Critically Evaluated Atomic Transition Probabilities for Sulfur S I–S XV

L. I. Podobedova,[a] D. E. Kelleher, and W. L. Wiese

Atomic Physics Division, National Institute of Standards and Technology, Gaithersburg, Maryland 20899-8420, USA

(Received 31 October 2008; accepted 31 October 2008; published online 5 June 2009)

Atomic transition probabilities for about 6400 allowed and forbidden lines of S I–S XV are tabulated based on a critical evaluation of recent literature sources. The transition probabilities were obtained mainly from recent sophisticated calculations carried out with complex computer codes. These tables provide data of interest for astronomical as well as laboratory plasmas. They will also be useful for the diagnostics of plasmas encountered in fusion energy research. © *2009 by the U.S. Secretary of Commerce on behalf of the United States. All rights reserved.* [DOI: 10.1063/1.3032939]

Key words: allowed transitions; atomic spectra; forbidden transitions; line strengths; oscillator strengths; sulfur; sulfur ions; transition probabilities; uncertainties.

CONTENTS

List of Tables

[a]Electronic mail: larissa.podobedova@nist.gov.

List of Symbols

Symbols for indication of data accuracy

A+ = uncertainty within 1%
A = uncertainty within 3%
B+ = uncertainty within 6%
B = uncertainty within 10%
C+ = uncertainty within 15%
C = uncertainty within 25%
D+ = uncertainty within 35%
D = uncertainty within 50%
E+ = uncertainty within 70%
E = uncertainty greater than 70% (but typically within factors of 2–3)

Symbols used for table headings

E_i = lower energy level
E_k = upper energy level

g_i = statistical weight of the lower level
g_k = statistical weight of the upper level
A_{ki} = atomic transition probability for spontaneous emission
f_{ik} = (absorption) oscillator strength
S = line strength

Abbreviations appearing in the column labeled "Source" (allowed lines only)

LS = decomposition into line data from multiplet values according to LS rules

Abbreviations appearing in the column labeled "Type" (forbidden lines only)

M1 = magnetic dipole transition
M2 = magnetic quadrupole transition
E2 = electric quadrupole transition

Throughout these tables we often use the terms atomic transition probability, oscillator strength (f value), and line strength interchangeably since they all refer to the same underlying physical property of radiative transitions. (The conversion factors will be given in Sec. 1.1.) We also use the generic term "transition rate" to refer to any of the above.

1. Introduction

The present work is being carried out as part of the National Institute of Standards and Technology (NIST) project of critically evaluating transition probabilities of light elements from sodium to calcium. The original compilation of the National Bureau of Standards was published several decades ago by Wiese *et al.* (1969). This new tabulation is undertaken because a vast amount of new material, referenced in the "Bibliographic Database on Atomic Transition Probabilities" (Fuhr *et al.*, 2003) became available in recent years, primarily from sophisticated atomic structure calculations. We have already completed critical compilations of transition probabilities for the spectra of sodium, magnesium, aluminum, and silicon (Kelleher and Podobedova 2008a, 2008b, 2008c). We have also carried out a special compilation (Podobedova *et al.*, 2003) of transition probabilities for several sulfur ions, including S VIII–S XIV, for transitions in the 20–170 Å spectral range.

In this new work all ionization stages (except for hydrogenic) are covered. The data are presented in separate tables for each atom and ion. Separate listings are given for "allowed" (electric dipole) and "forbidden" (magnetic dipole plus electric and magnetic quadrupole) transitions. The cited values and their estimated uncertainties are based on our consideration of all available theoretical and experimental literature sources.

We considered all transitions for which numerical data are listed for both the lower and upper energy levels in the NIST Atomic Spectra Database (ASD) (Ralchenko *et al.*, 2008). For the majority of sulfur levels, experimental energies are given in ASD. For all He-like and several Li-like and Be-like levels, more precise energies were determined by interpolation or extrapolation of known experimental values. The ionization energies given in the introductory comments for each ion are taken from values for the ionization limits in ASD. Energy levels of sulfur were included in ASD from the compilation of Martin *et al.* (1990).

The wavelengths in the tables are Ritz-type values derived from energy level values. Thus the wave number of a particular transition is found as the difference of the values of the combining energy levels in cm^{-1}, and the wavelength in vacuum is the reciprocal of the wave number. The customary unit cm^{-1} for energy levels used here is related to the SI unit for energy (joule) by $1\ cm^{-1} = 1.986\,445\,61(34) \times 10^{-23}$ J (Mohr and Taylor, 2008).

In compiling the transition probabilities we selected only values obtained with the most advanced theoretical and experimental methods. We regard this compilation as a table of reference data, and we therefore limit the entries to transitions that we estimate to be uncertain by less than ±50%. Because of the very small amount of experimental results available for highly ionized ions, for most transitions we had to rely on theoretical data. Fortunately, recent increases in computing power have greatly improved the accuracy of the calculations: The best are now able to predict atomic energy level data of very good accuracy, provide close consistency between length and velocity values for transition probabilities, and show very good agreement among various formulations by different authors. In this work we used a critical compilation technique that was earlier developed at NIST by Wiese and co-workers, described in detail by Wiese *et al.* (1996) and also illustrated in our previous compilation of sulfur lines in the ultraviolet region (Podobedova *et al.*, 2003). Here we briefly repeat the most important issues. All the data were reviewed with respect to four main criteria:

(i) The author's evaluation and numerical estimate of his/her uncertainties.
(ii) The degree of agreement of his/her results with other reliable data.
(iii) The author's consideration of the critical factors affecting his/her results.
(iv) The degree of fit of his/her results into established systematic trends or the reasons for possible deviations.

In theoretical approaches, which provided the large majority of the transition probability data for this compilation, it was shown many times that extensive treatment of configuration mixing due to electron correlations are necessary in order to obtain reliable results for most atomic systems compiled here. Such demonstrations came from (a) comparisons with experimental results and with other independent calculations, (b) convergence studies in the calculations, i.e., by the inclusion of more and more interacting configurations, (c) the agreement or lack thereof of results in the dipole-length and dipole-velocity representations, and (d) the degree of agreement between the computed level energies (in *ab initio* calculations) and experimental energies. Spin-orbit effects are found to be significant for many sulfur spectra. Therefore, if available, we always selected data from detailed multiconfiguration calculations with intermediate coupling.

The most valuable contributions to such theoretical data were made by Froese Fischer and co-workers during the past years. Their sophisticated calculations of the individual fine-structure transitions cover spectra of many elements including almost all sulfur ions, except the H-, He-, and B-like ones. The majority of these calculations were carried out using the multiconfiguration Hartree-Fock (MCHF) method with Breit-Pauli (BP) and other relativistic corrections (Froese Fischer and Tachiev, 2004; Froese Fischer *et al.*, 2006). For several sulfur ions, data were computed using the fully relativistic multiconfiguration Dirac-Hartree-Fock (MCDHF) method (Zou and Froese Fischer, 2000, 2001). Complete listings of their results are posted on the website http://www.atoms.vuse.vanderbilt.edu/. Results include calculations with both the length and velocity forms. Ratios of these two forms, given at the website, are a good guide to evaluate the accuracy of the results for allowed transitions. Comparisons of calculated energy levels with experimental values are presented as well and show very good agreement where available. For the prominent lines of the various spectra, normally transitions between lower excited states, we obtained good estimates of the numerical uncertainties from comparisons among various experimental and theoretical results, combined with our evaluations of the capabilities and limitations of the different methods.

For transitions involving high-lying configurations, data are available mainly from results of the Opacity Project (OP) which is the most extensive source of theoretical data. The OP results can be viewed at http://legacy.gsfc.nasa.gov/topbase. OP provides, however, only multiplet values. Therefore, for the present work the average values for *LS* multiplets were decomposed into their *LSJ* fine-structure components using *LS* coupling rules (Cowley *et al.*, 2000). For strong transitions of many sulfur spectra, good agreement exists between the OP data and data from more detailed calculations that include spin-orbit interactions, resulting in the individual fine-structure components. However, significant disagreements are often observed for weaker transitions when appreciable cancellation of positive and negative components of the transition integral is encountered. No intrinsic error estimates exist for these theoretical data. In these cases, we used a general scheme for assigning uncertainties for line strengths, which is based on extrapolation from our uncertainty estimates for the lower transitions. This scheme was described in detail by Wiese *et al.* (1996).

In our analysis we always used line strengths as the primary data and converted them to A and f values by applying experimental wavelengths (energy differences) since these are more precise than calculated ones. Some authors used calculated wavelengths to obtain fully theoretical A values. In these cases, we reconverted their A values to line strengths using their calculated wavelengths and then performed all our conversions with the more accurate experimental wavelength data.

1.1. Useful Relations

(i) Statistical weight g: The statistical weight of a level is related to the total angular momentum or quantum number J_L of that level (initial or final state of a line) by

$$g_L = 2J_L + 1 .$$

Similarly, the statistical weight of a term (initial or final state of a multiplet) is denoted by

$$g_M = (2L+1)(2S+1),$$

where L is the total orbital angular momentum and S is the total spin angular momentum.

(ii) Line strength S for lines and multiplets:

$$S(\text{multiplet}) = \sum S(\text{line})$$

or

$$S(i,k) = \sum_{J_i,J_k} S(J_i,J_k),$$

where k denotes the upper term and i the lower term.

(iii) Conversions: For electric dipole (E1-allowed) transitions,

$$A_{ki} = \frac{6.6703 \times 10^{15} g_i}{g_k \lambda^2} f_{ik} = \frac{2.0261 \times 10^{18}}{g_k \lambda^3} S.$$

For magnetic dipole (M1-forbidden) transitions,

$$A_{ki} = \frac{2.6974 \times 10^{13}}{g_k \lambda^3} S.$$

For magnetic quadrupole (M2-forbidden) transitions,

$$A_{ki} = \frac{1.4910 \times 10^{13}}{g_k \lambda^5} S.$$

For electric quadrupole (E2-forbidden) transitions,

$$A_{ki} = \frac{1.1199 \times 10^{18}}{g_k \lambda^5} S.$$

For these conversions, the line strength (S) is given in a.u. The transition probability (A_{ki}) is in units of s^{-1}, and the f value is dimensionless. The vacuum wavelength (λ) is given in Ångström units, and g_i and g_k are the statistical weights of the lower and upper levels, respectively. For more details on these units and conversion factors, we refer the reader to the NIST publication (Wiese *et al.*, 1996).

2. Arrangement of Tables

In order to facilitate finding lines by wavelength in each spectrum, we provide a finding list ordered in increasing wavelengths and correlate the lines with their corresponding multiplet number.

The tables are ordered by increasing ionization stage. In each spectrum, lines are grouped into multiplets which are arranged in order of ascending lower and upper level energies, respectively. Multiplet averages are given only if all the fine-structure members of the multiplet are listed. Each transition is identified by its wavelength, the energy levels of the lower (i) and upper (k) states, the statistical weights of the levels ($g=2J+1$), and the level designation. We present two wavelength columns. The first "λ" column lists air wavelengths for lines in the near ultraviolet, visible, and near infrared spectra (2000 Å$<\lambda<$20 000 Å); the index of refraction was computed from the formula given by Peck and Reader (1972). The second column gives the vacuum wavelength. A "cm^{-1}" in this column indicates that a vacuum wave number (i.e., in cm^{-1}) rather than a wavelength is listed; this is done for infrared lines above 20 000 Å.

Square brackets around a wavelength indicate that the energy of either the upper or lower level used to deduce the wavelength is uncertain to an unknown degree because of the following. (a) The energy of one transition level has a value which is not well known with respect to the other level of the transition. For example, in S XI, the absolute energy scale for excited levels of quintet terms (^{5}S° and ^{5}P°) is not experimentally established with respect to the ground ^{3}P levels. In this case wavelengths of the associated intercombination lines are given in brackets. (b) The assignment of one or both of the transition levels in uncertain. (c) The energy of one or both of the levels was calculated *ab initio* and its accuracy is uncertain.

The material for each spectrum is subdivided into a main table for allowed (electric dipole or E1) transitions and a smaller separate table for forbidden lines. Electric dipole intercombination (intersystem) lines are forbidden only in pure *LS* coupling and are listed under allowed transitions. For each line in tables of allowed transitions, the transition probability for spontaneous emission A_{ki} (s^{-1}), the line strength S (a.u.), oscillator strength f_{ik} (dimensionless), and the log $g_i f$ are provided. Special symbols used in the wavelength and energy level columns are numbers in italics which indicate multiplet values, i.e., weighted averages of line values. Forbidden lines include magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions. For these, the columns containing f and log gf are omitted since the oscillator strength is rarely utilized for forbidden lines. When both M1 and E2 transitions occur at the same wavelength, the total line strengths can be obtained by adding the magnetic dipole and electric quadrupole line strengths. For the M2 lines, if delta J is zero or 1, it competes with the corresponding allowed line (E1), so we did not included these lines in tables with forbidden transitions.

In all tables, we show the power of 10 by the exponential notation. For example, 3.88−03 stands for 3.88×10^{-3}.

The estimated accuracy of the line strengths is expressed by the code letters given in the List of Symbols. While we normally list here only transitions having estimated uncertainties of ±50% or less, i.e., classes A–D, some exceptions were made for those lines of classes E+ to E that complete a set of multiplet data. In other words, to be compiled, a multiplet must have at least one line with an accuracy of "D" or better. In tables for the forbidden transitions, we included all available transitions between levels of the ground-state configuration but eliminated all weak transitions with values $g_k A_{ki}<0.01$ between levels of excited configurations. We should also note that estimated accuracies in our previous compilation of far-UV lines of S VIII–S XIV (Podobedova *et al.*, 2003) are different in some cases because data from new sources were added for evaluation.

3. Acknowledgments and Future Plans

We would like to acknowledge the assistance and cooperation of many colleagues in this field. We are especially grateful to the authors who provided us with results of their calculations prior to this publication, as indicated in the references. We would like to thank Joseph Reader and Jeffrey Fuhr for their support and valuable suggestions, as well as critical reading of the manuscript. Also, in some cases partial support for this work was provided by the NASA Office of Space Sciences, Grant No. W-10215. We plan to continue this critical compilation work with analogous tables for the elements chlorine to calcium.

References for Sections 1–3

Cowley, C. R., W. L. Wiese, J. R. Fuhr, and L. A. Kusnetsova, 2000, *Allen's Astrophysical Quantities*, 4th ed., edited by A. N. Cox (AIP, New York), Chap. 4, pp. 53–93.

Froese Fischer, C. and G. Tachiev, 2004, At. Data Nucl. Data Tables **87**, 1. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Fuhr, J. R., H. R. Felrice, K. Olsen, and J. Hwang, 2003, *Atomic Transition Probability Bibliographic Database* (version 7.0), http://physics.nist.gov/fvalbib. National Institute of Standards and Technology, Gaithersburg, MD.

Kelleher, D. E. and L. I. Podobedova, 2008a, J. Phys. Chem. Ref. Data **37**, 267.

Kelleher, D. E. and L. I. Podobedova, 2008b, J. Phys. Chem. Ref. Data **37**, 709.

Kelleher, D. E. and L. I. Podobedova, 2008c, J. Phys. Chem. Ref. Data **37**, 1285.

Martin, W. C., R. Zalubas, and A. Musgrove, 1990, J. Phys. Chem. Ref. Data **19**, 821.

Mohr, P. J., B. N. Taylor, and D. B. Newell, 2008, J. Phys. Chem. Ref. Data **37**, 1187.

Peck, E. R. and K. Reeder, 1972, J. Opt. Soc. Am. **62**, 958.

Podobedova, L. I., A. Musgrove, D. E. Kelleher, J. Reader, and W. L. Wiese, 2003, J. Phys. Chem. Ref. Data **32**, 1367.

Ralchenko, Yu., A. E. Kramida, Reader, J. and NIST ASD Team, 2008, *NIST Atomic Spectra Database* (version 3.1.5), http://physics.nist.gov/asd3 National Institute of Standards and Technology, Gaithersburg, MD.

Wiese, W. L., J. R. Fuhr, and T. M. Deters, 1996, J. Phys. Chem. Ref. Data, Monogr. **7**, 532.

Wiese, W. L., M. W. Smith, and B. M. Miles, 1969, *Atomic Transition Probabilities*, Natl. Bur. Stand. Ref. Data Ser., Natl. Bur. Stand. (U.S.) Circ. No. 22 (U.S. GPO, Washington, D. C.), Vol. II.

Zou, Y. and C. Froese Fischer, 2000, Phys. Rev. A **62**, 062505.

Zou, Y. and C. Froese Fischer, 2001, J. Phys. B **34**, 915.

4. Transitions for Sulfur (S)

4.1. S I

$Z=16$
Ground State: $1s^2 2s^2 2p^6 3s^2 3p^4\ ^3P_2$
Ionization Energy: 83 559.1 cm^{-1} (10.3600 eV)

4.1.1. Allowed Transitions for S I

Spin-orbit effects are very significant for this spectrum. Therefore, only experimental data and calculations which include intermediate coupling were considered. Froese Fischer *et al.* (2006) calculated transition probabilities for transitions between lower excited states using the MCHF method with BP corrections. Their results were tabulated for the $3p^4$-$3p^3 4s$ and $3p^4$-$3p^3 4d$ transition arrays. The most extended calculations, which encompass all listed transitions, were produced by Zatsarinny and Bartschat (2006) using a modified R-matrix method based on the B-spline frozen-core representation. Relativistic corrections were included through the BP Hamiltonian. These results were selected mainly for stronger transitions ($S \geqslant 0.01$) from the higher excited states.

Since the earlier compilation (Wiese *et al.*, 1969) about 20 experiments were undertaken for neutral sulfur. Transition probabilities from six experimental works were adopted. Beideck *et al.* (1994) measured both branching fractions and lifetimes using beam-foil spectroscopy. Oscillator strengths of the $3p^3(^4S^\circ)4s\ ^3S_1^\circ$-$3p^3(^4S^\circ)4p\ ^3P_{0,1,2}$ transitions were cited from Zerne *et al.* (1997) where the time resolved two-photon laser spectroscopy was used for the lifetime measurements. The oscillator strengths were directly determined from the measured lifetimes of the $3p^3(^4S^\circ)4p\ ^3P_{0,1,2}$ levels since they each have only one allowed transition to the $3p^3(^4S^\circ)4s\ ^3S_1^{\ni\circ}$ level. Biémont *et al.* (1998) combined lifetimes, measured by Berzinsh *et al.* (1997) and Li *et al.* (1998), with their Hartree-Fock relativistic branching fractions. Comparisons of new experimental and theoretical data with the early emission measurements from a wall-stabilized arc by Müller (1968) indicate agreement within 15% in most cases. His values are quoted for $3s^2 3p^4\ ^3P$-$3s3p^5\ ^3P^\circ$ and for a number of intercombination transitions. Calculations for the radiative transition probabilities of this multiplet and for intercombination transitions encountered considerable problems due to appreciable cancellation of positive and negative parts of the transition integral.

In general we found good agreement for allowed transitions among theoretical and experimental values. The agreement is not satisfactory for many intercombination transitions. Therefore we included oscillator strengths only for 14 strong intercombination lines. For lines from the metastable $3p^3(^4S^\circ)4s\ ^5S_2^\circ$ level, computed oscillator strengths were selected from Biémont *et al.* (1996) where the SUPERSTRUCTURE configuration interaction (CI) code was applied.

A wavelength finding list of allowed lines for S I is given in Table 1, and the transition probabilities for these lines are provided in Table 2.

TABLE 1. Wavelength finding list for allowed lines of S I

Wavelength (vac.) Å	Mult. No.
1 241.905	24
1 247.107	22
1 247.134	22
1 247.160	22
1 248.044	24
1 250.816	24
1 253.297	22
1 253.325	22
1 256.093	22
1 262.860	21
1 269.208	21
1 270.769	19
1 270.780	19
1 270.787	19
1 272.075	21
1 277.197	19
1 277.216	19
1 280.100	19
1 295.653	15
1 296.174	15
1 302.336	15
1 302.862	15
1 303.110	15
1 303.430	14
1 305.884	15
1 310.194	14
1 313.249	14
1 316.543	12
1 316.615	12
1 316.622	12
1 323.516	12
1 323.523	12
1 326.642	12
1 381.553	11
1 385.510	11
1 388.436	11
1 389.154	11
1 392.589	11
1 396.113	11
1 401.514	10
1 409.337	10
1 409.503	23
1 409.538	23
1 412.873	10
1 425.030	8
1 425.188	8
1 425.219	8
1 433.278	8
1 433.310	8
1 436.967	8
1 439.819	20
1 439.828	20
1 444.296	4
1 448.23	17
1 471.832	16
1 472.971	7
1 473.994	3

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavelength (vac.) Å	Mult. No.
1 474.379	3
1 474.571	3
1 483.038	3
1 483.233	3
1 485.622	7
1 487.150	3
1 498.848	13
1 498.942	13
1 641.293	9
1 666.69	6
1 687.53	25
1 706.876	5
1 707.133	5
1 782.26	18
1 807.311	2
1 820.341	2
1 826.245	2
1 900.287	1
1 914.697	1
Wavelength (air) (Å)	**Mult. No.**
4 032.249	31
4 032.843	31
4 034.060	31
4 150.412	30
4 152.604	30
4 157.698	30
4 694.113	28
4 695.443	28
4 696.252	28
5 278.128	29
5 278.700	29
5 278.993	29
5 295.68	55
5 381.015	53
5 441.217	51
5 444.499	51
5 449.815	51
5 507.005	49
5 605.241	47
5 608.724	47
5 614.365	47
5 706.10	45
5 724.38	56
5 724.68	56
5 725.18	56
5 725.57	56
5 725.86	56
5 726.38	56
5 819.70	54
5 820.52	54
5 820.93	54
5 820.99	54
5 822.22	54
5 822.80	54
5 879.67	43

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavelength (air) (Å)	Mult. No.
5 883.51	43
5 889.71	43
5 894.34	52
5 895.19	52
5 895.60	52
5 958.19	50
5 959.02	50
5 959.05	50
5 959.48	50
5 960.30	50
5 961.21	50
6 041.92	41
6 045.97	41
6 046.04	41
6 052.53	41
6 052.59	41
6 052.66	41
6 081.84	48
6 082.73	48
6 083.18	48
6 172.77	46
6 173.61	46
6 173.69	46
6 174.15	46
6 174.99	46
6 175.82	46
6 395.16	44
6 396.15	44
6 396.64	44
6 403.57	39
6 408.12	39
6 415.48	39
6 535.58	42
6 536.34	42
6 536.61	42
6 537.13	42
6 537.88	42
6 538.60	42
6 743.54	38
6 748.58	38
6 748.79	38
6 756.75	38
6 756.96	38
6 757.15	38
6 992.85	40
6 994.03	40
6 994.62	40
7 161.44	73
7 164.79	73
7 165.50	73
7 166.67	73
7 167.80	73
7 443.30	71
7 446.92	71
7 447.68	71
7 448.94	71
7 450.17	71

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavelength (air) (Å)	Mult. No.
7 923.84	69
7 927.94	69
7 928.80	69
7 930.23	69
7 931.62	69
8 617.09	60
8 626.54	60
8 633.12	60
8 648.56	60
8 655.17	60
8 668.44	60
8 670.24	36
8 670.65	36
8 671.30	36
8 678.99	36
8 679.64	36
8 680.46	36
8 693.16	36
8 693.98	36
8 694.71	36
8 874.48	67
8 879.62	67
8 880.71	67
8 882.50	67
8 884.24	67
8 970.24	72
8 971.48	72
8 977.74	72
9 035.88	37
9 036.34	37
9 036.67	37
9 038.65	37
9 039.30	37
9 039.63	37
9 212.863	26
9 228.093	26
9 237.538	26
9 413.46	59
9 421.93	59
9 437.13	59
9 437.66	59
9 445.01	59
9 460.81	59
9 633.133	58
9 649.571	58
9 672.284	58
9 672.532	58
9 677.39	70
9 678.84	70
9 680.561	58
9 680.809	58
9 686.13	70
9 697.410	58
9 901.029	57
9 909.702	57
9 912.156	57
9 923.644	57

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavelength (air) (Å)	Mult. No.
9 932.357	57
9 949.833	57
10 455.449	27
10 456.757	27
10 459.406	27
10 633.08	62
11 133.55	68
11 135.47	68
11 145.12	68
11 390.090	64
11 390.122	64
11 390.125	64
11 396.19	78
11 398.492	64
11 400.282	64
11 400.329	64
11 400.93	78
11 403.234	64
11 403.280	64
11 403.303	64
11 406.157	64
11 406.179	64
11 406.214	64
11 410.67	78
11 601.76	61
11 856.1	95
12 292.56	94
12 393.39	77
12 412.95	77
12 458.58	77
12 901.540	66
12 904.113	66
12 920.440	66
12 939.967	66
12 942.555	66
12 955.592	66
12 970.43	93
13 564.26	91
13 571.01	91
13 582.14	91
13 776.554	34
13 797.616	34
13 831.804	34
13 975.045	76
13 981.323	76
13 986.201	76
14 131.77	90
14 163.92	92
14 166.03	92
14 170.15	92
14 564.13	108
14 566.16	108
14 568.48	108
14 570.32	108
14 571.49	108
15 291.39	88
15 299.98	88

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavelength (air) (Å)	Mult. No.
15 314.12	88
15 400.058	65
15 403.724	65
15 403.791	65
15 422.195	65
15 422.262	65
15 422.276	65
15 469.816	35
15 475.616	35
15 478.482	35
15 779.26	106
15 781.66	106
15 784.37	106
15 786.54	106
15 787.91	106
15 988.18	89
15 990.87	89
15 996.12	89
16 439.52	87
16 449.45	87
16 449.93	87
16 465.79	87
16 466.28	87
16 466.74	87
18 107.2	103
18 110.3	103
18 113.9	103
18 116.7	103
18 118.5	103
18 659.9	107
18 661.3	107
18 675.9	107
18 929.26	33
18 944.16	33
18 949.71	33
18 957.16	33
18 958.41	33
18 962.71	33
19 424.3	85
19 438.2	85
19 461.0	85
19 819.8	105
19 821.4	105
19 821.5	105
19 823.1	105
19 837.8	105

Wavenumber (cm^{-1})	Mult. No.
4 916.80	86
4 915.75	86
4 913.70	86
4 812.38	101
4 811.42	101
4 810.33	101
4 543.23	104
4 542.83	104

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
4 538.65	104
4 496.7	137
4 462.72	138
4 461.82	138
4 460.24	138
4 451.04	138
4 441.740	32
4 439.71	138
4 439.470	32
4 438.81	138
4 438.093	32
4 432.874	32
4 430.663	32
4 428.393	32
4 423.98	84
4 423.25	84
4 422.93	84
4 422.82	84
4 421.77	84
4 420.88	84
4 414.965	32
4 412.754	32
4 402.584	32
4 359.73	83
4 356.06	83
4 355.59	83
4 350.03	83
4 349.56	83
4 349.14	83
4 317.64	136
4 305.96	136
4 294.63	136
4 275.38	114
4 274.95	114
4 197.29	134
4 176.69	135
4 172.87	135
4 171.91	102
4 171.17	135
4 168.26	102
4 167.86	102
4 165.01	135
4 160.78	102
4 160.38	102
4 156.20	102
4 153.68	135
4 149.86	135
4 107.001	63
4 104.950	63
4 103.897	63
4 103.405	63
4 102.352	63
4 094.579	63
3 968.46	132
3 965.97	132
3 962.75	132
3 959.15	133

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
3 947.47	133
3 936.14	133
3 777.40	131
3 775.08	131
3 772.52	131
3 772.25	130
3 765.72	131
3 754.39	131
3 752.07	131
3 567.35	148
3 566.93	148
3 566.46	148
3 529.24	117
3 527.50	117
3 527.47	117
3 525.84	117
3 525.80	117
3 436.28	129
3 430.82	128
3 428.33	128
3 425.11	128
3 424.60	129
3 413.27	129
3 403.21	113
3 399.56	113
3 392.08	113
3 321.46	112
3 218.171	74
3 212.138	74
3 210.3	160
3 208.469	74
3 194.14	127
3 192.10	100
3 191.93	127
3 191.70	100
3 189.76	127
3 187.52	100
3 182.46	127
3 171.13	127
3 168.92	127
3 138.83	126
2 920.252	75
2 918.201	75
2 917.148	75
2 910.93	159
2 883.31	98
2 882.35	98
2 881.26	98
2 879.13	98
2 878.04	98
2 877.17	98
2 875.55	98
2 874.68	98
2 874.13	98
2 832.37	141
2 802.87	141
2 790.16	141

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
2 697.36	111
2 684.65	111
2 655.15	111
2 630.93	125
2 619.25	125
2 607.92	125
2 598.36	124
2 595.87	124
2 592.65	124
2 567.6	173
2 552.80	81
2 549.13	81
2 543.10	81
2 523.88	158
2 521.56	158
2 519.00	158
2 485.89	157
2 473.88	140
2 452.10	82
2 451.05	82
2 449.00	82
2 444.38	140
2 431.67	140
2 304.66	147
2 304.23	147
2 303.50	147
2 303.07	147
2 295.07	123
2 293.30	123
2 291.63	123
2 283.39	123
2 272.06	123
2 270.29	123
2 268.22	171
2 240.52	174
2 239.62	174
2 238.04	174
2 233.04	174
2 232.14	174
2 229.39	174
2 141.76	122
2 139.27	122
2 139.09	122
2 136.05	122
2 135.87	122
2 135.70	122
2 036.17	116
2 035.48	116
2 035.47	116
2 035.44	116
2 035.04	116
2 035.01	116
2 033.68	169
1 961.59	99
1 961.19	99
1 954.49	172
1 950.67	172

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
1 950.26	99
1 948.97	172
1 947.01	172
1 943.36	172
1 943.19	172
1 940.62	156
1 938.58	99
1 938.41	156
1 938.18	99
1 936.24	156
1 934.00	99
1 858.8	186
1 858.07	187
1 857.17	187
1 855.59	187
1 852.47	155
1 843.18	167
1 810.68	152
1 810.25	152
1 803.81	146
1 803.38	146
1 802.65	146
1 736.95	170
1 729.47	170
1 725.82	170
1 687.98	80
1 683.80	80
1 683.40	80
1 682.75	80
1 682.35	80
1 681.65	96
1 681.63	96
1 680.69	96
1 680.67	96
1 680.30	80
1 679.66	96
1 679.62	96
1 679.60	96
1 678.79	96
1 678.75	96
1 678.24	96
1 616.20	115
1 616.141	15
1 615.75	115
1 615.73	115
1 615.33	115
1 615.31	115
1 572.04	185
1 568.22	185
1 566.52	185
1 559.43	184
1 555.20	168
1 552.88	168
1 550.32	168
1 547.72	168
1 545.40	168
1 544.07	168

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
1 515.42	144
1 515.00	144
1 514.53	144
1 496.04	165
1 431.33	145
1 428.84	145
1 427.68	145
1 421.36	145
1 420.93	145
1 420.20	145
1 392.39	109
1 389.17	109
1 386.68	109
1 357.65	195
1 357.22	195
1 356.75	195
1 356.32	195
1 354.74	195
1 294.82	121
1 283.14	121
1 271.81	121
1 214.08	166
1 212.57	194
1 212.14	194
1 209.76	164
1 207.30	120
1 206.60	166
1 204.81	120
1 202.95	166
1 201.59	120
1 192.89	110
1 181.56	110
1 172.75	183
1 170.43	183
1 169.88	110
1 167.87	183
1 145.66	139
1 134.39	182
1 127.41	178
1 125.74	178
1 123.97	178
1 116.16	139
1 103.45	139
1 071.62	193
1 071.19	193
1 067.80	193
1 067.37	193
1 065.67	193
1 065.35	79
1 064.80	79
1 063.93	79
1 061.13	79
1 060.26	79
1 059.17	79
1 054.23	79
1 053.14	79
1 052.18	79

TABLE 1. Wavelength finding list for allowed lines of S I—Continued

Wavenumber (cm^{-1})	Mult. No.
1 044.3	200
1 043.68	201
1 042.78	201
1 041.55	154
1 041.20	201
1 039.78	154
1 038.11	154
938.51	151
934.86	151
927.38	151
872.71	142
872.29	142
871.82	142
854.08	192
853.65	192
849.69	153
849.51	153
849.34	153
813.87	177
812.20	177
811.77	177
810.43	177
810.00	177
802.00	119
801.27	119
800.84	119
790.32	119
778.99	119
777.83	119
757.65	199
753.83	199
752.13	199
744.90	198
727.48	150
704.41	97
704.01	97
703.98	97
699.83	97
699.80	97
699.79	97
672.33	191
671.90	191
670.01	191
669.58	191
667.02	191
663.58	162
589.49	181
587.28	181
585.11	181
515.7	204
502.16	175
501.99	175
501.81	175
500.97	180
474.57	179
474.14	179
452.68	143
452.25	143
451.52	143
420.25	118
417.76	118
417.29	118
414.54	118
414.07	118
413.65	118
408.73	163
401.25	163
397.60	163
358.36	197
356.04	197
353.48	197
331.21	190
330.78	190
319.86	196
313.56	188
313.02	176
311.35	176
309.58	176
232.66	149
229.28	189
227.11	189
224.90	189
219.95	149
216.29	203
208.75	202
206.98	161
206.80	161
206.63	161
190.45	149

TABLE 2. Transition probabilities of allowed lines for S I

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s^23p^4$–$3s^23p^3(^4S^\circ)4s$	^3P–$^5S^\circ$										
				1 900.287	0.000–52 623.640	5–5	7.09+04	3.84−05	1.20−03	−3.717	D+	7
				1 914.697	396.055–52 623.640	3–5	2.14+04	1.96−05	3.70−04	−4.231	D	7
2		^3P–$^3S^\circ$		*1 813.73*	*195.756*–55 330.811	9–3	5.52+08	9.08−02	4.88+00	−0.088	C+	1,3
				1 807.311	0.000–55 330.811	5–3	3.27+08	9.60−02	2.85+00	−0.319	C+	3

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 820.341	396.055–55 330.811	3–3	1.71+08	8.50−02	1.52+00	−0.593	C+	3
				1 826.245	573.640–55 330.811	1–3	5.64+07	8.46−02	5.08−01	−1.073	C	1
3	$3s^23p^4-3s^23p^3(^2D^\circ)4s$	$^3P-^3D^\circ$		*1 478.50*	*195.756–67 831.671*	9–15	1.94+08	1.06−01	4.64+00	−0.020	C+	1
				1 473.994	0.000–67 842.867	5–7	1.96+08	8.95−02	2.17+00	−0.349	C+	1
				1 483.038	396.055–67 825.188	3–5	1.44+08	7.93−02	1.16+00	−0.624	C+	1
				1 487.150	573.640–67 816.351	1–3	1.06+08	1.05−01	5.15−01	−0.979	C	1
				1 474.379	0.000–67 825.188	5–5	4.88+07	1.59−02	3.85−01	−1.100	C	1
				1 483.233	396.055–67 816.351	3–3	7.99+07	2.64−02	3.86−01	−1.101	C	1
				1 474.571	0.000–67 816.351	5–3	5.39+06	1.05−03	2.56−02	−2.280	D+	1
4		$^3P-^1D^\circ$										
				1 444.296	0.000–69 237.886	5–5	2.59+06	8.10−04	1.92−02	−2.393	D+	6
5		$^1D-^3D^\circ$										
				1 706.361	9 238.609–67 842.867	5–7	1.23+05	7.50−05	2.11−03	−3.426	D+	6
				1 707.133	9 238.609–67 816.351	5–3	4.96+05	1.30−04	3.65−03	−3.187	D+	6
6		$^1D-^1D^\circ$		1 666.69	9 238.609–69 237.886	5–5	4.58+08	1.91−01	5.23+00	−0.020	C+	1
7	$3s^23p^4-3s^23p^3(^4S^\circ)3d$	$^3P-^5D^\circ$										
				1 472.971	0.000–67 890.016	5–7	3.73+07	1.70−02	4.12−01	−1.071	D+	6
				1 485.622	573.640–67 885.535	1–3	2.32+06	2.30−03	1.12−02	−2.638	D+	6
8		$^3P-^3D^\circ$		*1 429.11*	*195.756–70 169.513*	9–15	3.76+08	1.92−01	8.13+00	0.238	C+	1
				1 425.030	0.000–70 173.968	5–7	3.79+08	1.61−01	3.78+00	−0.094	C+	1
				1 433.278	396.055–70 166.195	3–5	2.81+08	1.44−01	2.04+00	−0.365	C+	1
				1 436.967	573.640–70 164.650	1–3	2.07+08	1.92−01	9.09−01	−0.717	C	1
				1 425.188	0.000–70 166.195	5–5	9.48+07	2.89−02	6.77−01	−0.840	C	1
				1 433.310	396.055–70 164.650	3–3	1.56+08	4.81−02	6.81−01	−0.841	C	1
				1 425.219	0.000–70 164.650	5–3	1.05+07	1.93−03	4.52−02	−2.015	D+	1
9		$^1D-^3D^\circ$										
				1 641.293	9 238.609–70 166.195	5–5	7.18+05	2.90−04	7.83−03	−2.839	D+	6
10	$3s^23p^4-3s^23p^3(^4S^\circ)5s$	$^3P-^3S^\circ$		*1 405.37*	*195.756*–71 351.399	9–3	1.32+08	1.30−02	5.43−01	−0.932	C	5
				1 401.514	0.000–71 351.399	5–3	7.48+07	1.32−02	3.04−01	−1.180	C	5
				1 409.337	396.055–71 351.399	3–3	4.35+07	1.29−02	1.80−01	−1.412	C	5
				1 412.873	573.640–71 351.399	1–3	1.42+07	1.27−02	5.92−02	−1.896	D+	5
11	$3s^23p^4-3s3p^5$	$^3P-^3P^\circ$		*1 388.73*	*195.756–72 204.010*	9–9	1.18+06	3.40−04	1.40−02	−2.514	D	6
				1 388.436	0.000–72 023.495	5–5	5.54+05	1.60−04	3.65−03	−3.097	D	6
				1 389.154	396.055–72 382.328	3–3	1.69+05	4.90−05	6.72−04	−3.833	D	6
				1 381.553	0.000–72 382.328	5–3	5.42+05	9.30−05	2.11−03	−3.333	D	6
				1 385.510	396.055–72 571.630	3–1	1.25+06	1.20−04	1.64−03	−3.444	D	6
				1 396.113	396.055–72 023.495	3–5	5.75+05	2.80−04	3.86−03	−3.076	D	6
				1 392.589	573.640–72 382.328	1–3	5.16+05	4.50−04	2.06−03	−3.347	D	6
12	$3s^23p^4-3s^23p^3(^4S^\circ)4d$	$^3P-^3D^\circ$		*1 319.98*	*195.756–75 954.22*	9–15	8.00+07	3.48−02	1.36+00	−0.504	C	5
				1 316.543	0.000–75 956.53	5–7	7.89+07	2.87−02	6.22−01	−0.843	C	5
				1 323.516	396.055–75 952.35	3–5	6.04+07	2.64−02	3.45−01	−1.101	C	5
				1 326.642	573.640–75 951.95	1–3	4.44+07	3.52−02	1.53−01	−1.453	C	5
				1 316.615	0.000–75 952.35	5–5	2.10+07	5.46−03	1.18−01	−1.564	C	5
				1 323.523	396.055–75 951.95	3–3	3.40+07	8.93−03	1.16−01	−1.572	C	5
				1 316.622	0.000–75 951.95	5–3	2.37+06	3.69−04	7.99−03	−2.734	D	5
13		$^1D-^3D^\circ$										

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 498.942	9 238.609–75 952.35	5–5	1.52+04	5.12−06	1.26−04	−4.592	D+	5
				1 498.848	9 238.609–75 956.53	5–7	1.51+04	7.10−06	1.75−04	−4.450	D+	5
14	$3s^23p^4-3s^23p^3(^4S^\circ)6s$	$^3P-^3S^\circ$		*1 306.76*	*195.756–76 720.65*	9–3	5.19+07	4.43−03	1.72−01	−1.399	D+	5
				1 303.430	0.000–76 720.65	5–3	2.95+07	4.51−03	9.67−02	−1.647	D+	5
				1 310.194	396.055–76 720.65	3–3	1.70+07	4.36−03	5.64−02	−1.883	D+	5
				1 313.249	573.640–76 720.65	1–3	5.54+06	4.30−03	1.85−02	−2.367	D+	5
15	$3s^23p^4-3s^23p^3(^2P^\circ)4s$	$^3P-^3P^\circ$		*1 299.21*	*195.756–77 165.74*	9–9	4.77+08	1.21−01	4.65+00	0.037	C	3
				1 295.653	0.000–77 181.15	5–5	3.46+08	8.70−02	1.85+00	−0.362	C+	3
				1 302.862	396.055–77 150.14	3–3	1.53+08	3.90−02	5.01−01	−0.932	C	3
				1 296.174	0.000–77 150.14	5–3	1.46+08	2.20−02	4.69−01	−0.959	C	3
				1 303.110	396.055–77 135.52	3–1	4.83+08	4.10−02	5.27−01	−0.910	C	3
				1 302.336	396.055–77 181.15	3–5	1.20+08	5.10−02	6.56−01	−0.815	C	3
				1 305.884	573.640–77 150.14	1–3	1.96+08	1.50−01	6.44−01	−0.824	C	3
16		$^1D-^3P^\circ$		1 471.832	9 238.609–77 181.15	5–5	2.49+06	8.10−04	1.96−02	−2.393	D+	6
17		$^1D-^3P^\circ$		1 448.23	9 238.609–78 288.44	5–3	5.00+08	9.44−02	2.25+00	−0.326	D+	2
18		$^1S-^3P^\circ$		1 782.26	22 179.954–78 288.44	1–3	1.16+08	1.66−01	9.74−01	−0.780	D	2
19	$3s^23p^4-3s^23p^3(^4S^\circ)5d$	$^3P-^3D^\circ$		*1 273.95*	*195.756–78 691.80*	9–15	2.51+07	1.02−02	3.85−01	−1.037	D+	5
				1 270.780	0.000–78 691.80	5–7	2.54+07	8.61−03	1.80−01	−1.366	C	5
				1 277.216	396.055–78 691.37	3–5	1.84+07	7.48−03	9.43−02	−1.649	D+	5
				1 280.100	573.640–78 692.53	1–3	1.35+07	9.93−03	4.18−02	−2.003	D+	5
				1 270.787	0.000–78 691.37	5–5	6.70+06	1.62−03	3.39−02	−2.092	D+	5
				1 277.197	396.055–78 692.53	3–3	1.05+07	2.57−03	3.24−02	−2.113	D+	5
				1 270.769	0.000–78 692.53	5–3	7.60+05	1.10−04	2.30−03	−3.260	D	5
20		$^1D-^3D^\circ$										
				1 439.828	9 238.609–78 691.37	5–5	4.47+03	1.39−06	3.29−05	−5.158	D	5
				1 439.819	9 238.609–78 691.80	5–7	5.03+03	2.19−06	5.19−05	−4.961	D	5
21	$3s^23p^4-3s^23p^3(^4S^\circ)7s$	$^3P-^3S^\circ$		*1 265.99*	*195.756–79 185.35*	9–3	2.55+07	2.04−03	7.67−02	−1.736	D+	5
				1 262.860	0.000–79 185.35	5–3	1.48+07	2.12−03	4.40−02	−1.975	D+	5
				1 269.208	396.055–79 185.35	3–3	8.18+06	1.98−03	2.47−02	−2.226	D+	5
				1 272.075	573.640–79 185.35	1–3	2.62+06	1.91−03	7.97−03	−2.719	D	5
22	$3s^23p^4-3s^23p^3(^4S^\circ)6d$	$^3P-^3D^\circ$		*1 250.19*	*195.756–80 183.40*	9–15	1.35+07	5.29−03	1.96−01	−1.322	D+	5
				1 247.160	0.000–80 182.16	5–7	1.36+07	4.43−03	9.09−02	−1.655	D+	5
				1 253.325	396.055–80 183.83	3–5	1.07+07	4.21−03	5.20−02	−1.899	D+	5
				1 256.093	573.640–80 185.60	1–3	7.98+06	5.67−03	2.34−02	−2.246	D+	5
				1 247.134	0.000–80 183.83	5–5	2.82+06	6.57−04	1.34−02	−2.483	D+	5
				1 253.297	396.055–80 185.60	3–3	5.29+06	1.24−03	1.54−02	−2.429	D+	5
				1 247.107	0.000–80 185.60	5–3	2.69+05	3.76−05	7.71−04	−3.726	D	5
23		$^1D-^3D^\circ$		1 409.538	9 238.609–80 183.83	5–5	4.12+03	1.23−06	2.84−05	−5.211	D	5
				1 409.503	9 238.609–80 185.60	5–3	2.30+03	4.11−07	9.54−06	−5.687	D	5
24	$3s^23p^4-3s^23p^3(^4S^\circ)8s$	$^3P-^3S^\circ$		*1 244.93*	*195.756–80 521.46*	9–3	2.24+07	1.73−03	6.39−02	−1.808	D+	5
				1 241.905	0.000–80 521.46	5–3	1.22+07	1.69−03	3.46−02	−2.073	D+	5
				1 248.044	396.055–80 521.46	3–3	7.53+06	1.76−03	2.16−02	−2.277	D+	5
				1 250.816	573.640–80 521.46	1–3	2.66+06	1.88−03	7.72−03	−2.726	D	5
25	$3s^23p^4-3s^23p^3(^2D^\circ)3d$	$^1S-^3P^\circ$		1 687.53	22 179.954–81 438.30	1–3	6.90+07	8.84−02	4.91−01	−1.054	D	2
26	$3s^23p^3(^4S^\circ)4s-3s^23p^3(^4S^\circ)4p$	$^5S^\circ-^5P$	*9 222.86*	*9 225.40*	*52 623.640–63 463.284*	5–15	2.78+07	1.06+00	1.61+02	0.724	C	2
			9 212.863	9 215.391	52 623.640–63 475.051	5–7	2.79+07	4.97−01	7.53+01	0.395	C	2
			9 228.093	9 230.626	52 623.640–63 457.142	5–5	2.77+07	3.54−01	5.38+01	0.248	C	2
			9 237.538	9 240.073	52 623.640–63 446.065	5–3	2.77+07	2.12−01	3.23+01	0.025	C	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
27		$^3S^\circ$–^3P	*10 456.91*	*10 459.78*	55 330.811–*64 891.243*	3–9	2.17+07	1.07+00	1.10+02	0.507	B+	4
			10 455.449	10 458.314	55 330.811–64 892.582	3–5	2.17+07	5.93−01	6.12+01	0.250	B+	4
			10 459.406	10 462.272	55 330.811–64 888.964	3–3	2.18+07	3.57−01	3.68+01	0.030	B+	4
			10 456.757	10 459.622	55 330.811–64 891.386	3–1	2.18+07	1.19−01	1.22+01	−0.447	B+	4
28	$3s^23p^3(^4S^\circ)4s$–$3s^23p^3(^4S^\circ)5p$	$^5S^\circ$–^5P	*4 694.98*	*4 696.30*	*52 623.640–73 917.010*	5–15	8.20+05	8.14−03	6.29−01	−1.390	D	2
			4 694.113	4 695.426	52 623.640–73 920.961	5–7	8.37+05	3.87−03	2.99−01	−1.713	D	2
			4 695.443	4 696.757	52 623.640–73 914.928	5–5	8.14+05	2.69−03	2.08−01	−1.871	D	2
			4 696.252	4 697.566	52 623.640–73 911.259	5–3	8.01+05	1.59−03	1.22−01	−2.100	D	2
29		$^3S^\circ$–^3P	*5 278.80*	*5 280.27*	*55 330.811–74 269.243*	3–9	4.26+05	5.34−03	2.79−01	−1.795	D	2
			5 278.993	5 280.462	55 330.811–74 268.547	3–5	4.24+05	2.95−03	1.54−01	−2.053	D	2
			5 278.700	5 280.169	55 330.811–74 269.600	3–3	4.28+05	1.79−03	9.33−02	−2.270	E+	2
			5 278.128	5 279.597	55 330.811–74 271.651	3–1	4.33+05	6.04−04	3.14−02	−2.742	E+	2
30	$3s^23p^3(^4S^\circ)4s$–$3s^23p^3(^2D^\circ)4p$	$^3S^\circ$–^3P	*4 155.19*	*4 156.36*	*55 330.811–79 390.32*	3–9	1.53+06	1.19−02	4.89−01	−1.447	D	2
			4 157.698	4 158.871	55 330.811–79 375.80	3–5	1.59+06	6.86−03	2.81−01	−1.687	D	2
			4 152.604	4 153.775	55 330.811–79 405.30	3–3	1.48+06	3.83−03	1.57−01	−1.940	D	2
			4 150.412	4 151.583	55 330.811–79 418.01	3–1	1.44+06	1.24−03	5.07−02	−2.429	E+	2
31	$3s^23p^3(^4S^\circ)4s$–$3s^23p^3(^4S^\circ)7p$	$^3S^\circ$–^3P	*4 033.45*	*4 034.59*	*55 330.811–80 116.46*	3–9	1.07+06	7.80−03	3.11−01	−1.631	D	2
			4 034.060	4 035.200	55 330.811–80 112.73	3–5	1.06+06	4.33−03	1.72−01	−1.886	D	2
			4 032.843	4 033.982	55 330.811–80 120.21	3–3	1.07+06	2.62−03	1.04−01	−2.105	D	2
			4 032.249	4 033.389	55 330.811–80 123.86	3–1	1.08+06	8.78−04	3.49−02	−2.579	E+	2
32	$3s^23p^3(^4S^\circ)4p$–$3s^23p^3(^4S^\circ)3d$	^5P–$^5D^\circ$		*4 421.061* cm^{-1}	*63 463.284–67 884.345*	15–25	3.68+06	4.71−01	5.26+02	0.849	C	1
				4 402.584 cm^{-1}	63 475.051–67 877.635	7–9	3.65+06	3.63−01	1.89+02	0.405	C+	1
				4 432.874 cm^{-1}	63 457.142–67 890.016	5–7	2.48+06	2.65−01	9.83+01	0.122	C	1
				4 441.740 cm^{-1}	63 446.065–67 887.805	3–5	1.31+06	1.66−01	3.68+01	−0.303	C	1
				4 414.965 cm^{-1}	63 475.051–67 890.016	7–7	1.22+06	9.41−02	4.91+01	−0.181	C	1
				4 430.663 cm^{-1}	63 457.142–67 887.805	5–5	2.16+06	1.65−01	6.14+01	−0.084	C	1
				4 439.470 cm^{-1}	63 446.065–67 885.535	3–3	2.80+06	2.13−01	4.74+01	−0.194	C	1
				4 412.754 cm^{-1}	63 475.051–67 887.805	7–5	2.45+05	1.34−02	7.02+00	−1.028	C	1
				4 428.393 cm^{-1}	63 457.142–67 885.535	5–3	9.27+05	4.25−02	1.58+01	−0.673	C	1
				4 438.093 cm^{-1}	63 446.065–67 884.158	3–1	3.74+06	9.48−02	2.10+01	−0.546	C	1
33		^3P–$^3D^\circ$	*18 940.4*	*18 945.6*	*64 891.243–70 169.513*	9–15	7.54+06	6.76−01	3.79+02	0.784	C	2
			18 929.26	18 934.42	64 892.582–70 173.968	5–7	7.59+06	5.71−01	1.77+02	0.456	C+	2
			18 944.16	18 949.33	64 888.964–70 166.195	3–5	5.66+06	5.08−01	9.50+01	0.183	C	2
			18 958.41	18 963.59	64 891.386–70 164.650	1–3	4.18+06	6.76−01	4.22+01	−0.170	C	2
			18 957.16	18 962.33	64 892.582–70 166.195	5–5	1.88+06	1.01−01	3.15+01	−0.297	C	2
			18 949.71	18 954.88	64 888.964–70 164.650	3–3	3.13+06	1.69−01	3.16+01	−0.295	C	2
			18 962.71	18 967.89	64 892.582–70 164.650	5–3	2.08+05	6.73−03	2.10+00	−1.473	D+	2
34	$3s^23p^3(^4S^\circ)4p$–$3s^23p^3(^4S^\circ)5s$	^5P–$^5S^\circ$	*13 809.32*	*13 813.10*	*63 463.284–70 702.790*	15–5	2.09+07	2.00−01	1.36+02	0.477	C	2
			13 831.804	13 835.585	63 475.051–70 702.790	7–5	9.77+06	2.00−01	6.38+01	0.146	C	2
			13 797.616	13 801.388	63 457.142–70 702.790	5–5	7.00+06	2.00−01	4.53+01	0.000	C	2
			13 776.554	13 780.321	63 446.065–70 702.790	3–5	4.21+06	2.00−01	2.71+01	−0.222	C	2
35		^3P–$^3S^\circ$	*15 475.27*	*15 479.50*	*64 891.243–71 351.399*	9–3	1.76+07	2.11−01	9.66+01	0.279	C	2
			15 478.482	15 482.711	64 892.582–71 351.399	5–3	9.79+06	2.11−01	5.37+01	0.023	C	2
			15 469.816	15 474.043	64 888.964–71 351.399	3–3	5.88+06	2.11−01	3.22+01	−0.199	C	2
			15 475.616	15 479.845	64 891.386–71 351.399	1–3	1.96+06	2.11−01	1.07+01	−0.676	C	2
36	$3s^23p^3(^4S^\circ)4p$–$3s^23p^3(^4S^\circ)4d$	^5P–$^5D^\circ$	*8 684.9*	*8 687.3*	*63 463.284–74 974.31*	15–25	1.10+07	2.07−01	8.88+01	0.492	C	2
			8 694.71	8 697.10	63 475.051–74 973.14	7–9	1.10+07	1.61−01	3.22+01	0.052	C	2
			8 680.46	8 682.85	63 457.142–74 974.10	5–7	7.34+06	1.16−01	1.65+01	−0.237	C	2
			8 671.30	8 673.69	63 446.065–74 975.19	3–5	3.84+06	7.22−02	6.18+00	−0.664	D+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			8 693.98	8 696.37	63 475.051–74 974.10	7–7	3.68+06	4.17−02	8.35+00	−0.535	D+	2
			8 679.64	8 682.03	63 457.142–74 975.19	5–5	6.41+06	7.25−02	1.03+01	−0.441	C	2
			8 670.65	8 673.03	63 446.065–74 976.06	3–3	8.23+06	9.28−02	7.94+00	−0.555	D+	2
			8 693.16	8 695.55	63 475.051–74 975.19	7–5	7.35+05	5.95−03	1.19+00	−1.380	D+	2
			8 678.99	8 681.37	63 457.142–74 976.06	5–3	2.75+06	1.86−02	2.66+00	−1.032	D+	2
			8 670.24	8 672.62	63 446.065–74 976.61	3–1	1.10+07	4.12−02	3.53+00	−0.908	D+	2
37		^{3}P–^{3}D$^\circ$	*9 036.7*	*9 039.2*	*64 891.243–75 954.22*	9–15	2.15+06	4.40−02	1.18+01	−0.402	D+	2
			9 035.88	9 038.36	64 892.582–75 956.53	5–7	2.14+06	3.67−02	5.45+00	−0.736	D+	2
			9 036.34	9 038.82	64 888.964–75 952.35	3–5	1.62+06	3.31−02	2.95+00	−1.003	D+	2
			9 038.65	9 041.13	64 891.386–75 951.95	1–3	1.21+06	4.45−02	1.32+00	−1.352	D+	2
			9 039.30	9 041.78	64 892.582–75 952.35	5–5	5.44+05	6.67−03	9.92−01	−1.477	D	2
			9 036.67	9 039.15	64 888.964–75 951.95	3–3	9.08+05	1.11−02	9.93−01	−1.478	D	2
			9 039.63	9 042.11	64 892.582–75 951.95	5–3	6.08+04	4.47−04	6.65−02	−2.651	E+	2
38	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)5d$	^{5}P–^{5}D$^\circ$				15–25						2
			6 757.15	6 759.02	63 475.051–78 270.10	7–9	7.22+06	6.36−02	9.90+00	−0.351	D+	2
			6 748.79	6 750.65	63 457.142–78 270.52	5–7	4.81+06	4.60−02	5.11+00	−0.638	D+	2
			6 743.54	6745.40	63 446.065–78 270.99	3–5	2.52+06	2.87−02	1.91+00	−1.065	D+	2
			6 756.96	6 758.83	63 475.051–78 270.52	7–7	2.41+06	1.65−02	2.56+00	−0.937	D+	2
			6 748.58	6 750.44	63 457.142–78 270.99	5–5	4.21+06	2.87−02	3.19+00	−0.843	D+	2
			6 756.75	6 758.61	63 475.051–78 270.99	7–5	4.81+05	2.35−03	3.66−01	−1.784	D	2
39	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)7s$	^{5}P–^{5}S$^\circ$	*6 410.6*	*6 412.4*	*63 463.284–79 058.04*	15–5	3.44+06	7.06−03	2.24+00	−0.975	D	2
			6 415.48	6 417.25	63 475.051–79 058.04	7–5	1.61+06	7.09−03	1.04+00	−1.304	D+	2
			6 408.12	6 409.89	63 457.142–79 058.04	5–5	1.15+06	7.10−03	7.48−01	−1.450	D	2
			6 403.57	6 405.34	63 446.065–79 058.04	3–5	6.93+05	7.10−03	4.49−01	−1.672	D	2
40		^{3}P–^{3}S$^\circ$	*6 994.0*	*6 995.9*	*64 891.243–79 185.35*	9–3	2.79+06	6.82−03	1.41+00	−1.212	D	2
			6 994.62	6 996.55	64 892.582–79 185.35	5–3	1.55+06	6.81−03	7.84−01	−1.468	D	2
			6 992.85	6 994.77	64 888.964–79 185.35	3–3	9.32+05	6.83−03	4.72−01	−1.688	D	2
			6 994.03	6 995.96	64 891.386–79 185.35	1–3	3.11+05	6.84−03	1.57−01	−2.165	D	2
41	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)6d$	^{5}P–^{5}D$^\circ$				15–25						2
			6 052.66	6 054.33	63 475.051–79 992.15	7–9	4.30+06	3.04−02	4.24+00	−0.672	D+	2
			6 046.04	6 047.71	63 457.142–79 992.32	5–7	2.87+06	2.20−02	2.19+00	−0.959	D+	2
			6 041.92	6 043.60	63 446.065–79 992.50	3–5	1.51+06	1.37−02	8.20−01	−1.386	D	2
			6 052.59	6 054.27	63 475.051–79 992.32	7–7	1.43+06	7.88−03	1.09+00	−1.258	D+	2
			6 045.97	6 047.65	63 457.142–79 992.50	5–5	2.51+06	1.38−02	1.36+00	−1.161	D+	2
			6 052.53	6 054.20	63 475.051–79 992.50	7–5	2.87+05	1.13−03	1.57−01	−2.102	D	2
42		^{3}P–^{3}D$^\circ$	*6 537.5*	*6 539.3*	*64 891.243–80 183.40*	9–15	2.08+06	2.22−02	4.30+00	−0.699	D+	2
			6 538.60	6 540.40	64 892.582–80 182.16	5–7	2.08+06	1.87−02	2.01+00	−1.029	D+	2
			6 536.34	6 538.14	64 888.964–80 183.83	3–5	1.56+06	1.67−02	1.07+00	−1.300	D+	2
			6 536.61	6 538.42	64 891.386–80 185.60	1–3	1.16+06	2.23−02	4.79−01	−1.652	D	2
			6 537.88	6 539.69	64 892.582–80 183.83	5–5	5.21+05	3.34−03	3.59−01	−1.777	D	2
			6 535.58	6 537.39	64 888.964–80 185.60	3–3	8.69+05	5.57−03	3.59−01	−1.777	D	2
			6 537.13	6 538.93	64 892.582–80 185.60	5–3	5.79+04	2.23−04	2.39−02	−2.953	E+	2
43	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)8s$	^{5}P–^{5}S$^\circ$	*5 885.6*	*5 887.3*	*63 463.284–80 449.10*	15–5	1.95+06	3.38−03	9.84−01	−1.295	D	2
			5 889.71	5 891.35	63 475.051–80 449.10	7–5	9.11+05	3.39−03	4.59−01	−1.625	D	2
			5 883.51	5 885.14	63 457.142–80 449.10	5–5	6.53+05	3.39−03	3.28−01	−1.771	D	2
			5 879.67	5 881.30	63 446.065–80 449.10	3–5	3.93+05	3.39−03	1.97−01	−1.993	D	2
44		^{3}P–^{3}S$^\circ$	*6 396.1*	*6 397.9*	*64 891.243–80 521.46*	9–3	1.56+06	3.20−03	6.07−01	−1.541	D	2
			6 396.64	6 398.41	64 892.582–80 521.46	5–3	8.69+05	3.20−03	3.37−01	−1.796	D	2
			6 395.16	6 396.93	64 888.964–80 521.46	3–3	5.23+05	3.21−03	2.02−01	−2.016	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			6 396.15	6 397.92	64 891.386–80 521.46	1–3	1.75+05	3.21−03	6.76−02	−2.493	E+	2
45	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)7d$	^{5}P–^{5}D°				15–25						2
			5 706.10	5 707.69	63 475.051–80 995.28	7–9	2.69+06	1.69−02	2.22+00	−0.927	D+	2
46		^{3}P–^{3}D°	*6 174.7*	*6 176.4*	*64 891.243–81 081.89*	9–15	1.50+06	1.43−02	2.61+00	−0.890	D	2
			6 175.82	6 177.53	64 892.582–81 080.29	5–7	1.50+06	1.20−02	1.22+00	−1.222	D+	2
			6 173.61	6 175.32	64 888.964–81 082.46	3–5	1.13+06	1.07−02	6.54−01	−1.493	D	2
			6 173.69	6 175.40	64 891.386–81 084.67	1–3	8.34+05	1.43−02	2.90−01	−1.845	D	2
			6 174.99	6 176.70	64 892.582–81 082.46	5–5	3.76+05	2.15−03	2.18−01	−1.969	D	2
			6 172.77	6 174.48	64 888.964–81 084.67	3–3	6.26+05	3.58−03	2.18−01	−1.969	D	2
			6 174.15	6 175.86	64 892.582–81 084.67	5–3	4.17+04	1.43−04	1.45−02	−3.146	E+	2
47	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)9s$	^{5}P–^{5}S°	*5 610.66*	*5 612.22*	*63 463.284–81 281.56*	15–5	1.22+06	1.92−03	5.31−01	−1.541	D	2
			5 614.365	5 615.924	63 475.051–81 281.56	7–5	5.67+05	1.92−03	2.48−01	−1.872	D	2
			5 608.724	5 610.281	63 457.142–81 281.56	5–5	4.07+05	1.92−03	1.77−01	−2.018	D	2
			5 605.241	5 606.797	63 446.065–81 281.56	3–5	2.45+05	1.92−03	1.06−01	−2.240	D	2
48		^{3}P–^{3}S°	*6 082.7*	*6 084.4*	*64 891.243–81 326.81*	9–3	9.65+05	1.79−03	3.22−01	−1.793	D	2
			6 083.18	6 084.86	64 892.582–81 326.81	5–3	5.37+05	1.79−03	1.79−01	−2.048	D	2
			6 081.84	6 083.52	64 888.964–81 326.81	3–3	3.23+05	1.79−03	1.07−01	−2.270	D	2
			6 082.73	6 084.42	64 891.386–81 326.81	1–3	1.08+05	1.79−03	3.59−02	−2.747	E+	2
49	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)8d$	^{5}P–^{5}D°				15–25						2
			5 507.005	5 508.534	63 475.051–81 628.70	7–9	1.78+06	1.04−02	1.32+00	−1.138	D+	2
50		^{3}P–^{3}D°	*5 960.1*	*5 961.7*	*64 891.243–81 664.88*	9–15	1.06+06	9.45−03	1.67+00	−1.070	D	2
			5 961.21	5 962.86	64 892.582–81 663.05	5–7	1.06+06	7.94−03	7.79−01	−1.401	D	2
			5 959.02	5 960.67	64 888.964–81 665.61	3–5	8.00+05	7.10−03	4.18−01	−1.672	D	2
			5 959.05	5 960.70	64 891.386–81 667.93	1–3	5.91+05	9.45−03	1.85−01	−2.025	D	2
			5 960.30	5 961.95	64 892.582–81 665.61	5–5	2.67+05	1.42−03	1.39−01	−2.149	D	2
			5 958.19	5 959.84	64 888.964–81 667.93	3–3	4.45+05	2.37−03	1.39−01	−2.148	D	2
			5 959.48	5 961.13	64 892.582–81 667.93	5–3	2.96+04	9.46−05	9.28−03	−3.325	E	2
51	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)10s$	^{5}P–^{5}S°	*5 446.32*	*5 447.83*	*63 463.284–81 819.20*	15–5	8.06+05	1.20−03	3.22−01	−1.745	D	2
			5 449.815	5 451.329	63 475.051–81 819.20	7–5	3.77+05	1.20−03	1.50−01	−2.076	D	2
			5 444.499	5 446.013	63 457.142–81 819.20	5–5	2.70+05	1.20−03	1.07−01	−2.222	D	2
			5 441.217	5 442.729	63 446.065–81 819.20	3–5	1.63+05	1.20−03	6.47−02	−2.444	E+	2
52		^{3}P–^{3}S°	*5 895.1*	*5 896.8*	*64 891.243–81 849.68*	9–3	6.37+05	1.11−03	1.93−01	−2.000	D	2
			5 895.60	5 897.24	64 892.582–81 849.68	5–3	3.55+05	1.11−03	1.07−01	−2.256	D	2
			5 894.34	5 895.98	64 888.964–81 849.68	3–3	2.14+05	1.11−03	6.48−02	−2.478	E+	2
			5 895.19	5 896.82	64 891.386–81 849.68	1–3	7.12+04	1.11−03	2.16−02	−2.955	E+	2
53	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)9d$	^{5}P–^{5}D°				15–25						2
			5 381.015	5 382.511	63 475.051–82 053.74	7–9	1.23+06	6.89−03	8.54−01	−1.317	D	2
54		^{3}P–^{3}D°	*5 821.8*	*5 823.4*	*64 891.243–82 063.37*	9–15	7.54+05	6.39−03	1.10+00	−1.240	D	2
			5 822.80	5 824.41	64 892.582–82 061.70	5–7	7.52+05	5.35−03	5.13−01	−1.573	D	2
			5 820.99	5 822.61	64 888.964–82 063.40	3–5	5.67+05	4.80−03	2.76−01	−1.842	D	2
			5 820.52	5 822.13	64 891.386–82 067.22	1–3	4.22+05	6.43−03	1.23−01	−2.192	D	2
			5 822.22	5 823.83	64 892.582–82 063.40	5–5	1.89+05	9.63−04	9.23−02	−2.317	E+	2
			5 819.70	5 821.31	64 888.964–82 067.22	3–3	3.17+05	1.61−03	9.25−02	−2.316	E+	2
			5 820.93	5 822.54	64 892.582–82067.22	5–3	2.12+04	6.46−05	6.18−03	−3.491	E	2
55	$3s^23p^3(^4S^\circ)4p-3s^23p^3(^4S^\circ)10d$	^{5}P–^{5}D°				15–25						2
			5 295.68	5 297.16	63 475.051–82 353.1	7–9	8.89+05	4.81−03	5.86−01	−1.473	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
56		^{3}P–^{3}D°	*5 725.6*	*5 727.2*	*64 891.243–82 351.79*	9–15	5.34+05	4.38−03	7.43−01	−1.404	D	2
			5 726.38	5 727.97	64 892.582–82 350.77	5–7	5.30+05	3.65−03	3.44−01	−1.739	D	2
			5 724.68	5 726.27	64 888.964–82 352.35	3–5	4.01+05	3.29−03	1.86−01	−2.006	D	2
			5 725.18	5 726.77	64 891.386–82 353.25	1–3	3.01+05	4.44−03	8.37−02	−2.353	E+	2
			5 725.86	5 727.45	64 892.582–82 352.35	5–5	1.34+05	6.61−04	6.23−02	−2.481	E+	2
			5 724.38	5 725.97	64 888.964–82 353.25	3–3	2.27+05	1.11−03	6.29−02	−2.478	E+	2
			5 725.57	5 727.16	64 892.582–82 353.25	5–3	1.52+04	4.47−05	4.21−03	−3.651	E	2
57	$3s^23p^3(^2D^°)4s–3s^23p^3(^4S^°)6p$	^{3}D°–^{3}P	*9 929.91*	*9 932.63*	*67 831.671–77 899.500*	15–9	1.58+06	1.40−02	6.86+00	−0.678	D+	2
			9 949.833	9 952.561	67 842.867–77 890.532	7–5	1.01+06	1.07−02	2.44+00	−1.126	D+	2
			9 909.702	9 912.419	67 825.188–77 913.543	5–3	1.36+06	1.20−02	1.96+00	−1.222	D+	2
			9 912.156	9 914.874	67 816.351–77 902.208	3–1	1.50+06	7.36−03	7.20−01	−1.656	D	2
			9 932.357	9 935.080	67 825.188–77 890.532	5–5	6.07+05	8.99−03	1.47+00	−1.347	D+	2
			9 901.029	9 903.744	67 816.351–77 913.543	3–3	8.59+04	1.26−03	1.23−01	−2.423	D	2
			9 923.644	9 926.365	67 816.351–77 890.532	3–5	5.95+04	1.46−03	1.43−01	−2.359	D	2
58	$3s^23p^3(^2D^°)4s–3s^23p^3(^2D^°)4p$	^{3}D°–^{3}D	*9 664.51*	*9 667.16*	*67 831.671–78 175.975*	15–15	2.13+07	2.99−01	1.43+02	0.652	C	2
			9 649.571	9 652.218	67 842.867–78 203.180	7–7	1.99+07	2.77−01	6.16+01	0.288	C	2
			9 680.809	9 683.464	67 825.188–78 152.071	5–5	1.67+07	2.35−01	3.75+01	0.070	C	2
			9 672.284	9 674.937	67 816.351–78 152.336	3–3	1.60+07	2.24−01	2.14+01	−0.173	C	2
			9 697.410	9 700.070	67 842.867–78 152.071	7–5	3.37+06	3.40−02	7.59+00	−0.623	D+	2
			9 680.561	9 683.216	67 825.188–78 152.336	5–3	5.12+06	4.32−02	6.88+00	−0.666	D+	2
			9 633.133	9 635.775	67 825.188–78 203.180	5–7	9.95+05	1.94−02	3.07+00	−1.013	D+	2
			9 672.532	9 675.185	67 816.351–78 152.071	3–5	2.00+06	4.67−02	4.46+00	−0.854	D+	2
59		^{3}D°–^{3}F	*9 422.8*	*9 425.4*	*67 831.671–78 441.31*	15–21	2.37+07	4.42−01	2.06+02	0.822	C	2
			9 413.46	9 416.04	67 842.867–78 463.04	7–9	2.25+07	3.84−01	8.33+01	0.429	C	2
			9 421.93	9 424.52	67 825.188–78 435.81	5–7	2.33+07	4.34−01	6.72+01	0.336	C	2
			9 437.13	9 439.72	67 816.351–78 409.89	3–5	2.30+07	5.11−01	4.76+01	0.186	C	2
			9 437.66	9 440.25	67 842.867–78 435.81	7–7	1.02+06	1.36−02	2.96+00	−1.021	D+	2
			9 445.01	9 447.60	67 825.188–78 409.89	5–5	2.33+06	3.12−02	4.85+00	−0.807	D+	2
			9 460.81	9 463.40	67 842.867–78 409.89	7–5	1.88+04	1.81−04	3.93−02	−2.897	E+	2
60		^{3}D°–^{3}P	*8 649.2*	*8 651.5*	*67 831.671–79 390.32*	15–9	1.47+07	9.88−02	4.22+01	0.171	C	2
			8 668.44	8 670.82	67 842.867–79 375.80	7–5	1.20+07	9.62−02	1.92+01	−0.172	C	2
			8 633.12	8 635.50	67 825.188–79 405.30	5–3	1.13+07	7.61−02	1.08+01	−0.420	C	2
			8 617.09	8 619.46	67 816.351–79 418.01	3–1	1.55+07	5.76−02	4.90+00	−0.762	D+	2
			8 655.17	8 657.55	67 825.188–79 375.80	5–5	2.16+06	2.43−02	3.45+00	−0.915	D+	2
			8 626.54	8 628.91	67 816.351–79 405.30	3–3	3.81+06	4.25−02	3.62+00	−0.894	D+	2
			8 648.56	8 650.93	67 816.351–79 375.80	3–5	1.39+05	2.60−03	2.21−01	−2.108	D	2
61		^{1}D°–^{1}P	11 601.76	11 604.94	69 237.886–77 854.906	5–3	1.31+07	1.59−01	3.04+01	−0.100	C	2
62		^{1}D°–^{1}F	10 633.08	10 635.99	69 237.886–78 639.923	5–7	2.07+07	4.92−01	8.62+01	0.391	C	2
63	$3s^23p^3(^4S^°)3d–3s^23p^3(^4S^°)5p$	^{3}D°–^{3}P		*4 099.730* cm^{-1}	*70 169.513–74 269.243*	15–9	2.30+06	1.23−01	1.48+02	0.266	D+	2
				4 094.579 cm^{-1}	70 173.968–74 268.547	7–5	1.93+06	1.24−01	6.95+01	−0.061	D+	2
				4 103.405 cm^{-1}	70 166.195–74 269.600	5–3	1.73+06	9.23−02	3.70+01	−0.336	D+	2
				4 107.001 cm^{-1}	70 164.650–74 271.651	3–1	2.31+06	6.84−02	1.64+01	−0.688	D+	2
				4 102.352 cm^{-1}	70 166.195–74 268.547	5–5	3.48+05	3.10−02	1.24+01	−0.810	D+	2
				4 104.950 cm^{-1}	70 164.650–74 269.600	3–3	5.79+05	5.15−02	1.23+01	−0.811	D+	2
				4 103.897 cm^{-1}	70 164.650–74 268.547	3–5	2.34+04	3.46−03	8.33−01	−1.984	E+	2
64	$3s^23p^3(^4S^°)3d–3s^23p^3(^4S^°)4f$	^{5}D°–^{5}F	*11 398.81*	*11 401.94*	*67 884.345–76 654.786*	25–35	1.57+07	4.29−01	4.02+02	1.030	D+	2
			11 390.122	11 393.241	67 877.635–76 654.769	9–11	1.68+07	3.99−01	1.34+02	0.555	C	2
			11 406.214	11 409.337	67 890.016–76 654.767	7–9	1.19+07	2.97−01	7.81+01	0.318	D+	2
			11 403.303	11 406.425	67 887.805–76 654.794	5–7	1.06+07	2.91−01	5.46+01	0.163	D+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			11 400.329	11 403.450	67 885.535–76 654.811	3–5	9.14+06	2.97−01	3.34+01	−0.050	D+	2
			11 398.492	11 401.613	67 884.158–76 654.847	1–3	7.81+06	4.57−01	1.71+01	−0.340	D+	2
			11 390.125	11 393.243	67 877.635–76 654.767	9–9	2.79+06	5.44−02	1.83+01	−0.310	D+	2
			11 406.179	11 409.302	67 890.016–76 654.794	7–7	4.27+06	8.33−02	2.19+01	−0.234	D+	2
			11 403.280	11 406.403	67 887.805–76 654.811	5–5	6.22+06	1.21−01	2.27+01	−0.218	D+	2
			11 400.282	11 403.403	67 885.535–76 654.847	3–3	7.62+06	1.49−01	1.67+01	−0.350	D+	2
			11 390.090	11 393.208	67 877.635–76 654.794	9–7	2.39+05	3.62−03	1.22+00	−1.487	D	2
			11 406.157	11 409.280	67 890.016–76 654.811	7–5	5.70+05	7.94−03	2.08+00	−1.255	D	2
			11 403.234	11 406.356	67 887.805–76 654.847	5–3	1.04+06	1.21−02	2.27+00	−1.218	D	2
65		^{3}D°–^{3}F	*15 411.66*	*15 415.87*	*70 169.513–76 656.334*	15–21	1.59+07	7.94−01	6.05+02	1.076	C	2
			15 422.276	15 426.490	70 173.968–76 656.324	7–9	1.60+07	7.32−01	2.60+02	0.710	C	2
			15 403.791	15 408.000	70 166.195–76 656.330	5–7	1.42+07	7.07−01	1.79+02	0.548	C	2
			15 400.058	15 404.266	70 164.650–76 656.358	3–5	1.34+07	7.94−01	1.20+02	0.377	C	2
			15 422.262	15 426.476	70 173.968–76 656.330	7–7	1.77+06	6.33−02	2.25+01	−0.353	D+	2
			15 403.724	15 407.934	70 166.195–76 656.358	5–5	2.48+06	8.83−02	2.24+01	−0.355	D+	2
			15 422.195	15 426.409	70 173.968–76 656.358	7–5	7.10+04	1.81−03	6.43−01	−1.897	E+	2
66	$3s^23p^3(^4S°)3d–3s^23p^3(^4S°)6p$	^{3}D°–^{3}P	*12 933.09*	*12 936.63*	*70 169.513–77 899.500*	15–9	7.87+05	1.18−02	7.57+00	−0.752	D	2
			12 955.592	12 959.136	70 173.968–77 890.532	7–5	6.50+05	1.17−02	3.49+00	−1.087	D	2
			12 904.113	12 907.643	70 166.195–77 913.543	5–3	5.63+05	8.43−03	1.79+00	−1.375	D	2
			12 920.440	12 923.974	70 164.650–77 902.208	3–1	8.36+05	6.98−03	8.91−01	−1.679	E+	2
			12 942.555	12 946.095	70 166.195–77 890.532	5–5	1.56+05	3.92−03	8.35−01	−1.708	E+	2
			12 901.540	12 905.069	70 164.650–77 913.543	3–3	1.56+05	3.89−03	4.96−01	−1.933	E+	2
			12 939.967	12 943.506	70 164.650–77 890.532	3–5	1.19+04	5.00−04	6.39−02	−2.824	E	2
67	$3s^23p^3(^4S°)3d–3s^23p^3(^4S°)5f$	^{5}D°–^{5}F	*8 879.8*	*8 882.2*	*67 884.345–79 142.81*	25–35	8.16+06	1.35−01	9.88+01	0.528	D+	2
			8 874.48	8 876.91	67 877.635–79 142.81	9–11	8.67+06	1.25−01	3.29+01	0.051	D+	2
			8 884.24	8 886.68	67 890.016–79 142.81	7–9	6.18+06	9.40−02	1.92+01	−0.182	D+	2
			8 882.50	8 884.94	67 887.805–79 142.81	5–7	5.54+06	9.18−02	1.34+01	−0.338	D+	2
			8 880.71	8 883.14	67 885.535–79 142.81	3–5	4.74+06	9.34−02	8.19+00	−0.553	D	2
			8 879.62	8 882.06	67 884.158–79 142.81	1–3	4.04+06	1.43−01	4.19+00	−0.845	D	2
			8 874.48	8 876.91	67 877.635–79 142.81	9–9	1.45+06	1.71−02	4.49+00	−0.813	D	2
			8 884.24	8 886.68	67 890.016–79 142.81	7–7	2.23+06	2.63−02	5.39+00	−0.735	D	2
			8 882.50	8 884.94	67 887.805–79 142.81	5–5	3.23+06	3.82−02	5.59+00	−0.719	D	2
			8 880.71	8 883.14	67 885.535–79 142.81	3–3	3.95+06	4.67−02	4.09+00	−0.854	D	2
			8 874.48	8 876.91	67 877.635–79 142.81	9–7	1.24+05	1.14−03	2.99−01	−1.989	E+	2
			8 884.24	8 886.68	67 890.016–79 142.81	7–5	2.97+05	2.51−03	5.13−01	−1.755	E+	2
			8 882.50	8 884.94	67 887.805–79 142.81	5–3	5.39+05	3.82−03	5.59−01	−1.719	E+	2
68		^{3}D°–^{3}F	*11 139.6*	*11 142.6*	*70 169.513–79 144.05*	15–21	6.36+06	1.66−01	9.11+01	0.396	D+	2
			11 145.12	11 148.17	70 173.968–79 144.05	7–9	6.36+06	1.52−01	3.91+01	0.027	D+	2
			11 135.47	11 138.52	70 166.195–79 144.05	5–7	5.67+06	1.48−01	2.70+01	−0.131	D+	2
			11 133.55	11 136.60	70 164.650–79 144.05	3–5	5.36+06	1.66−01	1.82+01	−0.303	D+	2
			11 145.12	11 148.17	70 173.968–79 144.05	7–7	7.07+05	1.32−02	3.38+00	−1.034	D	2
			11 135.47	11 138.52	70 166.195–79 144.05	5–5	9.91+05	1.84−02	3.37+00	−1.036	D	2
			11 145.12	11 148.17	70 173.968–79 144.05	7–5	2.83+04	3.76−04	9.67−02	−2.580	E	2
69	$3s^23p^3(^4S°)3d–3s^23p^3(^4S°)6f$	^{5}D°–^{5}F	*7 928.1*	*7 930.2*	*67 884.345–80 494.31*	25–35	4.68+06	6.17−02	4.03+01	0.188	D	2
			7 923.84	7 926.02	67 877.635–80 494.31	9–11	4.98+06	5.74−02	1.34+01	−0.287	D+	2
			7 931.62	7 933.80	67 890.016–80 494.31	7–9	3.54+06	4.29−02	7.84+00	−0.522	D	2
			7 930.23	7 932.41	67 887.805–80 494.31	5–7	3.17+06	4.19−02	5.47+00	−0.679	D	2
			7 928.80	7 930.98	67 885.535–80 494.31	3–5	2.72+06	4.27−02	3.34+00	−0.892	D	2
			7 927.94	7 930.12	67 884.158–80 494.31	1–3	2.32+06	6.57−02	1.71+00	−1.182	D	2
			7 923.84	7 926.02	67 877.635–80 494.31	9–9	8.30+05	7.82−03	1.83+00	−1.153	D	2
			7 931.62	7 933.80	67 890.016–80 494.31	7–7	1.27+06	1.20−02	2.19+00	−1.076	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			7 930.23	7 932.41	67 887.805–80 494.31	5–5	1.85+06	1.75−02	2.28+00	−1.058	D	2
			7 928.80	7 930.98	67 885.535–80 494.31	3–3	2.27+06	2.14−02	1.67+00	−1.192	D	2
			7 923.84	7 926.02	67 877.635–80 494.31	9–7	7.12+04	5.21−04	1.22−01	−2.329	E+	2
			7 931.62	7 933.80	67 890.016–80 494.31	7–5	1.70+05	1.15−03	2.09−01	−2.094	E+	2
			7 930.23	7 932.41	67 887.805–80 494.31	5–3	3.09+05	1.75−03	2.28−01	−2.058	E+	2
70		$^3D^\circ-^3F$	*9 681.9*	*9 684.6*	*70 169.513–80 495.18*	15–21	3.27+06	6.43−02	3.08+01	−0.016	D	2
			9 686.13	9 688.78	70 173.968–80 495.18	7–9	3.27+06	5.91−02	1.32+01	−0.383	D+	2
			9 678.84	9 681.49	70 166.195–80 495.18	5–7	2.91+06	5.72−02	9.11+00	−0.544	D	2
			9 677.39	9 680.05	70 164.650–80 495.18	3–5	2.75+06	6.44−02	6.15+00	−0.714	D	2
			9 686.13	9 688.78	70 173.968–80 495.18	7–7	3.63+05	5.11−03	1.14+00	−1.446	D	2
			9 678.84	9 681.49	70 166.195–80 495.18	5–5	5.08+05	7.14−03	1.13+00	−1.447	D	2
			9 686.13	9 688.78	70 173.968–80 495.18	7–5	1.45+04	1.46−04	3.26−02	−2.991	E	2
71	$3s^23p^3(^4S^\circ)3d-3s^23p^3(^4S^\circ)7f$	$^5D^\circ-^5F$	*7 447.0*	*7 449.1*	*67 884.345–81 308.84*	25–35	2.93+06	3.41−02	2.09+01	−0.069	D	2
			7 443.30	7 445.35	67 877.635–81 308.84	9–11	3.12+06	3.17−02	6.98+00	−0.545	D	2
			7 450.17	7 452.22	67 890.016–81 308.84	7–9	2.21+06	2.37−02	4.06+00	−0.780	D	2
			7 448.94	7 450.99	67 887.805–81 308.84	5–7	1.99+06	2.31−02	2.83+00	−0.937	D	2
			7 447.68	7 449.73	67 885.535–81 308.84	3–5	1.70+06	2.36−02	1.73+00	−1.150	D	2
			7 446.92	7 448.97	67 884.158–81 308.84	1–3	1.45+06	3.62−02	8.88−01	−1.441	E+	2
			7 443.30	7 445.35	67 877.635–81 308.84	9–9	5.19+05	4.32−03	9.52−01	−1.410	E+	2
			7 450.17	7 452.22	67 890.016–81 308.84	7–7	7.97+05	6.64−03	1.14+00	−1.333	D	2
			7 448.94	7 450.99	67 887.805–81 308.84	5–5	1.16+06	9.65−03	1.18+00	−1.317	D	2
			7 447.68	7 449.73	67 885.535–81 308.84	3–3	1.42+06	1.18−02	8.68−01	−1.451	E+	2
			7 443.30	7 445.35	67 877.635–81 308.84	9–7	4.45+04	2.88−04	6.34−02	−2.586	E	2
			7 450.17	7 452.22	67 890.016–81 308.84	7–5	1.06+05	6.32−04	1.08−01	−2.354	E+	2
			7 448.94	7 450.99	67 887.805–81 308.84	5–3	1.93+05	9.65−04	1.18−01	−2.317	E+	2
72		$^3D^\circ-^3F$	*8 974.2*	*8 976.6*	*70 169.513–81 309.57*	15–21	1.92+06	3.25−02	1.44+01	−0.312	D	2
			8 977.74	8 980.21	70 173.968–81 309.57	7–9	1.92+06	2.99−02	6.18+00	−0.679	D	2
			8 971.48	8 973.94	70 166.195–81 309.57	5–7	1.71+06	2.89−02	4.27+00	−0.840	D	2
			8 970.24	8 972.70	70 164.650–81 309.57	3–5	1.62+06	3.25−02	2.88+00	−1.011	D	2
			8 977.74	8 980.21	70 173.968–81 309.57	7–7	2.14+05	2.58−03	5.34−01	−1.743	E+	2
			8 971.48	8 973.94	70 166.195–81 309.57	5–5	3.00+05	3.62−03	5.34−01	−1.742	E+	2
			8 977.74	8 980.21	70 173.968–81 309.57	7–5	8.54+03	7.37−05	1.52−02	−3.287	E	2
73	$3s^23p^3(^4S^\circ)3d-3s^23p^3(^4S^\circ)8f$	$^5D^\circ-^5F$	*7 164.9*	*7 166.9*	*67 884.345–81 837.45*	25–35	1.95+06	2.11−02	1.24+01	−0.278	D	2
			7 161.44	7 163.42	67 877.635–81 837.45	9–11	2.08+06	1.95−02	4.14+00	−0.756	D	2
			7 167.80	7 169.78	67 890.016–81 837.45	7–9	1.47+06	1.46−02	2.41+00	−0.991	D	2
			7 166.67	7 168.64	67 887.805–81 837.45	5–7	1.32+06	1.43−02	1.68+00	−1.146	D	2
			7 165.50	7 167.47	67 885.535–81 837.45	3–5	1.13+06	1.46−02	1.03+00	−1.359	D	2
			7 164.79	7 166.77	67 884.158–81 837.45	1–3	9.68+05	2.24−02	5.27−01	−1.650	E+	2
			7 161.44	7 163.42	67 877.635–81 837.45	9–9	3.46+05	2.66−03	5.65−01	−1.621	E+	2
			7 167.80	7 169.78	67 890.016–81 837.45	7–7	5.31+05	4.09−03	6.76−01	−1.543	E+	2
			7 166.67	7 168.64	67 887.805–81 837.45	5–5	7.73+05	5.95−03	7.02−01	−1.527	E+	2
			7 165.50	7 167.47	67 885.535–81 837.45	3–3	9.45+05	7.28−03	5.15−01	−1.661	E+	2
			7 161.44	7 163.42	67 877.635–81 837.45	9–7	2.97+04	1.78−04	3.77−02	−2.795	E	2
			7 167.80	7 169.78	67 890.016–81 837.45	7–5	7.09+04	3.90−04	6.44−02	−2.564	E	2
			7 166.67	7 168.64	67 887.805–81 837.45	5–3	1.29+05	5.96−04	7.02−02	−2.526	E	2
74	$3s^23p^3(^4S^\circ)5s-3s^23p^3(^4S^\circ)5p$	$^5S^\circ-^5P$		*3 214.220* cm^{-1}	70 702.790–*73 917.010*	5–15	3.61+06	1.57+00	8.05+02	0.895	C	2
				3 218.171 cm^{-1}	70 702.790–73 920.961	5–7	3.63+06	7.36−01	3.76+02	0.566	C	2
				3 212.138 cm^{-1}	70 702.790–73 914.928	5–5	3.61+06	5.25−01	2.68+02	0.419	C	2
				3 208.469 cm^{-1}	70 702.790–73 911.259	5–3	3.60+06	3.15−01	1.61+02	0.197	C	2
75		$^3S^\circ-^3P$		*2 917.844* cm^{-1}	71 351.399–*74 269.243*	3–9	2.94+06	1.55+00	5.26+02	0.667	C	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				2 917.148 cm^{-1}	71 351.399–74 268.547	3–5	2.94+06	8.63−01	2.92+02	0.413	C	2
				2 918.201 cm^{-1}	71 351.399–74 269.600	3–3	2.95+06	5.19−01	1.75+02	0.192	C	2
				2 920.252 cm^{-1}	71 351.399–74 271.651	3–1	2.95+06	1.73−01	5.85+01	−0.285	D+	2
76	$3s^23p^3(^4S^\circ)5s$–$3s^23p^3(^4S^\circ)6p$	$^3S^\circ$–^5P	*13 979.37*	*13 983.19*	*70 702.790–77 854.234*	5–15	3.09+05	2.72−02	6.26+00	−0.866	D	2
			13 975.045	13 978.866	70 702.790–77 856.446	5–7	3.15+05	1.29−02	2.97+00	−1.190	D	2
			13 981.323	13 985.146	70 702.790–77 853.234	5–5	3.06+05	8.98−03	2.06+00	−1.348	D	2
			13 986.201	13 990.025	70 702.790–77 850.740	5–3	3.05+05	5.36−03	1.23+00	−1.572	D	2
77	$3s^23p^3(^4S^\circ)5s$–$3s^23p^3(^2D^\circ)4p$	$^3S^\circ$–^3P	*12 436.1*	*12 439.5*	71 351.399–*79 390.32*	3–9	3.85+05	2.68−02	3.29+00	−1.095	D	2
			12 458.58	12 461.99	71 351.399–79 375.80	3–5	4.03+05	1.56−02	1.92+00	−1.330	D	2
			12 412.95	12 416.34	71 351.399–79 405.30	3–3	3.68+05	8.51−03	1.04+00	−1.593	D	2
			12 393.39	12 396.78	71 351.399–79 418.01	3–1	3.50+05	2.69−03	3.29−01	−2.093	E+	2
78	$3s^23p^3(^4S^\circ)5s$–$3s^23p^3(^4S^\circ)7p$	$^3S^\circ$–^3P	*11 405.8*	*11 408.9*	71 351.399–*80 116.46*	3–9	5.12+05	3.00−02	3.38+00	−1.046	D	2
			11 410.67	11 413.79	71 351.399–80 112.73	3–5	5.13+05	1.67−02	1.88+00	−1.300	D	2
			11 400.93	11 404.05	71 351.399–80 120.21	3–3	5.14+05	1.00−02	1.12+00	−1.523	D	2
			11 396.19	11 399.31	71 351.399–80 123.86	3–1	5.13+05	3.33−03	3.75−01	−2.000	E+	2
79	$3s^23p^3(^4S^\circ)5p$–$3s^23p^3(^4S^\circ)4d$	^5P–$^5D^\circ$		*1 057.30* cm^{-1}	*73 917.010–74 974.31*	15–25	2.42+05	5.40−01	2.52+03	0.908	C	2
				1 052.18 cm^{-1}	73 920.961–74 973.14	7–9	2.38+05	4.15−01	9.09+02	0.463	C	2
				1 059.17 cm^{-1}	73 914.928–74 974.10	5–7	1.62+05	3.03−01	4.71+02	0.180	C	2
				1 063.93 cm^{-1}	73 911.259–74 975.19	3–5	8.62+04	1.90−01	1.76+02	−0.244	C	2
				1 053.14 cm^{-1}	73 920.961–74 974.10	7–7	7.97+04	1.08−01	2.35+02	−0.121	C	2
				1 060.26 cm^{-1}	73 914.928–74 975.19	5–5	1.42+05	1.90−01	2.94+02	−0.022	C	2
				1 064.80 cm^{-1}	73 911.259–74 976.06	3–3	1.85+05	2.45−01	2.27+02	−0.134	C	2
				1 054.23 cm^{-1}	73 920.961–74 975.19	7–5	1.60+04	1.54−02	3.36+01	−0.967	D+	2
				1 061.13 cm^{-1}	73 914.928–74 976.06	5–3	6.11+04	4.88−02	7.56+01	−0.613	D+	2
				1 065.35 cm^{-1}	73 911.259–74 976.61	3–1	2.47+05	1.09−01	1.00+02	−0.485	C	2
80		^3P–$^3D^\circ$		*1 684.98* cm^{-1}	*74 269.243–75 954.22*	9–15	1.09+06	9.56−01	1.68+03	0.935	C	2
				1 687.98 cm^{-1}	74 268.547–75 956.53	5–7	1.09+06	8.04−01	7.84+02	0.604	C	2
				1 682.75 cm^{-1}	74 269.600–75 952.35	3–5	8.12+05	7.17−01	4.20+02	0.333	C	2
				1 680.30 cm^{-1}	74 271.651–75 951.95	1–3	6.00+05	9.55−01	1.87+02	−0.020	C	2
				1 683.80 cm^{-1}	74 268.547–75 952.35	5–5	2.71+05	1.43−01	1.40+02	−0.146	C	2
				1 682.35 cm^{-1}	74 269.600–75 951.95	3–3	4.51+05	2.39−01	1.40+02	−0.144	C	2
				1 683.40 cm^{-1}	74 268.547–75 951.95	5–3	3.01+04	9.55−03	9.34+00	−1.321	D	2
81	$3s^23p^3(^4S^\circ)5p$–$3s^23p^3(^4S^\circ)6s$	^5P–$^5S^\circ$		*2 547.05* cm^{-1}	*73 917.010*–76 464.06	15–5	4.35+06	3.35−01	6.49+02	0.701	C	2
				2 543.10 cm^{-1}	73 920.961–76 464.06	7–5	2.03+06	3.36−01	3.04+02	0.371	C	2
				2 549.13 cm^{-1}	73 914.928–76 464.06	5–5	1.45+06	3.35−01	2.16+02	0.224	C	2
				2 552.80 cm^{-1}	73 911.259–76 464.06	3–5	8.73+05	3.35−01	1.29+02	0.002	C	2
82		^3P–$^3S^\circ$		*2 451.41* cm^{-1}	*74 269.243*–76 720.65	9–3	3.94+06	3.28−01	3.96+02	0.470	C	2
				2 452.10 cm^{-1}	74 268.547–76 720.65	5–3	2.19+06	3.28−01	2.20+02	0.215	C	2
				2 451.05 cm^{-1}	74 269.600–76 720.65	3–3	1.31+06	3.28−01	1.32+02	−0.007	C	2
				2 449.00 cm^{-1}	74 271.651–76 720.65	1–3	4.38+05	3.28−01	4.41+01	−0.484	D+	2
83	$3s^23p^3(^4S^\circ)5p$–$3s^23p^3(^4S^\circ)5d$	^5P–$^5D^\circ$				15–25						2
				4 349.14 cm^{-1}	73 920.961–78 270.10	7–9	1.48+06	1.51−01	7.99+01	0.024	D+	2
				4 355.59 cm^{-1}	73 914.928–78 270.52	5–7	9.82+05	1.09−01	4.10+01	−0.264	D+	2
				4 359.73 cm^{-1}	73 911.259–78 270.99	3–5	5.14+05	6.76−02	1.53+01	−0.693	D+	2
				4 349.56 cm^{-1}	73 920.961–78 270.52	7–7	4.93+05	3.91−02	2.07+01	−0.563	D+	2
				4 356.06 cm^{-1}	73 914.928–78 270.99	5–5	8.59+05	6.79−02	2.56+01	−0.469	D+	2
				4 350.03 cm^{-1}	73 920.961–78 270.99	7–5	9.86+04	5.58−03	2.95+00	−1.408	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
84		$^3P-^3D^\circ$		*4 422.56* cm^{-1}	*74 269.243–78 691.80*	9–15	2.30+05	2.94−02	1.97+01	−0.577	D	2
				4 423.25 cm^{-1}	74 268.547–78 691.80	5–7	2.28+05	2.45−02	9.10+00	−0.912	D	2
				4 421.77 cm^{-1}	74 269.600–78 691.37	3–5	1.74+05	2.22−02	4.96+00	−1.177	D	2
				4 420.88 cm^{-1}	74 271.651–78 692.53	1–3	1.29+05	2.98−02	2.21+00	−1.526	D	2
				4 422.82 cm^{-1}	74 268.547–78 691.37	5–5	5.77+04	4.42−03	1.64+00	−1.656	D	2
				4 422.93 cm^{-1}	74 269.600–78 692.53	3–3	9.65+04	7.40−03	1.65+00	−1.654	D	2
				4 423.98 cm^{-1}	74 268.547–78 692.53	5–3	6.40+03	2.94−04	1.09−01	−2.833	E+	2
85	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)7s$	$^5P-^5S^\circ$	*19 446*	*19 451*	*73 917.010*–79 058.04	15–5	1.60+06	3.02−02	2.90+01	−0.344	D	2
			19 461.0	19 466.3	73 920.961–79 058.04	7–5	7.44+05	3.02−02	1.35+01	−0.675	D+	2
			19 438.2	19 443.5	73 914.928–79 058.04	5–5	5.33+05	3.02−02	9.67+00	−0.821	D	2
			19 424.3	19 429.6	73 911.259–79 058.04	3–5	3.21+05	3.03−02	5.80+00	−1.041	D	2
86		$^3P-^3S^\circ$		*4 916.11* cm^{-1}	*74 269.243*–79 185.35	9–3	1.46+06	3.02−02	1.82+01	−0.566	D+	2
				4 916.80 cm^{-1}	74 268.547–79 185.35	5–3	8.13+05	3.03−02	1.01+01	−0.820	D+	2
				4 915.75 cm^{-1}	74 269.600–79 185.35	3–3	4.89+05	3.03−02	6.09+00	−1.041	D	2
				4 913.70 cm^{-1}	74 271.651–79 185.35	1–3	1.63+05	3.03−02	2.03+00	−1.519	D	2
87	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)6d$	$^5P-^5D^\circ$				15–25						2
			16 466.74	16 471.24	73 920.961–79 992.15	7–9	1.14+06	5.95−02	2.25+01	−0.380	D+	2
			16 449.93	16 454.43	73 914.928–79 992.32	5–7	7.56+05	4.30−02	1.16+01	−0.668	D+	2
			16 439.52	16 444.01	73 911.259–79 992.50	3–5	3.96+05	2.68−02	4.34+00	−1.095	D	2
			16 466.28	16 470.78	73 920.961–79 992.32	7–7	3.79+05	1.54−02	5.85+00	−0.967	D	2
			16 449.45	16 453.94	73 914.928–79 992.50	5–5	6.61+05	2.68−02	7.26+00	−0.873	D	2
			16 465.79	16 470.29	73 920.961–79 992.50	7–5	7.58+04	2.20−03	8.35−01	−1.812	E+	2
88	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)8s$	$^5P-^5S^\circ$	*15 304.9*	*15 309.0*	*73 917.010*–80 449.10	15–5	8.47+05	9.92−03	7.50+00	−0.827	D	2
			15 314.12	15 318.30	73 920.961–80 449.10	7–5	3.95+05	9.94−03	3.50+00	−1.158	D	2
			15 299.98	15 304.16	73 914.928–80 449.10	5–5	2.83+05	9.95−03	2.50+00	−1.303	D	2
			15 291.39	15 295.57	73 911.259–80 449.10	3–5	1.71+05	9.97−03	1.50+00	−1.524	D	2
89		$^3P-^3S^\circ$	*15 990.0*	*15 994.3*	*74 269.243*–80 521.46	9–3	7.73+05	9.88−03	4.68+00	−1.051	D	2
			15 988.18	15 992.55	74 268.547–80 521.46	5–3	4.30+05	9.90−03	2.60+00	−1.305	D	2
			15 990.87	15 995.24	74 269.600–80 521.46	3–3	2.59+05	9.92−03	1.56+00	−1.526	D	2
			15 996.12	16 000.49	74 271.651–80 521.46	1–3	8.62+04	9.92−03	5.22−01	−2.003	E+	2
90	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)7d$	$^5P-^5D^\circ$				15–25						2
			14 131.77	14 135.64	73 920.961–80 995.28	7–9	7.69+05	2.96−02	9.64+00	−0.684	D	2
91	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)9s$	$^5P-^5S^\circ$	*13 574.9*	*13 578.6*	*73 917.010*–81 281.56	15–5	5.14+05	4.74−03	3.18+00	−1.148	D	2
			13 582.14	13 585.85	73 920.961–81 281.56	7–5	2.40+05	4.74−03	1.48+00	−1.479	D	2
			13 571.01	13 574.72	73 914.928–81 281.56	5–5	1.72+05	4.74−03	1.06+00	−1.625	D	2
			13 564.26	13 567.97	73 911.259–81 281.56	3–5	1.03+05	4.75−03	6.36−01	−1.846	E+	2
92		$^3P-^3S^\circ$	*14 165.3*	*14 169.2*	*74 269.243*–81 326.81	9–3	4.66+05	4.68−03	1.96+00	−1.376	D	2
			14 163.92	14 167.79	74 268.547–81 326.81	5–3	2.59+05	4.68−03	1.09+00	−1.631	D	2
			14 166.03	14 169.91	74 269.600–81 326.81	3–3	1.56+05	4.69−03	6.56−01	−1.852	E+	2
			14 170.15	14 174.02	74 271.651–81 326.81	1–3	5.19+04	4.69−03	2.18−01	−2.329	E+	2
93	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)8d$	$^5P-^5D^\circ$				15–25						2
			12 970.43	12 973.97	73 920.961–81 628.70	7–9	5.27+05	1.71−02	5.11+00	−0.922	D	2
94	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)9d$	$^5P-^5D^\circ$				15–25						2
			12 292.56	12 295.92	73 920.961–82 053.74	7–9	3.72+05	1.09−02	3.07+00	−1.117	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
95	$3s^23p^3(^4S^\circ)5p-3s^23p^3(^4S^\circ)10d$	$^5P-^5D^\circ$				15–25						2
			11 856.1	11 859.4	73 920.961–82353.1	7–9	2.72+05	7.37−03	2.01+00	−1.287	D	2
96	$3s^23p^3(^4S^\circ)4d-3s^23p^3(^4S^\circ)4f$	$^5D^\circ-^5F$		*1 680.48* cm^{-1}	*74 974.31–76 654.786*	25–35	1.07+06	7.94−01	3.89+03	1.298	C	2
				1 681.63 cm^{-1}	74 973.14–76 654.769	9–11	1.07+06	6.96−01	1.22+03	0.797	C+	2
				1 680.67 cm^{-1}	74 974.10–76 654.767	7–9	8.93+05	6.09−01	8.35+02	0.630	C	2
				1 679.60 cm^{-1}	74 975.19–76 654.794	5–7	7.33+05	5.46−01	5.34+02	0.436	C	2
				1 678.75 cm^{-1}	74 976.06–76 654.811	3–5	5.98+05	5.30−01	3.11+02	0.201	C	2
				1 678.24 cm^{-1}	74 976.61–76 654.847	1–3	4.98+05	7.95−01	1.55+02	−0.100	C	2
				1 681.63 cm^{-1}	74 973.14–76 654.767	9–9	1.79+05	9.48−02	1.67+02	−0.069	C	2
				1 680.69 cm^{-1}	74 974.10–76 654.794	7–7	3.21+05	1.71−01	2.33+02	0.078	C	2
				1 679.62 cm^{-1}	74 975.19–76 654.811	5–5	4.28+05	2.27−01	2.22+02	0.055	C	2
				1 678.79 cm^{-1}	74 976.06–76 654.847	3–3	4.98+05	2.65−01	1.56+02	−0.100	C	2
				1 681.65 cm^{-1}	74 973.14–76 654.794	9–7	1.53+04	6.32−03	1.11+01	−1.245	D+	2
				1 680.71 cm^{-1}	74 974.10–76 654.811	7–5	4.29+04	1.62−02	2.22+01	−0.945	D+	2
				1 679.66 cm^{-1}	74 975.19–76 654.847	5–3	7.13+04	2.27−02	2.22+01	−0.945	D+	2
97		$^3D^\circ-^3F$		*702.11* cm^{-1}	*75 954.22–76 656.334*	15–21	7.90+04	3.36−01	2.37+03	0.702	C	2
				699.79 cm^{-1}	75 956.53–76 656.324	7–9	7.85+04	3.09−01	1.01+03	0.335	C+	2
				703.98 cm^{-1}	75 952.35–76 656.330	5–7	7.11+04	3.01−01	7.03+02	0.178	C	2
				704.41 cm^{-1}	75 951.95–76 656.358	3–5	6.73+04	3.39−01	4.75+02	0.007	C	2
				699.80 cm^{-1}	75 956.53–76 656.330	7–7	8.72+03	2.67−02	8.79+01	−0.728	D+	2
				704.01 cm^{-1}	75 952.35–76 656.358	5–5	1.24+04	3.76−02	8.79+01	−0.726	D+	2
				699.83 cm^{-1}	75 956.53–76 656.358	7–5	3.49+02	7.63−04	2.51+00	−2.272	D	2
98	$3s^23p^3(^4S^\circ)4d-3s^23p^3(^4S^\circ)6p$	$^5D^\circ-^5P$		*2 879.92* cm^{-1}	*74 974.31–77 854.234*	25–15	9.42+05	1.02−01	2.92+02	0.407	D+	2
				2 883.31 cm^{-1}	74 973.14–77 856.446	9–7	7.29+05	1.02−01	1.05+02	−0.037	C	2
				2 879.13 cm^{-1}	74 974.10–77 853.234	7–5	5.26+05	6.80−02	5.44+01	−0.322	D+	2
				2 875.55 cm^{-1}	74 975.19–77 850.740	5–3	3.30+05	3.59−02	2.05+01	−0.746	D+	2
				2 882.35 cm^{-1}	74 974.10–77 856.446	7–7	1.89+05	3.41−02	2.72+01	−0.622	D+	2
				2 878.04 cm^{-1}	74 975.19–77 853.234	5–5	3.29+05	5.95−02	3.40+01	−0.527	D+	2
				2 874.68 cm^{-1}	74 976.06–77 850.740	3–3	4.24+05	7.68−02	2.64+01	−0.638	D+	2
				2 881.26 cm^{-1}	74 975.19–77 856.446	5–7	2.70+04	6.82−03	3.89+00	−1.467	D	2
				2 877.17 cm^{-1}	74 976.06–77 853.234	3–5	8.45+04	2.55−02	8.75+00	−1.116	D	2
				2 874.13 cm^{-1}	74 976.61–77 850.740	1–3	1.88+05	1.02−01	1.17+01	−0.991	D+	2
99		$^3D^\circ-^3P$		*1 945.28* cm^{-1}	*75 954.22–77 899.500*	15–9	9.46+05	2.25−01	5.71+02	0.528	C	2
				1 934.00 cm^{-1}	75 956.53–77 890.532	7–5	8.07+05	2.31−01	2.75+02	0.209	C	2
				1 961.19 cm^{-1}	75 952.35–77 913.543	5–3	6.79+05	1.59−01	1.33+02	−0.100	C	2
				1 950.26 cm^{-1}	75 951.95–77 902.208	3–1	9.92+05	1.30−01	6.60+01	−0.409	D+	2
				1 938.18 cm^{-1}	75 952.35–77 890.532	5–5	1.47+05	5.88−02	4.99+01	−0.532	D+	2
				1 961.59 cm^{-1}	75 951.95–77 913.543	3–3	2.22+05	8.66−02	4.35+01	−0.585	D+	2
				1 938.58 cm^{-1}	75 951.95–77 890.532	3–5	9.95+03	6.61−03	3.37+00	−1.703	D	2
100	$3s^23p^3(^4S^\circ)4d-3s^23p^3(^4S^\circ)5f$	$^3D^\circ-^3F$		*3 189.83* cm^{-1}	*75 954.22–79 144.05*	15–21	2.20+06	4.55−01	7.04+02	0.834	C	2
				3 187.52 cm^{-1}	75 956.53–79 144.05	7–9	2.21+06	4.20−01	3.03+02	0.468	C	2
				3 191.70 cm^{-1}	75 952.35–79 144.05	5–7	1.96+06	4.04−01	2.08+02	0.305	C	2
				3 192.10 cm^{-1}	75 951.95–79 144.05	3–5	1.85+06	4.55−01	1.40+02	0.135	C	2
				3 187.52 cm^{-1}	75 956.53–79 144.05	7–7	2.46+05	3.63−02	2.62+01	−0.595	D+	2
				3 191.70 cm^{-1}	75 952.35–79 144.05	5–5	3.44+05	5.06−02	2.60+01	−0.597	D+	2
				3 187.52 cm^{-1}	75 956.53–79 144.05	7–5	9.83+03	1.04−03	7.48−01	−2.138	E+	2
101	$3s^23p^3(^4S^\circ)4d-3s^23p^3(^4S^\circ)7p$	$^5D^\circ-^5P$				25–15						2
				4 812.38 cm^{-1}	74 973.14–79 785.52	9–7	3.05+05	1.54−02	9.46+00	−0.858	D	2
				4 811.42 cm^{-1}	74 974.10–79 785.52	7–7	7.91+04	5.12−03	2.45+00	−1.446	D	2
				4 810.33 cm^{-1}	74 975.19–79 785.52	5–7	1.13+04	1.02−03	3.50−01	−2.292	E+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
102		^{3}D°–^{3}P		*4 162.24* cm^{-1}	*75 954.22–80 116.46*	15–9	2.27+05	1.18−02	1.40+01	−0.752	D	2
				4 156.20 cm^{-1}	75 956.53–80 112.73	7–5	1.95+05	1.21−02	6.71+00	−1.072	D	2
				4 167.86 cm^{-1}	75 952.35–80 120.21	5–3	1.65+05	8.57−03	3.38+00	−1.368	D	2
				4 171.91 cm^{-1}	75 951.95–80 123.86	3–1	2.15+05	6.17−03	1.46+00	−1.733	D	2
				4 160.38 cm^{-1}	75 952.35–80 112.73	5–5	3.51+04	3.04−03	1.20+00	−1.818	D	2
				4 168.26 cm^{-1}	75 951.95–80 120.21	3–3	5.53+04	4.77−03	1.13+00	−1.844	D	2
				4 160.78 cm^{-1}	75 951.95–80 112.73	3–5	2.36+03	3.41−04	8.08−02	−2.990	E	2
103	$3s^23p^3(^4S°)4d–3s^23p^3(^4S°)6f$	^{5}D°–^{5}F	*18 111*	*18 116*	*74 974.31–80 494.31*	25–35	7.45+05	5.13−02	7.65+01	0.108	D+	2
			18 107.2	18 112.1	74 973.14–80 494.31	9–11	7.46+05	4.49−02	2.40+01	−0.394	D+	2
			18 110.3	18 115.3	74 974.10–80 494.31	7–9	6.22+05	3.94−02	1.64+01	−0.559	D+	2
			18 113.9	18 118.8	74 975.19–80 494.31	5–7	5.12+05	3.53−02	1.05+01	−0.753	D+	2
			18 116.7	18 121.7	74 976.06–80 494.31	3–5	4.18+05	3.43−02	6.14+00	−0.988	D	2
			18 118.5	18 123.5	74 976.61–80 494.31	1–3	3.49+05	5.15−02	3.07+00	−1.288	D	2
			18 107.2	18 112.1	74 973.14–80 494.31	9–9	1.24+05	6.12−03	3.28+00	−1.259	D	2
			18 110.3	18 115.3	74 974.10–80 494.31	7–7	2.24+05	1.10−02	4.59+00	−1.114	D	2
			18 113.9	18 118.8	74 975.19–80 494.31	5–5	2.99+05	1.47−02	4.38+00	−1.134	D	2
			18 116.7	18 121.7	74 976.06–80 494.31	3–3	3.49+05	1.72−02	3.07+00	−1.287	D	2
			18 107.2	18 112.1	74 973.14–80 494.31	9–7	1.07+04	4.08−04	2.18−01	−2.435	E+	2
			18 110.3	18 115.3	74 974.10–80 494.31	7–5	2.99+04	1.05−03	4.38−01	−2.134	E+	2
			18 113.9	18 118.8	74 975.19–80 494.31	5–3	4.98+04	1.47−03	4.38−01	−2.134	E+	2
104		^{3}D°–^{3}F		*4 540.96* cm^{-1}	*75 954.22–80 495.18*	15–21	1.42+06	1.44−01	1.57+02	0.334	D+	2
				4 538.65 cm^{-1}	75 956.53–80 495.18	7–9	1.42+06	1.33−01	6.74+01	−0.031	D+	2
				4 542.83 cm^{-1}	75 952.35–80 495.18	5–7	1.26+06	1.28−01	4.65+01	−0.194	D+	2
				4 543.23 cm^{-1}	75 951.95–80 495.18	3–5	1.19+06	1.44−01	3.13+01	−0.365	D+	2
				4 538.65 cm^{-1}	75 956.53–80 495.18	7–7	1.58+05	1.15−02	5.83+00	−1.094	D	2
				4 542.83 cm^{-1}	75 952.35–80 495.18	5–5	2.21+05	1.60−02	5.81+00	−1.097	D	2
				4 538.65 cm^{-1}	75 956.53–80 495.18	7–5	6.31+03	3.28−04	1.66−01	−2.639	E+	2
105	$3s^23p^3(^4S°)4d–3s^23p^3(^4S°)8p$	^{3}D°–^{3}P	*19 829*	*19 835*	*75 954.22–80 995.84*	15–9	2.16+05	7.65−03	7.50+00	−0.940	D	2
			19 837.8	19 843.2	75 956.53–80 996.03	7–5	1.82+05	7.68−03	3.51+00	−1.270	D	2
			19 823.1	19 828.5	75 952.35–80 995.60	5–3	1.62+05	5.73−03	1.87+00	−1.543	D	2
			19 821.5	19 826.9	75 951.95–80 995.60	3–1	2.15+05	4.23−03	8.28−01	−1.897	E+	2
			19 821.4	19 826.8	75 952.35–80 996.03	5–5	3.25+04	1.91−03	6.24−01	−2.020	E+	2
			19 821.5	19 826.9	75 951.95–80 995.60	3–3	5.40+04	3.18−03	6.23−01	−2.020	E+	2
			19 819.8	19 825.2	75 951.95–80 996.03	3–5	2.17+03	2.13−04	4.16−02	−3.194	E	2
106	$3s^23p^3(^4S°)4d–3s^23p^3(^4S°)7f$	^{5}D°–^{5}F	*15 782.2*	*15 786.5*	*74 974.31–81 308.84*	25–35	5.67+05	2.97−02	3.86+01	−0.129	D	2
			15 779.26	15 783.58	74 973.14–81 308.84	9–11	5.69+05	2.60−02	1.21+01	−0.631	D+	2
			15 781.66	15 785.97	74 974.10–81 308.84	7–9	4.74+05	2.28−02	8.28+00	−0.797	D	2
			15 784.37	15 788.68	74 975.19–81 308.84	5–7	3.90+05	2.04−02	5.30+00	−0.991	D	2
			15 786.54	15 790.85	74 976.06–81 308.84	3–5	3.19+05	1.98−02	3.09+00	−1.226	D	2
			15 787.91	15 792.22	74 976.61–81 308.84	1–3	2.65+05	2.98−02	1.54+00	−1.526	D	2
			15 779.26	15 783.58	74 973.14–81 308.84	9–9	9.48+04	3.54−03	1.65+00	−1.497	D	2
			15 781.66	15 785.97	74 974.10–81 308.84	7–7	1.71+05	6.37−03	2.31+00	−1.351	D	2
			15 784.37	15 788.68	74 975.19–81 308.84	5–5	2.27+05	8.50−03	2.20+00	−1.372	D	2
			15 786.54	15 790.85	74 976.06–81 308.84	3–3	2.65+05	9.92−03	1.54+00	−1.526	D	2
			15 779.26	15 783.58	74 973.14–81 308.84	9–7	8.12+03	2.36−04	1.10−01	−2.673	E+	2
			15 781.66	15 785.97	74 974.10–81 308.84	7–5	2.27+04	6.07−04	2.20−01	−2.372	E+	2
			15 784.37	15 788.68	74 975.19–81 308.84	5–3	3.79+04	8.50−04	2.20−01	−2.372	E+	2
107		^{3}D°–^{3}F	*18 668*	*18 673*	*75 954.22–81 309.57*	15–21	9.05+05	6.62−02	6.11+01	−0.003	D+	2
			18 675.9	18 681.0	75 956.53–81 309.57	7–9	9.05+05	6.09−02	2.62+01	−0.370	D+	2
			18 661.3	18 666.4	75 952.35–81 309.57	5–7	8.06+05	5.89−02	1.81+01	−0.531	D+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			18 659.9	18 665.0	75 951.95–81 309.57	3–5	7.61+05	6.62−02	1.22+01	−0.702	D+	2
			18 675.9	18 681.0	75 956.53–81 309.57	7–7	1.01+05	5.26−03	2.26+00	−1.434	D	2
			18 661.3	18 666.4	75 952.35–81 309.57	5–5	1.41+05	7.36−03	2.26+00	−1.434	D	2
			18 675.9	18 681.0	75 956.53–81 309.57	7–5	4.02+03	1.50−04	6.47−02	−2.979	E	2
108	$3s^23p^3(^4S^\circ)4d$–$3s^23p^3(^4S^\circ)8f$	$^5D^\circ$–^5F	*14 566.6*	*14 570.6*	*74 974.31–81 837.45*	25–35	4.17+05	1.86−02	2.23+01	−0.333	D	2
			14 564.13	14 568.11	74 973.14–81 837.45	9–11	4.18+05	1.62−02	7.00+00	−0.836	D	2
			14 566.16	14 570.14	74 974.10–81 837.45	7–9	3.48+05	1.42−02	4.78+00	−1.003	D	2
			14 568.48	14 572.46	74 975.19–81 837.45	5–7	2.86+05	1.28−02	3.06+00	−1.194	D	2
			14 570.32	14 574.31	74 976.06–81 837.45	3–5	2.34+05	1.24−02	1.78+00	−1.429	D	2
			14 571.49	14 575.47	74 976.61–81 837.45	1–3	1.95+05	1.86−02	8.93−01	−1.730	E+	2
			14 564.13	14 568.11	74 973.14–81 837.45	9–9	6.96+04	2.21−03	9.55−01	−1.701	E+	2
			14 566.16	14 570.14	74 974.10–81 837.45	7–7	1.25+05	3.99−03	1.33+00	−1.554	D	2
			14 568.48	14 572.46	74 975.19–81 837.45	5–5	1.67+05	5.32−03	1.27+00	−1.575	D	2
			14 570.32	14 574.31	74 976.06–81 837.45	3–3	1.95+05	6.21−03	8.93−01	−1.730	E+	2
			14 564.13	14 568.11	74 973.14–81 837.45	9–7	5.96+03	1.48−04	6.37−02	−2.875	E	2
			14 566.16	14 570.14	74 974.10–81 837.45	7–5	1.67+04	3.80−04	1.27−01	−2.575	E+	2
			14 568.48	14 572.46	74 975.19–81 837.45	5–3	2.78+04	5.32−04	1.27−01	−2.575	E+	2
109	$3s^23p^3(^4S^\circ)6s$–$3s^23p^3(^4S^\circ)6p$	$^5S^\circ$–^5P		*1 390.17* cm^{-1}	76 464.06–*77 854.234*	5–15	8.60+05	2.00+00	2.37+03	1.000	C	2
				1 392.39 cm^{-1}	76 464.06–77 856.446	5–7	8.69+05	9.41−01	1.11+03	0.673	C+	2
				1 389.17 cm^{-1}	76 464.06–77 853.234	5–5	8.55+05	6.65−01	7.87+02	0.522	C	2
				1 386.68 cm^{-1}	76 464.06–77 850.740	5–3	8.54+05	4.00−01	4.74+02	0.301	C	2
110		$^3S^\circ$–^3P		*1 178.85* cm^{-1}	76 720.65–*77 899.500*	3–9	5.30+05	1.72+00	1.44+03	0.713	C	2
				1 169.88 cm^{-1}	76 720.65–77 890.532	3–5	5.33+05	9.74−01	8.21+02	0.466	C	2
				1 192.89 cm^{-1}	76 720.65–77 913.543	3–3	5.16+05	5.44−01	4.50+02	0.213	C	2
				1 181.56 cm^{-1}	76 720.65–77 902.208	3–1	5.60+05	2.01−01	1.67+02	−0.220	C	2
111	$3s^23p^3(^4S^\circ)6s$–$3s^23p^3(^2D^\circ)4p$	$^3S^\circ$–^3P		*2 669.67* cm^{-1}	76 720.65–*79 390.32*	3–9	1.38+05	8.71−02	3.22+01	−0.583	D+	2
				2 655.15 cm^{-1}	76 720.65–79 375.80	3–5	1.47+05	5.21−02	1.93+01	−0.806	D+	2
				2 684.65 cm^{-1}	76 720.65–79 405.30	3–3	1.29+05	2.69−02	9.88+00	−1.093	D	2
				2 697.36 cm^{-1}	76 720.65–79 418.01	3–1	1.21+05	8.32−03	3.04+00	−1.603	D	2
112	$3s^23p^3(^4S^\circ)6s$–$3s^23p^3(^4S^\circ)7p$	$^5S^\circ$–^5S				5–15						2
				3 321.46 cm^{-1}	76 464.06–79 785.52	5–7	1.12+05	2.12−02	1.05+01	−0.975	D+	2
113		$^3S^\circ$–^3P		*3 395.81* cm^{-1}	76 720.65–*80 116.46*	3–9	3.30+05	1.29−01	3.74+01	−0.412	D+	2
				3 392.08 cm^{-1}	76 720.65–80 112.73	3–5	3.32+05	7.21−02	2.09+01	−0.665	D+	2
				3 399.56 cm^{-1}	76 720.65–80 120.21	3–3	3.30+05	4.28−02	1.24+01	−0.891	D+	2
				3 403.21 cm^{-1}	76 720.65–80 123.86	3–1	3.29+05	1.42−02	4.11+00	−1.371	D	2
114	$3s^23p^3(^4S^\circ)6s$–$3s^23p^3(^4S^\circ)8p$	$^3S^\circ$–^3P		*4 275.19* cm^{-1}	76 720.65–*80 995.84*	3–9	1.05+05	2.59−02	5.99+00	−1.110	D	2
				4 275.38 cm^{-1}	76 720.65–80 996.03	3–5	1.06+05	1.45−02	3.34+00	−1.362	D	2
				4 274.95 cm^{-1}	76 720.65–80 995.60	3–3	1.05+05	8.61−03	1.99+00	−1.588	D	2
				4 274.95 cm^{-1}	76 720.65–80 995.60	3–1	1.05+05	2.86−03	6.61−01	−2.067	E+	2
115	$3s^23p^3(^4S^\circ)4f$–$3s^23p^3(^4S^\circ)5d$	^5F–$^5D^\circ$				35–25						2
				1 615.33 cm^{-1}	76 654.769–78 270.10	11–9	2.80+05	1.31−01	2.94+02	0.159	C	2
				1 615.75 cm^{-1}	76 654.767–78 270.52	9–7	2.45+05	1.10−01	2.00+02	−0.004	C	2
				1 616.20 cm^{-1}	76 654.794–78 270.99	7–5	2.20+05	9.01−02	1.28+02	−0.200	C	2
				1 615.33 cm^{-1}	76 654.767–78 270.10	9–9	3.81+04	2.19−02	4.01+01	−0.705	D+	2
				1 615.73 cm^{-1}	76 654.794–78 270.52	7–7	6.86+04	3.94−02	5.62+01	−0.559	D+	2
				1 616.18 cm^{-1}	76 654.811–78 270.99	5–5	9.16+04	5.25−02	5.35+01	−0.581	D+	2
				1 615.31 cm^{-1}	76 654.794–78 270.10	7–9	2.54+03	1.88−03	2.67+00	−1.881	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 615.71 cm^{-1}	76 654.811–78 270.52	5–7	6.54+03	5.25−03	5.35+00	−1.581	D	2
				1 616.14 cm^{-1}	76 654.847–78 270.99	3–5	9.15+03	8.76−03	5.35+00	−1.580	D	2
116		^{3}F–^{3}D$^\circ$		*2 035.47* cm^{-1}	*76 656.334–78 691.80*	21–15	2.11+05	5.46−02	1.86+02	0.059	D+	2
				2 035.48 cm^{-1}	76 656.324–78 691.80	9–7	1.94+05	5.46−02	7.94+01	−0.309	D+	2
				2 035.04 cm^{-1}	76 656.330–78 691.37	7–5	1.88+05	4.87−02	5.51+01	−0.467	D+	2
				2 036.17 cm^{-1}	76 656.358–78 692.53	5–3	2.12+05	4.60−02	3.71+01	−0.638	D+	2
				2 035.47 cm^{-1}	76 656.330–78 691.80	7–7	1.68+04	6.07−03	6.87+00	−1.372	D	2
				2 035.01 cm^{-1}	76 656.358–78 691.37	5–5	2.35+04	8.52−03	6.89+00	−1.371	D	2
				2 035.44 cm^{-1}	76 656.358–78 691.80	5–7	4.80+02	2.43−04	1.96−01	−2.915	E+	2
117	$3s^23p^3(^4S^\circ)4f$–$3s^23p^3(^4S^\circ)6d$	^{3}F–^{3}D$^\circ$		*3 527.07* cm^{-1}	*76 656.334–80 183.40*	21–15	1.01+05	8.66−03	1.70+01	−0.740	D	2
				3 525.84 cm^{-1}	76 656.324–80 182.16	9–7	9.24+04	8.67−03	7.28+00	−1.108	D	2
				3 527.50 cm^{-1}	76 656.330–80 183.83	7–5	8.95+04	7.70−03	5.03+00	−1.268	D	2
				3 529.24 cm^{-1}	76 656.358–80 185.60	5–3	1.01+05	7.26−03	3.38+00	−1.440	D	2
				3 525.83 cm^{-1}	76 656.330–80 182.16	7–7	8.00+03	9.65−04	6.30−01	−2.170	E+	2
				3 527.47 cm^{-1}	76 656.358–80 183.83	5–5	1.12+04	1.35−03	6.29−01	−2.171	E+	2
				3 525.80 cm^{-1}	76 656.358–80 182.16	5–7	2.29+02	3.87−05	1.80−02	−3.713	E	2
118	$3s^23p^3(^4S^\circ)6p$–$3s^23p^3(^4S^\circ)5d$	^{5}P–^{5}D$^\circ$				15–25						2
				4 13.65 cm^{-1}	77 856.446–78 270.10	7–9	4.48+04	5.04−01	2.80+03	0.548	C+	2
				4 17.29 cm^{-1}	77 853.234–78 270.52	5–7	3.04+04	3.66−01	1.44+03	0.262	C+	2
				4 20.25 cm^{-1}	77 850.740–78 270.99	3–5	1.63+04	2.31−01	5.42+02	−0.159	C	2
				4 14.07 cm^{-1}	77 856.446–78 270.52	7–7	1.50+04	1.31−01	7.28+02	−0.038	C	2
				4 17.76 cm^{-1}	77 853.234–78 270.99	5–5	2.66+04	2.29−01	9.01+02	0.059	C	2
				4 14.54 cm^{-1}	77 856.446–78 270.99	7–5	3.00+03	1.87−02	1.04+02	−0.883	C	2
119		^{3}P–^{3}D$^\circ$		*792.30* cm^{-1}	*77 899.500–78 691.80*	9–15	2.73+05	1.09+00	4.06+03	0.992	C	2
				801.27 cm^{-1}	77 890.532–78 691.80	5–7	2.90+05	9.47−01	1.94+03	0.675	C+	2
				777.83 cm^{-1}	77 913.543–78 691.37	3–5	1.83+05	7.57−01	9.60+02	0.356	C	2
				790.32 cm^{-1}	77 902.208–78 692.53	1–3	1.59+05	1.14+00	4.75+02	0.057	C	2
				800.84 cm^{-1}	77 890.532–78 691.37	5–5	7.19+04	1.68−01	3.45+02	−0.076	C	2
				778.99 cm^{-1}	77 913.543–78 692.53	3–3	1.03+05	2.55−01	3.22+02	−0.116	C	2
				802.00 cm^{-1}	77 890.532–78 692.53	5–3	8.00+03	1.12−02	2.29+01	−1.252	D+	2
120	$3s^23p^3(^4S^\circ)6p$–$3s^23p^3(^4S^\circ)7s$	^{5}P–^{5}S$^\circ$		*1 203.81* cm^{-1}	*77 854.234*–79 058.04	15–5	1.36+06	4.68−01	1.92+03	0.846	C	2
				1 201.59 cm^{-1}	77 856.446–79 058.04	7–5	6.34+05	4.71−01	9.02+02	0.518	C	2
				1 204.81 cm^{-1}	77 853.234–79 058.04	5–5	4.51+05	4.65−01	6.35+02	0.366	C	2
				1 207.30 cm^{-1}	77 850.740–79 058.04	3–5	2.73+05	4.67−01	3.82+02	0.146	C	2
121		^{3}P–^{3}S$^\circ$		*1 285.85* cm^{-1}	*77 899.500*–79 185.35	9–3	1.22+06	3.69−01	8.51+02	0.521	C	2
				1 294.82 cm^{-1}	77 890.532–79 185.35	5–3	7.04+05	3.78−01	4.80+02	0.276	C	2
				1 271.81 cm^{-1}	77 913.543–79 185.35	3–3	3.77+05	3.49−01	2.71+02	0.020	C	2
				1 283.14 cm^{-1}	77 902.208–79 185.35	1–3	1.43+05	3.90−01	1.00+02	−0.409	C	2
122	$3s^23p^3(^4S^\circ)6p$–$3s^23p^3(^4S^\circ)6d$	^{5}P–^{5}D$^\circ$				15–25						2
				2 135.70 cm^{-1}	77 856.446–79 992.15	7–9	3.52+05	1.49−01	1.60+02	0.018	C	2
				2 139.09 cm^{-1}	77 853.234–79 992.32	5–7	2.32+05	1.06−01	8.18+01	−0.276	D+	2
				2 141.76 cm^{-1}	77 850.740–79 992.50	3–5	1.22+05	6.63−02	3.05+01	−0.701	D+	2
				2 135.87 cm^{-1}	77 856.446–79 992.32	7–7	1.17+05	3.86−02	4.16+01	−0.568	D+	2
				2 139.27 cm^{-1}	77 853.234–79 992.50	5–5	2.03+05	6.64−02	5.10+01	−0.479	D+	2
				2 136.05 cm^{-1}	77 856.446–79 992.50	7–5	2.35+04	5.51−03	5.94+00	−1.414	D	2
123		^{3}P–^{3}D$^\circ$		*2 283.90* cm^{-1}	*77 899.500–80 183.40*	9–15	2.34+04	1.12−02	1.45+01	−0.997	D	2
				2 291.63 cm^{-1}	77 890.532–80 182.16	5–7	2.20+04	8.79−03	6.31+00	−1.357	D	2
				2 270.29 cm^{-1}	77 913.543–80 183.83	3–5	1.88+04	9.14−03	3.97+00	−1.562	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				2 283.39 cm^{-1}	77 902.208–80 185.60	1–3	1.41+04	1.22−02	1.75+00	−1.914	D	2
				2 293.30 cm^{-1}	77 890.532–80 183.83	5–5	6.22+03	1.77−03	1.27+00	−2.053	D	2
				2 272.06 cm^{-1}	77 913.543–80 185.60	3–3	9.00+03	2.61−03	1.13+00	−2.106	D	2
				2 295.07 cm^{-1}	77 890.532–80 185.60	5–3	7.41+02	1.27−04	9.08−02	−3.197	E	2
124	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)8s$	$^5P-^5S^\circ$		*2 594.87* cm^{-1}	*77 854.234*–80 449.10	15–5	5.30+05	3.93−02	7.48+01	−0.230	D+	2
				2 592.65 cm^{-1}	77 856.446–80 449.10	7–5	2.48+05	3.95−02	3.51+01	−0.558	D+	2
				2 595.87 cm^{-1}	77 853.234–80 449.10	5–5	1.76+05	3.92−02	2.48+01	−0.708	D+	2
				2 598.36 cm^{-1}	77 850.740–80 449.10	3–5	1.06+05	3.94−02	1.49+01	−0.927	D+	2
125		$^3P-^3D^\circ$		*2 621.96* cm^{-1}	*77 899.500*–80 521.46	9–3	5.20+05	3.78−02	4.27+01	−0.468	D+	2
				2 630.93 cm^{-1}	77 890.532–80 521.46	5–3	3.00+05	3.90−02	2.43+01	−0.710	D+	2
				2 607.92 cm^{-1}	77 913.543–80 521.46	3–3	1.61+05	3.55−02	1.34+01	−0.973	D+	2
				2 619.25 cm^{-1}	77 902.208–80 521.46	1–3	6.06+04	3.97−02	4.99+00	−1.401	D	2
126	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)7d$	$^5P-^5D^\circ$				15–25						2
				3 138.83 cm^{-1}	77 856.446–80 995.28	7–9	2.96+05	5.80−02	4.25+01	−0.391	D+	2
127		$^3P-^3D^\circ$		*3 182.39* cm^{-1}	*77 899.500–81 081.89*	9–15	6.84+04	1.69−02	1.57+01	−0.818	D	2
				3 189.76 cm^{-1}	77 890.532–81 080.29	5–7	6.71+04	1.38−02	7.14+00	−1.161	D	2
				3 168.92 cm^{-1}	77 913.543–81 082.46	3–5	5.23+04	1.30−02	4.05+00	−1.409	D	2
				3 182.46 cm^{-1}	77 902.208–81 084.67	1–3	4.01+04	1.78−02	1.84+00	−1.750	D	2
				3 191.93 cm^{-1}	77 890.532–81 082.46	5–5	1.89+04	2.78−03	1.43+00	−1.857	D	2
				3 171.13 cm^{-1}	77 913.543–81 084.67	3–3	2.50+04	3.73−03	1.16+00	−1.951	D	2
				3 194.14 cm^{-1}	77 890.532–81 084.67	5–3	2.27+03	2.00−04	1.03−01	−3.000	E+	2
128	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)9s$	$^5P-^5S^\circ$		*3 427.33* cm^{-1}	*77 854.234*–81 281.56	15–5	3.00+05	1.27−02	1.84+01	−0.720	D	2
				3 425.11 cm^{-1}	77 856.446–81 281.56	7–5	1.40+05	1.28−02	8.60+00	−1.048	D	2
				3 428.33 cm^{-1}	77 853.234–81 281.56	5–5	9.96+04	1.27−02	6.09+00	−1.197	D	2
				3 430.82 cm^{-1}	77 850.740–81 281.56	3–5	6.02+04	1.28−02	3.67+00	−1.416	D	2
129		$^3P-^3S^\circ$		*3 427.31* cm^{-1}	*77 899.500*–81 326.81	9–3	2.97+05	1.26−02	1.09+01	−0.945	D	2
				3 436.28 cm^{-1}	77 890.532–81 326.81	5–3	1.70+05	1.30−02	6.22+00	−1.187	D	2
				3 413.27 cm^{-1}	77 913.543–81 326.81	3–3	9.23+04	1.19−02	3.43+00	−1.447	D	2
				3 424.60 cm^{-1}	77 902.208–81 326.81	1–3	3.44+04	1.32−02	1.27+00	−1.879	D	2
130	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)8d$	$^5P-^5D^\circ$				15–25						2
				3 772.25 cm^{-1}	77 856.446–81 628.70	7–9	2.16+05	2.93−02	1.79+01	−0.688	D+	2
131		$^3P-^3D^\circ$		*3 765.38* cm^{-1}	*77 899.500–81 664.88*	9–15	7.65+04	1.35−02	1.06+01	−0.915	D	2
				3 772.52 cm^{-1}	77 890.532–81 663.05	5–7	7.58+04	1.12−02	4.87+00	−1.252	D	2
				3 752.07 cm^{-1}	77 913.543–81 665.61	3–5	5.91+04	1.05−02	2.76+00	−1.502	D	2
				3 765.72 cm^{-1}	77 902.208–81 667.93	1–3	4.47+04	1.42−02	1.24+00	−1.848	D	2
				3 775.08 cm^{-1}	77 890.532–81 665.61	5–5	2.20+04	2.31−03	1.00+00	−1.937	D	2
				3 754.39 cm^{-1}	77 913.543–81 667.93	3–3	2.40+04	2.55−03	6.70−01	−2.116	E+	2
				3 777.40 cm^{-1}	77 890.532–81 667.93	5–3	2.70+03	1.70−04	7.40−02	−3.071	E	2
132	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)10s$	$^5P-^5S^\circ$		*3 964.97* cm^{-1}	*77 854.234*–81 819.20	15–5	1.90+05	6.05−03	7.54+00	−1.042	D	2
				3 962.75 cm^{-1}	77 856.446–81 819.20	7–5	8.91+04	6.08−03	3.53+00	−1.371	D	2
				3 965.97 cm^{-1}	77 853.234–81 819.20	5–5	6.33+04	6.04−03	2.50+00	−1.520	D	2
				3 968.46 cm^{-1}	77 850.740–81 819.20	3–5	3.83+04	6.07−03	1.51+00	−1.740	D	2
133		$^3P-^3S^\circ$		*3 950.18* cm^{-1}	*77 899.500*–81 849.68	9–3	1.87+05	5.98−03	4.49+00	−1.269	D	2
				3 959.15 cm^{-1}	77 890.532–81 849.68	5–3	1.08+05	6.20−03	2.57+00	−1.509	D	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				3 936.14 cm^{-1}	77 913.543–81 849.68	3–3	5.72+04	5.54−03	1.39+00	−1.779	D	2
				3 947.47 cm^{-1}	77 902.208–81 849.68	1–3	2.18+04	6.31−03	5.25−01	−2.200	E+	2
134	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)9d$	$^5P-^5D^\circ$				15–25						2
				4 197.29 cm^{-1}	77 856.446–82 053.74	7–9	1.57+05	1.72−02	9.45+00	−0.919	D	2
135		$^3P-^3D^\circ$		*4 163.87* cm^{-1}	*77 899.500–82 063.37*	9–15	7.09+04	1.02−02	7.27+00	−1.037	D	2
				4 171.17 cm^{-1}	77 890.532–82 061.70	5–7	6.89+04	8.32−03	3.28+00	−1.381	D	2
				4 149.86 cm^{-1}	77 913.543–82 063.40	3–5	5.51+04	8.00−03	1.90+00	−1.620	D	2
				4 165.01 cm^{-1}	77 902.208–82 067.22	1–3	4.11+04	1.06−02	8.41−01	−1.975	E+	2
				4 172.87 cm^{-1}	77 890.532–82 063.40	5–5	2.07+04	1.78−03	7.03−01	−2.051	E+	2
				4 153.68 cm^{-1}	77 913.543–82 067.22	3–3	2.37+04	2.06−03	4.90−01	−2.209	E+	2
				4 176.69 cm^{-1}	77 890.532–82 067.22	5–3	2.62+03	1.35−04	5.33−02	−3.171	E	2
136	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)11s$	$^3P-^3S^\circ$		*4 308.67* cm^{-1}	*77 899.500*–82 208.17	9–3	1.27+05	3.41−03	2.35+00	−1.513	D	2
				4 317.64 cm^{-1}	77 890.532–82 208.17	5–3	7.32+04	3.53−03	1.34+00	−1.753	D	2
				4 294.63 cm^{-1}	77 913.543–82 208.17	3–3	3.91+04	3.18−03	7.31−01	−2.020	E+	2
				4 305.96 cm^{-1}	77 902.208–82 208.17	1–3	1.48+04	3.59−03	2.74−01	−2.445	E+	2
137	$3s^23p^3(^4S^\circ)6p-3s^23p^3(^4S^\circ)10d$	$^5P-^5D^\circ$				15–25						2
				4 496.7 cm^{-1}	77 856.446–82353.1	7–9	1.17+05	1.11−02	5.69+00	−1.110	D	2
138		$^3P-^3D^\circ$		*4 452.29* cm^{-1}	*77 899.500–82 351.79*	9–15	6.03+04	7.60−03	5.06+00	−1.165	D	2
				4 460.24 cm^{-1}	77 890.532–82 350.77	5–7	5.72+04	6.04−03	2.22+00	−1.520	D	2
				4 438.81 cm^{-1}	77 913.543–82 352.35	3–5	4.94+04	6.27−03	1.39+00	−1.726	D	2
				4 451.04 cm^{-1}	77 902.208–82 353.25	1–3	3.49+04	7.91−03	5.85−01	−2.102	E+	2
				4 461.82 cm^{-1}	77 890.532–82 352.35	5–5	1.78+04	1.34−03	4.94−01	−2.174	E+	2
				4 439.71 cm^{-1}	77 913.543–82 353.25	3–3	1.97+04	1.50−03	3.32−01	−2.347	E+	2
				4 462.72 cm^{-1}	77 890.532–82 353.25	5–3	2.36+03	1.06−04	3.92−02	−3.276	E	2
139	$3s^23p^3(^2D^\circ)4p-3s^23p^3(^4S^\circ)8s$	$^3P-^3S^\circ$		*1 131.14* cm^{-1}	*79 390.32*–80 521.46	9–3	2.57+05	1.00−01	2.63+02	−0.046	C	2
				1 145.66 cm^{-1}	79 375.80–80 521.46	5–3	1.39+05	9.51−02	1.36+02	−0.323	C	2
				1 116.16 cm^{-1}	79 405.30–80 521.46	3–3	8.79+04	1.06−01	9.35+01	−0.498	D+	2
				1 103.45 cm^{-1}	79 418.01–80 521.46	1–3	3.00+04	1.11−01	3.31+01	−0.955	D+	2
140	$3s^23p^3(^2D^\circ)4p-3s^23p^3(^4S^\circ)10s$	$^3P-^3S^\circ$		*2 459.36* cm^{-1}	*79 390.32*–81 849.68	9–3	8.37+04	6.91−03	8.33+00	−1.206	D	2
				2 473.88 cm^{-1}	79 375.80–81 849.68	5–3	4.53+04	6.66−03	4.43+00	−1.478	D	2
				2 444.38 cm^{-1}	79 405.30–81 849.68	3–3	2.86+04	7.18−03	2.90+00	−1.667	D	2
				2 431.67 cm^{-1}	79 418.01–81 849.68	1–3	9.78+03	7.44−03	1.00+00	−2.128	D	2
141	$3s^23p^3(^2D^\circ)4p-3s^23p^3(^4S^\circ)11s$	$^3P-^3S^\circ$		*2 817.85* cm^{-1}	*79 390.32*–82 208.17	9–3	5.50+04	3.46−03	3.64+00	−1.507	D	2
				2 832.37 cm^{-1}	79 375.80–82 208.17	5–3	2.98+04	3.34−03	1.94+00	−1.777	D	2
				2 802.87 cm^{-1}	79 405.30–82 208.17	3–3	1.88+04	3.59−03	1.26+00	−1.968	D	2
				2 790.16 cm^{-1}	79 418.01–82 208.17	1–3	6.43+03	3.72−03	4.38−01	−2.429	E+	2
142	$3s^23p^3(^4S^\circ)5d-3s^23p^3(^4S^\circ)5f$	$^5D^\circ-^5F$					25–35					2
				872.71 cm^{-1}	78 270.10–79 142.81	9–11	4.72+05	1.14+00	3.85+03	1.011	C+	2
				872.29 cm^{-1}	78 270.52–79 142.81	7–9	3.93+05	9.95−01	2.62+03	0.843	C+	2
				871.82 cm^{-1}	78 270.99–79 142.81	5–7	3.23+05	8.91−01	1.68+03	0.649	C+	2
				872.71 cm^{-1}	78 270.10–79 142.81	9–9	7.86+04	1.55−01	5.25+02	0.145	C	2
				872.29 cm^{-1}	78 270.52–79 142.81	7–7	1.41+05	2.79−01	7.36+02	0.291	C	2
				871.82 cm^{-1}	78 270.99–79 142.81	5–5	1.88+05	3.71−01	7.01+02	0.268	C	2
				872.71 cm^{-1}	78 270.10–79 142.81	9–7	6.74+03	1.03−02	3.50+01	−1.033	D+	2
				872.29 cm^{-1}	78 270.52–79 142.81	7–5	1.89+04	2.65−02	7.01+01	−0.732	D+	2
				871.82 cm^{-1}	78 270.99–79 142.81	5–3	3.14+04	3.71−02	7.01+01	−0.732	D+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
143		$^3D^\circ$–^3F		*452.25* cm^{-1}	*78 691.80–79 144.05*	15–21	7.24+04	7.43−01	8.11+03	1.047	C+	2
				452.25 cm^{-1}	78 691.80–79 144.05	7–9	7.25+04	6.83−01	3.48+03	0.680	C+	2
				452.68 cm^{-1}	78 691.37–79 144.05	5–7	6.47+04	6.62−01	2.40+03	0.520	C+	2
				451.52 cm^{-1}	78 692.53–79 144.05	3–5	6.07+04	7.44−01	1.62+03	0.349	C+	2
				452.25 cm^{-1}	78 691.80–79 144.05	7–7	8.06+03	5.91−02	3.00+02	−0.383	C	2
				452.68 cm^{-1}	78 691.37–79 144.05	5–5	1.13+04	8.28−02	3.01+02	−0.383	C	2
				452.25 cm^{-1}	78 691.80–79 144.05	7–5	3.23+02	1.69−03	8.60+00	−1.927	D	2
144	$3s^23p^3(^4S^\circ)5d$–$3s^23p^3(^4S^\circ)7p$	$^5D^\circ$–^5P				25–15						2
				1 515.42 cm^{-1}	78 270.10–79 785.52	9–7	3.07+05	1.56−01	3.04+02	0.147	C	2
				1 515.00 cm^{-1}	78 270.52–79 785.52	7–7	7.95+04	5.19−02	7.90+01	−0.440	D+	2
				1 514.53 cm^{-1}	78 270.99–79 785.52	5–7	1.14+04	1.04−02	1.12+01	−1.284	D+	2
145		$^3D^\circ$–^3P		*1 424.66* cm^{-1}	*78 691.80–80 116.46*	15–9	1.82+05	8.07−02	2.80+02	0.083	D+	2
				1 420.93 cm^{-1}	78 691.80–80 112.73	7–5	1.57+05	8.33−02	1.35+02	−0.234	C	2
				1 428.84 cm^{-1}	78 691.37–80 120.21	5–3	1.33+05	5.85−02	6.74+01	−0.534	D+	2
				1 431.33 cm^{-1}	78 692.53–80 123.86	3–1	1.72+05	4.21−02	2.90+01	−0.899	D+	2
				1 421.36 cm^{-1}	78 691.37–80 112.73	5–5	2.81+04	2.09−02	2.41+01	−0.981	D+	2
				1 427.68 cm^{-1}	78 692.53–80 120.21	3–3	4.44+04	3.26−02	2.25+01	−1.010	D+	2
				1 420.20 cm^{-1}	78 692.53–80 112.73	3–5	1.89+03	2.34−03	1.62+00	−2.154	D	2
146	$3s^23p^3(^4S^\circ)5d$–$3s^23p^3(^4S^\circ)6f$	$^3D^\circ$–^3F		*1 803.38* cm^{-1}	*78 691.80–80 495.18*	15–21	4.00+05	2.58−01	7.07+02	0.588	C	2
				1 803.38 cm^{-1}	78 691.80–80 495.18	7–9	4.01+05	2.38−01	3.04+02	0.222	C	2
				1 803.81 cm^{-1}	78 691.37–80 495.18	5–7	3.56+05	2.30−01	2.09+02	0.061	C	2
				1 802.65 cm^{-1}	78 692.53–80 495.18	3–5	3.37+05	2.59−01	1.41+02	−0.110	C	2
				1 803.38 cm^{-1}	78 691.80–80 495.18	7–7	4.46+04	2.06−02	2.62+01	−0.841	D+	2
				1 803.81 cm^{-1}	78 691.37–80 495.18	5–5	6.24+04	2.87−02	2.62+01	−0.843	D+	2
				1 803.38 cm^{-1}	78 691.80–80 495.18	7–5	1.78+03	5.88−04	7.50−01	−2.386	E+	2
147	$3s^23p^3(^4S^\circ)5d$–$3s^23p^3(^4S^\circ)8p$	$^3D^\circ$–^3P		*2 304.04* cm^{-1}	*78 691.80–80 995.84*	15–9	1.84+05	3.12−02	6.69+01	−0.330	D+	2
				2 304.23 cm^{-1}	78 691.80–80 996.03	7–5	1.55+05	3.12−02	3.12+01	−0.661	D+	2
				2 304.23 cm^{-1}	78 691.37–80 995.60	5–3	1.38+05	2.34−02	1.67+01	−0.932	D+	2
				2 303.07 cm^{-1}	78 692.53–80 995.60	3–1	1.84+05	1.73−02	7.43+00	−1.285	D	2
				2 304.66 cm^{-1}	78 691.37–80 996.03	5–5	2.77+04	7.81−03	5.57+00	−1.408	D	2
				2 303.07 cm^{-1}	78 692.53–80 995.60	3–3	4.61+04	1.30−02	5.58+00	−1.409	D	2
				2 303.50 cm^{-1}	78 692.53–80 996.03	3–5	1.84+03	8.69−04	3.72−01	−2.584	E+	2
148	$3s^23p^3(^4S^\circ)5d$–$3s^23p^3(^4S^\circ)8f$	$^5D^\circ$–^5F				25–35						2
				3 567.35 cm^{-1}	78 270.10–81 837.45	9–11	7.68+04	1.11−02	9.19+00	−1.000	D	2
				3 566.93 cm^{-1}	78 270.52–81 837.45	7–9	6.41+04	9.70−03	6.27+00	−1.168	D	2
				3 566.46 cm^{-1}	78 270.99–81 837.45	5–7	5.27+04	8.70−03	4.01+00	−1.362	D	2
				3 567.35 cm^{-1}	78 270.10–81 837.45	9–9	1.28+04	1.51−03	1.25+00	−1.867	D	2
				3 566.93 cm^{-1}	78 270.52–81 837.45	7–7	2.31+04	2.72−03	1.75+00	−1.720	D	2
				3 566.46 cm^{-1}	78 270.99–81 837.45	5–5	3.08+04	3.62−03	1.67+00	−1.742	D	2
				3 567.35 cm^{-1}	78 270.10–81 837.45	9–7	1.10+03	1.01−04	8.35−02	−3.041	E	2
				3 566.93 cm^{-1}	78 270.52–81 837.45	7–5	3.07+03	2.59−04	1.67−01	−2.742	E+	2
				3 566.46 cm^{-1}	78 270.99–81 837.45	5–3	5.13+03	3.62−04	1.67−01	−2.742	E+	2
149	$3s^23p^3(^4S^\circ)7s$–$3s^23p^3(^2D^\circ)4p$	$^3S^\circ$–^3P		*204.97* cm^{-1}	79 185.35–*79 390.32*	3–9	4.20+03	4.50−01	2.17+03	0.130	C+	2
				190.45 cm^{-1}	79 185.35–79 375.80	3–5	3.34+03	2.30−01	1.19+03	−0.161	C+	2
				219.95 cm^{-1}	79 185.35–79 405.30	3–3	5.26+03	1.63−01	7.31+02	−0.311	C	2
				232.66 cm^{-1}	79 185.35–79 418.01	3–1	6.29+03	5.81−02	2.46+02	−0.759	C	2
150	$3s^23p^3(^4S^\circ)7s$–$3s^23p^3(^4S^\circ)7p$	$^5S^\circ$–^5P				5–15						2
				727.48 cm^{-1}	79 058.04–79 785.52	5–7	2.87+05	1.14+00	2.57+03	0.756	C+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
151		$^3S^\circ$–^3P		*931.11* cm^{-1}	79 185.35–*80 116.46*	3–9	3.00+05	1.55+00	1.65+03	0.667	C	2
				927.38 cm^{-1}	79 185.35–80 112.73	3–5	3.02+05	8.77−01	9.34+02	0.420	C	2
				934.86 cm^{-1}	79 185.35–80 120.21	3–3	2.98+05	5.11−01	5.39+02	0.186	C	2
				938.51 cm^{-1}	79 185.35–80 123.86	3–1	2.95+05	1.68−01	1.76+02	−0.298	C	2
152	$3s^23p^3(^4S^\circ)7s$–$3s^23p^3(^4S^\circ)8p$	$^3S^\circ$–^3P		*1 810.49* cm^{-1}	79 185.35–*80 995.84*	3–9	9.29+04	1.27−01	6.95+01	−0.419	D+	2
				1 810.68 cm^{-1}	79 185.35–80 996.03	3–5	9.31+04	7.10−02	3.87+01	−0.672	D+	2
				1 810.25 cm^{-1}	79 185.35–80 995.60	3–3	9.29+04	4.25−02	2.31+01	−0.894	D+	2
				1 810.25 cm^{-1}	79 185.35–80 995.60	3–1	9.28+04	1.42−02	7.72+00	−1.371	D	2
153	$3s^23p^3(^4S^\circ)5f$–$3s^23p^3(^4S^\circ)6d$	^5F–$^5D^\circ$				35–25						2
				849.34 cm^{-1}	79 142.81–79 992.15	11–9	1.71+05	2.90−01	1.23+03	0.504	C+	2
				849.51 cm^{-1}	79 142.81–79 992.32	9–7	1.50+05	2.42−01	8.44+02	0.338	C	2
				849.69 cm^{-1}	79 142.81–79 992.50	7–5	1.34+05	1.99−01	5.40+02	0.144	C	2
				849.34 cm^{-1}	79 142.81–79 992.15	9–9	2.33+04	4.84−02	1.68+02	−0.361	C	2
				849.51 cm^{-1}	79 142.81–79 992.32	7–7	4.19+04	8.71−02	2.36+02	−0.215	C	2
				849.69 cm^{-1}	79 142.81–79 992.50	5–5	5.60+04	1.16−01	2.25+02	−0.237	C	2
				849.34 cm^{-1}	79 142.81–79 992.15	7–9	1.55+03	4.15−03	1.12+01	−1.537	D+	2
				849.51 cm^{-1}	79 142.81–79 992.32	5–7	3.99+03	1.16−02	2.25+01	−1.237	D+	2
				849.69 cm^{-1}	79 142.81–79 992.50	3–5	5.60+03	1.94−02	2.25+01	−1.235	D+	2
154		^3F–$^3D^\circ$		*1 039.35* cm^{-1}	*79 144.05–80 183.40*	21–15	1.52+05	1.50−01	1.00+03	0.498	C	2
				1 038.11 cm^{-1}	79 144.05–80 182.16	9–7	1.39+05	1.51−01	4.30+02	0.133	C	2
				1 039.78 cm^{-1}	79 144.05–80 183.83	7–5	1.35+05	1.34−01	2.96+02	−0.028	C	2
				1 041.55 cm^{-1}	79 144.05–80 185.60	5–3	1.52+05	1.26−01	1.99+02	−0.201	C	2
				1 038.11 cm^{-1}	79 144.05–80 182.16	7–7	1.20+04	1.67−02	3.71+01	−0.932	D+	2
				1 039.78 cm^{-1}	79 144.05–80 183.83	5–5	1.69+04	2.34−02	3.70+01	−0.932	D+	2
				1 038.11 cm^{-1}	79 144.05–80 182.16	5–7	3.44+02	6.70−04	1.06+00	−2.475	D	2
155	$3s^23p^3(^4S^\circ)5f$–$3s_23p^3(^4S^\circ)7d$	^5F–$^5D^\circ$				35–25						2
				1 852.47 cm^{-1}	79 142.81–80 995.28	11–9	7.20+04	2.57−02	5.02+01	−0.549	D+	2
				1 852.47 cm^{-1}	79 142.81–80 995.28	9–9	9.81+03	4.29−03	6.85+00	−1.413	D	2
				1 852.47 cm^{-1}	79 142.81–80 995.28	7–9	6.54+02	3.67−04	4.57−01	−2.590	E+	2
156		^3F–$^3D^\circ$		*1 937.84* cm^{-1}	*79 144.05–81 081.89*	21–15	7.81+04	2.23−02	7.95+01	−0.329	D+	2
				1 936.24 cm^{-1}	79 144.05–81 080.29	9–7	7.19+04	2.23−02	3.42+01	−0.697	D+	2
				1 938.41 cm^{-1}	79 144.05–81 082.46	7–5	6.96+04	1.98−02	2.35+01	−0.858	D+	2
				1 940.62 cm^{-1}	79 144.05–81 084.67	5–3	7.83+04	1.87−02	1.58+01	−1.029	D+	2
				1 936.24 cm^{-1}	79 144.05–81 080.29	7–7	6.20+03	2.48−03	2.95+00	−1.760	D	2
				1 938.41 cm^{-1}	79 144.05–81 082.46	5–5	8.69+03	3.47−03	2.94+00	−1.761	D	2
				1 936.24 cm^{-1}	79 144.05–81 080.29	5–7	1.77+02	9.92−05	8.43−02	−3.305	E	2
157	$3s^23p^3(^4S^\circ)5f$–$3s^23p^3(^4S^\circ)8d$	^5F–$^5D^\circ$				35–25						2
				2 485.89 cm^{-1}	79 142.81–81 628.70	11–9	4.04+04	8.01−03	1.16+01	−1.055	D+	2
				2 485.89 cm^{-1}	79 142.81–81 628.70	9–9	5.50+03	1.33−03	1.59+00	−1.922	D	2
				2 485.89 cm^{-1}	79 142.81–81 628.70	7–9	3.67+02	1.14−04	1.06−01	−3.098	E+	2
158		^3F–$^3D^\circ$		*2520.83* cm^{-1}	*79 144.05–81 664.88*	21–15	4.65+04	7.84−03	2.15+01	−0.783	D	2
				2 519.00 cm^{-1}	79 144.05–81 663.05	9–7	4.27+04	7.85−03	9.23+00	−1.151	D	2
				2 521.56 cm^{-1}	79 144.05–81 665.61	7–5	4.14+04	6.97−03	6.37+00	−1.312	D	2
				2 523.88 cm^{-1}	79 144.05–81 667.93	5–3	4.65+04	6.57−03	4.28+00	−1.483	D	2
				2 519.00 cm^{-1}	79 144.05–81 663.05	7–7	3.68+03	8.71−04	7.96−01	−2.215	E+	2
				2 521.56 cm^{-1}	79 144.05–81 665.61	5–5	5.16+03	1.22−03	7.94−01	−2.215	E+	2
				2 519.00 cm^{-1}	79 144.05–81 663.05	5–7	1.05+02	3.47−05	2.27−02	−3.761	E	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
159	$3s^23p^3(^4S^\circ)5f-3s^23p^3(^4S^\circ)9d$	$^5F-^5D^\circ$				35–25						2
				2 910.93 cm^{-1}	79 142.81–82 053.74	11–9	2.54+04	3.68−03	4.58+00	−1.393	D	2
				2 910.93 cm^{-1}	79 142.81–82 053.74	9–9	3.47+03	6.13−04	6.24−01	−2.258	E+	2
				2 910.93 cm^{-1}	79 142.81 82 053.74	7–9	2.31+02	5.26−05	4.16−02	−3.434	E	2
160	$3s^23p^3(^4S^\circ)5f-3S^23P^3(^4s^\circ)10d$	$^5F-^5D^\circ$				35–25						2
				3 210.3 cm^{-1}	79 142.81–82353.1	11–9	1.72+04	2.05−03	2.31+00	−1.647	D	2
				3 210.3 cm^{-1}	79 142.81–82353.1	9–9	2.35+03	3.41−04	3.15−01	−2.513	E+	2
				3 210.3 cm^{-1}	79 142.81–82353.1	7–9	1.57+02	2.93−05	2.10−02	−3.688	E	2
161	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)6d$	$^5P-^5D^\circ$				15–25						2
				206.63 cm^{-1}	79 785.52–79 992.15	7–9	1.31+04	5.93−01	6.61+03	0.618	C+	2
				206.80 cm^{-1}	79 785.52–79 992.32	7–7	4.39+03	1.54−01	1.71+03	0.033	C+	2
				206.98 cm^{-1}	79 785.52–79 992.50	7–5	8.81+02	2.20−02	2.45+02	−0.812	C	2
162	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)8s$	$^5P-^5S^\circ$				15–5						2
				663.58 cm^{-1}	79 785.52–80 449.10	7–5	2.49+05	6.04−01	2.09+03	0.626	C+	2
163		$^3P-^3S^\circ$		*405.00* cm^{-1}	*80 116.46*–80 521.46	9–3	1.72+05	5.24−01	3.83+03	0.674	C+	2
				408.73 cm^{-1}	80 112.73–80 521.46	5–3	9.88+04	5.32−01	2.14+03	0.425	C+	2
				401.25 cm^{-1}	80 120.21–80 521.46	3–3	5.57+04	5.18−01	1.27+03	0.191	C+	2
				397.60 cm^{-1}	80 123.86–80 521.46	1–3	1.80+04	5.12−01	4.23+02	−0.291	C	2
164	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)7d$	$^5P-^5D^\circ$				15–25						2
				1 209.76 cm^{-1}	79 785.52–80 995.28	7–9	1.14+05	1.50−01	2.86+02	0.021	C	2
165	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)9s$	$^5P-^5S^\circ$				15–5						2
				1 496.04 cm^{-1}	79 785.52–81 281.56	7–5	1.02+05	4.87−02	7.49+01	−0.467	D+	2
166		$^3P-^3S^\circ$		*1 210.35* cm^{-1}	*80 116.46*–81 326.81	9–3	2.54+04	8.65−03	2.12+01	−1.109	D+	2
				1 214.08 cm^{-1}	80 112.73–81 326.81	5–3	1.50+04	9.15−03	1.24+01	−1.340	D+	2
				1 206.60 cm^{-1}	80 120.21–81 326.81	3–3	7.93+03	8.17−03	6.68+00	−1.611	D	2
				1 202.95 cm^{-1}	80 123.86–81 326.81	1–3	2.47+03	7.69−03	2.10+00	−2.114	D	2
167	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)8d$	$^5P-^5D^\circ$				15–25						2
				1 843.18 cm^{-1}	79 785.52–81 628.70	7–9	1.02+05	5.78−02	7.22+01	−0.393	D+	2
168		$^3P-^3D^\circ$		*1548.42* cm^{-1}	*80 116.46–81 664.88*	9–15	1.28+05	1.34−01	2.56+02	0.081	D+	2
				1 550.32 cm^{-1}	80 112.73–81 663.05	5–7	1.30+05	1.13−01	1.20+02	−0.248	C	2
				1 545.40 cm^{-1}	80 120.21–81 665.61	3–5	9.55+04	9.99−02	6.38+01	−0.523	D+	2
				1 544.07 cm^{-1}	80 123.86–81 667.93	1–3	7.00+04	1.32−01	2.81+01	−0.879	D+	2
				1 552.88 cm^{-1}	80 112.73–81 665.61	5–5	3.24+04	2.01−02	2.13+01	−0.998	D+	2
				1 547.72 cm^{-1}	80 120.21–81 667.93	3–3	5.29+04	3.31−02	2.11+01	−1.003	D+	2
				1 555.20 cm^{-1}	80 112.73–81 667.93	5–3	3.58+03	1.33−03	1.40+00	−2.177	D	2
169	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)10s$	$^5P-^5S^\circ$				15–5						2
				2 033.68 cm^{-1}	79 785.52–81 819.20	7–5	6.02+04	1.56−02	1.76+01	−0.962	D+	2
170		$^3P-^3S^\circ$		*1 733.22* cm^{-1}	*80 116.46*–81 849.68	9–3	1.29+04	2.15−03	3.68+00	−1.713	D	2
				1 736.95 cm^{-1}	80 112.73–81 849.68	5–3	7.70+03	2.30−03	2.17+00	−1.939	D	2
				1 729.47 cm^{-1}	80 120.21–81 849.68	3–3	4.05+03	2.03−03	1.15+00	−2.215	D	2
				1 725.82 cm^{-1}	80 123.86–81 849.68	1–3	1.25+03	1.89−03	3.60−01	−2.724	E+	2
171	$3s^23p^3(^4S^\circ)7p-3s^23p^3(^4S^\circ)9d$	$^5P-^5D^\circ$				15–25						2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				2 268.22 cm^{-1}	79 785.52–82 053.74	7–9	7.84+04	2.94−02	2.98+01	−0.687	D+	2
172		^{3}P–^{3}D°		*1 946.91* cm^{-1}	*80 116.46–82 063.37*	9–15	9.92+04	6.54−02	9.95+01	−0.230	D+	2
				1 948.97 cm^{-1}	80 112.73–82 061.70	5–7	1.00+05	5.55−02	4.68+01	−0.557	D+	2
				1 943.19 cm^{-1}	80 120.21–82 063.40	3–5	7.36+04	4.87−02	2.47+01	−0.835	D+	2
				1 943.36 cm^{-1}	80 123.86–82 067.22	1–3	5.41+04	6.44−02	1.09+01	−1.191	D+	2
				1 950.67 cm^{-1}	80 112.73–82 063.40	5–5	2.51+04	9.90−03	8.35+00	−1.305	D	2
				1 947.01 cm^{-1}	80 120.21–82 067.22	3–3	4.10+04	1.62−02	8.22+00	−1.313	D	2
				1 954.49 cm^{-1}	80 112.73–82 067.22	5–3	2.80+03	6.59−04	5.55−01	−2.482	E+	2
173	$3s^23p^3(^4S°)7p–3s^23p^3(^4S°)10d$	^{5}P–^{5}D°				15–25						2
				2 567.6 cm^{-1}	79 785.52–82353.1	7–9	5.97+04	1.74−02	1.56+01	−0.914	D+	2
174		^{3}P–^{3}D°		*2 235.33* cm^{-1}	*80 116.46–82 351.79*	9–15	7.64+04	3.82−02	5.06+01	−0.464	D+	2
				2 238.04 cm^{-1}	80 112.73–82 350.77	5–7	7.74+04	3.24−02	2.38+01	−0.790	D+	2
				2 232.14 cm^{-1}	80 120.21–82 352.35	3–5	5.66+04	2.84−02	1.25+01	−1.070	D+	2
				2 229.39 cm^{-1}	80 123.86–82 353.25	1–3	4.17+04	3.77−02	5.57+00	−1.424	D	2
				2 239.62 cm^{-1}	80 112.73–82 352.35	5–5	1.94+04	5.81−03	4.27+00	−1.537	D	2
				2 233.04 cm^{-1}	80 120.21–82 353.25	3–3	3.17+04	9.53−03	4.21+00	−1.544	D	2
				2 240.52 cm^{-1}	80 112.73–82 353.25	5–3	2.18+03	3.90−04	2.86−01	−2.710	E+	2
175	$3s^23p^3(^4S°)6d–3s^23p^3(^4S°)6f$	^{5}D°–^{5}F				25–35						2
				502.16 cm^{-1}	79 992.15–80 494.31	9–11	2.02+05	1.47+00	8.67+03	1.122	C+	2
				501.99 cm^{-1}	79 992.32–80 494.31	7–9	1.68+05	1.29+00	5.91+03	0.956	C+	2
				501.81 cm^{-1}	79 992.50–80 494.31	5–7	1.38+05	1.15+00	3.78+03	0.760	C+	2
				502.16 cm^{-1}	79 992.15–80 494.31	9–9	3.37+04	2.00−01	1.18+03	0.255	C+	2
				501.99 cm^{-1}	79 992.32–80 494.31	7–7	6.06+04	3.61−01	1.65+03	0.403	C+	2
				501.81 cm^{-1}	79 992.50–80 494.31	5–5	8.08+04	4.81−01	1.57+03	0.381	C+	2
				502.16 cm^{-1}	79 992.15–80 494.31	9–7	2.89+03	1.34−02	7.88+01	−0.919	D+	2
				501.99 cm^{-1}	79 992.32–80 494.31	7–5	8.08+03	3.44−02	1.57+02	−0.618	C	2
				501.81 cm^{-1}	79 992.50–80 494.31	5–3	1.35+04	4.81−02	1.57+02	−0.619	C	2
176		^{3}D°–^{3}F		*311.78* cm^{-1}	*80 183.40–80 495.18*	15–21	5.50+04	1.19+00	1.88+04	1.252	C+	2
				313.02 cm^{-1}	80 182.16–80 495.18	7–9	5.56+04	1.09+00	8.05+03	0.883	C+	2
				311.35 cm^{-1}	80 183.83–80 495.18	5–7	4.87+04	1.06+00	5.57+03	0.724	C+	2
				309.58 cm^{-1}	80 185.60–80 495.18	3–5	4.53+04	1.18+00	3.77+03	0.549	C+	2
				313.02 cm^{-1}	80 182.16–80 495.18	7–7	6.18+03	9.46−02	6.96+02	−0.179	C	2
				311.35 cm^{-1}	80 183.83–80 495.18	5–5	8.53+03	1.32−01	6.97+02	−0.180	C	2
				313.02 cm^{-1}	80 182.16–80 495.18	7–5	2.47+02	2.70−03	1.98+01	−1.724	D+	2
177	$3s^23p^3(^4S°)6d–3s^23p^3(^4S°)8p$	^{3}D°–^{3}P		*812.44* cm^{-1}	*80 183.40–80 995.84*	15–9	1.69+05	2.31−01	1.40+03	0.540	C	2
				813.87 cm^{-1}	80 182.16–80 996.03	7–5	1.42+05	2.30−01	6.51+02	0.207	C	2
				811.77 cm^{-1}	80 183.83–80 995.60	5–3	1.27+05	1.74−01	3.52+02	−0.060	C	2
				810.00 cm^{-1}	80 185.60–80 995.60	3–1	1.70+05	1.29−01	1.57+02	−0.412	C	2
				812.20 cm^{-1}	80 183.83–80 996.03	5–5	2.54+04	5.77−02	1.17+02	−0.540	C	2
				810.00 cm^{-1}	80 185.60–80 995.60	3–3	4.24+04	9.69−02	1.18+02	−0.537	C	2
				810.43 cm^{-1}	80 185.60–80 996.03	3–5	1.69+03	6.44−03	7.84+00	−1.714	D	2
178	$3s^23p^3(^4S°)6d–3s^23p^3(^4S°)7f$	^{3}D°–^{3}F		*1 126.17* cm^{-1}	*80 183.40–81 309.57*	15–21	8.21+04	1.36−01	5.96+02	0.310	C	2
				1 127.41 cm^{-1}	80 182.16–81 309.57	7–9	8.19+04	1.24−01	2.53+02	−0.061	C	2
				1 125.74 cm^{-1}	80 183.83–81 309.57	5–7	7.31+04	1.21−01	1.77+02	−0.218	C	2
				1 123.97 cm^{-1}	80 185.60–81 309.57	3–5	6.96+04	1.38−01	1.21+02	−0.383	C	2
				1 127.41 cm^{-1}	80 182.16–81 309.57	7–7	9.10+03	1.07−02	2.19+01	−1.126	D+	2
				1 125.74 cm^{-1}	80 183.83–81 309.57	5–5	1.28+04	1.51−02	2.21+01	−1.122	D+	2
				1 127.41 cm^{-1}	80 182.16–81 309.57	7–5	3.64+02	3.07−04	6.26−01	−2.668	E+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
179	$3s^23p^3(^4S^\circ)8s-3s^23p^3(^4S^\circ)8p$	$^3S^\circ-^3P$		*474.38* cm^{-1}	80 521.46–*80 995.84*	3–9	1.35+05	2.69+00	5.60+03	0.907	C+	2
				474.57 cm^{-1}	80 521.46–80 996.03	3–5	1.35+05	1.50+00	3.11+03	0.653	C+	2
				474.14 cm^{-1}	80 521.46–80 995.60	3–3	1.35+05	9.00−01	1.87+03	0.431	C+	2
				474.14 cm^{-1}	80 521.46–80 995.60	3–1	1.35+05	2.99−01	6.23+02	−0.047	C	2
180	$3s^23p^3(^4S^\circ)6f-3s^23p^3(^4S^\circ)7d$	$^5F-^5D^\circ$				35–25						2
				500.97 cm^{-1}	80 494.31–80 995.28	11–9	9.34+04	4.57−01	3.30+03	0.701	C+	2
				500.97 cm^{-1}	80 494.31–80 995.28	9–9	1.27+04	7.61−02	4.49+02	−0.164	C	2
				500.97 cm^{-1}	80 494.31–80 995.28	7–9	8.49+02	6.52−03	2.99+01	−1.341	D+	2
181		$F^3-^3D^\circ$		*586.71* cm^{-1}	*80 495.18–81 081.89*	21–15	8.99+04	2.80−01	3.30+03	0.769	C	2
				585.11 cm^{-1}	80 495.18–81 080.29	9–7	8.25+04	2.81−01	1.42+03	0.403	C+	2
				587.28 cm^{-1}	80 495.18–81 082.46	7–5	8.01+04	2.49−01	9.75+02	0.241	C	2
				589.49 cm^{-1}	80 495.18–81 084.67	5–3	9.04+04	2.34−01	6.53+02	0.068	C	2
				585.11 cm^{-1}	80 495.18–81 080.29	7–7	7.13+03	3.12−02	1.23+02	−0.661	C	2
				587.28 cm^{-1}	80 495.18–81 082.46	5–5	1.00+04	4.35−02	1.22+02	−0.663	C	2
				585.11 cm^{-1}	80 495.18–81 080.29	5–7	2.03+02	1.25−03	3.50+00	−2.204	D	2
182	$3s^23p^3(^4S^\circ)6f-3s^23p^3(^4S^\circ)8d$	$^5F-^5D^\circ$				35–25						2
				1 134.39 cm^{-1}	80 494.31–81 628.70	11–9	4.23+04	4.03−02	1.28+02	−0.353	C	2
				1134.39 cm^{-1}	80 494.31–81 628.70	9–9	5.76+03	6.72−03	1.75+01	−1.218	D+	2
				1 134.39 cm^{-1}	80 494.31–81 628.70	7–9	3.85+02	5.76−04	1.17+00	−2.394	D	2
183		$^3F-^3D^\circ$		*1 169.70* cm^{-1}	*80 495.18–81 664.88*	21–15	4.88+04	3.82−02	2.26+02	−0.096	D+	2
				1 167.87 cm^{-1}	80 495.18–81 663.05	9–7	4.47+04	3.82−02	9.70+01	−0.464	D+	2
				1 170.43 cm^{-1}	80 495.18–81 665.61	7–5	4.34+04	3.39−02	6.68+01	−0.625	D+	2
				1 172.75 cm^{-1}	80 495.18–81 667.93	5–3	4.89+04	3.20−02	4.49+01	−0.796	D+	2
				1 167.87 cm^{-1}	80 495.18–81 663.05	7–7	3.87+03	4.25−03	8.38+00	−1.527	D	2
				1 170.43 cm^{-1}	80 495.18–81 665.61	5–5	5.43+03	5.94−03	8.35+00	−1.527	D	2
				1 167.87 cm^{-1}	80 495.18–81 663.05	5–7	1.10+02	1.70−04	2.39−01	−3.071	E+	2
184	$3s^23p^3(^4S^\circ)6f-3s^23p^3(^4S^\circ)9d$	$^5F-^5D^\circ$				35–25						2
				1 559.43 cm^{-1}	80 494.31–82 053.74	11–9	2.52+04	1.27−02	2.94+01	−0.855	D+	2
				1 559.43 cm^{-1}	80 494.31–82 053.74	9–9	3.43+03	2.12−03	4.01+00	−1.719	D	2
				1 559.43 cm^{-1}	80 494.31–82 053.74	7–9	2.29+02	1.81−04	2.68−01	−2.897	E+	2
185		$^3F-^3D^\circ$		*1 568.19* cm^{-1}	*80 495.18–82 063.37*	21–15	2.95+04	1.29−02	5.67+01	−0.567	D+	2
				1 566.52 cm^{-1}	80 495.18–82 061.70	9–7	2.71+04	1.29−02	2.43+01	−0.935	D+	2
				1 568.22 cm^{-1}	80 495.18–82 063.40	7–5	2.64+04	1.15−02	1.68+01	−1.094	D+	2
				1 572.04 cm^{-1}	80 495.18–82 067.22	5–3	2.99+04	1.09−02	1.13+01	−1.264	D+	2
				1 566.52 cm^{-1}	80 495.18–82 061.70	7–7	2.34+03	1.43−03	2.10+00	−2.000	D	2
				1 568.22 cm^{-1}	80 495.18–82 063.40	5–5	3.29+03	2.01−03	2.10+00	−1.998	D	2
				1 566.52 cm^{-1}	80 495.18–82 061.70	5–7	6.68+01	5.71−05	6.00−02	−3.544	E	2
186	$3s^23p^3(^4S^\circ)6f-3s^23p^3(^4S^\circ)10d$	$^5F-^5D^\circ$				35–25						2
				1 858.8 cm^{-1}	80 494.31–82 353.1	11–9	1.66+04	5.89−03	1.14+01	−1.188	D+	2
				1 858.8 cm^{-1}	80 494.31–82 353.1	9–9	2.26+03	9.82−04	1.56+00	−2.054	D	2
				1 858.8 cm^{-1}	80 494.31–82 353.1	7–9	1.51+02	8.41−05	1.04−01	−3.230	E+	2
187		$^3F-^3D^\circ$		*1 856.61* cm^{-1}	*80 495.18–82 351.79*	21–15	1.92+04	5.96−03	2.22+01	−0.903	D	2
				1 855.59 cm^{-1}	80 495.18–82 350.77	9–7	1.75+04	5.93−03	9.46+00	−1.273	D	2
				1 857.17 cm^{-1}	80 495.18–82 352.35	7–5	1.71+04	5.30−03	6.58+00	−1.431	D	2
				1 858.07 cm^{-1}	80 495.18–82 353.25	5–3	1.94+04	5.07−03	4.48+00	−1.596	D	2
				1 855.59 cm^{-1}	80 495.18–82 350.77	7–7	1.51+03	6.58−04	8.17−01	−2.337	E+	2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 857.17 cm^{-1}	80 495.18–82 352.35	5–5	2.13+03	9.27−04	8.21−01	−2.334	E+	2
				1 855.59 cm^{-1}	80 495.18–82 350.77	5–7	4.31+01	2.62−05	2.32−02	−3.883	E	2
188	$3s^23p^3(^4S^°)7d–3s^23p^3(^4S^°)7f$	$^5D^°–^5F$				25–35						2
				313.56 cm^{-1}	80 995.28–81 308.84	9–11	9.44+04	1.76+00	1.66+04	1.200	C+	2
				313.56 cm^{-1}	80 995.28–81 308.84	9–9	1.57+04	2.40−01	2.26+03	0.334	C+	2
				313.56 cm^{-1}	80 995.28–81 308.84	9–7	1.35+03	1.60−02	1.51+02	−0.842	C	2
189		$^3D^°–^3F$		*227.68* cm^{-1}	*81 081.89–81 309.57*	15–21	4.09+04	1.66+00	3.59+04	1.396	C+	2
				229.28 cm^{-1}	81 080.29–81 309.57	7–9	4.18+04	1.53+00	1.54+04	1.030	C+	2
				227.11 cm^{-1}	81 082.46–81 309.57	5–7	3.62+04	1.47+00	1.06+04	0.866	C+	2
				224.90 cm^{-1}	81 084.67–81 309.57	3–5	3.33+04	1.65+00	7.22+03	0.695	C+	2
				229.28 cm^{-1}	81 080.29–81 309.57	7–7	4.64+03	1.32−01	1.33+03	−0.034	C+	2
				227.11 cm^{-1}	81 082.46–81 309.57	5–5	6.34+03	1.84−01	1.33+03	−0.036	C+	2
				229.28 cm^{-1}	81 080.29–81 309.57	7–5	1.86+02	3.78−03	3.80+01	−1.577	D+	2
190	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)9s$	$^3P–^3S^°$		*330.97* cm^{-1}	*80 995.84*–81 326.81	9–3	1.74+05	7.94−01	7.11+03	0.854	C+	2
				330.78 cm^{-1}	80 996.03–81 326.81	5–3	9.66+04	7.94−01	3.95+03	0.599	C+	2
				331.21 cm^{-1}	80 995.60–81 326.81	3–3	5.82+04	7.95−01	2.37+03	0.377	C+	2
				331.21 cm^{-1}	80 995.60–81 326.81	1–3	1.94+04	7.94−01	7.89+02	−0.100	C	2
191	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)8d$	$^3P–^3D^°$		*669.04* cm^{-1}	*80 995.84–81 664.88*	9–15	5.48+04	3.06−01	1.36+03	0.440	C	2
				667.02 cm^{-1}	80 996.03–81 663.05	5–7	5.56+04	2.63−01	6.47+02	0.119	C	2
				670.01 cm^{-1}	80 995.60–81 665.61	3–5	4.09+04	2.28−01	3.35+02	−0.165	C	2
				672.33 cm^{-1}	80 995.60–81 667.93	1–3	2.98+04	2.97−01	1.45+02	−0.527	C	2
				669.58 cm^{-1}	80 996.03–81 665.61	5–5	1.37+04	4.57−02	1.12+02	−0.641	C	2
				672.33 cm^{-1}	80 995.60–81 667.93	3–3	2.24+04	7.42−02	1.09+02	−0.652	C	2
				671.90 cm^{-1}	80 996.03–81 667.93	5–3	1.50+03	2.98−03	7.30+00	−1.827	D	2
192	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)10s$	$^3P–^3S^°$		*853.84* cm^{-1}	*80 995.84*–81 849.68	9–3	5.68+04	3.89−02	1.35+02	−0.456	D+	2
				853.65 cm^{-1}	80 996.03–81 849.68	5–3	3.15+04	3.89−02	7.50+01	−0.711	D+	2
				854.08 cm^{-1}	80 995.60–81 849.68	3–3	1.90+04	3.91−02	4.51+01	−0.931	D+	2
				854.08 cm^{-1}	80 995.60–81 849.68	1–3	6.33+03	3.90−02	1.50+01	−1.409	D+	2
193	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)9d$	$^3P–^3D^°$		*1 067.53* cm^{-1}	*80 995.84–82 063.37*	9–15	5.65+04	1.24−01	3.44+02	0.048	D+	2
				1 065.67 cm^{-1}	80 996.03–82 061.70	5–7	5.73+04	1.06−01	1.63+02	−0.276	C	2
				1 067.80 cm^{-1}	80 995.60–82 063.40	3–5	4.22+04	9.24−02	8.54+01	−0.557	D+	2
				1 071.62 cm^{-1}	80 995.60–82 067.22	1–3	3.09+04	1.21−01	3.71+01	−0.917	D+	2
				1 067.37 cm^{-1}	80 996.03–82 063.40	5–5	1.41+04	1.85−02	2.85+01	−1.034	D+	2
				1 071.62 cm^{-1}	80 995.60–82 067.22	3–3	2.32+04	3.03−02	2.79+01	−1.041	D+	2
				1 071.19 cm^{-1}	80 996.03–82 067.22	5–3	1.55+03	1.21−03	1.86+00	−2.218	D	2
194	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)11s$	$^3P–^3S^°$		*1 212.33* cm^{-1}	*80 995.84–82 208.17*	9–3	3.33+04	1.13−02	2.76+01	−0.993	D+	2
				1 212.14 cm^{-1}	80 996.03–82 208.17	5–3	1.85+04	1.13−02	1.53+01	−1.248	D+	2
				1 212.57 cm^{-1}	80 995.60–82 208.17	3–3	1.12+04	1.14−02	9.26+00	−1.466	D	2
				1 212.57 cm^{-1}	80 995.60–82 208.17	1–3	3.71+03	1.14−02	3.08+00	−1.943	D	2
195	$3s^23p^3(^4S^°)8p–3s^23p^3(^4S^°)10d$	$^3P–^3D^°$		*1 355.95* cm^{-1}	*80 995.84–82 351.79*	9–15	4.92+04	6.69−02	1.46+02	−0.220	D+	2
				1 354.74 cm^{-1}	80 996.03–82 350.77	5–7	4.98+04	5.70−02	6.92+01	−0.545	D+	2
				1 356.75 cm^{-1}	80 995.60–82 352.35	3–5	3.67+04	4.99−02	3.63+01	−0.825	D+	2
				1 357.65 cm^{-1}	80 995.60–82 353.25	1–3	2.68+04	6.54−02	1.58+01	−1.184	D+	2
				1 356.32 cm^{-1}	80 996.03–82 352.35	5–5	1.23+04	9.99−03	1.21+01	−1.301	D+	2
				1 357.65 cm^{-1}	80 995.60–82 353.25	3–3	2.01+04	1.64−02	1.19+01	−1.308	D+	2
				1 357.22 cm^{-1}	80 996.03–82 353.25	5–3	1.34+03	6.55−04	7.93−01	−2.485	E+	2
196	$3s^23p^3(^4S^°)7f–3s^23p^3(^4S^°)8d$	$^5F–^5D^°$				35–25						2

TABLE 2. Transition probabilities of allowed lines for S I—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				319.86 cm^{-1}	81 308.84–81 628.70	11–9	5.20+04	6.24−01	7.06+03	0.837	C+	2
				319.86 cm^{-1}	81 308.84–81 628.70	9–9	7.09+03	1.04−01	9.62+02	−0.029	C	2
				319.86 cm^{-1}	81 308.84–81 628.70	7–9	4.73+02	8.91−03	6.42+01	−1.205	D+	2
197		^{3}F–^{3}D°		*355.31* cm^{-1}	*81 309.57–81 664.88*	21–15	5.13+04	4.35−01	8.47+03	0.961	C+	2
				353.48 cm^{-1}	81 309.57–81 663.05	9–7	4.70+04	4.38−01	3.67+03	0.596	C+	2
				356.04 cm^{-1}	81 309.57–81 665.61	7–5	4.58+04	3.87−01	2.50+03	0.433	C+	2
				358.36 cm^{-1}	81 309.57–81 667.93	5–3	5.19+04	3.63−01	1.66+03	0.259	C+	2
				353.48 cm^{-1}	81 309.57–81 663.05	7–7	4.06+03	4.87−02	3.17+02	−0.467	C	2
				356.04 cm^{-1}	81 309.57–81 665.61	5–5	5.73+03	6.78−02	3.13+02	−0.470	C	2
				353.48 cm^{-1}	81 309.57–81 663.05	5–7	1.16+02	1.95−03	9.07+00	−2.011	D	2
198	$3s^23p^3(^4S°)7f–3s^23p^3(^4S°)9d$	^{5}F–^{5}D°				35–25						2
				744.90 cm^{-1}	81 308.84–82 053.74	11–9	2.48+04	5.48−02	2.66+02	−0.220	C	2
				744.90 cm^{-1}	81 308.84–82 053.74	9–9	3.38+03	9.12−03	3.62+01	−1.086	D+	2
				744.90 cm^{-1}	81 308.84–82 053.74	7–9	2.25+02	7.82−04	2.41+00	−2.262	D	2
199		^{3}F–^{3}D°		*753.80* cm^{-1}	*81 309.57–82 063.37*	21–15	2.86+04	5.38−02	4.94+02	0.053	C	2
				752.13 cm^{-1}	81 309.57–82 061.70	9–7	2.61+04	5.38−02	2.12+02	−0.315	C	2
				753.83 cm^{-1}	81 309.57–82 063.40	7–5	2.54+04	4.79−02	1.46+02	−0.475	C	2
				757.65 cm^{-1}	81 309.57–82 067.22	5–3	2.90+04	4.54−02	9.86+01	−0.644	D+	2
				752.13 cm^{-1}	81 309.57–82 061.70	7–7	2.26+03	5.98−03	1.83+01	−1.378	D+	2
				753.83 cm^{-1}	81 309.57–82 063.40	5–5	3.18+03	8.38−03	1.83+01	−1.378	D+	2
				752.13 cm^{-1}	81 309.57–82 061.70	5–7	6.45+01	2.39−04	5.23−01	−2.923	E+	2
200	$3s^23p^3(^4S°)7f–3s^23p^3(^4S°)10d$	^{5}F–^{5}D°				35–25						2
				1 044.3 cm^{-1}	81 308.84–82 353.1	11–9	1.54+04	1.74−02	6.02+01	−0.718	D+	2
				1 044.3 cm^{-1}	81 308.84–82 353.1	9–9	2.10+03	2.89−03	8.20+00	−1.585	D	2
				1 044.3 cm^{-1}	81 308.84–82 353.1	7–9	1.40+02	2.48−04	5.47−01	−2.760	E+	2
201		^{3}F–^{3}D°		*1 042.22* cm^{-1}	*81 309.57–82 351.79*	21–15	1.77+04	1.75−02	1.16+02	−0.435	D+	2
				1 041.20 cm^{-1}	81 309.57–82 350.77	9–7	1.62+04	1.74−02	4.95+01	−0.805	D+	2
				1 042.78 cm^{-1}	81 309.57–82 352.35	7–5	1.58+04	1.56−02	3.44+01	−0.962	D+	2
				1 043.68 cm^{-1}	81 309.57–82 353.25	5–3	1.80+04	1.49−02	2.34+01	−1.128	D+	2
				1 041.20 cm^{-1}	81 309.57–82 350.77	7–7	1.40+03	1.93−03	4.27+00	−1.869	D	2
				1 042.78 cm^{-1}	81 309.57–82 352.35	5–5	1.98+03	2.72−03	4.30+00	−1.866	D	2
				1 041.20 cm^{-1}	81 309.57–82 350.77	5–7	3.99+01	7.73−05	1.22−01	−3.413	E+	2
202	$3s^23p^3(^4S°)8d–3s^23p^3(^4S°)8f$	^{5}D°–^{5}F				25–35						2
				208.75 cm^{-1}	81 628.70–81 837.45	9–11	4.83+04	2.03+00	2.88+04	1.262	C+	2
				208.75 cm^{-1}	81 628.70–81 837.45	9–9	8.04+03	2.77−01	3.92+03	0.397	C+	2
				208.75 cm^{-1}	81 628.70–81 837.45	9–7	6.89+02	1.84−02	2.61+02	−0.781	C	2
203	$3s^23p^3(^4S°)8f–3s^23p^3(^4S°)9d$	^{5}F–^{5}D°				35–25						2
				216.29 cm^{-1}	81 837.45–82 053.74	11–9	3.01+04	7.90−01	1.32+04	0.939	C+	2
				216.29 cm^{-1}	81 837.45–82 053.74	9–9	4.11+03	1.32−01	1.80+03	0.075	C+	2
				216.29 cm^{-1}	81 837.45–82 053.74	7–9	2.74+02	1.13−02	1.20+02	−1.102	C	2
204	$3s^23p^3(^4S°)8f–3s^23p^3(^4S°)10d$	^{5}F–^{5}D°				35–25						2
				515.7 cm^{-1}	81 837.45–82 353.1	11–9	1.50+04	6.90−02	4.84+02	−0.120	C	2
				515.7 cm^{-1}	81 837.45–82 353.1	9–9	2.04+03	1.15−02	6.60+01	−0.985	D+	2
				515.7 cm^{-1}	81 837.45–82 353.1	7–9	1.36+02	9.85−04	4.40+00	−2.161	D	2

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.

[b]Ref. 1 = Froese Fischer *et al.* (2006); Ref. 2 = Zatsarinny and Bartschat (2006); Ref. 3 = Beideck *et al.* (1994); Ref. 4 = Zerne *et al.* (1997); Ref. 5 = Biémont *et al.* (1998); Ref. 6 = Müller (1968); Ref. 7 = Biémont *et al.* (1996).

References for Allowed Transitions of S I

Beideck, D. J., R. M. Schectman, S. R. Federman, and D. G. Ellis, 1994, Astrophys. J. **428**, 393.

Berzinsh, U., L. Caiyan, R. Zerne, S. Svanberg, and E. Biémont, 1997, Phys. Rev. A **55**, 1836.

Biémont, E., H. P. Garnir, S. R. Federman, Z. S. Li, and S. Svanberg, 1998, Astrophys. J. **502**, 1010.

Biémont, E., P. J. Storey, and C. J. Zeippen, 1996, Astron. Astrophys. **309**, 991.

Delalic, Z., P. Erman, and E. Kaellne, 1990, Phys. Scr. **42**, 540.

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Li, Z. S., A. Persson, S. Svanberg, H. P. Garnir, and E. Biémont, 1998, Eur. Phys. J. D. **2**, 11.

Müller, D., 1968, Z. Naturforsch. A **23**, 1707.

Wiese, W. L., M. W. Smith, and B. M. Miles, 1969, *Atomic Transition Probabilities* Natl. Bur Stand. Ref. Data Set. Natl. Bur. Stand. (U.S.) Circ. No. 22 (U.S. GPO, Washington, D.C.), Vol. II.

Zatsarinny, O. and K. Bartschat, 2006, J. Phys. B **39**, 2861.

Zerne, R., L. Caiyan, U. Berzinsh, and S. Svanberg, 1997, Phys. Scr. **56**, 459.

4.1.2. Forbidden Transitions for S I

The magnetic dipole (M1) and electric quadrupole (E2) transition rates between ground-state terms were taken from the MCHF calculations with the BP corrections (Froese Fischer *et al.*, 2006). A wavelength finding list of forbidden lines for S I is given in Table 3, and the transition probabilities for these lines are provided in Table 4.

TABLE 3. Wavelength finding list for forbidden lines of S I

Wavelength (air) (Å)	Mult. No.
4 507.311	3
4 589.261	3
7 725.046	4
10 821.176	2
11 305.854	2
11 537.564	2
Wave number (cm^{-1})	**Mult. No.**
573.640	1
396.055	1
177.585	1

TABLE 4. Transition probabilities of forbidden lines for S I

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s^23p^4-3s^23p^4$	$^3P-^3P$									
				573.640 cm^{-1}	0.000–573.640	5–1	E2	7.05−08	1.01+01	B	1
				396.055 cm^{-1}	0.000–396.055	5–3	M1	1.40−03	2.49+00	B	1
				396.055 cm^{-1}	0.000–396.055	5–3	E2	8.27−09	2.27+01	B	1
				177.585 cm^{-1}	396.055–573.640	3–1	M1	3.02−04	1.99+00	B	1
2		$^3P-^1D$									
			11 537.564	11 540.722	573.640–9 238.609	1–5	E2	2.78−06	2.54−03	D	1
			11 305.854	11 308.950	396.055–9 238.609	3–5	M1	6.20−03	1.66−03	D	1
			11 305.854	11 308.950	396.055–9 238.609	3–5	E2	1.87−05	1.54−02	C	1
			10 821.176	10 824.140	0.000–9 238.609	5–5	M1	2.12−02	4.98−03	E	1
			10 821.176	10 824.140	0.000–9 238.609	5–5	E2	1.38−04	9.15−02	C	1
3		$^3P-^1S$									
			4 507.311	4 508.576	0.000–22 179.954	5–1	E2	4.87−03	8.10−03	D	1
			4 589.261	4 590.546	396.055–22 179.954	3–1	M1	2.98−01	1.06−03	D	1
4		$^1D-^1S$									
			7 725.046	7 727.172	9 238.609–22 179.954	5–1	E2	1.38+00	3.39+01	B	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006).

References for Forbidden Transitions of S I

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.2. S II

$Z=16$
Phosphorus Isoelectronic Sequence
Ground State: $1s^22s^22p^63s^23p^3\ {}^2P_2^{\circ}$
Ionization Energy: 188 232.7 cm^{-1} (23.337 88 eV)

4.2.1. Allowed Transitions for S II

For transition arrays between low configurations, line strengths were taken from the work of Irimia and Froese Fischer (2005). They used the MCHF method with BP corrections. Energy level values were adjusted as well.

Oscillator strengths from the R-matrix calculations of the OP (Butler *et al.*, unpublished) were taken for strong transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S II is given in Table 5, and the transition probabilities for the lines are provided in Table 6.

TABLE 5. Wavelength finding list for allowed lines of S II

Wavelength (vac.) (Å)	Mult. No.
746.002	23
746.081	23
746.179	23
746.258	23
763.215	3
763.656	7
764.416	7
765.387	3
765.574	3
765.684	7
773.460	20
773.650	20
774.255	20
774.445	20
798.953	19
799.156	19
800.051	19
804.013	24
804.315	24
804.408	24
808.694	18
808.778	18
808.902	18
824.043	6
824.361	6
826.577	6
826.896	6
840.605	10
840.830	10
843.825	10
844.052	10
865.861	21
866.212	21

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (vac.) (Å)	Mult. No.
867.151	21
867.502	21
894.423	22
894.797	22
906.876	13
910.485	13
912.736	13
915.388	12
918.813	12
919.208	12
937.408	16
937.420	16
937.688	16
937.699	16
996.007	9
1 000.486	9
1 000.804	9
1 014.110	14
1 014.437	14
1 019.528	14
1 030.886	17
1 031.369	17
1 031.383	17
1 049.770	5
1 050.285	5
1 096.596	8
1 101.975	8
1 102.362	8
1 124.395	15
1 124.986	15
1 131.059	15
1 131.657	15
1 203.863	2
1 204.271	2
1 204.324	2
1 204.732	2
1 226.702	11
1 227.405	11
1 233.438	11
1 234.149	11
1 250.584	1
1 253.811	1
1 259.519	1
1 363.031	4
1 363.376	4
1 363.899	4
1 930.808	26
1 936.729	27
1 944.377	26
1 950.382	27
1 951.382	26
1 958.241	27
1 965.243	26
1 970.879	25
1 973.223	26
1 981.658	25
1 985.020	25

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (vac.) (Å)	Mult. No.
1 995.954	25
1 998.761	25
Wavelength (air) (Å)	**Mult. No.**
2 003.537	25
2 006.367	25
2 185.930	33
2 187.275	33
2 192.383	33
2 332.484	32
2 334.016	32
2 334.742	32
2 336.277	32
2 357.749	31
2 361.147	31
2 362.716	31
2 629.099	49
2 638.440	49
2 660.247	49
2 669.810	49
2 815.340	29
2 817.572	29
2 825.789	29
2 844.011	48
2 847.368	48
2 880.493	48
3 002.448	28
3 004.986	28
3 052.513	28
3 055.136	28
3 257.877	68
3 272.231	68
3 314.474	68
3 329.333	68
3 594.445	67
3 595.979	37
3 613.042	37
3 654.500	37
3 663.464	67
3 669.037	67
3 672.124	37
3 730.631	119
3 735.366	119
3 736.410	119
3 741.160	119
3 760.021	51
3 765.437	51
3 769.768	51
3 771.325	51
3 775.669	51
3 782.568	51
3 832.065	50
3 839.171	50
3 840.697	50
3 845.202	50

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
3 852.358	50
3 853.070	53
3 859.236	53
3 906.955	36
3 918.175	52
3 931.911	52
3 932.289	53
3 992.154	36
3 993.499	52
4 007.768	52
4 064.410	36
4 146.916	117
4 162.305	117
4 165.100	117
4 168.363	121
4 174.002	116
4 174.265	116
4 180.625	117
4 185.929	121
4 189.593	116
4 191.891	121
4 193.486	34
4 217.299	34
4 230.946	118
4 249.877	118
4 257.379	118
4 404.725	120
4 411.306	120
4 431.005	120
4 437.665	120
4 524.675	74
4 524.941	74
4 552.410	74
4 648.155	113
4 649.212	113
4 656.757	61
4 668.564	113
4 681.302	60
4 716.271	61
4 742.412	60
4 753.986	114
4 755.092	114
4 763.375	114
4 764.485	114
4 779.101	60
4 804.150	60
4 815.552	61
4 885.648	66
4 902.426	75
4 907.205	60
4 917.198	66
4 924.110	59
4 925.343	59
4 942.473	59
4 991.969	59
4 993.500	75

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
5 009.567	59
5 011.626	104
5 014.042	66
5 027.203	35
5 032.434	59
5 039.362	104
5 047.277	66
5 103.332	59
5 142.322	35
5 201.027	73
5 201.379	73
5 212.267	73
5 212.620	73
5 230.563	95
5 249.887	95
5 253.843	95
5 320.723	72
5 327.091	95
5 331.165	95
5 345.712	72
5 346.084	72
5 428.655	58
5 432.797	58
5 453.855	58
5 467.217	38
5 473.614	58
5 474.990	96
5 478.218	115
5 479.293	96
5 509.705	58
5 518.928	115
5 520.418	115
5 525.990	65
5 526.243	38
5 536.732	38
5 537.836	76
5 556.023	58
5 564.958	58
5 578.870	38
5 584.630	76
5 606.151	38
5 616.633	38
5 639.98	64
5 640.35	38
5 643.78	96
5 645.68	58
5 647.02	64
5 648.35	96
5 654.33	76
5 660.00	38
5 664.77	38
5 690.81	65
5 703.12	76
5 819.25	64
5 885.34	41
5 890.95	145
5 895.93	41
5 908.32	63
5 912.77	41
5 932.98	63
5 996.20	63
6 066.72	41
6 080.83	41
6 092.13	41
6 097.12	63
6 102.27	44
6 123.40	63
6 161.82	45
6 213.39	77
6 240.67	77
6 274.30	40
6 277.86	57
6 286.34	40
6 286.94	44
6 305.48	40
6 312.69	44
6 360.41	77
6 369.34	40
6 384.89	40
6 386.50	57
6 389.01	77
6 395.27	97
6 397.36	40
6 398.01	40
6 413.71	40
6 449.44	97
6 455.41	97
6 521.44	43
6 641.00	43
6 732.81	43
6 879.71	85
6 957.93	39
6 962.01	85
6 981.40	39
7 124.27	39
7 139.79	39
7 164.50	39
7 237.02	39
7 247.12	42
7 257.11	39
7 273.21	39
7 317.14	39
7 337.68	39
7 342.17	30
7 413.65	30
7 444.61	42
7 509.08	42
7 578.19	98
7 578.91	98
7 589.79	42
7 629.74	98
7 721.32	42

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
7 928.67	78
7 967.38	62
8 012.10	78
8 169.65	78
8 258.25	78
8 314.59	62
8 421.40	71
8 422.32	71
8 515.58	71
9 032.62	144
9 099.28	144
9 162.76	142
9 194.16	93
9 241.14	142
9 245.50	142
9 306.54	93
9 325.30	142
9 398.20	142
9 422.97	93
9 459.86	144
9 491.52	86
9 555.70	140
9 589.25	140
9 589.61	140
9 611.32	140
9 639.00	143
9 650.52	142
9 657.00	140
9 691.64	140
9 711.00	86
9 725.77	143
9 728.77	86
9 741.35	56
9 773.50	88
9 809.61	140
9 821.94	142
9 841.19	88
9 870.82	56
9 880.52	140
9 899.89	143
9 940.44	88
9 980.83	140
10 010.46	88
10 068.93	86
10 088.04	86
10 116.01	88
10 192.22	56
10 194.83	140
10 216.61	141
10 232.85	139
10 235.59	152
10 241.70	139
10 259.30	139
10 274.41	152
10 293.55	141
10 295.44	139
10 306.55	152
10 332.91	141
10 350.77	70
10 352.16	70
10 358.16	139
10 398.09	141
10 438.26	141
10 478.96	135
10 483.01	141
10 484.17	139
10 615.74	139
10 662.99	90
10 681.41	139
10 719.34	141
10 742.66	135
10 804.07	141
10 862.01	90
10 912.14	135
10 925.37	139
10 971.06	70
10 972.63	70
11 044.44	135
11 206.37	135
11 232.70	136
11 246.17	135
11 322.47	90
11 337.77	135
11 386.75	135
11 529.79	110
11 548.89	110
11 556.21	87
11 561.38	138
11 579.11	151
11 580.10	151
11 617.38	69
11 619.13	69
11 620.94	151
11 669.04	110
11 843.39	136
11 884.99	136
11 910.27	87
11 937.02	87
11 956.92	137
12 002.30	69
12 004.17	69
12 024.57	136
12 104.53	69
12 203.66	111
12 225.06	111
12 265.72	111
12 270.72	138
12 282.33	136
12 287.34	111
12 318.58	138
12 431.46	136
12 570.83	136

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
12 698.81	137
12 706.14	89
12 718.78	125
13 153.47	137
13 176.07	125
13 316.74	124
13 364.76	91
13 475.57	124
13 527.62	122
13 529.05	55
13 553.92	122
13 605.37	55
13 618.79	89
13 653.77	89
13 655.29	124
13 704.70	103
13 758.72	122
13 962.35	103
13 990.00	124
14 036.49	125
14 183.80	124
14 196.25	124
14 414.63	55
14 501.30	55
14 553.67	54
14 633.47	126
14 691.86	126
14 814.96	92
14 831.91	146
14 898.97	146
14 909.83	146
14 963.75	123
15 050.73	123
15 108.92	92
15 185.87	124
15 201.94	92
15 213.67	123
15 234.26	123
15 370.03	54
15 511.62	92
15 583.57	54
15 600.77	123
15 856.70	126
15 872.61	123
16 183.93	123
16 615.67	134
16 821.67	123
17 123.01	81
17 781.9	134
17 911.0	81
18 059.4	81
18 121.2	134
18 296.2	127
18 297.8	79
18 472.6	112
18 566.7	81

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
18 744.1	79
18 943.7	112
18 995.3	112
19 028.8	127
19 173.9	127
19 496.8	81
19 498.0	105
19 683.3	127

Wave number (cm^{-1})	Mult. No.
4 979.81	127
4 943.31	127
4 870.06	127
4 868.69	127
4 844.86	127
4 836.65	129
4 796.85	105
4 755.53	129
4 755.40	105
4 624.86	129
4 523.42	129
4 475.37	129
4 425.78	129
4 377.73	129
4 296.61	129
4 292.31	147
4 275.70	128
4 261.97	147
4 241.12	148
4 210.78	148
4 204.69	147
4 145.03	128
4 135.87	148
4 105.53	148
3 971.74	128
3 956.66	83
3 912.06	107
3 890.62	128
3 785.60	128
3 779.32	107
3 778.57	102
3 759.95	128
3 737.55	128
3 690.19	107
3 680.68	83
3 675.85	128
3 656.43	128
3 643.96	102
3 627.80	128
3 606.79	102
3 573.03	83
3 502.68	83
3 472.18	102
3 433.27	108

TABLE 5. Wavelength finding list for allowed lines of S II—Continued

Wave number (cm^{-1})	Mult. No.
3 391.82	108
3 300.53	108
3 259.08	108
3 226.70	83
3 173.73	84
3 123.86	80
3 060.11	94
2 993.77	80
2 972.60	80
2 928.82	94
2 842.51	80
2 719.75	84
2 627.65	84
2 625.87	80
2 593.76	132
2 585.65	80
2 388.71	106
2 369.01	80
2 300.04	131
2 254.10	106
2 241.17	100
2 219.89	130
2 199.72	100
2 180.91	100
2 173.67	84
2 111.29	132
2 093.89	132
2 089.21	131
2 016.79	106
2 009.06	130
2 003.05	80
1 970.27	131
1 882.18	106
1 810.06	99
1 791.25	99
1 760.97	130
1 720.93	99
1 702.12	99
1 647.78	130
1 550.14	130
1 528.84	130
1 431.20	130
1 280.35	133
1 277.24	133
1 259.18	150
1 228.84	150
1 161.11	82
1 090.76	82
1 031.02	82
970.72	149
967.09	149
960.67	82
936.75	149
905.35	101
840.40	150
810.06	150
780.48	133
777.37	133
744.03	82
733.57	101
692.12	101
684.69	82
653.21	109
584.98	46
518.60	109
468.05	82
426.64	47
385.86	109
368.34	46
210.00	47
38.90	46

TABLE 6. Transition probabilities of allowed lines for S II

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s^23p^3-3s3p^4$	$^4S^\circ-^4P$		*1 256.1*	*0–79 610.41*	4–12	5.10+07	3.62−02	5.99−01	−0.839	D+	1
				1 259.519	0.00–79 395.39	4–6	5.10+07	1.82−02	3.01−01	−1.138	D+	1
				1 253.811	0.00–79 756.83	4–4	5.12+07	1.21−02	1.99−01	−1.315	D+	1
				1 250.584	0.00–79 962.61	4–2	5.13+07	6.02−03	9.90−02	−1.618	D	1
2		$^2D^\circ-^2D$		*1 204.30*	*14 872.01–97 907.61*	10–10	6.23+07	1.36−02	5.37−01	−0.866	D+	1
				1 204.324	14 884.73–97 918.86	6–6	5.79+07	1.26−02	2.99−01	−1.121	D+	1
				1 204.271	14 852.94–97 890.74	4–4	5.91+07	1.28−02	2.03−01	−1.291	D+	1
				1 204.732	14 884.73–97 890.74	6–4	4.79+06	6.94−04	1.65−02	−2.380	D	1
				1 203.863	14 852.94–97 918.86	4–6	3.68+06	1.20−03	1.89−02	−2.319	D	1
3		$^2D^\circ-^2P$		*764.77*	*14 872.01–145 629.71*	10–6	4.27+09	2.25−01	5.66+00	0.352	C	1
				765.574	14 884.73–145 505.74	6–4	3.28+09	1.92−01	2.90+00	0.061	C	1
				763.215	14 852.94–145 877.66	4–2	4.20+09	1.83−01	1.84+00	−0.135	C	1
				765.387	14 852.94–145 505.74	4–4	1.04+09	9.13−02	9.20−01	−0.437	D+	1
4		$^2P^\circ-^2D$		*1 363.30*	*24 555.97–97 907.61*	6–10	2.44+06	1.13−03	3.05−02	−2.169	D	1
				1 363.376	24 571.54–97 918.86	4–6	2.64+06	1.10−03	1.98−02	−2.357	D	1
				1 363.031	24 524.83–97 890.74	2–4	2.07+06	1.15−03	1.03−02	−2.638	D	1
				1 363.899	24 571.54–97 890.74	4–4	7.31+04	2.04−05	3.66−04	−4.088	E	1
5		$^2P^\circ-^2S$		*1 050.11*	*24 555.97*–119 783.77	6–2	1.75+08	9.64−03	2.00−01	−1.238	D+	1
				1 050.285	24 571.54–119 783.77	4–2	1.14+08	9.41−03	1.30−01	−1.424	D+	1
				1 049.770	24 524.83–119 783.77	2–2	6.12+07	1.01−02	6.99−02	−1.695	D	1
6		$^2P^\circ-^2P$		*825.94*	*24 555.97–145 629.71*	6–6	1.67+09	1.71−01	2.79+00	0.011	C	1
				826.896	24 571.54–145 505.74	4–4	1.44+09	1.48−01	1.61+00	−0.228	C	1
				824.043	24 524.83–145 877.66	2–2	1.16+09	1.18−01	6.39−01	−0.627	D+	1
				824.361	24 571.54–145 877.66	4–2	6.26+08	3.19−02	3.46−01	−0.894	D+	1
				826.577	24 524.83–145 505.74	2–4	1.71+08	3.51−02	1.91−01	−1.154	D+	1
7	$3s^23p^3-3s^23p^2(^3P)3d$	$^4S^\circ-^4P$		*764.9*	*0–130 732.21*	4–12	9.48+09	2.49+00	2.51+01	0.998	C	1
				765.684	0.00–130 602.21	4–6	9.47+09	1.25+00	1.25+01	0.699	C+	1
				764.416	0.00–130 818.85	4–4	9.55+09	8.36−01	8.41+00	0.524	C	1
				763.656	0.00–130 948.94	4–2	9.60+09	4.19−01	4.21+00	0.224	C	1
8		$^2D^\circ-^2P$		*1 100.41*	*14 872.01–105 747.45*	10–6	4.05+07	4.41−03	1.60−01	−1.356	D+	1
				1 102.362	14 884.73–105 599.06	6–4	3.79+07	4.60−03	1.00−01	−1.559	D+	1
				1 096.596	14 852.94–106 044.24	4–2	4.20+07	3.79−03	5.47−02	−1.819	D	1
				1 101.975	14 852.94–105 599.06	4–4	1.95+06	3.55−04	5.15−03	−2.848	E+	1
9		$^2D^\circ-^2F$		*997.93*	*14 872.01–115 079.36*	10–14	3.57+07	7.46−03	2.45−01	−1.127	D+	1
				996.007	14 884.73–115 285.61	6–8	3.29+07	6.52−03	1.28−01	−1.408	D+	1
				1 000.486	14 852.94–114 804.37	4–6	3.61+07	8.13−03	1.07−01	−1.488	D+	1
				1 000.804	14 884.73–114 804.37	6–6	3.43+06	5.15−04	1.01−02	−2.510	D	1
10		$^2D^\circ-^2D$		*842.03*	*14 872.01–133 633.25*	10–10	1.34+09	1.43−01	3.95+00	0.155	C	1
				840.830	14 884.73–133 814.84	6–6	1.21+09	1.28−01	2.12+00	−0.115	C	1
				843.825	14 852.94–133 360.86	4–4	1.07+09	1.14−01	1.27+00	−0.341	C	1
				844.052	14 884.73–133 360.86	6–4	1.32+08	9.39−03	1.56−01	−1.249	D+	1
				840.605	14 852.94–133 814.84	4–6	2.31+08	3.68−02	4.07−01	−0.832	D+	1
11		$^2P^\circ-^2P$		*1 231.66*	*24 555.97–105 747.45*	6–6	1.11+07	2.52−03	6.12−02	−1.820	D	1
				1 234.149	24 571.54–105 599.06	4–4	9.54+06	2.18−03	3.54−02	−2.059	D	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 226.702	24 524.83–106 044.24	2–2	7.30+06	1.65−03	1.33−02	−2.481	D	1
				1 227.405	24 571.54–106 044.24	4–2	3.31+06	3.73−04	6.03−03	−2.826	E+	1
				1 233.438	24 524.83–105 599.06	2–4	1.74+06	7.96−04	6.46−03	−2.798	E+	1
12		^{2}P°–^{2}D		*916.78*	*24 555.97–133 633.25*	6–10	1.23+09	2.59−01	4.68+00	0.191	C	1
				915.388	24 571.54–133 814.84	4–6	1.21+09	2.29−01	2.75+00	−0.038	C	1
				918.813	24 524.83–133 360.86	2–4	1.06+09	2.68−01	1.62+00	−0.271	C	1
				919.208	24 571.54–133 360.86	4–4	2.05+08	2.60−02	3.14−01	−0.983	D+	1
13	$3s^23p^3$–$3s^23p^2(^3P)4s$	^{4}S°–^{4}P		*909.1*	*0–110 004.94*	4–12	1.07+09	3.98−01	4.76+00	0.202	C	1
				906.876	0.00–110 268.60	4–6	1.09+09	2.01−01	2.40+00	−0.095	C	1
				910.485	0.00–109 831.59	4–4	1.06+09	1.32−01	1.58+00	−0.277	C	1
				912.736	0.00–109 560.69	4–2	1.05+09	6.53−02	7.84−01	−0.583	D+	1
14		^{2}D°–^{2}P		*1 016.11*	*14 872.01–113 286.88*	10–6	1.62+09	1.50−01	5.02+00	0.176	C	1
				1 014.437	14 884.73–113 461.54	6–4	1.49+09	1.53−01	3.07+00	−0.037	C	1
				1 019.528	14 852.94–112 937.57	4–2	1.66+09	1.29−01	1.73+00	−0.287	C	1
				1 014.110	14 852.94–113 461.54	4–4	1.08+08	1.67−02	2.22−01	−1.175	D+	1
15		^{2}P°–^{2}P		*1 127.00*	*24 555.97–113 286.88*	6–6	5.11+08	9.73−02	2.17+00	−0.234	C	1
				1 124.986	24 571.54–113 461.54	4–4	4.39+08	8.32−02	1.23+00	−0.478	C	1
				1 131.059	24 524.83–112 937.57	2–2	3.29+08	6.31−02	4.70−01	−0.899	D+	1
				1 131.657	24 571.54–112 937.57	4–2	1.40+08	1.34−02	1.99−01	−1.271	D+	1
				1 124.395	24 524.83–113 461.54	2–4	9.48+07	3.59−02	2.66−01	−1.144	D+	1
16	$3s^23p^3$–$3s^23p^2(^1D)4s$	^{2}D°–^{2}D		*937.58*	*14 872.01–121 529.50*	10–10	1.26+09	1.66−01	5.12+00	0.220	C	1
				937.688	14 884.73–121 530.02	6–6	1.18+09	1.56−01	2.88+00	−0.029	C	1
				937.420	14 852.94–121 528.72	4–4	1.14+09	1.50−01	1.85+00	−0.222	C	1
				937.699	14 884.73–121 528.72	6–4	9.14+07	8.03−03	1.48−01	−1.317	D+	1
				937.408	14 852.94–121 530.02	4–6	9.76+07	1.93−02	2.38−01	−1.112	D+	1
17		^{2}P°–^{2}D		*1 031.21*	*24 555.97–121 529.50*	6–10	1.85+08	4.90−02	9.99−01	−0.532	D+	1
				1 031.369	24 571.54–121 530.02	4–6	1.74+08	4.16−02	5.64−01	−0.779	D+	1
				1 030.886	24 524.83–121 528.72	2–4	1.42+08	4.51−02	3.06−01	−1.045	D+	1
				1 031.383	24 571.54–121 528.72	4–4	5.97+07	9.53−03	1.29−01	−1.419	D+	1
18	$3s^23p^3$–$3s^23p^2(^1D)3d$	^{2}D°–^{2}F		*808.75*	*14 872.01–138 519.92*	10–14	8.50+09	1.17+00	3.11+01	1.068	C+	1
				808.778	14 884.73–138 527.98	6–8	8.55+09	1.12+00	1.78+01	0.827	C+	1
				808.694	14 852.94–138 509.17	4–6	7.86+09	1.16+00	1.23+01	0.667	C+	1
				808.902	14 884.73–138 509.17	6–6	6.19+08	6.07−02	9.70−01	−0.439	D+	1
19		^{2}D°–^{2}P		*799.44*	*14 872.01–139 959.51*	10–6	2.58+09	1.48−01	3.90+00	0.170	C	1
				799.156	14 884.73–140 016.77	6–4	2.37+09	1.51−01	2.38+00	−0.043	C	1
				800.051	14 852.94–139 844.99	4–2	2.62+09	1.25−01	1.32+00	−0.301	C	1
				798.953	14 852.94–140 016.77	4–4	2.01+08	1.92−02	2.02−01	−1.115	D+	1
20		^{2}D°–^{2}D		*774.05*	*14 872.01–144 062.52*	10–10	5.53+09	4.97−01	1.27+01	0.696	C	1
				774.445	14 884.73–144 009.42	6–6	5.12+09	4.61−01	7.04+00	0.442	C	1
				773.460	14 852.94–144 142.16	4–4	5.30+09	4.75−01	4.84+00	0.279	C	1
				773.650	14 884.73–144 142.16	6–4	4.41+08	2.64−02	4.03−01	−0.800	D+	1
				774.255	14 852.94–144 009.42	4–6	2.80+08	3.77−02	3.84−01	−0.822	D+	1
21		^{2}P°–^{2}P		*866.52*	*24 555.97–139 959.51*	6–6	2.16+09	2.44−01	4.17+00	0.166	C	1
				866.212	24 571.54–140 016.77	4–4	1.87+09	2.10−01	2.39+00	−0.076	C	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				867.151	24 524.83–139 844.99	2–2	1.50+09	1.69−01	9.64−01	−0.471	D+	1
				867.502	24 571.54–139 844.99	4–2	6.25+08	3.53−02	4.02−01	−0.850	D+	1
				865.861	24 524.83–140 016.77	2–4	3.24+08	7.29−02	4.15−01	−0.836	D+	1
22	$3s^23p^3–3s^23p^2(^1S)4s$	$^2P^\circ–^2S$		*894.67*	*24 555.97*–136 328.79	6–2	2.97+09	1.19−01	2.10+00	−0.146	C	1
				894.797	24 571.54–136 328.79	4–2	1.96+09	1.17−01	1.38+00	−0.330	C	1
				894.423	24 524.83–136 328.79	2–2	1.02+09	1.23−01	7.22−01	−0.609	D+	1
23	$3s^23p^3–3s^23p^2(^1S)3d$	$^2D^\circ–^2D$		*746.16*	*14 872.01–148 892.31*	10–10	1.36+09	1.13−01	2.78+00	0.053	C	1
				746.258	14 884.73–148 886.57	6–6	1.27+09	1.06−01	1.56+00	−0.197	C	1
				746.002	14 852.94–148 900.91	4–4	1.08+09	8.98−02	8.81−01	−0.445	D+	1
				746.179	14 884.73–148 900.91	6–4	3.07+08	1.71−02	2.51−01	−0.989	D+	1
				746.081	14 852.94–148 886.57	4–6	7.23+07	9.05−03	8.88−02	−1.441	D	1
24		$^2P^\circ–^2D$		*804.27*	*24 555.97–148 892.31*	6–10	6.07+09	9.81−01	1.56+01	0.770	C	1
				804.408	24 571.54–148 886.57	4–6	6.15+09	8.94−01	9.47+00	0.553	C	1
				804.013	24 524.83–148 900.91	2–4	5.31+09	1.03+00	5.45+00	0.314	C	1
				804.315	24 571.54–148 900.91	4–4	6.44+08	6.24−02	6.61−01	−0.603	D+	1
25	$3s3p^4–3s^23p^2(^3P)4p$	$^4P–^4P^\circ$		*1 985.15*	*79 610.41–129 984.44*	12–12	2.49+07	1.47−02	1.15+00	−0.754	D+	1
				1 970.879	79 395.39–130 134.16	6–6	1.70+07	9.92−03	3.86−01	−1.225	D+	1
				1 995.954	79 756.83–129 858.18	4–4	7.05+05	4.21−04	1.10−02	−2.774	D	1
			2 006.367	2 007.016	79 962.61–129 787.83	2–2	4.09+06	2.47−03	3.26−02	−2.306	D	1
				1 981.658	79 395.39–129 858.18	6–4	1.93+07	7.56−03	2.96−01	−1.343	D+	1
				1 998.761	79 756.83–129 787.83	4–2	2.04+07	6.11−03	1.60−01	−1.612	D+	1
				1 985.020	79 756.83–130 134.16	4–6	7.31+06	6.47−03	1.69−01	−1.587	D+	1
			2 003.537	2 004.186	79 962.61–129 858.18	2–4	6.12+06	7.37−03	9.71−02	−1.832	D	1
26		$^4P–^2D^\circ$										
				1 944.377	79 756.83–131 187.19	4–6	2.96+05	2.52−04	6.45−03	−2.997	E+	1
				1 973.223	79 962.61–130 641.11	2–4	1.45+04	1.69−05	2.20−04	−4.471	E	1
				1 930.808	79 395.39–131 187.19	6–6	6.99+05	3.91−04	1.49−02	−2.630	D	1
				1 965.243	79 756.83–130 641.11	4–4	9.47+03	5.48−06	1.41−04	−4.659	E	1
				1 951.382	79 395.39–130 641.11	6–4	4.55+05	1.73−04	6.67−03	−2.984	E+	1
27		$^4P–^4S^\circ$		*1 944.83*	*79 610.41*–131 028.85	12–4	6.70+07	1.27−02	9.73−01	−0.817	D+	1
				1 936.729	79 395.39–131 028.85	6–4	2.55+07	9.58−03	3.66−01	−1.240	D+	1
				1 950.382	79 756.83–131 028.85	4–4	2.55+07	1.46−02	3.74−01	−1.234	D+	1
				1 958.241	79 962.61–131 028.85	2–4	1.57+07	1.81−02	2.33−01	−1.441	D+	1
28		$^2D–^2D^\circ$	*3 023.82*	*3 024.70*	*97 907.61–130 968.76*	10–10	3.15+05	4.32−04	4.31−02	−2.365	D	1
			3 004.986	3 005.862	97 918.86–131 187.19	6–6	2.69+05	3.65−04	2.16−02	−2.660	D	1
			3 052.513	3 053.401	97 890.74–130 641.11	4–4	2.83+05	3.95−04	1.58−02	−2.801	D	1
			3 055.136	3 056.025	97 918.86–130 641.11	6–4	3.10+04	2.89−05	1.74−03	−3.761	E+	1
			3 002.448	3 003.323	97 890.74–131 187.19	4–6	4.88+04	9.91−05	3.91−03	−3.402	E+	1
29		$^2D–^2P^\circ$	*2 820.16*	*2 820.99*	*97 907.61–133 356.21*	10–6	7.83+06	5.60−03	5.20−01	−1.252	D+	1
			2 817.572	2 818.401	97 918.86–133 399.97	6–4	7.46+06	5.92−03	3.29−01	−1.450	D+	1
			2 825.789	2 826.620	97 890.74–133 268.68	4–2	8.01+06	4.80−03	1.78−01	−1.717	D+	1
			2 815.340	2 816.169	97 890.74–133 399.97	4–4	3.05+05	3.63−04	1.34−02	−2.838	D	1
30		$^2S–^2P^\circ$	*7 365.8*	*7 367.9*	119 783.77–*133 356.21*	2–6	9.62+04	2.35−03	1.14−01	−2.328	D	1
			7 342.17	7 344.19	119 783.77–133 399.97	2–4	9.19+04	1.49−03	7.18−02	−2.526	D	1
			7 413.65	7 415.70	119 783.77–133 268.68	2–2	1.05+05	8.66−04	4.22−02	−2.761	D	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
31	$3s3p^4$–$3s^23p^2(^1D)4p$	^{2}D–^{2}F°	2 359.25	2 359.97	97 907.61–140 281.03	10–14	4.58+06	5.35−03	4.16−01	−1.272	D+	1
			2 357.749	2 358.470	97 918.86–140 319.23	6–8	4.55+06	5.06−03	2.35−01	−1.518	D+	1
			2 361.147	2 361.868	97 890.74–140 230.10	4–6	3.87+06	4.86−03	1.51−01	−1.711	D+	1
			2 362.716	2 363.438	97 918.86–140 230.10	6–6	7.59+05	6.36−04	2.96−02	−2.418	D	1
32		^{2}D–^{2}D°	2 334.76	2 335.47	97 907.61–140 725.47	10–10	2.51+07	2.05−02	1.58+00	−0.688	D+	1
			2 336.277	2 336.993	97 918.86–140 708.89	6–6	2.26+07	1.85−02	8.53−01	−0.955	D+	1
			2 332.484	2 333.200	97 890.74–140 750.34	4–4	2.42+07	1.97−02	6.06−01	−1.103	D+	1
			2 334.016	2 334.731	97 918.86–140 750.34	6–4	1.34+06	7.33−04	3.37−02	−2.357	D	1
			2 334.742	2 335.458	97 890.74–140 708.89	4–6	2.21+06	2.71−03	8.34−02	−1.965	D	1
33		^{2}D–^{2}P°	2 188.88	2 189.57	97 907.61–143 578.69	10–6	3.84+07	1.66−02	1.19+00	−0.780	D+	1
			2 187.275	2 187.959	97 918.86–143 623.56	6–4	3.54+07	1.69−02	7.31−01	−0.994	D+	1
			2 192.383	2 193.069	97 890.74–143 488.95	4–2	3.90+07	1.41−02	4.06−01	−1.249	D+	1
			2 185.930	2 186.613	97 890.74–143 623.56	4–4	2.78+06	2.00−03	5.74−02	−2.097	D	1
34		^{2}S–^{2}P°	4 201.39	4 202.58	119 783.77–143 578.69	2–6	6.13+06	4.87−02	1.35+00	−1.011	D+	1
			4 193.486	4 194.668	119 783.77–143 623.56	2–4	6.09+06	3.21−02	8.87−01	−1.192	D+	1
			4 217.299	4 218.487	119 783.77–143 488.95	2–2	6.23+06	1.66−02	4.61−01	−1.479	D+	1
35	$3s^23p^2(^3P)3d$–$3s^23p^2(^3P)4p$	^{2}P–^{2}S°	5 065.00	5 066.41	105 747.45–125 485.29	6–2	4.10+07	5.26−02	5.26+00	−0.501	C	1
			5 027.203	5 028.605	105 599.06–125 485.29	4–2	2.86+07	5.42−02	3.59+00	−0.664	C	1
			5 142.322	5 143.755	106 044.24–125 485.29	2–2	1.25+07	4.95−02	1.67+00	−1.004	C	1
36		^{2}P–^{2}D°	3 963.78	3 964.90	105 747.45–130 968.76	6–10	1.04+06	4.07−03	3.19−01	−1.612	D+	1
			3 906.955	3 908.062	105 599.06–131 187.19	4–6	1.02+06	3.49−03	1.79−01	−1.855	D+	1
			4 064.410	4 065.558	106 044.24–130 641.11	2–4	8.11+05	4.02−03	1.07−01	−2.095	D+	1
			3 992.154	3 993.283	105 599.06–130 641.11	4–4	2.61+05	6.25−04	3.28−02	−2.602	D	1
37		^{2}P–^{2}P°	3 621.01	3 622.04	105 747.45–133 356.21	6–6	2.69+07	5.28−02	3.78+00	−0.499	C	1
			3 595.979	3 597.005	105 599.06–133 399.97	4–4	2.31+07	4.49−02	2.12+00	−0.746	C	1
			3 672.124	3 673.170	106 044.24–133 268.68	2–2	1.87+07	3.78−02	9.14−01	−1.121	D+	1
			3 613.042	3 614.072	105 599.06–133 268.68	4–2	7.14+06	6.99−03	3.32−01	−1.553	D+	1
			3 654.500	3 655.541	106 044.24–133 399.97	2–4	4.29+06	1.72−02	4.13−01	−1.463	D+	1
38		^{4}F–^{4}D°	5 624.1	5 625.6	110 511.56–128 287.40	28–20	3.89+07	1.32−01	6.84+01	0.568	C+	1
			5 606.151	5 607.707	110 766.56–128 599.16	10–8	3.52+07	1.33−01	2.44+01	0.124	C+	1
			5 640.35	5 641.91	110 508.71–128 233.20	8–6	3.22+07	1.15−01	1.71+01	−0.036	C+	1
			5 660.00	5 661.57	110 313.40–127 976.34	6–4	3.12+07	1.00−01	1.11+01	−0.222	C+	1
			5 664.77	5 666.35	110 177.02–127 825.08	4–2	3.89+07	9.36−02	6.98+00	−0.427	C	1
			5 526.243	5 527.778	110 508.71–128 599.16	8–8	3.71+06	1.70−02	2.47+00	−0.866	C	1
			5 578.870	5 580.419	110 313.40–128 233.20	6–6	6.69+06	3.12−02	3.44+00	−0.728	C	1
			5 616.633	5 618.192	110 177.02–127 976.34	4–4	7.58+06	3.59−02	2.65+00	−0.843	C	1
			5 467.217	5 468.736	110 313.40–128 599.16	6–8	1.01+05	6.06−04	6.54−02	−2.439	D	1
			5 536.732	5 538.270	110 177.02–128 233.20	4–6	3.24+05	2.23−03	1.62−01	−2.050	D+	1
39		^{4}D–^{4}D°	7 115.5	7 117.4	114 237.38–128 287.40	20–20	3.39+06	2.58−02	1.21+01	−0.287	C	1
			6 981.40	6 983.32	114 279.33–128 599.16	8–8	3.21+06	2.35−02	4.31+00	−0.726	C	1
			7 139.79	7 141.76	114 231.04–128 233.20	6–6	1.69+06	1.30−02	1.82+00	−1.108	C	1
			7 257.11	7 259.11	114 200.54–127 976.34	4–4	1.04+06	8.22−03	7.85−01	−1.483	D+	1
			7 317.14	7 319.15	114 162.30–127 825.08	2–2	1.30+06	1.05−02	5.05−01	−1.678	D+	1
			7 164.50	7 166.47	114 279.33–128 233.20	8–6	8.71+05	5.03−03	9.49−01	−1.395	D+	1
			7 273.21	7 275.21	114 231.04–127 976.34	6–4	1.29+06	6.81−03	9.78−01	−1.389	D+	1
			7 337.68	7 339.70	114 200.54–127 825.08	4–2	1.55+06	6.25−03	6.03−01	−1.602	D+	1
			6 957.93	6 959.85	114 231.04–128 599.16	6–8	5.70+05	5.52−03	7.59−01	−1.480	D+	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			7 124.27	7 126.23	114 200.54–128 233.20	4–6	7.73+05	8.82−03	8.28−01	−1.452	D+	1
			7 237.02	7 239.01	114 162.30–127 976.34	2–4	7.17+05	1.13−02	5.36−01	−1.646	D+	1
40		^{4}D–^{4}P°	*6 348.6*	*6 350.4*	*114 237.38–129 984.44*	20–12	2.53+07	9.18−02	3.84+01	0.264	C	1
			6 305.48	6 307.23	114 279.33–130 134.16	8–6	2.02+07	9.04−02	1.50+01	−0.141	C+	1
			6 397.36	6 399.12	114 231.04–129 858.18	6–4	1.49+07	6.11−02	7.72+00	−0.436	C	1
			6 413.71	6 415.48	114 200.54–129 787.83	4–2	1.25+07	3.87−02	3.26+00	−0.810	C	1
			6 286.34	6 288.07	114 231.04–130 134.16	6–6	4.98+06	2.95−02	3.66+00	−0.752	C	1
			6 384.89	6 386.66	114 200.54–129 858.18	4–4	8.21+06	5.02−02	4.22+00	−0.697	C	1
			6 398.01	6 399.78	114 162.30–129 787.83	2–2	1.32+07	8.09−02	3.40+00	−0.791	C	1
			6 274.30	6 276.04	114 200.54–130 134.16	4–6	6.13+05	5.43−03	4.48−01	−1.663	D+	1
			6 369.34	6 371.10	114 162.30–129 858.18	2–4	1.36+06	1.66−02	6.94−01	−1.479	D+	1
41		^{4}D–^{2}D°										
			5 895.93	5 897.57	114 231.04–131 187.19	6–6	3.33+04	1.74−04	2.02−02	−2.981	D	1
			6 080.83	6 082.51	114 200.54–130 641.11	4–4	7.57+04	4.20−04	3.36−02	−2.775	D	1
			5 912.77	5 914.41	114 279.33–131 187.19	8–6	1.03+05	4.03−04	6.28−02	−2.492	D	1
			6 092.13	6 093.82	114 231.04–130 641.11	6–4	3.03+05	1.12−03	1.35−01	−2.173	D+	1
			5 885.34	5 886.98	114 200.54–131 187.19	4–6	1.61+04	1.26−04	9.74−03	−3.298	E+	1
			6 066.72	6 068.40	114 162.30–130 641.11	2–4	9.65+03	1.07−04	4.25−03	−3.670	E+	1
42		^{2}F–^{4}D°										
			7 721.32	7 723.45	115 285.61–128 233.20	8–6	2.26+04	1.52−04	3.08−02	−2.915	D	1
			7 589.79	7 591.88	114 804.37–127 976.34	6–4	2.33+04	1.35−04	2.01−02	−3.092	D	1
			7 509.08	7 511.14	115 285.61–128 599.16	8–8	1.78+05	1.51−03	2.97−01	−1.918	D+	1
			7 444.61	7 446.67	114 804.37–128 233.20	6–6	7.13+04	5.93−04	8.72−02	−2.449	D	1
			7 247.12	7 249.11	114 804.37–128 599.16	6–8	2.07+04	2.18−04	3.11−02	−2.883	D	1
43		^{2}F–^{4}P°										
			6 732.81	6 734.66	115 285.61–130 134.16	8–6	9.78+04	4.99−04	8.84−02	−2.399	D	1
			6 641.00	6 642.84	114 804.37–129 858.18	6–4	9.47+04	4.17−04	5.47−02	−2.602	D	1
			6 521.44	6 523.25	114 804.37–130 134.16	6–6	5.89+04	3.76−04	4.84−02	−2.647	D	1
44		^{2}F–^{2}D°	*6 291.8*	*6 293.5*	*115 079.36–130 968.76*	14–10	2.06+07	8.75−02	2.54+01	0.088	C+	1
			6 286.94	6 288.68	115 285.61–131 187.19	8–6	1.96+07	8.70−02	1.44+01	−0.157	C+	1
			6 312.69	6 314.43	114 804.37–130 641.11	6–4	2.04+07	8.13−02	1.01+01	−0.312	C+	1
			6 102.27	6 103.96	114 804.37–131 187.19	6–6	1.33+06	7.41−03	8.93−01	−1.352	D+	1
45		^{2}F–^{4}S°										
			6 161.82	6 163.53	114 804.37–131 028.85	6–4	1.16+05	4.42−04	5.37−02	−2.576	D	1
46		^{4}P–^{2}D°										
				368.34 cm^{-1}	130 818.85–131 187.19	4–6	2.86+00	4.74−05	1.69−01	−3.722	D+	1
				584.98 cm^{-1}	130 602.21–131 187.19	6–6	2.62+01	1.15−04	3.87−01	−3.161	D+	1
				38.90 cm^{-1}	130 602.21–130 641.11	6–4	4.94−03	3.26−06	1.65−01	−4.709	D+	1
47		^{4}P–^{4}S°				10–4						1
				426.64 cm^{-1}	130 602.21–131 028.85	6–4	3.68+02	2.02−03	9.34+00	−1.916	C	1
				210.00 cm^{-1}	130 818.85–131 028.85	4–4	4.52+01	1.54−03	9.63+00	−2.210	C	1
48	$3s^23p^2(^3P)3d$–$3s^23p^2(^1D)4p$	^{2}P–^{2}D°	*2 858.10*	*2 858.94*	*105 747.45–140 725.47*	6–10	3.25+06	6.63−03	3.75−01	−1.400	D+	1
			2 847.368	2 848.205	105 599.06–140 708.89	4–6	3.30+06	6.03−03	2.26−01	−1.618	D+	1
			2 880.493	2 881.338	106 044.24–140 750.34	2–4	3.04+06	7.57−03	1.43−01	−1.820	D+	1
			2 844.011	2 844.847	105 599.06–140 750.34	4–4	1.21+05	1.47−04	5.51−03	−3.231	E+	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
49		^{2}P–^{2}P°	*2 642.53*	*2 643.32*	*105 747.45–143 578.69*	6–6	1.34+06	1.40−03	7.32−02	−2.076	D	1
			2 629.099	2 629.883	105 599.06–143 623.56	4–4	1.21+06	1.26−03	4.34−02	−2.298	D	1
			2 669.810	2 670.604	106 044.24–143 488.95	2–2	1.08+06	1.15−03	2.02−02	−2.638	D	1
			2 638.440	2 639.226	105 599.06–143 488.95	4–2	2.10+05	1.10−04	3.80−03	−3.357	E+	1
			2 660.247	2 661.038	106 044.24–143 623.56	2–4	1.57+05	3.34−04	5.85−03	−3.175	E+	1
50		^{4}D–^{2}F°										
			3 832.065	3 833.152	114 231.04–140 319.23	6–8	5.15+03	1.51−05	1.14−03	−4.043	E+	1
			3 840.697	3 841.786	114 200.54–140 230.10	4–6	2.32+03	7.70−06	3.89−04	−4.511	E	1
			3 839.171	3 840.261	114 279.33–140 319.23	8–8	8.31+05	1.84−03	1.85−01	−1.832	D+	1
			3 845.202	3 846.293	114 231.04–140 230.10	6–6	5.00+05	1.11−03	8.42−02	−2.177	D	1
			3 852.358	3 853.450	114 279.33–140 230.10	8–6	7.58+04	1.27−04	1.28−02	−2.993	D	1
51		^{4}D–^{2}D°										
			3 775.669	3 776.742	114 231.04–140 708.89	6–6	2.84+04	6.08−05	4.53−03	−3.438	E+	1
			3 765.437	3 766.507	114 200.54–140 750.34	4–4	1.26+03	2.68−06	1.32−04	−4.970	E	1
			3 782.568	3 783.642	114 279.33–140 708.89	8–6	5.18+05	8.34−04	8.31−02	−2.176	D	1
			3 769.768	3 770.839	114 231.04–140 750.34	6–4	3.88+05	5.51−04	4.10−02	−2.481	D	1
			3 771.325	3 772.396	114 200.54–140 708.89	4–6	4.27+03	1.37−05	6.78−04	−4.261	E	1
			3 760.021	3 761.090	114 162.30–140 750.34	2–4	3.34+03	1.42−05	3.50−04	−4.547	E	1
52		^{2}F–^{2}F°	*3 966.87*	*3 967.99*	*115 079.36–140 281.03*	14–14	1.20+07	2.83−02	5.18+00	−0.402	C	1
			3 993.499	3 994.628	115 285.61–140 319.23	8–8	1.15+07	2.75−02	2.89+00	−0.658	C	1
			3 931.911	3 933.024	114 804.37–140 230.10	6–6	1.10+07	2.56−02	1.98+00	−0.814	C	1
			4 007.768	4 008.901	115 285.61–140 230.10	8–6	1.06+06	1.91−03	2.01−01	−1.816	D+	1
			3 918.175	3 919.285	114 804.37–140 319.23	6–8	4.60+05	1.41−03	1.09−01	−2.073	D+	1
53		^{2}F–^{2}D°	*3 898.12*	*3 899.23*	*115 079.36–140 725.47*	14–10	9.69+06	1.58−02	2.84+00	−0.655	C	1
			3 932.289	3 933.403	115 285.61–140 708.89	8–6	8.51+06	1.48−02	1.53+00	−0.927	C	1
			3 853.070	3 854.163	114 804.37–140 750.34	6–4	9.69+06	1.44−02	1.09+00	−1.063	C	1
			3 859.236	3 860.330	114 804.37–140 708.89	6–6	1.27+06	2.84−03	2.16−01	−1.769	D+	1
54		^{2}D–^{2}F°	*15 038.5*	*15 042.6*	*133 633.25–140 281.03*	10–14	1.98+04	9.39−04	4.65−01	−2.027	D+	1
			15 370.03	15 374.23	133 814.84–140 319.23	6–8	1.71+04	8.09−04	2.45−01	−2.314	D+	1
			14 553.67	14 557.65	133 360.86–140 230.10	4–6	2.39+04	1.14−03	2.18−01	−2.341	D+	1
			15 583.57	15 587.83	133 814.84–140 230.10	6–6	1.72+02	6.26−06	1.92−03	−4.425	E+	1
55		^{2}D–^{2}D°	*14 096.1*	*14 100.0*	*133 633.25–140 725.47*	10–10	1.01+05	3.01−03	1.40+00	−1.521	D+	1
			14 501.30	14 505.26	133 814.84–140 708.89	6–6	8.08+04	2.55−03	7.30−01	−1.815	D+	1
			13 529.05	13 532.75	133 360.86–140 750.34	4–4	1.02+05	2.81−03	5.00−01	−1.949	D+	1
			14 414.63	14 418.57	133 814.84–140 750.34	6–4	2.09+04	4.34−04	1.23−01	−2.584	D+	1
			13 605.37	13 609.09	133 360.86–140 708.89	4–6	6.03+03	2.51−04	4.49−02	−2.998	D	1
56		^{2}D–^{2}P°	*10 052.1*	*10 054.9*	*133 633.25–143 578.69*	10–6	1.72+06	1.56−02	5.18+00	−0.807	C	1
			10 192.22	10 195.01	133 814.84–143 623.56	6–4	1.46+06	1.52−02	3.05+00	−1.040	C	1
			9 870.82	9 873.53	133 360.86–143 488.95	4–2	1.89+06	1.38−02	1.79+00	−1.258	C	1
			9 741.35	9 744.02	133 360.86–143 623.56	4–4	1.84+05	2.62−03	3.36−01	−1.980	D+	1
57	$3s^23p^2(^3\mathrm{P})4s$–$3s^23p^2(^3\mathrm{P})4p$	^{4}P–^{2}S°										
			6 386.50	6 388.27	109 831.59–125 485.29	4–2	3.20+05	9.79−04	8.23−02	−2.407	D	1
			6 277.86	6 279.59	109 560.69–125 485.29	2–2	1.25+05	7.41−04	3.06−02	−2.829	D	1
58		^{4}P–^{4}D°	*5 468.20*	*5 469.72*	*110 004.94–128 287.40*	12–20	7.69+07	5.75−01	1.24+02	0.839	C+	1
			5 453.855	5 455.371	110 268.60–128 599.16	6–8	7.75+07	4.61−01	4.97+01	0.442	C+	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			5 432.797	5 434.307	109 831.59–128 233.20	4–6	6.04+07	4.01−01	2.87+01	0.205	C+	1
			5 428.655	5 430.164	109 560.69–127 976.34	2–4	3.77+07	3.33−01	1.19+01	−0.177	C+	1
			5 564.958	5 566.503	110 268.60–128 233.20	6–6	1.65+07	7.68−02	8.44+00	−0.336	C	1
			5 509.705	5 511.236	109 831.59–127 976.34	4–4	3.67+07	1.67−01	1.21+01	−0.175	C+	1
			5 473.614	5 475.135	109 560.69–127 825.08	2–2	6.61+07	2.97−01	1.07+01	−0.226	C+	1
			5 645.68	5 647.25	110 268.60–127 976.34	6–4	2.47+06	7.87−03	8.78−01	−1.326	D+	1
			5 556.023	5 557.566	109 831.59–127 825.08	4–2	1.03+07	2.39−02	1.74+00	−1.020	C	1
59		^{4}P–^{4}P°	*5 003.73*	*5 005.13*	*110 004.94–129 984.44*	12–12	8.94+07	3.36−01	6.64+01	0.606	C+	1
			5 032.434	5 033.837	110 268.60–130 134.16	6–6	6.76+07	2.57−01	2.55+01	0.188	C+	1
			4 991.969	4 993.361	109 831.59–129 858.18	4–4	2.67+07	1.00−01	6.57+00	−0.398	C	1
			4 942.473	4 943.853	109 560.69–129 787.83	2–2	1.26+07	4.62−02	1.50+00	−1.034	C	1
			5 103.332	5 104.755	110 268.60–129 858.18	6–4	2.23+07	5.82−02	5.86+00	−0.457	C	1
			5 009.567	5 010.964	109 831.59–129 787.83	4–2	7.73+07	1.46−01	9.60+00	−0.234	C	1
			4 924.110	4 925.485	109 831.59–130 134.16	4–6	2.09+07	1.14−01	7.38+00	−0.341	C	1
			4 925.343	4 926.718	109 560.69–129 858.18	2–4	4.27+07	3.11−01	1.00+01	−0.206	C+	1
60		^{4}P–^{2}D°										
			4 681.302	4 682.613	109 831.59–131 187.19	4–6	4.12+05	2.03−03	1.25−01	−2.090	D+	1
			4 742.412	4 743.739	109 560.69–130 641.11	2–4	4.09+05	2.76−03	8.61−02	−2.258	D	1
			4 779.101	4 780.437	110 268.60–131 187.19	6–6	2.38+06	8.17−03	7.71−01	−1.310	D+	1
			4 804.150	4 805.493	109 831.59–130 641.11	4–4	6.85+05	2.37−03	1.50−01	−2.023	D+	1
			4 907.205	4 908.575	110 268.60–130 641.11	6–4	1.76+04	4.23−05	4.10−03	−3.596	E+	1
61		^{4}P–^{4}S°	*4 755.16*	*4 756.49*	*110 004.94*–131 028.85	12–4	1.29+08	1.46−01	2.75+01	0.244	C+	1
			4 815.552	4 816.898	110 268.60–131 028.85	6–4	8.40+07	1.95−01	1.85+01	0.068	C+	1
			4 716.271	4 717.591	109 831.59–131 028.85	4–4	3.23+07	1.08−01	6.69+00	−0.365	C	1
			4 656.757	4 658.061	109 560.69–131 028.85	2–4	1.14+07	7.45−02	2.28+00	−0.827	C	1
62		^{2}P–^{2}S°	*8 195.5*	*8 197.8*	*113 286.88*–125 485.29	6–2	2.61+07	8.75−02	1.42+01	−0.280	C	1
			8 314.59	8 316.87	113 461.54–125 485.29	4–2	1.59+07	8.24−02	9.02+00	−0.482	C	1
			7 967.38	7 969.58	112 937.57–125 485.29	2–2	1.03+07	9.83−02	5.15+00	−0.706	C	1
63		^{2}P–^{4}P°										
			6 097.12	6 098.81	113 461.54–129 858.18	4–4	6.43+04	3.59−04	2.88−02	−2.843	D	1
			5 932.98	5 934.63	112 937.57–129 787.83	2–2	1.72+05	9.06−04	3.54−02	−2.742	D	1
			6 123.40	6 125.09	113 461.54–129 787.83	4–2	1.97+05	5.54−04	4.46−02	−2.654	D	1
			5 996.20	5 997.86	113 461.54–130 134.16	4–6	1.62+06	1.31−02	1.03+00	−1.281	C	1
			5 908.32	5 909.95	112 937.57–129 858.18	2–4	4.68+05	4.90−03	1.90−01	−2.009	D+	1
64		^{2}P–^{2}D°	*5 653.9*	*5 655.5*	*113 286.88–130 968.76*	6–10	6.36+07	5.08−01	5.68+01	0.484	C+	1
			5 639.98	5 641.54	113 461.54–131 187.19	4–6	6.33+07	4.53−01	3.36+01	0.258	C+	1
			5 647.02	5 648.59	112 937.57–130 641.11	2–4	5.49+07	5.25−01	1.95+01	0.021	C+	1
			5 819.25	5 820.87	113 461.54–130 641.11	4–4	9.49+06	4.82−02	3.69+00	−0.715	C	1
65		^{2}P–^{4}S°										
			5 690.81	5 692.39	113 461.54–131 028.85	4–4	2.46+04	1.19−04	8.95−03	−3.322	E+	1
			5 525.990	5 527.525	112 937.57–131 028.85	2–4	7.89+04	7.22−04	2.62−02	−2.840	D	1
66		^{2}P–^{2}P°	*4 981.34*	*4 982.73*	*113 286.88–133 356.21*	6–6	8.87+07	3.30−01	3.25+01	0.297	C+	1
			5 014.042	5 015.440	113 461.54–133 399.97	4–4	7.36+07	2.78−01	1.83+01	0.046	C+	1
			4 917.198	4 918.571	112 937.57–133 268.68	2–2	5.82+07	2.11−01	6.84+00	−0.375	C	1
			5 047.277	5 048.684	113 461.54–133 268.68	4–2	3.10+07	5.93−02	3.94+00	−0.625	C	1
			4 885.648	4 887.012	112 937.57–133 399.97	2–4	1.48+07	1.06−01	3.40+00	−0.674	C	1
67	$3s^23p^2(^3P)4s$–$3s^23p^2(^1D)4p$	^{2}P–^{2}D°	*3 643.46*	*3 644.50*	*113 286.88–140 725.47*	6–10	2.34+07	7.78−02	5.60+00	−0.331	C	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			3 669.037	3 670.082	113 461.54–140 708.89	4–6	2.40+07	7.27−02	3.51+00	−0.536	C	1
			3 594.445	3 595.471	112 937.57–140 750.34	2–4	1.99+07	7.72−02	1.82+00	−0.811	C	1
			3 663.464	3 664.507	113 461.54–140 750.34	4–4	2.79+06	5.61−03	2.70−01	−1.649	D+	1
68		^{2}P−^{2}P°	*3 300.27*	*3 301.22*	*113 286.88–143 578.69*	6–6	2.18+07	3.57−02	2.33+00	−0.669	C	1
			3 314.474	3 315.428	113 461.54–143 623.56	4–4	1.86+07	3.06−02	1.33+00	−0.912	C	1
			3 272.231	3 273.175	112 937.57–143 488.95	2–2	1.38+07	2.22−02	4.77−01	−1.353	D+	1
			3 329.333	3 330.291	113 461.54–143 488.95	4–2	9.02+06	7.50−03	3.29−01	−1.523	D+	1
			3 257.877	3 258.816	112 937.57–143 623.56	2–4	2.80+06	8.90−03	1.91−01	−1.750	D+	1
69	$3s^23p^2(^1D)4s$–$3s^23p^2(^3P)4p$	^{2}D−^{4}P°										
			12 004.17	12 007.45	121 530.02–129 858.18	6–4	2.62+03	3.78−05	8.96−03	−3.644	E+	1
			12 104.53	12 107.84	121 528.72–129 787.83	4–2	9.50+01	1.04−06	1.66−04	−5.381	E	1
			11 619.13	11 622.31	121 530.02–130 134.16	6–6	3.51+04	7.11−04	1.63−01	−2.370	D+	1
			12 002.30	12 005.58	121 528.72–129 858.18	4–4	7.14+03	1.54−04	2.43−02	−3.210	D	1
			11 617.38	11 620.56	121 528.72–130 134.16	4–6	2.76+03	8.37−05	1.28−02	−3.475	D	1
70		^{2}D−^{2}D°	*10 591.1*	*10 594.1*	*121 529.50–130 968.76*	10–10	1.25+06	2.10−02	7.32+00	−0.678	C	1
			10 352.16	10 355.00	121 530.02–131 187.19	6–6	1.27+06	2.04−02	4.17+00	−0.912	C	1
			10 971.06	10 974.07	121 528.72–130 641.11	4–4	9.69+05	1.75−02	2.52+00	−1.155	C	1
			10 972.63	10 975.64	121 530.02–130 641.11	6–4	1.19+05	1.44−03	3.11−01	−2.063	D+	1
			10 350.77	10 353.61	121 528.72–131 187.19	4–6	9.62+04	2.32−03	3.16−01	−2.032	D+	1
71		^{2}D−^{2}P°	*8 453.1*	*8 455.4*	*121 529.50–133 356.21*	10–6	2.05+06	1.32−02	3.67+00	−0.879	C	1
			8 422.32	8 424.64	121 530.02–133 399.97	6–4	1.76+06	1.25−02	2.07+00	−1.125	C	1
			8 515.58	8 517.92	121 528.72–133 268.68	4–2	2.10+06	1.14−02	1.28+00	−1.341	C	1
			8 421.40	8 423.71	121 528.72–133 399.97	4–4	2.70+05	2.87−03	3.18−01	−1.940	D+	1
72	$3s^23p^2(^1D)4s$–$3s^23p^2(^1D)4p$	^{2}D−^{2}F°	*5 331.42*	*5 332.90*	*121 529.50–140 281.03*	10–14	7.89+07	4.71−01	8.27+01	0.673	C+	1
			5 320.723	5 322.204	121 530.02–140 319.23	6–8	7.95+07	4.50−01	4.73+01	0.431	C+	1
			5 345.712	5 347.199	121 528.72–140 230.10	4–6	7.56+07	4.86−01	3.42+01	0.289	C+	1
			5 346.084	5 347.571	121 530.02–140 230.10	6–6	2.69+06	1.15−02	1.22+00	−1.161	C	1
73		^{2}D−^{2}D°	*5 207.98*	*5 209.43*	*121 529.50–140 725.47*	10–10	8.66+07	3.52−01	6.04+01	0.547	C+	1
			5 212.620	5 214.072	121 530.02–140 708.89	6–6	8.47+07	3.45−01	3.55+01	0.316	C+	1
			5 201.027	5 202.475	121 528.72–140 750.34	4–4	7.56+07	3.07−01	2.10+01	0.089	C+	1
			5 201.379	5 202.827	121 530.02–140 750.34	6–4	1.19+07	3.23−02	3.31+00	−0.713	C	1
			5 212.267	5 213.718	121 528.72–140 708.89	4–6	1.46+06	8.95−03	6.14−01	−1.446	D+	1
74		^{2}D−^{2}P°	*4 534.04*	*4 535.31*	*121 529.50–143 578.69*	10–6	1.01+08	1.87−01	2.80+01	0.272	C+	1
			4 524.941	4 526.210	121 530.02–143 623.56	6–4	8.77+07	1.80−01	1.60+01	0.033	C+	1
			4 552.410	4 553.686	121 528.72–143 488.95	4–2	1.00+08	1.55−01	9.31+00	−0.208	C	1
			4 524.675	4 525.944	121 528.72–143 623.56	4–4	1.46+07	4.49−02	2.67+00	−0.746	C	1
75	$3s^23p^2(^3P)4p$–$3s3p^4$	^{2}S°−^{2}P	*4 962.77*	*4 964.15*	*125 485.29–145 629.71*	2–6	4.47+07	4.96−01	1.62+01	−0.003	C+	1
			4 993.500	4 994.893	125 485.29–145 505.74	2–4	4.58+07	3.43−01	1.12+01	−0.164	C+	1
			4 902.426	4 903.795	125 485.29–145 877.66	2–2	4.30+07	1.55−01	5.00+00	−0.509	C	1
76		^{4}D°−^{2}P										
			5 584.630	5 586.180	127 976.34–145 877.66	4–2	1.02+04	2.39−05	1.76−03	−4.020	E+	1
			5 703.12	5 704.70	127 976.34–145 505.74	4–4	1.81+04	8.83−05	6.63−03	−3.452	E+	1
			5 537.836	5 539.374	127 825.08–145 877.66	2–2	7.41+04	3.41−04	1.24−02	−3.166	D	1
			5 654.33	5 655.90	127 825.08–145 505.74	2–4	2.88+03	2.77−05	1.03−03	−4.256	E+	1
77		^{4}P°−^{2}P										

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			6 389.01	6 390.77	129 858.18–145 505.74	4–4	2.03+04	1.24−04	1.04−02	−3.305	D	1
			6 213.39	6 215.11	129 787.83–145 877.66	2–2	1.38+04	7.98−05	3.26−03	−3.797	E+	1
			6 240.67	6 242.40	129 858.18–145 877.66	4–2	1.63+04	4.76−05	3.91−03	−3.720	E+	1
			6 360.41	6 362.17	129 787.83–145 505.74	2–4	7.72+04	9.37−04	3.92−02	−2.727	D	1
78		$^2P^\circ$–^2P	*8 145.4*	*8 147.6*	*133 356.21–145 629.71*	6–6	1.56+07	1.56−01	2.50+01	−0.029	C+	1
			8 258.25	8 260.52	133 399.97–145 505.74	4–4	1.20+07	1.23−01	1.33+01	−0.308	C+	1
			7 928.67	7 930.86	133 268.68–145 877.66	2–2	1.23+07	1.16−01	6.03+00	−0.635	C	1
			8 012.10	8 014.30	133 399.97–145 877.66	4–2	5.57+06	2.68−02	2.82+00	−0.970	C	1
			8 169.65	8 171.90	133 268.68–145 505.74	2–4	2.69+06	5.39−02	2.89+00	−0.967	C	1
79	$3s^23p^2(^3P)4p$–$3s^23p^2(^3P)3d$	$^2S^\circ$–^4P										
			18 744.1	18 749.2	125 485.29–130 818.85	2–4	1.32+03	1.40−04	1.72−02	−3.553	D	1
			18 297.8	18 302.8	125 485.29–130 948.94	2–2	5.41+02	2.72−05	3.27−03	−4.264	E+	1
80		$^4D^\circ$–^4P		*2 444.81* cm^{-1}	*128 287.40–130 732.21*	20–12	1.04+03	1.57−04	4.23−01	−2.503	D+	1
				2 003.05 cm^{-1}	128 599.16–130 602.21	8–6	2.75+02	7.70−05	1.01−01	−3.210	D+	1
				2 585.65 cm^{-1}	128 233.20–130 818.85	6–4	3.08+01	4.60−06	3.51−03	−4.559	E+	1
				2 972.60 cm^{-1}	127 976.34–130 948.94	4–2	4.56+00	3.86−07	1.71−04	−5.811	E	1
				2 369.01 cm^{-1}	128 233.20–130 602.21	6–6	7.93+02	2.12−04	1.76−01	−2.896	D+	1
				2 842.51 cm^{-1}	127 976.34–130 818.85	4–4	6.42+02	1.19−04	5.52−02	−3.322	D	1
				3 123.86 cm^{-1}	127 825.08–130 948.94	2–2	4.08+02	6.26−05	1.32−02	−3.902	D	1
				2 625.87 cm^{-1}	127 976.34–130 602.21	4–6	3.19+02	1.04−04	5.22−02	−3.381	D	1
				2 993.77 cm^{-1}	127 825.08–130 818.85	2–4	2.93+02	9.80−05	2.15−02	−3.708	D	1
81		$^4D^\circ$–^2D										
			17 911.0	17 915.9	128 233.20–133 814.84	6–6	2.18+02	1.05−05	3.71−03	−4.201	E+	1
			18 566.7	18 571.8	127 976.34–133 360.86	4–4	4.60+02	2.38−05	5.81−03	−4.021	E+	1
			19 496.8	19 502.1	128 233.20–133 360.86	6–4	1.58+01	6.01−07	2.31−04	−5.443	E	1
			17 123.01	17 127.69	127 976.34–133 814.84	4–6	4.52+02	2.98−05	6.71−03	−3.924	E+	1
			18 059.4	18 064.3	127 825.08–133 360.86	2–4	1.17+03	1.15−04	1.36−02	−3.638	D	1
82		$^4P^\circ$–^4P		*747.77* cm^{-1}	*129 984.44–130 732.21*	12–12	2.22+03	5.95−03	3.15+01	−1.146	C	1
				468.05 cm^{-1}	130 134.16–130 602.21	6–6	3.73+02	2.55−03	1.07+01	−1.815	C+	1
				960.67 cm^{-1}	129 858.18–130 818.85	4–4	1.50+02	2.43−04	3.33−01	−3.012	D+	1
				1 161.11 cm^{-1}	129 787.83–130 948.94	2–2	1.38+03	1.53−03	8.70−01	−2.514	D+	1
				684.69 cm^{-1}	130 134.16–130 818.85	6–4	7.59+02	1.62−03	4.66+00	−2.012	C	1
				1 090.76 cm^{-1}	129 858.18–130 948.94	4–2	3.53+03	2.23−03	2.68+00	−2.050	C	1
				744.03 cm^{-1}	129 858.18–130 602.21	4–6	1.10+03	4.46−03	7.90+00	−1.749	C	1
				1 031.02 cm^{-1}	129 787.83–130 818.85	2–4	2.40+03	6.76−03	4.31+00	−1.869	C	1
83		$^4P^\circ$–^2D										
				3 956.66 cm^{-1}	129 858.18–133 814.84	4–6	7.93+02	1.14−04	3.79−02	−3.341	D	1
				3 573.03 cm^{-1}	129 787.83–133 360.86	2–4	9.03+01	2.12−05	3.90−03	−4.373	E+	1
				3 680.68 cm^{-1}	130 134.16–133 814.84	6–6	2.82+03	3.12−04	1.67−01	−2.728	D+	1
				3 502.68 cm^{-1}	129 858.18–133 360.86	4–4	5.07+02	6.19−05	2.32−02	−3.606	D	1
				3 226.70 cm^{-1}	130 134.16–133 360.86	6–4	2.21+02	2.12−05	1.29−02	−3.896	D	1
84		$^2D^\circ$–^2D		*2 664.49* cm^{-1}	*130 968.76–133 633.25*	10–10	3.89+04	8.21−03	1.01+01	−1.086	C	1
				2 627.65 cm^{-1}	131 187.19–133 814.84	6–6	3.32+04	7.20−03	5.41+00	−1.365	C	1
				2 719.75 cm^{-1}	130 641.11–133 360.86	4–4	3.60+04	7.31−03	3.53+00	−1.534	C	1
				2 173.67 cm^{-1}	131 187.19–133 360.86	6–4	2.05+03	4.34−04	3.94−01	−2.584	D+	1
				3 173.73 cm^{-1}	130 641.11–133 814.84	4–6	8.72+03	1.95−03	8.07−01	−2.108	D+	1
85	$3s^23p^2(^3P)4p$–$3s^23p^2(^1D)3d$	$^2S^\circ$–^2P	*6 906.9*	*6 908.8*	125 485.29–*139 959.51*	2–6	2.03+06	4.37−02	1.99+00	−1.058	C	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			6 879.71	6 881.61	125 485.29–140 016.77	2–4	1.96+06	2.79−02	1.26+00	−1.253	C	1
			6 962.01	6 963.93	125 485.29–139 844.99	2–2	2.18+06	1.59−02	7.26−01	−1.498	D+	1
86		$^4D^\circ-^2F$										
			9 711.00	9 713.66	128 233.20–138 527.98	6–8	8.12+03	1.53−04	2.93−02	−3.037	D	1
			9 491.52	9 494.12	127 976.34–138 509.17	4–6	6.25+03	1.27−04	1.58−02	−3.294	D	1
			10 068.93	10 071.69	128 599.16–138 527.98	8–8	8.84+02	1.34−05	3.56−03	−3.970	E+	1
			9 728.77	9 731.44	128 233.20–138 509.17	6–6	1.49+03	2.11−05	4.06−03	−3.898	E+	1
			10 088.04	10 090.81	128 599.16–138 509.17	8–6	3.49+01	4.00−07	1.06−04	−5.495	E	1
87		$^4P^\circ-^2F$										
			11 910.27	11 913.53	130 134.16–138 527.98	6–8	9.83+04	2.79−03	6.56−01	−1.776	D+	1
			11 556.21	11 559.37	129 858.18–138 509.17	4–6	3.06+04	9.20−04	1.40−01	−2.434	D+	1
			11 937.02	11 940.28	130 134.16–138 509.17	6–6	6.55+03	1.40−04	3.30−02	−3.076	D	1
88		$^4P^\circ-^2P$										
			9 841.19	9 843.89	129 858.18–140 016.77	4–4	3.02+02	4.39−06	5.69−04	−4.755	E	1
			9 940.44	9 943.16	129 787.83–139 844.99	2–2	3.88+03	5.75−05	3.76−03	−3.939	E+	1
			10 116.01	10 118.78	130 134.16–140 016.77	6–4	7.48+03	7.65−05	1.53−02	−3.338	D	1
			10 010.46	10 013.21	129 858.18–139 844.99	4–2	2.13+03	1.60−05	2.10−03	−4.194	E+	1
			9 773.50	9 776.18	129 787.83–140 016.77	2–4	4.19+03	1.20−04	7.73−03	−3.620	E+	1
89		$^2D^\circ-^2F$	*13 239.4*	*13 243.0*	*130 968.76–138 519.92*	10–14	2.26+06	8.33−02	3.63+01	−0.079	C+	1
			13 618.79	13 622.51	131 187.19–138 527.98	6–8	2.08+06	7.73−02	2.08+01	−0.334	C+	1
			12 706.14	12 709.61	130 641.11–138 509.17	4–6	2.39+06	8.67−02	1.45+01	−0.460	C+	1
			13 653.77	13 657.51	131 187.19–138 509.17	6–6	1.36+05	3.80−03	1.02+00	−1.642	C	1
90		$^2D^\circ-^2P$	*11 119.5*	*11 122.5*	*130 968.76–139 959.51*	10–6	1.95+05	2.16−03	7.93−01	−1.666	D+	1
			11 322.47	11 325.57	131 187.19–140 016.77	6–4	1.70+05	2.18−03	4.88−01	−1.883	D+	1
			10 862.01	10 864.98	130 641.11–139 844.99	4–2	2.08+05	1.84−03	2.63−01	−2.133	D+	1
			10 662.99	10 665.92	130 641.11–140 016.77	4–4	1.74+04	2.97−04	4.16−02	−2.925	D	1
91		$^4S^\circ-^2F$										
			13 364.76	13 368.41	131 028.85–138 509.17	4–6	3.13+03	1.26−04	2.21−02	−3.298	D	1
92		$^2P^\circ-^2P$	*15 139.8*	*15 143.9*	*133 356.21–139 959.51*	6–6	8.03+03	2.76−04	8.26−02	−2.781	D	1
			15 108.92	15 113.05	133 399.97–140 016.77	4–4	2.70+03	9.26−05	1.84−02	−3.431	D	1
			15 201.94	15 206.10	133 268.68–139 844.99	2–2	1.29+04	4.47−04	4.47−02	−3.049	D	1
			15 511.62	15 515.86	133 399.97–139 844.99	4–2	5.27+03	9.51−05	1.94−02	−3.420	D	1
			14 814.96	14 819.01	133 268.68–140 016.77	2–4	9.31+00	6.13−07	5.98−05	−5.912	EE	1
93		$^2P^\circ-^2D$	*9 337.7*	*9 340.3*	*133 356.21–144 062.52*	6–10	2.07+06	4.52−02	8.34+00	−0.567	C	1
			9 422.97	9 425.56	133 399.97–144 009.42	4–6	2.07+06	4.13−02	5.12+00	−0.782	C	1
			9 194.16	9 196.69	133 268.68–144 142.16	2–4	1.90+06	4.81−02	2.91+00	−1.017	C	1
			9 306.54	9 309.09	133 399.97–144 142.16	4–4	1.96+05	2.55−03	3.12−01	−1.991	D+	1
94	$3s^23p^2(^3P)4p-3s^23p^2(^1S)4s$	$^2P^\circ-^2S$		*2 972.58* cm^{-1}	*133 356.21*–136 328.79	6–2	1.52+04	8.59−04	5.71−01	−2.288	D+	1
				2 928.82 cm^{-1}	133 399.97–136 328.79	4–2	1.01+04	8.78−04	3.94−01	−2.454	D+	1
				3 060.11 cm^{-1}	133 268.68–136 328.79	2–2	5.15+03	8.25−04	1.77−01	−2.783	D+	1
95	$3s^23p^2(^3P)4p-3s^23p^2(^1S)3d$	$^4P^\circ-^2D$										
			5 253.843	5 255.305	129 858.18–148 886.57	4–6	1.57+04	9.72−05	6.73−03	−3.410	E+	1
			5 230.563	5 232.019	129 787.83–148 900.91	2–4	3.88+03	3.19−05	1.09−03	−4.195	E+	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			5 331.165	5 332.648	130 134.16–148 886.57	6–6	3.05+05	1.30−03	1.37−01	−2.108	D+	1
			5 249.887	5 251.348	129 858.18–148 900.91	4–4	9.01+04	3.73−04	2.57−02	−2.826	D	1
			5 327.091	5 328.573	130 134.16–148 900.91	6–4	3.32+04	9.42−05	9.91−03	−3.248	E+	1
96		$^2D^\circ-^2D$	*5 577.70*	*5 579.25*	*130 968.76–148 892.31*	10–10	7.64+06	3.56−02	6.55+00	−0.449	C	1
			5 648.35	5 649.92	131 187.19–148 886.57	6–6	6.90+06	3.30−02	3.68+00	−0.703	C	1
			5 474.990	5 476.511	130 641.11–148 900.91	4–4	7.35+06	3.31−02	2.38+00	−0.878	C	1
			5 643.78	5 645.34	131 187.19–148 900.91	6–4	7.33+05	2.33−03	2.60−01	−1.854	D+	1
			5 479.293	5 480.816	130 641.11–148 886.57	4–6	4.64+05	3.13−03	2.26−01	−1.902	D+	1
97		$^2P^\circ-^2D$	*6 434.8*	*6 436.6*	*133 356.21–148 892.31*	6–10	3.59+06	3.72−02	4.73+00	−0.651	C	1
			6 455.41	6 457.20	133 399.97–148 886.57	4–6	3.24+06	3.04−02	2.58+00	−0.915	C	1
			6 395.27	6 397.04	133 268.68–148 900.91	2–4	3.98+06	4.89−02	2.05+00	−1.010	C	1
			6 449.44	6 451.22	133 399.97–148 900.91	4–4	1.87+05	1.17−03	9.92−02	−2.330	D	1
98	$3s^23p^2(^1D)3d-3s^23p^2(^1D)4p$	$^2G-^2F^\circ$	*7 600.6*	*7 602.7*	*127 127.79–140 281.03*	18–14	1.76+07	1.19−01	5.35+01	0.331	C+	1
			7 578.91	7 581.00	127 128.35–140 319.23	10–8	1.74+07	1.20−01	2.98+01	0.079	C+	1
			7 629.74	7 631.84	127 127.10–140 230.10	8–6	1.75+07	1.15−01	2.30+01	−0.036	C+	1
			7 578.19	7 580.28	127 127.10–140 319.23	8–8	4.31+05	3.72−03	7.41−01	−1.526	D+	1
99		$^2F-^2F^\circ$		*1 761.11* cm^{-1}	*138 519.92–140 281.03*	14–14	7.64+03	3.69−03	9.66+00	−1.287	C	1
				1 791.25 cm^{-1}	138 527.98–140 319.23	8–8	7.86+03	3.67−03	5.40+00	−1.532	C	1
				1 720.93 cm^{-1}	138 509.17–140 230.10	6–6	6.57+03	3.32−03	3.81+00	−1.701	C	1
				1 702.12 cm^{-1}	138 527.98–140 230.10	8–6	4.78+02	1.86−04	2.87−01	−2.827	D+	1
				1 810.06 cm^{-1}	138 509.17–140 319.23	6–8	2.48+02	1.51−04	1.64−01	−3.043	D+	1
100		$^2F-^2D^\circ$		*2 205.55* cm^{-1}	*138 519.92–140 725.47*	14–10	9.02+04	1.99−02	4.15+01	−0.555	C+	1
				2 180.91 cm^{-1}	138 527.98–140 708.89	8–6	8.11+04	1.92−02	2.31+01	−0.814	C+	1
				2 241.17 cm^{-1}	138 509.17–140 750.34	6–4	9.51+04	1.89−02	1.66+01	−0.945	C+	1
				2 199.72 cm^{-1}	138 509.17–140 708.89	6–6	6.45+03	2.00−03	1.79+00	−1.921	C	1
101		$^2P-^2D^\circ$		*765.96* cm^{-1}	*139 959.51–140 725.47*	6–10	4.56+02	1.94−03	5.01+00	−1.934	C	1
				692.12 cm^{-1}	140 016.77–140 708.89	4–6	3.35+02	1.57−03	2.99+00	−2.202	C	1
				905.35 cm^{-1}	139 844.99–140 750.34	2–4	7.06+02	2.58−03	1.87+00	−2.287	C	1
				733.57 cm^{-1}	140 016.77–140 750.34	4–4	3.04+01	8.47−05	1.52−01	−3.470	D+	1
102		$^2P-^2P^\circ$		*3 619.18* cm^{-1}	*139 959.51–143 578.69*	6–6	3.43+05	3.93−02	2.14+01	−0.627	C+	1
				3 606.79 cm^{-1}	140 016.77–143 623.56	4–4	2.91+05	3.36−02	1.22+01	−0.872	C+	1
				3 643.96 cm^{-1}	139 844.99–143 488.95	2–2	2.34+05	2.64−02	4.77+00	−1.277	C	1
				3 472.18 cm^{-1}	140 016.77–143 488.95	4–2	9.60+04	5.97−03	2.26+00	−1.622	C	1
				3 778.57 cm^{-1}	139 844.99–143 623.56	2–4	6.03+04	1.27−02	2.20+00	−1.595	C	1
103	$3s^23p^2(^1S)4s-3s^23p^2(^1D)4p$	$^2S-^2P^\circ$	*13 789.5*	*13 793.3*	136 328.79–*143 578.69*	2–6	1.89+05	1.61−02	1.47+00	−1.492	D+	1
			13 704.70	13 708.45	136 328.79–143 623.56	2–4	1.92+05	1.08−02	9.74−01	−1.666	D+	1
			13 962.35	13 966.17	136 328.79–143 488.95	2–2	1.83+05	5.35−03	4.92−01	−1.971	D+	1
104	$3s^23p^2(^1S)4s-3s^23p^2(^1S)4p$	$^2S-^2P^\circ$	*5 020.84*	*5 022.24*	*136 328.79–156 240.23*	2–6	7.83+07	8.88−01	2.94+01	0.249	D	2
			5 011.626	5 013.024	136 328.79–156 276.83	2–4	7.88+07	5.94−01	1.96+01	0.075	D	2,LS
			5 039.362	5 040.767	136 328.79–156 167.04	2–2	7.74+07	2.95−01	9.78+00	−0.229	E+	2,LS
105	$3s^23p^2(^1D)4p-3s3p^4$	$^2D^\circ-^2P$		*4 904.24* cm^{-1}	*140 725.47–145 629.71*	10–6	1.36+04	5.07−04	3.41−01	−2.295	D+	1
				4 796.85 cm^{-1}	140 708.89–145 505.74	6–4	2.38+03	1.03−04	4.25−02	−3.209	D	1
			19 498.0	19 503.4	140 750.34–145 877.66	4–2	1.61+04	4.59−04	1.17−01	−2.736	D+	1
				4 755.40 cm^{-1}	140 750.34–145 505.74	4–4	9.88+03	6.55−04	1.81−01	−2.582	D+	1

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
106		^{2}P°–^{2}P		*2 051.02* cm^{-1}	*143 578.69–145 629.71*	6–6	1.73+03	6.18−04	5.95−01	−2.431	D+	1
				1 882.18 cm^{-1}	143 623.56–145 505.74	4–4	1.55+03	6.55−04	4.58−01	−2.582	D+	1
				2 388.71 cm^{-1}	143 488.95–145 877.66	2–2	1.07+03	2.80−04	7.72−02	−3.252	D	1
				2 254.10 cm^{-1}	143 623.56–145 877.66	4–2	2.77+02	4.09−05	2.38−02	−3.786	D	1
				2 016.79 cm^{-1}	143 488.95–145 505.74	2–4	1.51+02	1.11−04	3.63−02	−3.654	D	1
107	$3s^23p^2(^1D)4p$–$3s^23p^2(^1D)3d$	^{2}F°–^{2}D		*3 781.49* cm^{-1}	*140 281.03–144 062.52*	14–10	5.93+04	4.44−03	5.41+00	−1.206	C	1
				3 690.19 cm^{-1}	140 319.23–144 009.42	8–6	5.26+04	4.35−03	3.10+00	−1.458	C	1
				3 912.06 cm^{-1}	140 230.10–144 142.16	6–4	6.15+04	4.01−03	2.02+00	−1.619	C	1
				3 779.32 cm^{-1}	140 230.10–144 009.42	6–6	5.33+03	5.60−04	2.92−01	−2.474	D+	1
108		^{2}D°–^{2}D		*3 337.05* cm^{-1}	*140 725.47–144 062.52*	10–10	1.19+05	1.60−02	1.58+01	−0.796	C	1
				3 300.53 cm^{-1}	140 708.89–144 009.42	6–6	1.03+05	1.42−02	8.47+00	−1.070	C	1
				3 391.82 cm^{-1}	140 750.34–144 142.16	4–4	1.22+05	1.58−02	6.15+00	−1.199	C	1
				3 433.27 cm^{-1}	140 708.89–144 142.16	6–4	1.86+04	1.57−03	9.05−01	−2.026	D+	1
				3 259.08 cm^{-1}	140 750.34–144 009.42	4–6	3.01+03	6.38−04	2.57−01	−2.593	D+	1
109		^{2}P°–^{2}D		*483.83* cm^{-1}	*143 578.69–144 062.52*	6–10	2.34+02	2.50−03	1.02+01	−1.824	C	1
				385.86 cm^{-1}	143 623.56–144 009.42	4–6	1.19+02	1.79−03	6.12+00	−2.145	C	1
				653.21 cm^{-1}	143 488.95–144 142.16	2–4	5.08+02	3.57−03	3.60+00	−2.146	C	1
				518.60 cm^{-1}	143 623.56–144 142.16	4–4	3.32+01	1.85−04	4.70−01	−3.131	D+	1
110	$3s^23p^2(^1D)4p$–$3s^23p^2(^1S)3d$	^{2}F°–^{2}D	*11 609.5*	*11 612.7*	*140 281.03–148 892.31*	14–10	2.00+05	2.88−03	1.54+00	−1.394	D+	1
			11 669.04	11 672.23	140 319.23–148 886.57	8–6	1.85+05	2.83−03	8.70−01	−1.645	D+	1
			11 529.79	11 532.95	140 230.10–148 900.91	6–4	1.68+05	2.24−03	5.09−01	−1.872	D+	1
			11 548.89	11 552.05	140 230.10–148 886.57	6–6	3.63+04	7.26−04	1.65−01	−2.361	D+	1
111		^{2}D°–^{2}D	*12 241.3*	*12 244.6*	*140 725.47–148 892.31*	10–10	3.52+05	7.92−03	3.19+00	−1.101	C	1
			12 225.06	12 228.41	140 708.89–148 886.57	6–6	3.18+05	7.12−03	1.72+00	−1.369	C	1
			12 265.72	12 269.08	140 750.34–148 900.91	4–4	3.11+05	7.01−03	1.13+00	−1.552	C	1
			12 203.66	12 207.00	140 708.89–148 900.91	6–4	5.93+04	8.83−04	2.12−01	−2.276	D+	1
			12 287.34	12 290.70	140 750.34–148 886.57	4–6	2.35+04	8.00−04	1.29−01	−2.495	D+	1
112		^{2}P°–^{2}D	*18 814*	*18 820*	*143 578.69–148 892.31*	6–10	3.97+05	3.51−02	1.31+01	−0.677	C	1
			18 995.3	19 000.5	143 623.56–148 886.57	4–6	4.03+05	3.27−02	8.17+00	−0.883	C	1
			18 472.6	18 477.6	143 488.95–148 900.91	2–4	3.40+05	3.48−02	4.23+00	−1.157	C	1
			18 943.7	18 948.9	143 623.56–148 900.91	4–4	4.89+04	2.63−03	6.57−01	−1.978	D+	1
113	$3s^23p^2(^1D)4p$–$3s^23p^2(^1D)5s$	^{2}F°–^{2}D	*4 659.82*	*4 661.13*	*140 281.03–161 735.06*	14–10	8.07+07	1.88−01	4.04+01	0.420	D	2
			4 668.564	4 669.871	140 319.23–161 733.10	8–6	7.67+07	1.88−01	2.31+01	0.177	D	2,LS
			4 648.155	4 649.457	140 230.10–161 737.99	6–4	8.14+07	1.76−01	1.61+01	0.024	D	2,LS
			4 649.212	4 650.514	140 230.10–161 733.10	6–6	3.88+06	1.26−02	1.15+00	−1.121	E+	2,LS
114		^{2}D°–^{2}D	*4 758.40*	*4 759.73*	*140 725.47–161 735.06*	10–10	7.72+07	2.62−01	4.11+01	0.418	D	2
			4 755.092	4 756.421	140 708.89–161 733.10	6–6	7.22+07	2.45−01	2.30+01	0.167	D	2,LS
			4 763.375	4 764.707	140 750.34–161 737.99	4–4	6.93+07	2.36−01	1.48+01	−0.025	D	2,LS
			4 753.986	4 755.315	140 708.89–161 737.99	6–4	7.74+06	1.75−02	1.64+00	−0.979	E+	2,LS
			4 764.485	4 765.817	140 750.34–161 733.10	4–6	5.13+06	2.62−02	1.64+00	−0.980	E+	2,LS
115		^{2}P°–^{2}D	*5 506.18*	*5 507.71*	*143 578.69–161 735.06*	6–10	2.23+07	1.69−01	1.83+01	0.006	D	2
			5 520.418	5 521.951	143 623.56–161 733.10	4–6	2.22+07	1.52−01	1.10+01	−0.216	D	2,LS
			5 478.218	5 479.740	143 488.95–161 737.99	2–4	1.89+07	1.70−01	6.13+00	−0.469	E+	2,LS
			5 518.928	5 520.461	143 623.56–161 737.99	4–4	3.68+06	1.68−02	1.22+00	−1.173	E+	2,LS
116	$3s^23p^2(^1D)4p$–$3s^23p^2(^1D)4d$	^{2}F°–^{2}G	*4 174.39*	*4 175.57*	*140 281.03–164 229.85*	14–18	2.33+08	7.82−01	1.51+02	1.039	D	2

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			4 174.265	4 175.442	140 319.23–164 268.79	8–10	2.40+08	7.83−01	8.60+01	0.797	D	2,LS
			4 174.002	4 175.179	140 230.10–164 181.17	6–8	2.10+08	7.31−01	6.02+01	0.642	D	2,LS
			4 189.593	4 190.774	140 319.23–164 181.17	8–8	1.48+07	3.90−02	4.30+00	−0.506	E+	2,LS
117		^{2}F°–^{2}F	*4 163.50*	*4 164.68*	*140 281.03–164 292.50*	14–14	7.87+07	2.05−01	3.93+01	0.458	D	2
			4 162.305	4 163.478	140 319.23–164 337.61	8–8	6.96+07	1.81−01	1.98+01	0.161	D	2,LS
			4 165.100	4 166.274	140 230.10–164 232.36	6–6	8.41+07	2.19−01	1.80+01	0.119	D	2,LS
			4 180.625	4 181.803	140 319.23–164 232.36	8–6	3.40+06	6.68−03	7.35−01	−1.272	E	2,LS
			4 146.916	4 148.085	140 230.10–164 337.61	6–8	2.61+06	8.97−03	7.34−01	−1.269	E	2,LS
118		^{2}D°–^{2}F	*4 242.02*	*4 243.22*	*140 725.47–164 292.50*	10–14	1.17+08	4.42−01	6.18+01	0.645	D	2
			4 230.946	4 232.138	140 708.89–164 337.61	6–8	1.18+08	4.23−01	3.53+01	0.404	D	2,LS
			4 257.379	4 258.577	140 750.34–164 232.36	4–6	1.08+08	4.42−01	2.47+01	0.247	D	2,LS
			4 249.877	4 251.074	140 708.89–164 232.36	6–6	7.78+06	2.11−02	1.77+00	−0.898	E+	2,LS
119		^{2}D°–^{2}D	*3 734.84*	*3 735.90*	*140 725.47–167 492.80*	10–10	8.00+07	1.67−01	2.06+01	0.223	E+	2
			3 730.631	3 731.691	140 708.89–167 506.39	6–6	7.52+07	1.57−01	1.15+01	−0.026	D	2,LS
			3 741.160	3 742.224	140 750.34–167 472.42	4–4	7.19+07	1.51−01	7.43+00	−0.219	E+	2,LS
			3 735.366	3 736.428	140 708.89–167 472.42	6–4	8.02+06	1.12−02	8.26−01	−1.173	E	2,LS
			3 736.410	3 737.472	140 750.34–167 506.39	4–6	5.35+06	1.68−02	8.26−01	−1.173	E	2,LS
120		^{2}P°–^{2}P	*4 424.42*	*4 425.66*	*143 578.69–166 174.18*	6–6	1.05+08	3.10−01	2.71+01	0.270	D	2
			4 431.005	4 432.249	143 623.56–166 185.47	4–4	8.76+07	2.58−01	1.50+01	0.014	D	2,LS
			4 411.306	4 412.545	143 488.95–166 151.61	2–2	7.12+07	2.08−01	6.04+00	−0.381	E+	2,LS
			4 437.665	4 438.911	143 623.56–166 151.61	4–2	3.49+07	5.16−02	3.01+00	−0.685	E+	2,LS
			4 404.725	4 405.962	143 488.95–166 185.47	2–4	1.79+07	1.04−01	3.01+00	−0.682	E+	2,LS
121		^{2}P°–^{2}D	*4 180.45*	*4 181.63*	*143 578.69–167 492.80*	6–10	5.40+07	2.36−01	1.95+01	0.151	D	2
			4 185.929	4 187.108	143 623.56–167 506.39	4–6	5.40+07	2.13−01	1.17+01	−0.070	D	2,LS
			4 168.363	4 169.538	143 488.95–167 472.42	2–4	4.55+07	2.37−01	6.50+00	−0.324	E+	2,LS
			4 191.891	4 193.073	143 623.56–167 472.42	4–4	8.95+06	2.36−02	1.30+00	−1.025	E+	2,LS
122	$3s^23p^2(^1S)3d$–$3s^23p^2(^1S)4p$	^{2}D–^{2}P°	*13 605.6*	*13 609.3*	*148 892.31–156 240.23*	10–6	3.84+06	6.40−02	2.87+01	−0.194	D	2
			13 527.62	13 531.32	148 886.57–156 276.83	6–4	3.52+06	6.44−02	1.72+01	−0.413	D	2,LS
			13 758.72	13 762.48	148 900.91–156 167.04	4–2	3.72+06	5.28−02	9.56+00	−0.675	E+	2,LS
			13 553.92	13 557.63	148 900.91–156 276.83	4–4	3.88+05	1.07−02	1.91+00	−1.369	E+	2,LS
123	$3s^23p^2(^3P)5s$–$3s^23p^2(^3P)5p$	^{4}P–^{4}D°	*15 314.2*	*15 318.4*	*150 718.39–157 246.49*	12–20	1.44+07	8.46−01	5.12+02	1.007	D+	2
			15 234.26	15 238.42	150 996.41–157 558.77	6–8	1.47+07	6.82−01	2.05+02	0.612	D+	2,LS
			15 050.73	15 054.84	150 531.31–157 173.69	4–6	1.07+07	5.44−01	1.07+02	0.338	D+	2,LS
			14 963.75	14 967.84	150 258.51–156 939.50	2–4	6.46+06	4.34−01	4.27+01	−0.061	D	2,LS
			16 183.93	16 188.35	150 996.41–157 173.69	6–6	3.69+06	1.45−01	4.63+01	−0.060	D	2,LS
			15 600.77	15 605.03	150 531.31–156 939.50	4–4	7.31+06	2.67−01	5.48+01	0.029	D	2,LS
			15 213.67	15 217.83	150 258.51–156 829.75	2–2	1.23+07	4.27−01	4.27+01	−0.069	D	2,LS
			16 821.67	16 826.26	150 996.41–156 939.50	6–4	5.44+05	1.54−02	5.11+00	−1.034	E+	2,LS
			15 872.61	15 876.95	150 531.31–156 829.75	4–2	2.16+06	4.09−02	8.54+00	−0.786	E+	2,LS
124		^{4}P–^{4}P°	*14 066.7*	*14 070.6*	*150 718.39–157 825.41*	12–12	1.66+07	4.94−01	2.74+02	0.773	D	2
			14 196.25	14 200.13	150 996.41–158 038.60	6–6	1.13+07	3.43−01	9.61+01	0.313	D	2,LS
			14 183.80	14 187.68	150 531.31–157 579.68	4–4	2.16+06	6.53−02	1.22+01	−0.583	D	2,LS
			13 475.57	13 479.25	150 258.51–157 677.32	2–2	3.16+06	8.60−02	7.63+00	−0.764	E+	2,LS
			15 185.87	15 190.02	150 996.41–157 579.68	6–4	5.94+06	1.37−01	4.10+01	−0.085	D	2,LS
			13 990.00	13 993.82	150 531.31–157 677.32	4–2	1.41+07	2.07−01	3.81+01	−0.082	D	2,LS
			13 316.74	13 320.39	150 531.31–158 038.60	4–6	5.89+06	2.35−01	4.12+01	−0.027	D	2,LS
			13 655.29	13 659.02	150 258.51–157 579.68	2–4	7.58+06	4.24−01	3.81+01	−0.072	D	2,LS

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
125		^{4}P–^{4}S°	*13 509.2*	*13 512.9*	*150 718.39–158 118.75*	12–4	2.32+07	2.12−01	1.13+02	0.406	D	2
			14 036.49	14 040.33	150 996.41–158 118.75	6–4	1.04+07	2.04−01	5.65+01	0.088	D	2,LS
			13 176.07	13 179.68	150 531.31–158 118.75	4–4	8.37+06	2.18−01	3.78+01	−0.059	D	2,LS
			12 718.78	12 722.26	150 258.51–158 118.75	2–4	4.66+06	2.26−01	1.89+01	−0.345	D	2,LS
126		^{2}P–^{2}D°	*14 744.5*	*14 748.5*	*151 735.16–158 515.51*	6–10	1.56+07	8.48−01	2.47+02	0.707	D+	2
			14 691.86	14 695.88	151 910.83–158 715.46	4–6	1.58+07	7.68−01	1.48+02	0.487	D+	2,LS
			14 633.47	14 637.47	151 383.81–158 215.59	2–4	1.33+07	8.57−01	8.25+01	0.234	D	2,LS
			15 856.70	15 861.03	151 910.83–158 215.59	4–4	2.10+06	7.91−02	1.65+01	−0.500	D	2,LS
127	$3s^23p^2(^3\mathrm{P})4d$–$3s^23p^2(^3\mathrm{P})5p$	^{4}F–^{4}D°		*4 925.02* cm^{-1}	*152 321.47–157 246.49*	28–20	5.88+06	2.59−01	4.86+02	0.860	D+	2
				4 943.31 cm^{-1}	152 615.46–157 558.77	10–8	5.32+06	2.61−01	1.73+02	0.417	D+	2,LS
				4 868.69 cm^{-1}	152 305.00–157 173.69	8–6	4.66+06	2.21−01	1.19+02	0.247	D+	2,LS
				4 844.86 cm^{-1}	152 094.64–156 939.50	6–4	4.51+06	1.92−01	7.82+01	0.061	D	2,LS
				4 870.06 cm^{-1}	151 959.69–156 829.75	4–2	5.70+06	1.80−01	4.86+01	−0.143	D	2,LS
			19 028.8	19 034.0	152 305.00–157 558.77	8–8	7.29+05	3.96−02	1.98+01	−0.499	D	2,LS
			19 683.3	19 688.7	152 094.64–157 173.69	6–6	1.12+06	6.53−02	2.53+01	−0.407	D	2,LS
				4 979.81 cm^{-1}	151 959.69–156 939.50	4–4	1.22+06	7.37−02	1.94+01	−0.530	D	2,LS
			18 296.2	18 301.2	152 094.64–157 558.77	6–8	4.16+04	2.79−03	1.00+00	−1.776	E+	2,LS
			19 173.9	19 179.1	151 959.69–157 173.69	4–6	6.66+04	5.51−03	1.39+00	−1.657	E+	2,LS
128		^{4}D–^{4}D°		*3 940.29* cm^{-1}	*153 306.20–157 246.49*	20–20	6.53+05	6.31−02	1.05+02	0.101	D	2
				4 145.03 cm^{-1}	153 413.74–157 558.77	8–8	6.53+05	5.70−02	3.62+01	−0.341	D	2,LS
				3 890.62 cm^{-1}	153 283.07–157 173.69	6–6	3.62+05	3.58−02	1.81+01	−0.668	D	2,LS
				3 737.55 cm^{-1}	153 201.95–156 939.50	4–4	2.24+05	2.40−02	8.45+00	−1.018	E+	2,LS
				3 675.85 cm^{-1}	153 153.90–156 829.75	2–2	2.66+05	2.95−02	5.28+00	−1.229	E+	2,LS
				3 759.95 cm^{-1}	153 413.74–157 173.69	8–6	1.08+05	8.59−03	6.01+00	−1.163	E+	2,LS
				3 656.43 cm^{-1}	153 283.07–156 939.50	6–4	1.83+05	1.37−02	7.40+00	−1.085	E+	2,LS
				3 627.80 cm^{-1}	153 201.95–156 829.75	4–2	2.55+05	1.45−02	5.26+00	−1.237	E+	2,LS
				4 275.70 cm^{-1}	153 283.07–157 558.77	6–8	1.19+05	1.30−02	6.00+00	−1.108	E+	2,LS
				3 971.74 cm^{-1}	153 201.95–157 173.69	4–6	1.56+05	2.23−02	7.39+00	−1.050	E+	2,LS
				3 785.60 cm^{-1}	153 153.90–156 939.50	2–4	1.45+05	3.03−02	5.27+00	−1.218	E+	2,LS
129		^{4}D–^{4}P°		*4 519.21* cm^{-1}	*153 306.20–157 825.41*	20–12	4.38+06	1.93−01	2.81+02	0.587	D	2
				4 624.86 cm^{-1}	153 413.74–158 038.60	8–6	3.77+06	1.98−01	1.12+02	0.200	D+	2,LS
				4 296.61 cm^{-1}	153 283.07–157 579.68	6–4	2.38+06	1.29−01	5.93+01	−0.111	D	2,LS
				4 475.37 cm^{-1}	153 201.95–157 677.32	4–2	2.13+06	7.99−02	2.35+01	−0.495	D	2,LS
				4 755.53 cm^{-1}	153 283.07–158 038.60	6–6	9.23+05	6.12−02	2.54+01	−0.435	D	2,LS
				4 377.73 cm^{-1}	153 201.95–157 579.68	4–4	1.28+06	1.00−01	3.00+01	−0.398	D	2,LS
				4 523.42 cm^{-1}	153 153.90–157 677.32	2–2	2.21+06	1.62−01	2.35+01	−0.489	D	2,LS
				4 836.65 cm^{-1}	153 201.95–158 038.60	4–6	1.08+05	1.04−02	2.83+00	−1.381	E+	2,LS
				4 425.78 cm^{-1}	153 153.90–157 579.68	2–4	2.06+05	3.16−02	4.70+00	−1.199	E+	2,LS
130		^{4}P–^{4}P°		*1 881.46* cm^{-1}	*155 943.95–157 825.41*	12–12	1.90+05	8.06−02	1.69+02	−0.014	D	2
				2 219.89 cm^{-1}	155 818.71–158 038.60	6–6	2.19+05	6.67−02	5.93+01	−0.398	D	2,LS
				1 550.14 cm^{-1}	156 029.54–157 579.68	4–4	1.42+04	8.87−03	7.53+00	−1.450	E+	2,LS
				1 528.84 cm^{-1}	156 148.48–157 677.32	2–2	1.70+04	1.09−02	4.69+00	−1.662	E+	2,LS
				1 760.97 cm^{-1}	155 818.71–157 579.68	6–4	7.04+04	2.27−02	2.54+01	−0.866	D	2,LS
				1 647.78 cm^{-1}	156 029.54–157 677.32	4–2	1.07+05	2.95−02	2.35+01	−0.928	D	2,LS
				2 009.06 cm^{-1}	156 029.54–158 038.60	4–6	6.96+04	3.88−02	2.54+01	−0.809	D	2,LS
				1 431.20 cm^{-1}	156 148.48–157 579.68	2–4	3.50+04	5.12−02	2.35+01	−0.990	D	2,LS
131		^{4}P–^{4}S°		*2 174.80* cm^{-1}	*155 943.95*–158 118.75	12–4	7.38+05	7.80−02	1.42+02	−0.029	D	2
				2 300.04 cm^{-1}	155 818.71–158 118.75	6–4	4.37+05	8.26−02	7.09+01	−0.305	D	2,LS
				2 089.21 cm^{-1}	156 029.54–158 118.75	4–4	2.18+05	7.50−02	4.72+01	−0.523	D	2,LS

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 970.27 cm^{-1}	156 148.48–158 118.75	2–4	9.15+04	7.07−02	2.36+01	−0.850	D	2,LS
132		^{2}F–^{2}D°		*2 118.11* cm^{-1}	*156 397.40–158 515.51*	14–10	5.97+05	1.42−01	3.10+02	0.298	D+	2
				2 111.29 cm^{-1}	156 604.17–158 715.46	8–6	5.63+05	1.42−01	1.77+02	0.055	D+	2,LS
				2 093.89 cm^{-1}	156 121.70–158 215.59	6–4	5.79+05	1.32−01	1.24+02	−0.101	D+	2,LS
				2 593.76 cm^{-1}	156 121.70–158 715.46	6–6	5.25+04	1.17−02	8.91+00	−1.154	E+	2,LS
133	$3s^23p^2(^3P)5p-3s^23p^2(^3P)4d$	^{2}D°–^{2}D		*978.56* cm^{-1}	*158 515.51–159 494.07*	10–10	1.68+04	2.62−02	8.83+01	−0.582	D	2
				777.37 cm^{-1}	158 715.46–159 492.83	6–6	7.86+03	1.95−02	4.95+01	−0.932	D	2,LS
				1 280.35 cm^{-1}	158 215.59–159 495.94	4–4	3.38+04	3.09−02	3.17+01	−0.908	D	2,LS
				780.48 cm^{-1}	158 715.46–159 495.94	6–4	8.53+02	1.40−03	3.54+00	−2.076	E+	2,LS
				1 277.24 cm^{-1}	158 215.59–159 492.83	4–6	2.49+03	3.43−03	3.53+00	−1.863	E+	2,LS
134	$3s^23p^2(^3P)5p-3s^23p^2(^1D)4d$	^{2}D°–^{2}F	*17 305.3*	*17 310.1*	*158 515.51–164 292.50*	10–14	4.47+06	2.81−01	1.60+02	0.449	D	2
			17 781.9	17 786.8	158 715.46–164 337.61	6–8	4.13+06	2.61−01	9.16+01	0.195	D	2,LS
			16 615.67	16 620.21	158 215.59–164 232.36	4–6	4.72+06	2.93−01	6.41+01	0.069	D	2,LS
			18 121.2	18 126.1	158 715.46–164 232.36	6–6	2.60+05	1.28−02	4.58+00	−1.115	E+	2,LS
135	$3s^23p^2(^3P)5p-3s^23p^2(^3P)6s$	^{4}D°–^{4}P	*11 177.9*	*11 181.0*	*157 246.49–166 190.23*	20–12	2.80+07	3.14−01	2.31+02	0.798	D	2
			11 206.37	11 209.44	157 558.77–166 479.82	8–6	2.22+07	3.14−01	9.26+01	0.400	D	2,LS
			11 337.77	11 340.88	157 173.69–165 991.35	6–4	1.69+07	2.17−01	4.86+01	0.115	D	2,LS
			11 386.75	11 389.87	156 939.50–165 719.23	4–2	1.33+07	1.29−01	1.93+01	−0.287	D	2,LS
			10 742.66	10 745.61	157 173.69–166 479.82	6–6	5.68+06	9.83−02	2.08+01	−0.229	D	2,LS
			11 044.44	11 047.47	156 939.50–165 991.35	4–4	9.29+06	1.70−01	2.47+01	−0.167	D	2,LS
			11 246.17	11 249.25	156 829.75–165 719.23	2–2	1.38+07	2.61−01	1.93+01	−0.282	D	2,LS
			10 478.96	10 481.83	156 939.50–166 479.82	4–6	6.80+05	1.68−02	2.31+00	−1.173	E+	2,LS
			10 912.14	10 915.12	156 829.75–165 991.35	2–4	1.50+06	5.37−02	3.85+00	−0.969	E+	2,LS
136		^{4}P°–^{4}P	*11 951.6*	*11 954.8*	*157 825.41–166 190.23*	12–12	1.40+07	3.00−01	1.42+02	0.556	D	2
			11 843.39	11 846.63	158 038.60–166 479.82	6–6	1.01+07	2.12−01	4.95+01	0.104	D	2,LS
			11 884.99	11 888.25	157 579.68–165 991.35	4–4	1.90+06	4.03−02	6.30+00	−0.793	E+	2,LS
			12 431.46	12 434.86	157 677.32–165 719.23	2–2	2.08+06	4.82−02	3.94+00	−1.016	E+	2,LS
			12 570.83	12 574.27	158 038.60–165 991.35	6–4	5.42+06	8.57−02	2.12+01	−0.289	D	2,LS
			12 282.33	12 285.69	157 579.68–165 719.23	4–2	1.08+07	1.22−01	1.97+01	−0.312	D	2,LS
			11 232.70	11 235.78	157 579.68–166 479.82	4–6	5.07+06	1.44−01	2.13+01	−0.240	D	2,LS
			12 024.57	12 027.86	157 677.32–165 991.35	2–4	5.74+06	2.49−01	1.97+01	−0.303	D	2,LS
137		^{4}S°–^{4}P	*12 385.9*	*12 389.3*	158 118.75–*166 190.23*	4–12	6.12+06	4.22−01	6.89+01	0.227	D	2
			11 956.92	11 960.19	158 118.75–166 479.82	4–6	6.81+06	2.19−01	3.44+01	−0.057	D	2,LS
			12 698.81	12 702.28	158 118.75–165 991.35	4–4	5.70+06	1.38−01	2.30+01	−0.258	D	2,LS
			13 153.47	13 157.06	158 118.75–165 719.23	4–2	5.12+06	6.65−02	1.15+01	−0.575	D	2,LS
138		^{2}D°–^{2}P	*12 236.5*	*12 239.9*	*158 515.51–166 685.54*	10–6	2.53+07	3.41−01	1.37+02	0.533	D	2
			12 270.72	12 274.08	158 715.46–166 862.71	6–4	2.26+07	3.40−01	8.24+01	0.310	D	2,LS
			12 318.58	12 321.95	158 215.59–166 331.19	4–2	2.48+07	2.82−01	4.57+01	0.052	D	2,LS
			11 561.38	11 564.54	158 215.59–166 862.71	4–4	3.00+06	6.01−02	9.15+00	−0.619	E+	2,LS
139	$3s^23p^2(^3P)5p-3s^23p^2(^3P)5d$	^{4}D°–^{4}F	*10 300.5*	*10 303.4*	*157 246.49–166 952.06*	20–28	4.85+07	1.08+00	7.32+02	1.334	D+	2
			10 295.44	10 298.26	157 558.77–167 269.15	8–10	4.86+07	9.67−01	2.62+02	0.889	D+	2,LS
			10 259.30	10 262.11	157 173.69–166 918.27	6–8	4.21+07	8.87−01	1.79+02	0.726	D+	2,LS
			10 232.85	10 235.66	156 939.50–166 709.27	4–6	3.71+07	8.75−01	1.17+02	0.544	D+	2,LS
			10 241.70	10 244.51	156 829.75–166 591.08	2–4	3.46+07	1.09+00	7.35+01	0.338	D	2,LS
			10 681.41	10 684.33	157 558.77–166 918.27	8–8	6.19+06	1.06−01	2.98+01	−0.072	D	2,LS
			10 484.17	10 487.04	157 173.69–166 709.27	6–6	1.12+07	1.85−01	3.83+01	0.045	D	2,LS
			10 358.16	10 361.00	156 939.50–166 591.08	4–4	1.34+07	2.15−01	2.93+01	−0.066	D	2,LS

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			10 925.37	10 928.36	157 558.77–166 709.27	8–6	3.93+05	5.28−03	1.51+00	−1.374	E+	2,LS
			10 615.74	10 618.65	157 173.69–166 591.08	6–4	8.87+05	1.00−02	2.09+00	−1.222	E+	2,LS
140		$^{4}D^{\circ}-^{4}D$	*9 823.4*	*9 826.1*	*157 246.49–167 423.44*	20–20	1.26+07	1.83−01	1.18+02	0.563	D	2
			9 980.83	9 983.57	157 558.77–167 575.23	8–8	1.04+07	1.55−01	4.07+01	0.093	D	2,LS
			9 809.61	9 812.30	157 173.69–167 364.98	6–6	7.27+06	1.05−01	2.03+01	−0.201	D	2,LS
			9 657.00	9 659.65	156 939.50–167 291.84	4–4	5.34+06	7.47−02	9.49+00	−0.525	E+	2,LS
			9 589.61	9 592.24	156 829.75–167 254.84	2–2	6.82+06	9.41−02	5.94+00	−0.725	E+	2,LS
			10 194.83	10 197.62	157 558.77–167 364.98	8–6	2.15+06	2.52−02	6.76+00	−0.696	E+	2,LS
			9 880.52	9 883.23	157 173.69–167 291.84	6–4	4.36+06	4.26−02	8.31+00	−0.592	E+	2,LS
			9 691.64	9 694.30	156 939.50–167 254.84	4–2	6.60+06	4.65−02	5.93+00	−0.730	E+	2,LS
			9 611.32	9 613.96	157 173.69–167 575.23	6–8	1.93+06	3.57−02	6.77+00	−0.669	E+	2,LS
			9 589.25	9 591.88	156 939.50–167 364.98	4–6	3.18+06	6.58−02	8.30+00	−0.580	E+	2,LS
			9 555.70	9 558.32	156 829.75–167 291.84	2–4	3.44+06	9.44−02	5.93+00	−0.724	E+	2,LS
141		$^{4}P^{\circ}-^{4}D$	*10 416.0*	*10 418.8*	*157 825.41–167 423.44*	12–20	3.57+07	9.68−01	3.98+02	1.065	D	2
			10 483.01	10 485.88	158 038.60–167 575.23	6–8	3.51+07	7.71−01	1.59+02	0.665	D+	2,LS
			10 216.61	10 219.41	157 579.68–167 364.98	4–6	2.65+07	6.23−01	8.38+01	0.397	D	2,LS
			10 398.09	10 400.94	157 677.32–167 291.84	2–4	1.50+07	4.86−01	3.32+01	−0.012	D	2,LS
			10 719.34	10 722.27	158 038.60–167 364.98	6–6	9.86+06	1.70−01	3.59+01	0.009	D	2,LS
			10 293.55	10 296.37	157 579.68–167 291.84	4–4	1.97+07	3.14−01	4.25+01	0.099	D	2,LS
			10 438.26	10 441.12	157 677.32–167 254.84	2–2	2.96+07	4.84−01	3.32+01	−0.014	D	2,LS
			10 804.07	10 807.03	158 038.60–167 291.84	6–4	1.60+06	1.87−02	3.99+00	−0.950	E+	2,LS
			10 332.91	10 335.75	157 579.68–167 254.84	4–2	6.11+06	4.89−02	6.65+00	−0.709	E+	2,LS
142		$^{4}P^{\circ}-^{4}P$	*9 523.5*	*9 526.1*	*157 825.41–168 322.92*	12–12	1.92+07	2.61−01	9.84+01	0.496	D	2
			9 821.94	9 824.63	158 038.60–168 217.10	6–6	1.23+07	1.78−01	3.45+01	0.029	D	2,LS
			9 241.14	9 243.67	157 579.68–168 397.89	4–4	2.81+06	3.60−02	4.38+00	−0.842	E+	2,LS
			9 245.50	9 248.03	157 677.32–168 490.43	2–2	3.51+06	4.50−02	2.73+00	−1.046	E+	2,LS
			9 650.52	9 653.17	158 038.60–168 397.89	6–4	8.33+06	7.76−02	1.47+01	−0.332	D	2,LS
			9 162.76	9 165.27	157 579.68–168 490.43	4–2	1.81+07	1.14−01	1.37+01	−0.341	D	2,LS
			9 398.20	9 400.78	157 579.68–168 217.10	4–6	6.04+06	1.20−01	1.48+01	−0.319	D	2,LS
			9 325.30	9 327.86	157 677.32–168 397.89	2–4	8.54+06	2.23−01	1.36+01	−0.351	D	2,LS
143		$^{4}S^{\circ}-^{4}P$	*9 797.2*	*9 799.9*	158 118.75–*168 322.92*	4–12	2.25+07	9.71−01	1.25+02	0.589	D	2
			9 899.89	9 902.61	158 118.75–168 217.10	4–6	2.18+07	4.81−01	6.27+01	0.284	D	2,LS
			9 725.77	9 728.44	158 118.75–168 397.89	4–4	2.30+07	3.26−01	4.17+01	0.115	D	2,LS
			9 639.00	9 641.64	158 118.75–168 490.43	4–2	2.37+07	1.65−01	2.09+01	−0.180	D	2,LS
144		$^{2}D^{\circ}-^{2}F$	*9 082.4*	*9 084.9*	*158 515.51–169 522.84*	10–14	3.04+07	5.27−01	1.58+02	0.722	D	2
			9 099.28	9 101.78	158 715.46–169 702.32	6–8	3.02+07	5.01−01	9.00+01	0.478	D	2,LS
			9 032.62	9 035.10	158 215.59–169 283.54	4–6	2.89+07	5.30−01	6.30+01	0.326	D	2,LS
			9 459.86	9 462.46	158 715.46–169 283.54	6–6	1.79+06	2.41−02	4.50+00	−0.840	E+	2,LS
145	$3s^23p^2(^3P)5p-3s^23p^2(^3P)6d$	$^{4}D^{\circ}-^{4}F$				20–28						2
			5 890.95	5 892.58	157 558.77–174 529.27	8–10	1.57+07	1.02−01	1.58+01	−0.088	D	2,LS
146	$3s^23p^2(^1D)5s-3s^23p^2(^1D)5p$	$^{2}D-^{2}F^{\circ}$	*14 864.9*	*14 869.0*	*161 735.06–168 460.48*	10–14	1.47+07	6.83−01	3.35+02	0.834	D+	2
			14 831.91	14 835.96	161 733.10–168 473.48	6–8	1.49+07	6.54−01	1.91+02	0.594	D+	2,LS
			14 909.83	14 913.91	161 737.99–168 443.14	4–6	1.37+07	6.83−01	1.34+02	0.436	D+	2,LS
			14 898.97	14 903.04	161 733.10–168 443.14	6–6	9.76+05	3.25−02	9.56+00	−0.710	E+	2,LS
147	$3s^23p^2(^1D)4d-3s^23p^2(^1D)5p$	$^{2}G-^{2}F^{\circ}$		*4 230.63* cm^{-1}	*164 229.85–168 460.48*	18–14	3.94+06	2.57−01	3.59+02	0.665	D+	2
				4 204.69 cm^{-1}	164 268.79–168 473.48	10–8	3.88+06	2.63−01	2.05+02	0.420	D+	2,LS
				4 261.97 cm^{-1}	164 181.17–168 443.14	8–6	3.76+06	2.33−01	1.44+02	0.270	D+	2,LS

TABLE 6. Transition probabilities of allowed lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				4 292.31 cm^{-1}	164 181.17–168 473.48	8–8	2.06+05	1.68−02	1.03+01	−0.872	D	2,LS
148		^{2}F–^{2}F°		*4 167.98* cm^{-1}	*164 292.50–168 460.48*	14–14	8.55+05	7.38−02	8.16+01	0.014	D	2
				4 135.87 cm^{-1}	164 337.61–168 473.48	8–8	7.39+05	6.48−02	4.12+01	−0.285	D	2,LS
				4 210.78 cm^{-1}	164 232.36–168 443.14	6–6	9.44+05	7.98−02	3.74+01	−0.320	D	2,LS
				4 105.53 cm^{-1}	164 337.61–168 443.14	8–6	3.57+04	2.38−03	1.52+00	−1.720	E+	2,LS
				4 241.12 cm^{-1}	164 232.36–168 473.48	6–8	2.95+04	3.28−03	1.52+00	−1.706	E+	2,LS
149		^{2}D–^{2}F°		*967.68* cm^{-1}	*167 492.80–168 460.48*	10–14	6.78+03	1.52−02	5.17+01	−0.818	D	2
				967.09 cm^{-1}	167 506.39–168 473.48	6–8	6.79+03	1.45−02	2.96+01	−1.060	D	2,LS
				970.72 cm^{-1}	167 472.42–168 443.14	4–6	6.37+03	1.52−02	2.06+01	−1.216	D	2,LS
				936.75 cm^{-1}	167 506.39–168 443.14	6–6	4.10+02	7.00−04	1.47+00	−2.377	E+	2,LS
150	$3s^23p^2(^1D)5p-3s^23p^2(^3P)5d$	^{2}F°–^{2}F		*1 062.36* cm^{-1}	*168 460.48–169 522.84*	14–14	6.87+03	9.12−03	3.96+01	−0.894	D	2
				1 228.84 cm^{-1}	168 473.48–169 702.32	8–8	9.41+03	9.34−03	2.00+01	−1.127	D	2,LS
				840.40 cm^{-1}	168 443.14–169 283.54	6–6	3.64+03	7.73−03	1.81+01	−1.334	D	2,LS
				810.06 cm^{-1}	168 473.48–169 283.54	8–6	1.33+02	2.28−04	7.41−01	−2.739	E	2,LS
				1 259.18 cm^{-1}	168 443.14–169 702.32	6–8	3.75+02	4.73−04	7.42−01	−2.547	E	2,LS
151	$3s^23p^2(^1D)5p-3s^23p^2(^1D)6s$	^{2}F°–^{2}D	*11 603.0*	*11 606.2*	*168 460.48–177 076.58*	14–10	2.06+07	2.97−01	1.59+02	0.619	D	2
			11 620.94	11 624.12	168 473.48–177 076.28	8–6	1.95+07	2.97−01	9.09+01	0.376	D	2,LS
			11 579.11	11 582.28	168 443.14–177 077.02	6–4	2.07+07	2.78−01	6.35+01	0.222	D	2,LS
			11 580.10	11 583.27	168 443.14–177 076.28	6–6	9.89+05	1.99−02	4.55+00	−0.923	E+	2,LS
152	$3s^23p^2(^1D)5p-3s^23p^2(^1D)5d$	^{2}F°–^{2}G	*10 253.3*	*10 256.1*	*168 460.48–178 210.75*	14–18	4.65+07	9.43−01	4.46+02	1.121	D+	2
			10 235.59	10 238.39	168 473.48–178 240.64	8–10	4.83+07	9.48−01	2.55+02	0.880	D+	2,LS
			10 274.41	10 277.23	168 443.14–178 173.39	6–8	4.17+07	8.81−01	1.78+02	0.723	D+	2,LS
			10 306.55	10 309.37	168 473.48–178 173.39	8–8	2.95+06	4.71−02	1.27+01	−0.424	D	2,LS

[a]Wave lengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Irimia and Froese Fischer (2005); Ref. 2 = Mendoza *et al.* (1995).

References for Allowed Transitions of S II

Butler, K., C. Mendoza, and C. J. Zeippen (unpublished). Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Irimia, A. and C. Froese Fischer, 2005, Phys. Scr. **71**, 172. Downloaded from C. Froese Fischer C. and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *energy adjusted*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.2.2. Forbidden Transitions for S II

The magnetic dipole (M1) and electric quadrupole (E2) transition rates for transitions in the $3s^23p^3$ ground state and for the $3s^23p^3$-$3s^23p^24p$, $3s3p^4$-$3s^23p^23d$, $3s^23p^23d$-$3s^23p^23d$, and $3s^23p^24s$-$3s^23p^23d$ transitions were taken from the extensive calculations of Irimia and Froese Fischer (2005). They used MCHF method with BP corrections. Energy level values were adjusted as well.

A wavelength finding list of allowed lines for S II is given in Table 7, and the transition probabilities for the lines are provided in Table 8.

TABLE 7. Wavelength finding list for forbidden lines of S II

Wavelength (vac.) (Å)	Mult. No.
776.575	15
776.766	15
777.387	15
777.579	15
777.61	6
779.83	6
781.39	6
782.32	6
794.298	14
794.498	14
794.559	14
794.760	14
797.027	13
797.229	13
797.593	13
797.796	13
843.547	10
843.773	10
844.482	10
844.709	10
859.592	9

TABLE 7. Wavelength finding list for forbidden lines of S II—Continued

Wavelength (vac.) (Å)	Mult. No.
859.827	9
860.396	17
860.703	17
860.742	17
861.049	17
863.646	9
863.883	9
863.948	16
864.265	16
864.614	16
867.683	8
903.895	7
904.155	7
918.483	12
918.878	12
919.987	12
937.538	11
937.949	11
942.362	11
942.777	11
Wavelength (air) (Å)	**Mult. No.**
2 094.323	20
2 865.807	19
2 869.780	19
2 872.295	19
2 875.454	19
2 902.437	19

TABLE 7. Wavelength finding list for forbidden lines of S II—Continued

Wavelength (air) (Å)	Mult. No.
2 905.663	19
2 919.883	19
3 186.719	18
3 213.129	18
3 250.896	18
3 308.727	18
3 419.418	21
3 422.563	21
4 068.6	2
4 076.3	2
6 015.76	22
6 110.11	22
6 716	1
6 731	1
7 780.55	23
8 112.03	24
8 441.67	24
10 286.73	4
10 320.49	4
10 336.41	4
10 370.49	4
17 857.6	25
Wave number (cm^{-1})	**Mult. No.**
46.71	5
31.79	3

TABLE 8. Transition probabilities of forbidden lines for S II

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s^23p^3$–$3s^23p^3$	$^4S^\circ$–$^2D^\circ$									
			6 716	6 718	0–14 884.73	4–6	M1	1.39−05	9.40−07	E	1
			6 716	6 718	0–14 884.73	4–6	E2	1.88−04	1.38−02	C	1
			6 731	6 733	0–14 852.94	4–4	M1	5.63−04	2.54−05	D	1
			6 731	6 733	0–14 852.94	4–4	E2	1.21−04	5.96−03	C	1
2		$^4S^\circ$–$^2P^\circ$									
			4 068.6	4 069.7	0–24 571.54	4–4	M1	1.92−01	1.92−03	C	1
			4 068.6	4 069.7	0–24 571.54	4–4	E2	9.53−08	3.79−07	E	1
			4 076.3	4 077.5	0–24 524.83	4–2	M1	7.72−02	3.88−04	D+	1
			4 076.3	4 077.5	0–24 524.83	4–2	E2	1.16−06	2.33−06	E	1
3		$^2D^\circ$–$^2D^\circ$									
				31.79 cm^{-1}	14 852.94–14 884.73	4–6	M1	3.46−07	2.39+00	B+	1
				31.79 cm^{-1}	14 852.94–14 884.73	4–6	E2	4.80−17	7.91−02	C	1
4		$^2D^\circ$–$^2P^\circ$									
			10 370.49	10 373.34	14 884.73–24 524.83	6–2	E2	6.81−02	1.46+01	B+	1
			10 320.49	10 323.32	14 884.73–24 571.54	6–4	M1	3.47−02	5.66−03	C	1
			10 320.49	10 323.32	14 884.73–24 571.54	6–4	E2	1.22−01	5.09+01	B+	1

TABLE 8. Transition probabilities of forbidden lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			10 336.41	10 339.24	14 852.94–24 524.83	4–2	M1	3.84−02	3.14−03	C	1
			10 336.41	10 339.24	14 852.94–24 524.83	4–2	E2	1.04−01	2.19+01	B+	1
			10 286.73	10 289.55	14 852.94–24 571.54	4–4	M1	6.23−02	1.00−02	C	1
			10 286.73	10 289.55	14 852.94–24 571.54	4–4	E2	5.25−02	2.16+01	B+	1
5		$^2P^\circ-^2P^\circ$									
				46.71 cm^{-1}	24 524.83–24 571.54	2–4	M1	9.14−07	1.33+00	B+	1
				46.71 cm^{-1}	24 524.83–24 571.54	2–4	E2	5.75−17	9.23−03	C	1
6	$3s^23p^3-3s^23p^2(^3P)4p$	$^4S^\circ-^4D^\circ$									
				777.61	0–128 599.16	4–8	E2	9.21+03	1.87+01	B	1
				779.83	0–128 233.20	4–6	E2	9.02+03	1.39+01	B	1
				781.39	0–127 976.34	4–4	E2	8.94+03	9.30+00	C+	1
				782.32	0–127 825.08	4–2	E2	8.93+03	4.67+00	C+	1
7		$^2D^\circ-^2S^\circ$									
				904.155	14 884.73–125 485.29	6–2	E2	7.96+03	8.59+00	C+	1
				903.895	14 852.94–125 485.29	4–2	E2	5.79+03	6.24+00	C+	1
8		$^2D^\circ-^4P^\circ$									
				867.683	14 884.73–130 134.16	6–6	E2	2.92+02	7.68−01	C	1
9		$^2D^\circ-^2D^\circ$									
				859.827	14 884.73–131 187.19	6–6	E2	6.74+03	1.69+01	B	1
				863.646	14 852.94–130 641.11	4–4	E2	6.32+03	1.08+01	B	1
				863.883	14 884.73–130 641.11	6–4	E2	2.36+03	4.05+00	C+	1
				859.592	14 852.94–131 187.19	4–6	E2	1.26+03	3.18+00	C+	1
10		$^2D^\circ-^2P^\circ$									
				844.709	14 884.73–133 268.68	6–2	E2	2.89+03	2.22+00	C+	1
				843.773	14 884.73–133 399.97	6–4	E2	4.41+03	6.73+00	C+	1
				844.482	14 852.94–133 268.68	4–2	E2	3.66+03	2.80+00	C+	1
				843.547	14 852.94–133 399.97	4–4	E2	1.34+03	2.04+00	C+	1
11		$^2P^\circ-^2D^\circ$									
				937.538	24 524.83–131 187.19	2–6	E2	7.30+02	2.83+00	C+	1
				937.949	24 571.54–131 187.19	4–6	E2	2.38+03	9.26+00	C+	1
				942.362	24 524.83–130 641.11	2–4	E2	1.49+03	3.95+00	C+	1
				942.777	24 571.54–130 641.11	4–4	E2	1.22+03	3.23+00	C+	1
12		$^2P^\circ-^2P^\circ$									
				918.878	24 571.54–133 399.97	4–4	E2	1.80+03	4.22+00	C+	1
				919.987	24 571.54–133 268.68	4–2	E2	3.20+03	3.76+00	C+	1
				918.483	24 524.83–133 399.97	2–4	E2	1.69+03	3.95+00	C+	1
13	$3s^23p^3-3s^23p^2(^1D)4p$	$^2D^\circ-^2F^\circ$									
				797.027	14 852.94–140 319.23	4–8	E2	9.47+02	2.17+00	C+	1
				797.229	14 884.73–140 319.23	6–8	E2	7.02+03	1.61+01	B	1
				797.593	14 852.94–140 230.10	4–6	E2	6.47+03	1.11+01	B	1
				797.796	14 884.73–140 230.10	6–6	E2	1.08+03	1.87+00	C+	1
14		$^2D^\circ-^2D^\circ$									
				794.760	14 884.73–140 708.89	6–6	E2	3.30+03	5.60+00	C+	1
				794.298	14 852.94–140 750.34	4–4	E2	2.22+03	2.51+00	C+	1

TABLE 8. Transition probabilities of forbidden lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				794.498	14 884.73–140 750.34	6–4	E2	1.08+03	1.21+00	C+	1
				794.559	14 852.94–140 708.89	4–6	E2	3.54+02	6.00−01	C	1
15		^{2}D°–^{2}P°									
				777.579	14 884.73–143 488.95	6–2	E2	1.71+03	8.68−01	C	1
				776.766	14 884.73–143 623.56	6–4	E2	3.34+03	3.36+00	C+	1
				777.387	14 852.94–143 488.95	4–2	E2	2.84+03	1.43+00	C+	1
				776.575	14 852.94–143 623.56	4–4	E2	1.66+03	1.67+00	C+	1
16		^{2}P°–^{2}F°									
				863.948	24 571.54–140 319.23	4–8	E2	2.77+03	9.51+00	C+	1
				864.265	24 524.83–140 230.10	2–6	E2	2.28+03	5.88+00	C+	1
				864.614	24 571.54–140 230.10	4–6	E2	8.06+02	2.08+00	C+	1
17		^{2}P°–^{2}D°									
				860.703	24 524.83–140 708.89	2–6	E2	2.00+02	5.06−01	C	1
				861.049	24 571.54–140 708.89	4–6	E2	1.58+03	3.99+00	C+	1
				860.396	24 524.83–140 750.34	2–4	E2	7.85+02	1.32+00	C+	1
				860.742	24 571.54–140 750.34	4–4	E2	1.19+03	2.00+00	C+	1
18	$3s3p^4$–$3s^23p^2$(^{3}P)$3d$	^{4}P°–^{4}F°									
			3 186.719	3 187.640	79 395.39–110 766.56	6–10	E2	6.34−01	1.86+00	C+	1
			3 250.896	3 251.834	79 756.83–110 508.71	4–8	E2	4.02−01	1.04+00	C+	1
			3 213.129	3 214.058	79 395.39–110 508.71	6–8	E2	1.87−01	4.57−01	C	1
			3 308.727	3 309.679	79 962.61–110 177.02	2–4	E2	3.99−01	5.66−01	C	1
19		^{4}P°–^{4}D°									
			2 865.807	2 866.649	79 395.39–114 279.33	6–8	E2	2.66+00	3.67+00	C+	1
			2 919.883	2 920.737	79 962.61–114 200.54	2–4	E2	1.02+00	7.77−01	C	1
			2 869.780	2 870.622	79 395.39–114 231.04	6–6	E2	2.63+00	2.74+00	C+	1
			2 902.437	2 903.288	79 756.83–114 200.54	4–4	E2	1.84+00	1.35+00	C+	1
			2 872.295	2 873.138	79 395.39–114 200.54	6–4	E2	1.56+00	1.09+00	C+	1
			2 905.663	2 906.515	79 756.83–114 162.30	4–2	E2	3.95+00	1.46+00	C+	1
			2 875.454	2 876.298	79 395.39–114 162.30	6–2	E2	4.37−01	1.53−01	C	1
20	$3s3p^4$–$3s^23p^2$(^{1}D)$3d$	^{4}P°–^{2}G°									
			2 094.323	2 094.988	79 395.39–127 128.35	6–10	E2	8.49−03	3.05−03	D	1
21		^{2}D°–^{2}G°									
			3 422.563	3 423.545	97 918.86–127 128.35	6–10	E2	1.80+00	7.55+00	C+	1
			3 419.418	3 420.398	97 890.74–127 127.10	4–8	E2	1.61+00	5.39+00	C+	1
22	$3s^23p^2$(^{3}P)$3d$–$3s^23p^2$(^{1}D)$3d$	^{4}F°–^{2}G°									
			6 110.11	6 111.80	110 766.56–127 128.35	10–10	M1	5.57−02	4.71−03	D	1
			6 015.76	6 017.43	110 508.71–127 127.10	8–8	M1	2.19−02	1.41−03	D	1
23		^{4}D°–^{2}G°									
			7 780.55	7 782.69	114 279.33–127 128.35	8–10	E2	2.70−03	6.87−01	C	1
24		^{2}F°–^{2}G°									
			8 112.03	8 114.26	114 804.37–127 128.35	6–10	E2	2.74−03	8.60−01	C	1
			8 441.67	8 443.99	115 285.61–127 128.35	8–10	M1	5.02−03	1.12−03	D	1

TABLE 8. Transition probabilities of forbidden lines for S II—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			8 441.67	8 443.99	115 285.61–127 128.35	8–10	E2	3.48−02	1.33+01	B	1
25	$3s^23p^2(^1D)4s–3s^23p^2(^1D)3d$	$^2D^{\circ}–^2G^{\circ}$									
			17 857.6	17 862.5	121 530.02–127 128.35	6–10	E2	2.26−02	3.66+02	B+	1

[a]Wavelengths (Å)are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Irimia and Froese Fischer (2005).

References for Forbidden Transitions of S II

Irimia, A. and C. Froese Fischer, 2005, Phys. Scr. **71**, 172. Downloaded from C. Froese Fischer C. and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *energy adjusted*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.3. S III

$Z=16$
Silicon Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^6 3s^2 3p^2\ {}^3P_0$
Ionization Energy: 280 600 cm^{-1} (34.7900 eV)

4.3.1. Allowed Transitions for S III

Froese Fischer *et al.* (2006) have performed extensive calculations using the MCHF method with BP corrections. The MCHF results were adopted for transitions from the $3s^2 3p4p$ configuration to the $3s3p^3$ and $3s^2 3p3d$ configurations.

For transitions to the $3s^2 3p^2$ ground state from the $3s3p^3$, $3s^2 3p3d$, and $3s^2 3p4s$ configurations, transition probabilities were taken from Kohstall *et al.* (1998). They calculated using the multiconfiguration Dirac-Fock (MCDF) method.

Oscillator strengths from the R-matrix calculations of the OP (Nahar and Pradhan, 1993) were taken for strong transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

Transition rates for the $3s^2 3p^2\ {}^3P_{2,1}$-$3s3p^3\ {}^5S_2^\circ$ intersystem lines were selected from Heise *et al.* (1995). They measured the radiative lifetime of the ${}^5S_2^\circ$ metastable level using a radio-frequency ion trap and estimated transition rates with calculated branching ratios.

A wavelength finding list of allowed lines for S III is given in Table 9, and the transition probabilities for the lines are provided in Table 10.

TABLE 9. Wavelength finding list for allowed lines of S III

Wavelength (vac.) (Å)	Mult. No.
609.232	18
610.343	18
612.340	18
637.848	17
654.37	23
659.283	5
661.614	5
673.859	27
675.218	27
677.663	27
677.729	16
678.456	16
679.104	16
680.677	16
680.925	16
680.974	26
681.489	26
681.577	16
682.879	26
683.066	26
683.461	26
683.58	22
685.380	26
698.727	15
700.150	15
700.188	15
700.288	15
702.779	15
702.818	15
710.96	11
724.288	4
725.858	4
728.685	4
729.52	29
730.03	25
733.014	21
733.302	21
734.059	21
736.245	28
738.471	28
788.993	10
796.68	9
824.82	31
830.630	24
836.284	30
900.242	20
902.561	20
911.72	14
1 012.495	3
1 012.763	34
1 015.502	3
1 015.567	3
1 015.779	3
1 021.108	3
1 021.323	3
1 077.16	19
1 121.405	33
1 121.750	33
1 122.413	33
1 126.533	33
1 126.880	33
1 128.496	33
1 143.600	8
1 143.869	8
1 154.683	32
1 155.386	32
1 162.123	32
1 162.493	32
1 163.206	32
1 166.152	32
1 166.525	32
1 190.203	2
1 194.058	2
1 194.449	2
1 200.966	2
1 201.726	2
1 202.122	2
1 328.155	37
1 328.519	37
1 328.630	37

TABLE 9. Wavelength finding list for allowed lines of S III—Continued

Wavelength (vac.) (Å)	Mult. No.
1 343.222	36
1 343.594	36
1 350.586	36
1 350.961	36
1 351.076	36
1 353.787	36
1 373.16	51
1 374.066	7
1 375.062	7
1 375.580	7
1 390.719	35
1 396.552	13
1 402.064	35
1 402.469	35
1 407.933	35
1 408.341	35
1 408.466	35
1 503.966	50
1 517.243	50
1 524.118	50
1 577.45	49
1 713.114	1
1 728.942	1
1 758.758	12
Wavelength (air) (Å)	**Mult. No.**
3 499.18	97
2 059.84	53
2 072.03	53
2 084.83	53
2 089.11	53
2 097.32	53
2 097.84	53
2 111.30	6
2 173.74	83
2 177.24	40
2 200.27	52
2 236.82	43
2 283.66	92
2 442.586	93
2 460.460	93
2 489.537	93
2 490.49	39
2 496.208	93
2 499.029	93
2 508.107	93
2 568.75	42
2 636.903	94
2 659.17	82
2 665.440	94
2 680.554	94
2 691.703	94
2 702.803	94
2 709.101	85
2 713.348	85

TABLE 9. Wavelength finding list for allowed lines of S III—Continued

Wavelength (air) (Å)	Mult. No.
2 718.880	85
2 721.446	94
2 726.846	95
2 731.105	85
2 741.044	85
2 756.885	85
2 775.219	85
2 775.297	75
2 785.490	95
2 797.378	95
2 818.287	87
2 822.058	87
2 830.614	87
2 846.01	41
2 847.702	87
2 855.994	84
2 863.511	84
2 863.524	87
2 871.957	84
2 879.28	41
2 881.013	87
2 892.15	41
2 896.698	84
2 904.270	84
2 909.50	81
2 910.81	96
2 925.322	88
2 926.13	90
2 934.516	88
2 946.372	84
2 948.330	86
2 950.222	86
2 951.862	58
2 952.548	58
2 952.885	88
2 961.823	86
2 964.776	86
2 985.989	86
2 997.874	86
3 231.066	57
3 233.190	57
3 234.013	57
3 247.56	91
3 255.38	38
3 305.173	74
3 323.984	56
3 324.854	56
3 350.543	74
3 367.150	56
3 369.457	56
3 370.351	56
3 387.092	56
3 396.591	62
3 412.896	62
3 419.139	62
3 497.28	80

TABLE 9. Wavelength finding list for allowed lines of S III—Continued

Wavelength (air) (Å)	Mult. No.
3 549.70	89
3 631.990	55
3 656.560	73
3 661.942	73
3 709.338	55
3 710.422	55
3 717.717	73
3 747.855	55
3 750.713	55
3 751.821	55
3 778.846	72
3 831.815	72
3 837.726	72
3 838.268	72
3 860.619	72
3 898.817	61
3 899.029	72
3 899.246	79
3 920.315	61
3 928.556	61
3 961.526	61
3 983.723	61
3 985.924	61
3 997.93	48
4 032.067	78
4 087.790	54
4 091.191	54
4 092.510	54
4 099.172	78
4 125.301	78
4 253.499	71
4 284.904	71
4 332.653	71
4 340.211	71
4 354.492	60
4 361.468	71
4 364.661	60
4 418.781	71
4 439.817	60
4 467.716	60
4 478.422	60
4 499.222	60
4 527.876	60
4 531.995	47
4 613.433	77
4 677.609	77
4 712.416	46
4 793.466	70
4 802.719	70
4 804.335	46
4 899.113	70
4 998.188	59
5 033.574	59
5 160.08	65
5 219.31	76
5 354.121	45
5 369.62	69
5 526.323	45
5 618.663	45
6 415.55	64
6 418.9	44
7 666.46	63
7 783.9	68
8 024.49	63
16 865.17	67
17 755.69	67
Wave number (cm^{-1})	**Mult. No.**
3 412.30	66

TABLE 10. Transition probabilities of allowed lines for S III

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s^23p^2$–$3s3p^3$	^{3}P–^{5}S°										
				1 728.942	833.08–58 671.92	5–5	1.54+04	6.90−06	1.96−04	−4.462	C+	4
				1 713.114	298.69–58 671.92	3–5	5.40+03	3.96−06	6.70−05	−4.925	C+	4
2		^{3}P–^{3}D°		*1 197.6*	*562–84 065.8*	9–15	6.70+07	2.40−02	8.52−01	−0.666	B	2
				1 200.966	833.08–84 099.4	5–7	6.62+07	2.00−02	3.96−01	−1.000	B	2
				1 194.058	298.69–84 046.7	3–5	5.38+07	1.92−02	2.26−01	−1.240	B	2
				1 190.203	0.00–84 019.3	1–3	4.05+07	2.58−02	1.01−01	−1.588	B	2
				1 201.726	833.08–84 046.7	5–5	1.36+07	2.95−03	5.83−02	−1.831	C+	2
				1 194.449	298.69–84 019.3	3–3	2.66+07	5.68−03	6.70−02	−1.769	C+	2
				1 202.122	833.08–84 019.3	5–3	1.36+06	1.77−04	3.51−03	−3.053	C	2
3		^{3}P–^{3}P°		*1 018.4*	*562–98 755.2*	9–9	2.79+08	4.33−02	1.31+00	−0.409	B	2
				1 021.323	833.08–98 745.3	5–5	2.09+08	3.27−02	5.50−01	−0.786	B	2

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 015.567	298.69–98 765.9	3–3	7.80+07	1.21−02	1.21−01	−1.440	B	2
				1 021.108	833.08–98 765.9	5–3	1.09+08	1.02−02	1.72−01	−1.292	B	2
				1 015.502	298.69–98 772.2	3–1	2.88+08	1.49−02	1.49−01	−1.350	B	2
				1 015.779	298.69–98 745.3	3–5	6.53+07	1.68−02	1.69−01	−1.298	B	2
				1 012.495	0.00–98 765.9	1–3	9.56+07	4.41−02	1.47−01	−1.356	B	2
4		^{3}P–^{3}S°		*727.2*	*562*–138 066.6	9–3	1.25+10	3.31−01	7.13+00	0.474	B+	2
				728.685	833.08–138 066.6	5–3	6.48+09	3.09−01	3.71+00	0.189	B+	2
				725.858	298.69–138 066.6	3–3	4.45+09	3.52−01	2.52+00	0.024	B+	2
				724.288	0.00–138 066.6	1–3	1.60+09	3.78−01	9.01−01	−0.423	B	2
5		^{3}P–^{1}D°										
				659.283	298.69–151 978.54	3–5	7.58+06	8.23−04	5.36−03	−2.607	D	2
				661.614	833.08–151 978.54	5–5	5.95+06	3.91−04	4.25−03	−2.709	D	2
6		^{1}D–^{5}S°										
			2 111.30	2 111.97	11 322.7–58 671.92	5–5	4.86+00	3.25−09	1.13−07	−7.789	D	2
7		^{1}D–^{3}D°										
				1 375.062	11 322.7–84 046.7	5–5	5.53+03	1.57−06	3.55−05	−5.105	D	2
				1 375.580	11 322.7–84 019.3	5–3	5.42+04	9.23−06	2.09−04	−4.336	D	2
				1 374.066	11 322.7–84 099.4	5–7	6.81+04	2.70−05	6.10−04	−3.870	D	2
8		^{1}D–^{3}P°										
				1 143.600	11 322.7–98 765.9	5–3	1.01+05	1.19−05	2.24−04	−4.225	D	2
				1 143.869	11 322.7–98 745.3	5–5	1.38+05	2.70−05	5.08−04	−3.870	D	2
9		^{1}D–^{1}P°		796.68	11 322.7–136 843.78	5–3	5.50+09	3.14−01	4.12+00	0.196	B+	2
10		^{1}D–^{3}S°										
				788.993	11 322.7–138 066.6	5–3	3.30+08	1.85−02	2.40−01	−1.034	D	2
11		^{1}D–^{1}D°		710.96	11 322.7–151 978.54	5–5	1.31+10	9.91−01	1.16+01	0.695	B+	2
12		^{1}S–^{3}D°										
				1 758.758	27 161.0–84 019.3	1–3	1.24+03	1.72−06	9.95−06	−5.764	D	2
13		^{1}S–^{3}P°										
				1 396.552	27 161.0–98 765.9	1–3	3.37+04	2.96−05	1.36−04	−4.529	D	2
14		^{1}S–^{1}P°		911.72	27 161.0–136 843.78	1–3	5.26+06	1.97−03	5.90−03	−2.706	C	2
15	$3s^23p^2$–$3s^23p3d$	^{3}P–^{3}P°		*701.5*	*562–143 119.52*	9–9	1.12+10	8.24−01	1.71+01	0.870	B+	2
				702.779	833.08–143 125.28	5–5	7.85+09	5.81−01	6.72+00	0.463	B+	2
				700.188	298.69–143 117.41	3–3	2.29+09	1.68−01	1.16+00	−0.298	B+	2
				702.818	833.08–143 117.41	5–3	4.86+09	2.16−01	2.49+00	0.033	B+	2
				700.288	298.69–143 097.08	3–1	1.09+10	2.68−01	1.85+00	−0.095	B+	2
				700.150	298.69–143 125.28	3–5	3.50+09	4.29−01	2.96+00	0.110	B+	2
				698.727	0.00–143 117.41	1–3	3.87+09	8.50−01	1.95+00	−0.071	B+	2
16		^{3}P–^{3}D°		*679.7*	*562–147 689.05*	9–15	1.33+10	1.54+00	3.10+01	1.142	B+	2
				680.677	833.08–147 745.70	5–7	1.42+10	1.38+00	1.54+01	0.839	B+	2
				678.456	298.69–147 692.21	3–5	7.97+09	9.17−01	6.14+00	0.439	B+	2
				677.729	0.00–147 551.60	1–3	6.93+09	1.43+00	3.19+00	0.155	B+	2
				680.925	833.08–147 692.21	5–5	3.99+09	2.78−01	3.11+00	0.143	B+	2

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				679.104	298.69–147 551.60	3–3	6.28+09	4.34−01	2.91+00	0.115	B+	2
				681.577	833.08–147 551.60	5–3	5.90+08	2.47−02	2.76−01	−0.908	B	2
17		^{3}P–^{1}F$^\circ$										
				637.848	833.08–157 610.31	5–7	4.13+06	3.53−04	3.70−03	−2.753	D	2
18		^{3}P–^{1}P$^\circ$										
				610.343	298.69–164 140.97	3–3	4.34+05	2.43−05	1.46−04	−4.137	D	2
				612.340	833.08–164 140.97	5–3	5.46+05	1.84−05	1.85−04	−4.036	D	2
				609.232	0.00–164 140.97	1–3	1.27+06	2.13−04	4.26−04	−3.672	D	2
19		^{1}D–^{1}D$^\circ$		1 077.16	11 322.7–104 159.7	5–5	1.36+08	2.36−02	4.18−01	−0.928	B	2
20		^{1}D–^{3}F$^\circ$										
				900.242	11 322.7–122 404.0	5–7	5.16+05	8.77−05	1.30−03	−3.358	D	2
				902.561	11 322.7–122 118.5	5–5	4.93+05	6.02−05	8.95−04	−3.521	D	2
21		^{1}D–^{3}D$^\circ$										
				733.302	11 322.7–147 692.21	5–5	2.95+06	2.38−04	2.87−03	−2.924	D	2
				734.059	11 322.7–147 551.60	5–3	1.91+05	9.27−06	1.12−04	−4.334	D	2
				733.014	11 322.7–147 745.70	5–7	2.76+06	3.12−04	3.76−03	−2.807	D	2
22		^{1}D–^{1}F$^\circ$		683.58	11 322.7–157 610.31	5–7	1.37+10	1.34+00	1.51+01	0.826	B+	2
23		^{1}D–^{1}P$^\circ$		654.37	11 322.7–164 140.97	5–3	4.22+08	1.62−02	1.75−01	−1.092	B	2
24		^{1}S–^{3}D$^\circ$										
				830.630	27 161.0–147 551.60	1–3	5.59+04	1.73−05	4.74−05	−4.762	D	2
25		^{1}S–^{1}P$^\circ$		730.03	27 161.0–164 140.97	1–3	1.14+10	2.73+00	6.56+00	0.436	B+	2
26	$3s^23p^2$–$3s^23p4s$	^{3}P–^{3}P$^\circ$		*683.1*	*562–146 960.62*	9–9	1.70+09	1.19−01	2.40+00	0.030	B+	2
				683.461	833.08–147 147.11	5–5	3.41+08	2.39−02	2.69−01	−0.923	B	2
				682.879	298.69–146 737.55	3–3	3.19+07	2.23−03	1.50−02	−2.175	C+	2
				685.380	833.08–146 737.55	5–3	7.54+07	3.18−03	3.59−02	−1.799	C+	2
				683.066	298.69–146 697.37	3–1	5.00+08	1.17−02	7.86−02	−1.455	C+	2
				680.974	298.69–147 147.11	3–5	2.10+09	2.43−01	1.63+00	−0.137	B+	2
				681.489	0.00–146 737.55	1–3	7.96+08	1.66−01	3.73−01	−0.780	B	2
27		^{3}P–^{1}P$^\circ$										
				675.218	298.69–148 398.97	3–3	1.19+07	8.14−04	5.42−03	−2.612	D	2
				677.663	833.08–148 398.97	5–3	2.57+06	1.06−04	1.18−03	−3.276	D	2
				673.859	0.00–148 398.97	1–3	3.62+07	7.40−03	1.64−02	−2.131	D	2
28		^{1}D–^{3}P$^\circ$										
				738.471	11 322.7–146 737.55	5–3	1.69+08	8.31−03	1.01−01	−1.381	D	2
				736.245	11 322.7–147 147.11	5–5	1.25+07	1.01−03	1.23−02	−2.297	D	2
29		^{1}D–^{1}P$^\circ$		729.52	11 322.7–148 398.97	5–3	2.57+09	1.23−01	1.48+00	−0.211	B+	2
30		^{1}S–^{3}P$^\circ$										
				836.284	27 161.0–146 737.55	1–3	6.42+06	2.02−03	5.56−03	−2.695	D	2
31		^{1}S–^{1}P$^\circ$		824.82	27 161.0–148 398.97	1–3	1.82+08	5.56−02	1.51−01	−1.255	B	2
32	$3s3p^3$–$3s^23p4p$	^{3}D$^\circ$–^{3}D		*1 159.89*	*84 065.8–170 280.79*	15–15	4.14+07	8.35−03	4.78−01	−0.902	C+	1
				1 155.386	84 099.4–170 650.55	7–7	3.67+07	7.34−03	1.95−01	−1.289	B	1

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 162.493	84 046.7–170 068.73	5–5	2.50+07	5.07−03	9.69−02	−1.596	C+	1
				1 166.152	84 019.3–169 771.43	3–3	2.64+07	5.38−03	6.19−02	−1.792	C+	1
				1 163.206	84 099.4–170 068.73	7–5	1.17+07	1.70−03	4.55−02	−1.924	C+	1
				1 166.525	84 046.7–169 771.43	5–3	1.53+07	1.88−03	3.60−02	−2.027	C+	1
				1 154.683	84 046.7–170 650.55	5–7	4.19+06	1.17−03	2.23−02	−2.233	C+	1
				1 162.123	84 019.3–170 068.73	3–5	5.40+06	1.82−03	2.09−02	−2.263	C+	1
33		$^3D°-^3P$		*1 124.48*	*84 065.8–172 995.59*	15–9	1.82+08	2.08−02	1.15+00	−0.506	B	1
				1 122.413	84 099.4–173 193.14	7–5	1.48+08	2.00−02	5.17−01	−0.854	B	1
				1 126.880	84 046.7–172 787.26	5–3	1.34+08	1.53−02	2.83−01	−1.116	B	1
				1 128.496	84 019.3–172 632.79	3–1	1.93+08	1.23−02	1.36−01	−1.433	B	1
				1 121.750	84 046.7–173 193.14	5–5	3.04+07	5.74−03	1.05−01	−1.542	B	1
				1 126.533	84 019.3–172 787.26	3–3	4.91+07	9.35−03	1.04−01	−1.552	B	1
				1 121.405	84 019.3–173 193.14	3–5	2.19+06	6.89−04	7.63−03	−2.685	C	1
34		$^3D°-^1S$										
				1 012.763	84 019.3–182 759.09	3–1	2.98+07	1.53−03	1.52−02	−2.338	D	1
35		$^3P°-^3D$		*1 398.10*	*98 755.2–170 280.79*	9–15	8.21+06	4.01−03	1.66−01	−1.443	C+	1
				1 390.719	98 745.3–170 650.55	5–7	8.56+06	3.48−03	7.95−02	−1.759	C+	1
				1 402.469	98 765.9–170 068.73	3–5	5.40+06	2.66−03	3.67−02	−2.098	C+	1
				1 408.466	98 772.2–169 771.43	1–3	3.94+06	3.52−03	1.63−02	−2.453	C+	1
				1 402.064	98 745.3–170 068.73	5–5	2.67+06	7.88−04	1.81−02	−2.405	C+	1
				1 408.341	98 765.9–169 771.43	3–3	3.09+06	9.17−04	1.27−02	−2.561	C+	1
				1 407.933	98 745.3–169 771.43	5–3	6.84+05	1.22−04	2.82−03	−3.215	C	1
36		$^3P°-^3P$		*1 346.98*	*98 755.2–172 995.59*	9–9	3.29+07	8.96−03	3.58−01	−1.093	B	1
				1 343.222	98 745.3–173 193.14	5–5	2.32+07	6.29−03	1.39−01	−1.502	B	1
				1 350.961	98 765.9–172 787.26	3–3	5.86+05	1.60−04	2.13−03	−3.319	C	1
				1 350.586	98 745.3–172 787.26	5–3	3.16+07	5.18−03	1.15−01	−1.587	B	1
				1 353.787	98 765.9–172 632.79	3–1	2.72+07	2.50−03	3.33−02	−2.125	C+	1
				1 343.594	98 765.9–173 193.14	3–5	8.73+06	3.94−03	5.22−02	−1.927	C+	1
				1 351.076	98 772.2–172 787.26	1–3	4.36+06	3.58−03	1.59−02	−2.446	C+	1
37		$^3P°-^3S$		*1 328.33*	*98 755.2*–174 037.69	9–3	2.71+08	2.39−02	9.41−01	−0.667	B	1
				1 328.155	98 745.3–174 037.69	5–3	1.33+08	2.11−02	4.61−01	−0.977	B	1
				1 328.519	98 765.9–174 037.69	3–3	1.01+08	2.67−02	3.50−01	−1.096	B	1
				1 328.630	98 772.2–174 037.69	1–3	3.75+07	2.98−02	1.30−01	−1.526	B	1
38		$^1P°-^1P$	3 255.38	3 256.32	136 843.78–167 553.27	3–3	6.83+04	1.09−04	3.49−03	−3.485	C	1
39		$^1P°-^1D$	2 490.49	2 491.24	136 843.78–176 984.44	3–5	1.93+07	3.00−02	7.37−01	−1.046	B	1
40		$^1P°-^1S$	2 177.24	2 177.92	136 843.78–182 759.09	3–1	2.20+08	5.21−02	1.12+00	−0.806	B+	1
41		$^3S°-^3P$	2 862.1	2 863.0	138 066.6–172 995.59	3–9	8.53+04	3.14−04	8.89−03	−3.026	C	1
			2 846.01	2 846.85	138 066.6–173 193.14	3–5	2.88+04	5.83−05	1.64−03	−3.757	C	1
			2 879.28	2 880.13	138 066.6–172 787.26	3–3	8.16+04	1.01−04	2.88−03	−3.519	C	1
			2 892.15	2 893.00	138 066.6–172 632.79	3–1	3.66+05	1.53−04	4.37−03	−3.338	C	1
42		$^3S°-^1D$										
			2 568.75	2 569.52	138 066.6–176 984.44	3–5	5.10+05	8.42−04	2.13−02	−2.598	D	1
43		$^3S°-^1S$										
			2 236.82	2 237.51	138 066.6–182 759.09	3–1	8.90+06	2.23−03	4.92−02	−2.175	D	1

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
44		$^1D^\circ-^1P$	6 418.9	6 420.7	151 978.54–167 553.27	5–3	6.99+06	2.59−02	2.74+00	−0.888	B+	1
45		$^1D^\circ-^3D$										
			5 526.323	5 527.858	151 978.54–170 068.73	5–5	4.36+02	2.00−06	1.81−04	−5.000	E	1
			5 618.663	5 620.222	151 978.54–169 771.43	5–3	1.76+05	5.00−04	4.62−02	−2.602	D	1
			5 354.121	5 355.610	151 978.54–170 650.55	5–7	2.03+03	1.22−05	1.07−03	−4.215	E	1
46		$^1D^\circ-^3P$										
			4 804.335	4 805.678	151 978.54–172 787.26	5–3	7.98+04	1.66−04	1.31−02	−3.081	D	1
			4 712.416	4 713.735	151 978.54–173 193.14	5–5	8.24+03	2.75−05	2.13−03	−3.862	E	1
47		$^1D^\circ-^3S$										
			4 531.995	4 533.266	151 978.54–174 037.69	5–3	1.07+05	1.98−04	1.47−02	−3.004	D	1
48		$^1D^\circ-^1D$	3 997.93	3 999.06	151 978.54–176 984.44	5–5	6.53+06	1.56−02	1.03+00	−1.108	B+	1
49	$3s^23p3d-3s^23p4p$	$^1D^\circ-^1P$		1 577.45	104 159.7–167 553.27	5–3	3.13+08	7.01−02	1.82+00	−0.455	B+	1
50		$^1D^\circ-^3D$										
				1 517.243	104 159.7–170 068.73	5–5	1.62+05	5.60−05	1.39−03	−3.553	E	1
				1 524.118	104 159.7–169 771.43	5–3	4.47+06	9.35−04	2.34−02	−2.330	D	1
				1 503.966	104 159.7–170 650.55	5–7	2.17+04	1.03−05	2.54−04	−4.288	E	1
51		$^1D^\circ-^1D$		1 373.16	104 159.7–176 984.44	5–5	9.91+07	2.80−02	6.33−01	−0.854	B	1
52		$^3F^\circ-^1P$										
			2 200.27	2 200.96	122 118.5–167 553.27	5–3	4.54+06	1.98−03	7.16−02	−2.004	D	1
53		$^3F^\circ-^3D$	*2 092.4*	*2 093.1*	*122 505.1–170 280.79*	21–15	3.10+08	1.45−01	2.10+01	0.484	B+	1
			2 089.11	2 089.78	122 798.6–170 650.55	9–7	2.87+08	1.46−01	9.04+00	0.119	B+	1
			2 097.32	2 097.99	122 404.0–170 068.73	7–5	2.75+08	1.29−01	6.26+00	−0.044	B+	1
			2 097.84	2 098.51	122 118.5–169 771.43	5–3	3.05+08	1.21−01	4.17+00	−0.218	B+	1
			2 072.03	2 072.69	122 404.0–170 650.55	7–7	2.48+07	1.59−02	7.61−01	−0.954	B	1
			2 084.83	2 085.50	122 118.5–170 068.73	5–5	3.42+07	2.23−02	7.66−01	−0.953	B	1
			2 059.84	2 060.49	122 118.5–170 650.55	5–7	7.06+05	6.29−04	2.13−02	−2.502	C+	1
54		$^3P^\circ-^1P$										
			4 091.191	4 092.346	143 117.41–167 553.27	3–3	1.91+06	4.80−03	1.93−01	−1.842	D	1
			4 092.510	4 093.665	143 125.28–167 553.27	5–3	1.55+05	2.34−04	1.57−02	−2.932	D	1
			4 087.790	4 088.944	143 097.08–167 553.27	1–3	2.99+05	2.25−03	3.02−02	−2.648	D	1
55		$^3P^\circ-^3D$	*3 680.67*	*3 681.71*	*143 119 52–170 280.79*	9–15	6.79+07	2.30−01	2.51+01	0.316	B+	1
			3 631.990	3 633.025	143 125.28–170 650.55	5–7	6.35+07	1.76−01	1.05+01	−0.056	B+	1
			3 709.338	3 710.393	143 117.41–170 068.73	3–5	6.22+07	2.14−01	7.83+00	−0.192	B+	1
			3 747.855	3 748.920	143 097.08–169 771.43	1–3	4.83+07	3.05−01	3.76+00	−0.516	B+	1
			3 710.422	3 711.477	143 125.28–170 068.73	5–5	8.91+06	1.84−02	1.12+00	−1.036	B+	1
			3 750.713	3 751.779	143 117.41–169 771.43	3–3	2.34+07	4.95−02	1.83+00	−0.828	B+	1
			3 751.821	3 752.887	143 125.28–169 771.43	5–3	5.07+05	6.42−04	3.96−02	−2.493	C+	1
56		$^3P^\circ-^3P$	*3 346.20*	*3 347.16*	*143 119.52–172 995.59*	9–9	1.84+08	3.08−01	3.06+01	0.443	B+	1
			3 324.854	3 325.810	143 125.28–173 193.14	5–5	1.37+08	2.28−01	1.24+01	0.057	B+	1
			3 369.457	3 370.425	143 117.41–172 787.26	3–3	5.34+07	9.10−02	3.02+00	−0.564	B+	1
			3 370.351	3 371.319	143 125.28–172 787.26	5–3	7.26+07	7.42−02	4.11+00	−0.431	B+	1
			3 387.092	3 388.064	143 117.41–172 632.79	3–1	1.99+08	1.14−01	3.81+00	−0.466	B+	1
			3 323.984	3 324.940	143 117.41–173 193.14	3–5	4.12+07	1.14−01	3.74+00	−0.466	B+	1
			3 367.150	3 368.117	143 097.08–172 787.26	1–3	6.19+07	3.16−01	3.50+00	−0.500	B+	1

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
57		$^3P^\circ-^3S$	*3 233.41*	*3 234.34*	*143 119 52*–174 037.69	9–3	1.02+07	5.35−03	5.12−01	−1.317	B	1
			3 234.013	3 234.947	143 125.28–174 037.69	5–3	9.95+06	9.36−03	4.98−01	−1.330	B	1
			3 233.190	3 234.123	143 117.41–174 037.69	3–3	1.51+05	2.36−04	7.54−03	−3.150	C	1
			3 231.066	3 231.998	143 097.08–174 037.69	1–3	1.37+05	6.46−04	6.87−03	−3.190	C	1
58		$^3P^\circ-^1D$										
			2 951.862	2 952.724	143 117.41–176 984.44	3–5	2.69+03	5.86−06	1.70−04	−4.755	E	1
			2 952.548	2 953.411	143 125.28–176 984.44	5–5	2.12+05	2.78−04	1.35−02	−2.857	D	1
59		$^3D^\circ-^1P$										
			5 033.574	5 034.978	147 692.21–167 553.27	5–3	2.26+03	5.14−06	4.26−04	−4.590	E	1
			4 998.188	4 999.583	147 551.60–167 553.27	3–3	2.81+05	1.05−03	5.20−02	−2.502	D	1
60		$^3D^\circ-^3D$	*4 425.15*	*4 426.40*	*147 689.05–170 280.79*	15–15	9.69+06	2.85−02	6.22+00	−0.369	B+	1
			4 364.661	4 365.888	147 745.70–170 650.55	7–7	7.83+06	2.24−02	2.25+00	−0.805	B+	1
			4 467.716	4 468.970	147 692.21–170 068.73	5–5	2.41+06	7.20−03	5.30−01	−1.444	B	1
			4 499.222	4 500.484	147 551.60–169 771.43	3–3	2.51+06	7.63−03	3.39−01	−1.640	B	1
			4 478.422	4 479.679	147 745.70–170 068.73	7–5	2.16+06	4.64−03	4.79−01	−1.488	B	1
			4 527.876	4 529.146	147 692.21–169 771.43	5–3	1.98+06	3.65−03	2.71−01	−1.739	B	1
			4 354.492	4 355.716	147 692.21–170 650.55	5–7	5.53+06	2.20−02	1.57+00	−0.959	B+	1
			4 439.817	4 441.063	147 551.60–170 068.73	3–5	3.63+06	1.79−02	7.85−01	−1.270	B	1
61		$^3D^\circ-^3P$	*3 950.43*	*3 951.55*	*147 689.05–172 995.59*	15–9	4.89+07	6.87−02	1.34+01	0.013	B+	1
			3 928.556	3 929.668	147 745.70–173 193.14	7–5	4.39+07	7.26−02	6.57+00	−0.294	B+	1
			3 983.723	3 984.850	147 692.21–172 787.26	5–3	3.60+07	5.14−02	3.37+00	−0.590	B+	1
			3 985.924	3 987.052	147 551.60–172 632.79	3–1	5.84+07	4.64−02	1.82+00	−0.856	B+	1
			3 920.315	3 921.426	147 692.21–173 193.14	5–5	4.76+06	1.10−02	7.09−01	−1.260	B	1
			3 961.526	3 962.647	147 551.60–172 787.26	3–3	9.45+06	2.22−02	8.70−01	−1.177	B	1
			3 898.817	3 899.922	147 551.60–173 193.14	3–5	3.99+05	1.52−03	5.84−02	−2.341	C+	1
62		$^3D^\circ-^1D$										
			3 412.896	3 413.875	147 692.21–176 984.44	5–5	2.07+03	3.62−06	2.03−04	−4.742	E	1
			3 419.139	3 420.120	147 745.70–176 984.44	7–5	7.78+04	9.74−05	7.67−03	−3.166	E	1
			3 396.591	3 397.565	147 551.60–176 984.44	3–5	2.10+05	6.05−04	2.03−02	−2.741	D	1
63		$^1F^\circ-^3D$										
			8 024.49	8 026.70	157 610.31–170 068.73	7–5	1.27+04	8.74−05	1.61−02	−3.213	D	1
			7 666.46	7 668.57	157 610.31–170 650.55	7–7	4.45+02	3.93−06	6.93−04	−4.561	E	1
64		$^1F^\circ-^3P$										
			6 415.55	6 417.32	157 610.31–173 193.14	7–5	3.07+04	1.35−04	1.99−02	−3.025	D	1
65		$^1F^\circ-^1D$	5 160.08	5 161.52	157 610.31–176 984.44	7–5	3.83+07	1.09−01	1.30+01	−0.117	B+	1
66		$^1P^\circ-^1P$		3 412.30 cm^{-1}	164 140.97–167 553.27	3–3	1.95+04	2.50−03	7.25−01	−2.125	B	1
67		$^1P^\circ-^3D$										
			16 865.17	16 869.78	164 140.97–170 068.73	3–5	2.91+01	2.07−06	3.44−04	−5.207	E	1
			17 755.69	17 760.54	164 140.97–169 771.43	3–3	1.68+03	7.94−05	1.39−02	−3.623	D	1
68		$^1P^\circ-^1D$	7 783.9	7 786.1	164 140.97–176 984.44	3–5	7.85+05	1.19−02	9.14−01	−1.447	B	1
69		$^1P^\circ-^1S$	5 369.62	5 371.11	164 140.97–182 759.09	3–1	4.60+07	6.64−02	3.52+00	−0.701	B+	1
70	$3s^23p4s-3s^23p4p$	$^3P^\circ-^1P$										

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log *gf*	Acc.	Source[b]
			4 802.719	4 804.062	146 737.55–167 553.27	3–3	1.19+07	4.13−02	1.95+00	−0.907	D+	1
			4 899.113	4 900.481	147 147.11–167 553.27	5–3	3.16+04	6.82−05	5.50−03	−3.467	E	1
			4 793.466	4 794.806	146 697.37–167 553.27	1–3	1.71+05	1.76−03	2.78−02	−2.754	D	1
71		$^3P^\circ - ^3D$	*4 286.93*	*4 288.13*	*146 960.62–170 280.79*	9–15	6.21+07	2.85−01	3.62+01	0.409	B+	1
			4 253.499	4 254.696	147 147.11–170 650.55	5–7	6.74+07	2.56−01	1.79+01	0.107	B+	1
			4 284.904	4 286.110	146 737.55–170 068.73	3–5	4.24+07	1.95−01	8.24+00	−0.233	B+	1
			4 332.653	4 333.871	146 697.37–169 771.43	1–3	3.23+07	2.73−01	3.89+00	−0.564	B+	1
			4 361.468	4 362.693	147 147.11–170 068.73	5–5	1.74+07	4.96−02	3.56+00	−0.606	B+	1
			4 340.211	4 341.431	146 737.55–169 771.43	3–3	1.93+07	5.45−02	2.33+00	−0.786	B+	1
			4 418.781	4 420.022	147 147.11–169 771.43	5–3	2.48+06	4.36−03	3.16−01	−1.662	B	1
72		$^3P^\circ - ^3P$	*3 839.90*	*3 840.99*	*146 960.62–172 995.59*	9–9	4.57+07	1.01−01	1.15+01	−0.041	B+	1
			3 838.268	3 839.357	147 147.11–173 193.14	5–5	4.81+07	1.06−01	6.71+00	−0.276	B+	1
			3 837.726	3 838.814	146 737.55–172 787.26	3–3	2.55+07	5.64−02	2.13+00	−0.772	B+	1
			3 899.029	3 900.133	147 147.11–172 787.26	5–3	8.76+05	1.20−03	7.69−02	−2.222	C+	1
			3 860.619	3 861.714	146 737.55–172 632.79	3–1	2.02+07	1.51−02	5.74−01	−1.344	B	1
			3 778.846	3 779.919	146 737.55–173 193.14	3–5	6.62+06	2.37−02	8.82−01	−1.148	B	1
			3 831.815	3 832.902	146 697.37–172 787.26	1–3	1.37+07	9.05−02	1.14+00	−1.043	B+	1
73		$^3P^\circ - ^3S$	*3 692.11*	*3 693.16*	*146 960.62–174 037.69*	9–3	2.17+08	1.48−01	1.62+01	0.125	B+	1
			3 717.717	3 718.774	147 147.11–174 037.69	5–3	1.40+08	1.74−01	1.06+01	−0.060	B+	1
			3 661.942	3 662.985	146 737.55–174 037.69	3–3	5.73+07	1.15−01	4.17+00	−0.462	B+	1
			3 656.560	3 657.602	146 697.37–174 037.69	1–3	1.99+07	1.20−01	1.44+00	−0.921	B+	1
74		$^3P^\circ - ^1D$										
			3 305.173	3 306.125	146 737.55–176 984.44	3–5	1.21+07	3.30−02	1.07+00	−1.004	D+	1
			3 350.543	3 351.506	147 147.11–176 984.44	5–5	6.64+04	1.12−04	6.16−03	−3.252	E	1
75		$^3P^\circ - ^1S$										
			2 775.297	2 776.117	146 737.55–182 759.09	3–1	1.26+07	4.85−03	1.32−01	−1.837	D	1
76		$^1P^\circ - ^1P$	5 219.31	5 220.76	148 398.97–167 553.27	3–3	5.98+07	2.44−01	1.26+01	−0.135	B+	1
77		$^1P^\circ - ^3D$										
			4 613.433	4 614.726	148 398.97–170 068.73	3–5	2.15+06	1.15−02	5.22−01	−1.462	D	1
			4 677.609	4 678.919	148 398.97–169 771.43	3–3	7.07+06	2.32−02	1.07+00	−1.157	D+	1
78		$^1P^\circ - ^3P$										
			4 099.172	4 100.328	148 398.97–172 787.26	3–3	4.86+06	1.23−02	4.96−01	−1.433	D	1
			4 125.301	4 126.465	148 398.97–172 632.79	3–1	1.12+06	9.55−04	3.89−02	−2.543	D	1
			4 032.067	4 033.206	148 398.97–173 193.14	3–5	9.27+04	3.77−04	1.50−02	−2.947	D	1
79		$^1P^\circ - ^3S$										
			3 899.246	3 900.351	148 398.97–174 037.69	3–3	5.64+06	1.29−02	4.95−01	−1.412	D	1
80		$^1P^\circ - ^1D$	3 497.28	3 498.28	148 398.97–176 984.44	3–5	1.77+08	5.41−01	1.87+01	0.210	B+	1
81		$^1P^\circ - ^1S$	2 909.50	2 910.35	148 398.97–182 759.09	3–1	1.84+08	7.79−02	2.24+00	−0.631	B+	1
82	$3s^23p4p-3s^23p4d$	$^1P - ^1D^\circ$	2 659.17	2 659.96	167 553.27–205 147.80	3–5	4.65+08	8.22−01	2.16+01	0.392	D	3
83		$^1P - ^1P^\circ$	2 173.74	2 174.42	167 553.27–213 542.54	3–3	4.53+08	3.21−01	6.89+00	−0.016	D	3
84		$^3D - ^3F^\circ$	*2 865.75*	*2 866.59*	*170 280.79–205 165.39*	15–21	5.51+08	9.50−01	1.34+02	1.154	D	3
			2 863.511	2 864.352	170 650.55–205 562.46	7–9	5.53+08	8.74−01	5.76+01	0.787	D	3,LS

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 855.994	2 856.833	170 068.73–205 072.53	5–7	4.94+08	8.47−01	3.98+01	0.627	D	3,LS
			2 871.957	2 872.800	169 771.43–204 580.68	3–5	4.60+08	9.48−01	2.69+01	0.454	D	3,LS
			2 904.270	2 905.121	170 650.55–205 072.53	7–7	5.90+07	7.46−02	4.99+00	−0.282	D	3,LS
			2 896.698	2 897.547	170 068.73–204 580.68	5–5	8.34+07	1.05−01	5.00+00	−0.280	D	3,LS
			2 946.372	2 947.233	170 650.55–204 580.68	7–5	2.24+06	2.08−03	1.41−01	−1.837	E	3,LS
85		^{3}D–^{3}D$^\circ$	*2 740.60*	*2 741.41*	*170 280.79–206 758.35*	15–15	1.47+08	1.65−01	2.24+01	0.394	D	3
			2 756.885	2 757.700	170 650.55–206 912.65	7–7	1.28+08	1.46−01	9.27+00	0.009	D	3,LS
			2 731.105	2 731.914	170 068.73–206 673.11	5–5	1.04+08	1.16−01	5.21+00	−0.237	D	3,LS
			2 718.880	2 719.685	169 771.43–206 540.39	3–3	1.13+08	1.25−01	3.35+00	−0.426	D	3,LS
			2 775.219	2 776.038	170 650.55–206 673.11	7–5	2.20+07	1.82−02	1.16+00	−0.895	D	3,LS
			2 741.044	2 741.855	170 068.73–206 540.39	5–3	3.67+07	2.48−02	1.11+00	−0.907	D	3,LS
			2 713.348	2 714.152	170 068.73–206 912.65	5–7	1.69+07	2.61−02	1.16+00	−0.884	D	3,LS
			2 709.101	2 709.904	169 771.43–206 673.11	3–5	2.28+07	4.19−02	1.12+00	−0.901	D	3,LS
86		^{3}P–^{3}D$^\circ$	*2 960.98*	*2 961.84*	*172 995.59–206 758.35*	9–15	3.60+08	7.88−01	6.92+01	0.851	D	3
			2 964.776	2 965.642	173 193.14–206 912.65	5–7	3.59+08	6.62−01	3.23+01	0.520	D	3,LS
			2 950.222	2 951.084	172 787.26–206 673.11	3–5	2.73+08	5.94−01	1.73+01	0.251	D	3,LS
			2 948.330	2 949.191	172 632.79–206 540.39	1–3	2.02+08	7.92−01	7.69+00	−0.101	D	3,LS
			2 985.989	2 986.861	173 193.14–206 673.11	5–5	8.75+07	1.17−01	5.75+00	−0.233	D	3,LS
			2 961.823	2 962.688	172 787.26–206 540.39	3–3	1.50+08	1.97−01	5.76+00	−0.228	D	3,LS
			2 997.874	2 998.748	173 193.14–206 540.39	5–3	9.63+06	7.79−03	3.84−01	−1.409	E	3,LS
87		^{3}P–^{3}P$^\circ$	*2 856.02*	*2 856.86*	*172 995.59–207 999.06*	9–9	2.44+08	2.98−01	2.52+01	0.428	D	3,LS
			2 881.013	2 881.858	173 193.14–207 892.98	5–5	1.78+08	2.22−01	1.05+01	0.045	D	3,LS
			2 830.614	2 831.447	172 787.26–208 104.89	3–3	6.27+07	7.54−02	2.10+00	−0.646	D	3,LS
			2 863.524	2 864.365	173 193.14–208 104.89	5–3	1.01+08	7.46−02	3.51+00	−0.428	D	3,LS
			2 822.058	2 822.889	172 787.26–208 211.96	3–1	2.54+08	1.01−01	2.81+00	−0.519	D	3,LS
			2 847.702	2 848.539	172 787.26–207 892.98	3–5	6.17+07	1.25−01	3.51+00	−0.426	D	3,LS
			2 818.287	2 819.117	172 632.79–208 104.89	1–3	8.48+07	3.03−01	2.81+00	−0.519	D	3,LS
88		^{3}S–^{3}P$^\circ$	*2 943.66*	*2 944.52*	174 037.69–*207 999.06*	3–9	2.78+08	1.08+00	3.15+01	0.511	D	3
			2 952.885	2 953.748	174 037.69–207 892.98	3–5	2.76+08	6.01−01	1.75+01	0.256	D	3,LS
			2 934.516	2 935.375	174 037.69–208 104.89	3–3	2.81+08	3.63−01	1.05+01	0.037	D	3,LS
			2 925.322	2 926.178	174 037.69–208 211.96	3–1	2.83+08	1.21−01	3.49+00	−0.440	D	3,LS
89		^{1}D–^{1}D$^\circ$	3 549.70	3 550.71	176 984.44–205 147.80	5–5	7.98+07	1.51−01	8.82+00	−0.122	D	3
90		^{1}D–^{1}F$^\circ$	2 926.13	2 926.98	176 984.44–211 149.32	5–7	5.06+08	9.09−01	4.38+01	0.658	D	3
91		^{1}S–^{1}P$^\circ$	3 247.56	3 248.50	182 759.09–213 542.54	1–3	1.80+08	8.53−01	9.12+00	−0.069	D	3
92	$3s^23p4p-3s^23p5s$	^{1}P–^{1}P$^\circ$	2 283.66	2 284.37	167 553.27–211 329.07	3–3	1.04+08	8.16−02	1.84+00	−0.611	D	3
93		^{3}D–^{3}P$^\circ$	*2 495.60*	*2 496.35*	*170 280.79–210 339.27*	15–9	3.45+08	1.93−01	2.39+01	0.462	D	3
			2 496.208	2 496.961	170 650.55–210 699.24	7–5	2.90+08	1.94−01	1.11+01	0.133	D	3,LS
			2 508.107	2 508.863	170 068.73–209 927.43	5–3	2.56+08	1.45−01	5.98+00	−0.140	D	3,LS
			2 499.029	2 499.783	169 771.43–209 774.91	3–1	3.46+08	1.08−01	2.66+00	−0.489	D	3,LS
			2 460.460	2 461.205	170 068.73–210 699.24	5–5	5.42+07	4.92−02	1.99+00	−0.609	D	3,LS
			2 489.537	2 490.288	169 771.43–209 927.43	3–3	8.72+07	8.11−02	1.99+00	−0.614	D	3,LS
			2 442.586	2 443.326	169 771.43–210 699.24	3–5	3.69+06	5.51−03	1.33−01	−1.782	E	3,LS
94		^{3}P–^{3}P$^\circ$	*2 677.03*	*2 677.83*	*172 995.59–210 339.27*	9–9	1.83+08	1.97−01	1.56+01	0.249	D	3
			2 665.440	2 666.233	173 193.14–210 699.24	5–5	1.40+08	1.49−01	6.53+00	−0.128	D	3,LS
			2 691.703	2 692.502	172 787.26–209 927.43	3–3	4.52+07	4.91−02	1.30+00	−0.832	D	3,LS
			2 721.446	2 722.252	173 193.14–209 927.43	5–3	7.29+07	4.86−02	2.17+00	−0.614	D	3,LS
			2 702.803	2 703.605	172 787.26–209 774.91	3–1	1.78+08	6.52−02	1.74+00	−0.709	D	3,LS

TABLE 10. Transition probabilities of allowed lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 636.903	2 637.689	172 787.26–210 699.24	3–5	4.81+07	8.36−02	2.17+00	−0.601	D	3,LS
			2 680.554	2 681.350	172 632.79–209 927.43	1–3	6.09+07	1.97−01	1.73+00	−0.706	D	3,LS
95		^{3}S–^{3}P°	*2 753.89*	*2 754.70*	174 037.69–*210 339.27*	3–9	7.25+07	2.47−01	6.73+00	−0.130	D	3
			2 726.846	2 727.653	174 037.69–210 699.24	3–5	7.48+07	1.39−01	3.74+00	−0.380	D	3,LS
			2 785.490	2 786.312	174 037.69–209 927.43	3–3	7.01+07	8.16−02	2.24+00	−0.611	D	3,LS
			2 797.378	2 798.203	174 037.69–209 774.91	3–1	6.93+07	2.71−02	7.48−01	−1.090	E	3,LS
96		^{1}D–^{1}P°	2 910.81	2 911.66	176 984.44–211 329.07	5–3	3.28+08	2.50−01	1.20+01	0.097	D	3
97		^{1}S–^{1}P°	3 499.18	3 500.18	182 759.09–211 329.07	1–3	1.00+08	5.52−01	6.36+00	−0.258	D	3

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006); Ref. 2 = Kohstall *et al.* (1998); Ref. 3 = Nahar and Pradhan (1993); Ref. 4 = Heise *et al.* (1995).

References for Allowed Transitions of S III

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Heise, C., P. L. Smith, and A. G. Calamai, 1995, Astrophys. J. **451**, L41.

Kohstall, C., S. Fritzsche, B. Fricke, and W.-D. Sepp, 1998, At. Data Nucl. Data Tables **70**, 63.

Nahar, S. N. and A. K. Pradhan, 1993, J. Phys. B **26**, 1109. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

4.3.2. Forbidden Transitions for S III

The magnetic dipole (M1) and electric quadrupole (E2) transition rates for transitions in the $3s^23p^2$ ground-state and magnetic quadrupole (M2) transition rates for the $3s^23p^2$-$3s3p^3$ lines were taken from extended calculations of Froese Fischer *et al.* (2006). She used the MCHF method with BP corrections.

For the E2 $3s3p^3$-$3s^23p3d$ and M2 $3s^23p^2$-$3s^23p3d$ lines, transition probabilities were taken from the MCDF computations of Kohstall *et al.* (1998).

A wavelength finding list of forbidden lines for S III is given in Table 11, and the transition probabilities for the lines are provided in Table 12.

TABLE 11. Wavelength finding list for forbidden lines of S III

Wavelength (vac.) (Å)	Mult. No.
819.904	6
897.055	7
1 704.39	5
Wavelength (air) (Å)	**Mult. No.**
2 583.26	8
3 721.63	3
3 797.17	3
4 156.26	9
6 312.1	4
8 829	2
9 068.6	2
9 530.6	2
Wave number (cm^{-1})	**Mult. No.**
833	1
534.39	1
299	1

TABLE 12. Transition probabilities of forbidden lines for S III

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s^23p^2$–$3s^23p^2$	^{3}P–^{3}P									
				534.39 cm^{-1}	298.69–833.08	3–5	M1	2.06−03	2.49+00	A	1
				534.39 cm^{-1}	298.69–833.08	3–5	E2	1.00−08	1.02+01	B+	1
				299 cm^{-1}	0–298.69	1–3	M1	4.79−04	1.99+00	A	1
				833 cm^{-1}	0–833.08	1–5	E2	4.11−08	4.56+00	B	1
2		^{3}P–^{1}D									

TABLE 12. Transition probabilities of forbidden lines for S III—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			8 829	8 832	0–11 322.7	1–5	E2	5.25−06	1.26−03	D+	1
			9 068.6	9 071.1	298.69–11 322.7	3–5	M1	1.85−02	2.55−03	C+	1
			9 068.6	9 071.1	298.69–11 322.7	3–5	E2	3.94−05	1.08−02	C	1
			9 530.6	9 533.2	833.08–11 322.7	5–5	M1	4.78−02	7.67−03	C+	1
			9 530.6	9 533.2	833.08–11 322.7	5–5	E2	2.09−04	7.33−02	C	1
3		^{3}P–^{1}S									
			3 797.17	3 798.25	833.08–27 161.0	5–1	E2	8.82−03	6.22−03	D+	1
			3 721.63	3 722.69	298.69–27 161.0	3–1	M1	6.61−01	1.26−03	C+	1
4		^{1}D–^{1}S									
			6 312.1	6 313.8	11 322.7–27 161.0	5–1	E2	2.08+00	1.86+01	B+	1
5	$3s^23p^2$–$3s3p^3$	^{3}P–^{5}S°									
				1 704.39	0–58 671.92	1–5	M2	5.42−03	2.61+01	C	1
6	$3s^23p^2$–$3s^23p3d$	^{3}P–^{3}F°									
				819.904	833.08–122 798.6	5–9	M2	1.28−01	2.87+01	D	
7		^{1}D–^{3}F°									
				897.055	11 322.7–122 798.6	5–9	M2	4.74−01	1.66+02	D	2
8	$3s3p^3$–$3s^23p3d$	^{3}D°–^{3}F°									
			2 583.26	2 584.03	84 099.4–122 798.6	7–9	E2	5.85−02	5.42−02	D	2
9		^{3}P°–^{3}F°									
			4 156.26	4 157.43	98 745.3–122 798.6	5–9	E2	7.89−01	7.87+00	D	2

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006); Ref. 2 = Kohstall *et al.* (1998).

References for Forbidden Transitions of S III

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Kohstall, C., S. Fritzsche, B. Fricke, and W.-D. Sepp, 1998, At. Data Nucl. Data Tables **70**, 63.

4.4. S IV

$Z=16$
Aluminum Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^6 3s^2 3p\ ^2P_{1/2}^{\circ}$
Ionization Energy: 380 870 cm^{-1} (47.2219 eV)

4.4.1. Allowed Transitions for S IV

Froese Fischer *et al.* (2006) performed extensive calculations for transitions between low configurations states using two methods: the MCHF method with BP corrections and the fully relativistic MCDHF method.

Hibbert *et al.* (2002) calculated oscillator strengths of allowed and intercombination lines in the $3s^2 3p$-$3s3p^2$ multiplets and for a number of other transitions. For allowed transitions, we selected their recommended values, computed with the configuration-interaction code 3 (CIV3) including the valence and core-valence correlation effects.

Gupta and Msezane (2000a) used the CIV3 method for a wider range of transitions. Results from this work were added for transitions from the higher-lying $3s3p(^1P^{\circ})3d$ and $3s3p(^1P^{\circ})4s$ configurations.

Oscillator strengths from the R-matrix calculations of the OP (Mendoza *et al.*, 1995) were taken for strong transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S IV is given in Table 13, and the transition probabilities for these lines are provided in Table 14.

TABLE 13. Wavelength finding list for allowed lines of S IV

Wavelength (vac.) (Å)	Mult. No.
465.348	54
465.450	54
465.471	54
491.615	57
492.459	57
493.132	57
499.369	43
500.230	43
501.599	43
501.761	43
515.807	22
516.266	22
516.725	22
517.186	22
518.650	22
519.375	42
520.118	42
520.852	42
521.052	42
521.069	42
522.007	42
522.538	42
537.017	40
538.595	40
538.977	40
539.122	55
539.287	55
541.789	50
541.890	50
542.029	50
551.121	6
554.000	75
554.023	75
554.027	6
554.042	75
563.908	45
564.058	45
565.855	45
570.201	56
570.387	56
572.243	56
572.430	56
584.960	28
585.550	28
585.712	28
587.037	21
587.829	21
588.358	44
588.521	44
589.720	21
590.510	44
590.675	44
591.737	44
611.099	41
611.276	41
611.768	41
615.545	20
616.854	20
616.973	20
618.937	20
619.057	20
624.141	98
624.281	98
624.643	98
628.050	74
628.104	74
628.110	74
637.499	73
637.554	73
637.730	73
644.464	51
644.608	51
649.700	95
650.077	95
650.092	95
650.470	95
652.522	19
652.918	19
653.549	19

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
653.993	19
654.390	19
655.553	19
655.889	19
656.335	19
657.319	5
660.030	18
660.919	18
661.396	5
661.455	5
661.534	18
662.428	18
663.704	18
664.831	18
666.116	18
672.747	125
672.959	125
673.271	125
673.484	125
673.608	125
674.200	125
674.440	27
674.851	125
674.900	125
675.834	125
676.006	47
677.768	27
677.984	27
678.086	53
678.806	47
680.336	53
680.975	53
687.113	124
687.261	124
687.721	124
688.011	124
688.160	124
689.017	124
689.308	124
689.383	52
689.547	52
690.255	124
692.370	52
692.535	52
701.552	36
702.590	36
703.252	36
704.295	36
705.961	36
706.485	31
707.346	31
713.306	9
713.356	9
714.598	46
715.064	9
715.114	9
716.395	46

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
716.648	26
716.808	26
716.890	26
717.051	26
717.915	9
725.598	49
728.825	49
728.908	49
728.911	86
729.070	86
732.165	49
744.904	4
746.412	126
747.646	126
747.697	126
748.033	126
748.393	4
748.787	126
749.175	126
749.248	126
749.323	126
750.221	4
753.760	4
758.155	128
758.553	128
758.690	128
759.088	128
759.686	128
760.417	128
760.829	35
761.017	128
761.469	128
761.828	35
762.624	128
763.078	128
764.469	35
765.478	35
766.477	25
766.658	25
766.936	25
767.268	25
767.392	139
767.546	25
767.816	25
768.634	139
770.247	48
770.284	48
772.335	48
773.978	48
774.603	72
774.685	72
775.432	72
775.514	72
776.086	48
777.400	97
777.459	97
777.670	24

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
778.531	97
778.589	97
778.904	24
779.191	24
780.669	24
780.957	24
783.663	96
784.019	85
784.212	96
784.272	96
784.368	85
790.241	71
790.456	71
790.541	71
790.603	138
791.772	138
791.921	138
793.094	138
797.649	137
798.267	8
798.421	137
798.701	151
798.730	151
798.846	151
798.875	151
798.991	137
800.469	8
802.535	127
802.931	127
803.074	127
803.134	127
803.205	127
803.600	127
803.709	127
803.803	127
803.981	8
804.104	127
809.656	3
815.941	3
835.965	37
836.295	37
837.164	136
837.440	37
838.197	70
838.293	70
838.643	136
842.506	70
844.417	94
845.079	94
845.433	94
846.097	94
852.710	12
852.780	12
853.124	12
858.213	91
858.897	91
861.663	91

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
862.353	91
878.186	7
880.132	7
880.852	7
884.380	7
885.106	7
885.568	66
886.921	66
887.028	66
888.493	119
889.049	119
890.544	119
890.554	119
890.658	119
890.900	119
892.053	119
892.728	119
893.380	69
893.488	69
894.793	129
895.824	129
896.075	129
898.352	69
898.462	69
901.194	69
911.112	23
912.994	23
913.388	23
914.581	23
914.976	23
927.311	90
928.110	90
930.111	90
939.937	122
940.214	122
941.868	122
946.885	68
947.007	68
948.189	68
949.108	121
949.390	121
949.914	121
950.196	121
962.948	84
964.117	130
964.562	84
965.314	130
971.376	130
972.591	130
977.018	11
977.468	11
990.822	30
991.735	30
999.779	34
1 006.074	34
1 006.391	34
1 008.236	29

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 010.312	29
1 020.555	135
1 022.753	135
1 026.753	93
1 026.855	93
1 027.473	123
1 028.417	123
1 028.503	83
1 028.868	83
1 035.721	123
1 062.664	2
1 072.974	2
1 073.518	2
1 088.215	120
1 091.184	120
1 092.113	120
1 093.053	120
1 094.200	120
1 094.293	120
1 095.228	120
1 095.313	120
1 096.559	120
1 098.359	10
1 098.929	10
1 099.480	10
1 100.051	10
1 101.128	33
1 103.151	105
1 106.490	105
1 107.495	33
1 107.496	105
1 107.731	65
1 108.451	38
1 108.768	33
1 109.831	105
1 109.911	33
1 110.861	105
1 110.898	105
1 111.044	38
1 111.251	82
1 112.743	105
1 113.210	105
1 117.155	65
1 117.325	65
1 118.837	82
1 125.252	32
1 130.621	32
1 133.232	32
1 136.972	32
1 138.084	14
1 138.209	14
1 138.290	134
1 139.509	155
1 141.181	155
1 141.220	155
1 141.616	134
1 142.898	155

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 144.368	134
1 196.074	79
1 198.544	79
1 219.514	81
1 224.756	81
1 226.583	92
1 226.729	92
1 226.866	64
1 227.071	64
1 227.337	64
1 227.542	64
1 229.036	150
1 229.083	154
1 229.104	150
1 229.409	150
1 231.074	154
1 231.488	92
1 231.635	92
1 232.430	154
1 248.351	39
1 251.641	39
1 258.031	207
1 258.180	39
1 258.390	207
1 259.776	133
1 261.522	39
1 263.127	133
1 264.950	133
1 265.459	207
1 265.823	207
1 268.329	133
1 286.063	17
1 286.223	17
1 294.594	149
1 294.619	149
1 294.694	149
1 295.824	107
1 296.497	17
1 296.660	17
1 300.717	107
1 304.174	107
1 319.052	106
1 324.123	106
1 326.358	106
1 331.485	106
1 334.962	106
1 335.108	106
1 338.604	106
1 359.163	109
1 361.081	109
1 362.528	109
1 365.188	109
1 366.921	109
1 368.843	109
1 368.862	109
1 369.872	165
1 370.586	109

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 370.875	13
1 379.872	63
1 381.099	63
1 381.420	165
1 383.080	63
1 383.340	63
1 384.859	63
1 398.040	1
1 404.808	1
1 406.016	1
1 416.887	1
1 417.250	62
1 421.355	62
1 421.630	62
1 423.839	1
1 427.244	62
1 427.521	62
1 431.236	115
1 431.877	115
1 433.838	108
1 434.156	115
1 434.801	115
1 435.443	108
1 442.981	108
1 445.143	108
1 446.751	108
1 446.774	108
1 448.698	108
1 449.946	108
1 450.878	108
1 451.901	108
1 464.667	118
1 469.370	164
1 471.324	111
1 472.002	111
1 480.701	164
1 481.486	118
1 481.490	118
1 481.495	111
1 482.182	111
1 482.663	164
1 534.124	177
1 534.936	177
1 558.946	180
1 559.175	180
1 562.307	180
1 581.193	148
1 581.305	148
1 581.941	148
1 591.449	16
1 607.459	16
1 617.238	116
1 620.969	116
1 623.585	67
1 623.943	67
1 629.155	67
1 629.777	176

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 630.694	176
1 634.754	176
1 635.676	176
1 637.768	116
1 668.611	112
1 676.325	89
1 676.598	89
1 681.704	112
1 686.810	110
1 687.701	110
1 687.960	60
1 688.237	60
1 688.624	60
1 690.474	112
1 696.629	87
1 697.001	110
1 697.594	179
1 701.580	179
1 702.994	179
1 727.745	178
1 730.418	178
1 731.875	178
1 734.560	178
1 738.943	132
1 745.335	132
1 786.98	147
1 787.12	147
1 787.18	147
1 840.83	175
1 842.00	175
1 860.09	187
1 863.01	187
1 865.66	146
1 865.81	146
1 866.12	187
1 867.64	146
1 884.82	196
1 896.42	196
1 897.18	196
1 908.94	196
1 911.67	153
1 911.68	153
1 916.49	153
1 924.82	99
1 931.71	99
1 931.88	99
1 932.01	61
1 941.76	61
1 941.97	99
1 944.18	15
1 948.95	61
1 964.54	15
1 968.12	15

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (air) (Å)	Mult. No.
2 089.49	186
2 097.11	186
2 102.81	199
2 109.57	199
2 110.21	199
2 117.02	199
2 129.35	199
2 129.53	199
2 142.01	199
2 167.35	199
2 245.74	204
2 248.43	195
2 250.83	195
2 255.51	59
2 256.20	59
2 262.25	198
2 262.84	198
2 263.33	204
2 264.98	195
2 270.07	198
2 270.29	88
2 270.52	88
2 271.02	88
2 271.30	198
2 273.81	152
2 276.94	198
2 278.33	114
2 280.64	152
2 283.92	198
2 284.26	198
2 287.32	114
2 287.49	204
2 299.81	198
2 300.57	201
2 305.18	152
2 305.60	198
2 309.44	201
2 310.97	201
2 319.92	201
2 325.55	78
2 325.61	197
2 327.87	197
2 330.59	78
2 330.66	197
2 333.88	197
2 334.95	201
2 335.72	197
2 336.16	197
2 342.62	201
2 345.62	197
2 348.88	197
2 357.95	201
2 364.08	213
2 365.88	197
2 376.04	197
2 383.57	213
2 386.98	131
2 391.68	213
2 396.43	248
2 397.74	248
2 398.79	131
2 399.05	131
2 401.58	248
2 402.89	248
2 409.96	202
2 419.69	202
2 423.85	77
2 435.88	77
2 436.04	202
2 452.48	249
2 457.84	163
2 462.39	249
2 463.77	249
2 495.27	163
2 569.93	200
2 572.69	200
2 578.97	200
2 582.92	200
2 585.71	200
2 590.08	117
2 594.84	200
2 599.67	117
2 607.06	200
2 611.09	200
2 611.37	117
2 632.51	168
2 635.35	161
2 636.46	168
2 678.44	161
2 711.89	205
2 737.57	205
2 756.12	158
2 761.74	203
2 783.05	158
2 783.07	203
2 797.81	203
2 804.18	206
2 806.12	206
2 819.69	203
2 827.25	250
2 829.07	250
2 831.90	158
2 837.57	250
2 841.37	206
2 865.56	219
2 870.25	219
2 892.49	157
2 898.07	157
2 914.60	157
2 927.86	157
2 929.62	224
2 942.89	212

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (air) (Å)	Mult. No.
2 944.73	157
2 945.29	157
2 955.27	212
2 959.62	224
2 967.11	212
2 979.69	212
2 981.98	157
2 991.12	214
2 993.33	214
3 003.91	214
3 010.99	100
3 028.06	58
3 029.31	58
3 036.60	58
3 037.55	100
3 037.85	58
3 037.96	100
3 042.50	174
3 045.69	174
3 056.90	100
3 074.98	162
3 097.27	80
3 117.62	80
3 119.88	162
3 133.80	162
3 170.79	194
3 217.80	194
3 218.42	194
3 218.52	218
3 219.36	101
3 224.43	218
3 228.55	101
3 229.02	101
3 237.99	218
3 239.87	101
3 243.97	218
3 247.61	101
3 292.21	156
3 300.63	156
3 301.22	160
3 308.72	156
3 308.80	156
3 316.95	160
3 330.71	156
3 335.01	217
3 338.63	217
3 340.38	76
3 341.46	76
3 343.50	145
3 344.00	145
3 344.99	217
3 347.70	156
3 363.05	145
3 369.11	160
3 369.56	156
3 400.92	156

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (air) (Å)	Mult. No.
3 411.90	211
3 427.84	211
3 428.55	211
3 568.99	113
3 591.08	113
3 610.85	113
3 619.79	222
3 620.00	222
3 631.76	222
3 633.46	113
3 789.90	185
3 815.04	185
3 834.74	191
3 839.14	191
3 883.10	191
3 887.62	191
3 957.74	225
3 961.61	225
3 964.47	231
3 969.18	231
4 025.00	172
4 048.19	172
4 053.86	172
4 160.93	216
4 170.81	216
4 229.14	183
4 260.47	183
4 294.12	144
4 300.49	144
4 301.33	144
4 359.11	169
4 399.48	221
4 399.51	221
4 400.68	221
4 449.64	169
4 456.49	169
4 465.72	173
4 493.42	173
4 494.29	173
4 522.35	173
4 530.34	159
4 563.28	227
4 579.95	227
4 588.00	102
4 588.94	102
4 592.76	227
4 594.60	102
4 595.55	102
4 598.00	159
4 602.95	227
4 632.94	227
4 635.24	227
4 640.75	227
4 658.81	227
4 659.18	159
4 673.51	230

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (air) (Å)	Mult. No.
4 680.05	230
4 714.68	230
4 721.34	230
4 730.77	159
4 847.72	226
4 849.65	226
4 861.67	226
4 871.55	226
4 880.78	171
4 892.51	226
4 906.73	226
4 911.69	226
4 913.89	171
4 916.67	229
4 931.10	229
4 938.38	229
4 955.66	226
4 992.14	226
4 994.56	171
5 001.98	237
5 012.44	237
5 019.36	237
5 029.23	171
5 029.89	237
5 044.92	237
5 088.83	237
5 104.21	237
5 151.72	237
5 177.41	237
5 226.29	237
5 334.47	241
5 354.24	241
5 394.86	241
5 421.07	241
5 462.72	241
5 488.28	184
5 495.49	241
5 497.78	184
5 541.15	184
5 546.65	241
5 580.43	241
5 676.2	241
5 703.1	192
5 712.9	192
5 859.1	192
6 140.7	182
6 232.3	143
6 234.0	143
6 253.1	182
6 321.8	182
6 341.2	242
6 426.0	242
6 435.2	242
6 454.7	242
6 478.7	143
6 495.7	242
6 525.0	242
6 533.5	210
6 546.3	210
6 552.0	242
6 552.1	242
6 594.9	210
6 803.9	240
6 808.2	240
6 852.7	240
6 853.9	240
6 904.4	240
6 920.6	240
6 951.3	240
6 963.7	228
6 973.3	240
6 978.2	228
7 003.3	167
7 051.6	240
7 089.6	167
7 268.6	103
7 271.0	103
7 702.7	103
7 876.4	236
7 881.6	236
7 882.8	236
7 897.3	233
7 902.4	236
7 919.8	236
7 933.0	236
7 939.6	236
7 995.4	236
8 034.8	236
8 119.1	233
8 472.0	170
8 572.3	170
8 709.7	239
8 711.7	170
8 733.6	239
8 770.4	239
8 817.7	239
8 842.2	239
8 855.1	239
8 903.4	239
9 018.1	239
9 756.9	190
10 120.5	193
10 151.3	193
10 222.5	190
10 224.1	190
10 349.9	140
10 537.9	140
10 542.9	140
12 178.9	238
12 403.6	238
12 415.4	142
12 422.4	142

TABLE 13. Wavelength finding list for allowed lines of S IV—Continued

Wavelength (air) (Å)	Mult. No.
12 468.1	209
12 604.7	238
12 676.6	188
12 693.3	209
12 695.9	209
12 768.7	188
12 863.7	181
12 981.3	142
13 058.1	166
13 117.2	166
13 157.9	181
13 424.6	181
13 473.8	188
13 745.3	181
14 004.5	223
14 063.4	223
14 099.5	244
14 148.8	244
14 829.2	245
15 631.0	245
15 783.7	232
15 798.7	232
15 852.6	245
16 009.7	232
16 287.2	104
16 757.6	104
17 204.0	246
17 668.0	208
17 775.5	246
17 847	208
18 124	208
18 293	246
18 940	246

Wave number (cm^{-1})	Mult. No.
3 794.8	234
3 770.1	234
2 561.3	215
2 504.4	215
2 346.8	141
2 342.3	141
2 212.1	243
2 210.7	141
2 147.4	243
2 122.7	243
1 941.7	235
1 852.3	235
1 798.5	247
1 664.4	235
1 575.0	235
1 452.7	247
1 434.9	220
1 433.5	220
1 433.3	220
235.2	189
178.3	189

TABLE 14. Transition probabilities of allowed lines for S IV

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s^2(^1S)3p-3s3p^2$	$^2P^\circ-^4P$										
				1 416.887	951.43–71 528.7	4–4	1.64+04	4.93−06	9.19−05	−4.705	C	1
				1 404.808	0.00–71 184.1	2–2	5.73+04	1.70−05	1.56−04	−4.469	C+	1
				1 423.839	951.43–71 184.1	4–2	4.45+04	6.76−06	1.26−04	−4.568	C+	1
				1 406.016	951.43–72 074.4	4–6	4.54+04	2.02−05	3.73−04	−4.093	C+	1
				1 398.040	0.00–71 528.7	2–4	1.22+03	7.15−07	6.58−06	−5.845	D+	1
2		$^2P^\circ-^2D$		*1 069.5*	*634–94 131.4*	6–10	1.65+08	4.72−02	9.97−01	−0.548	A	3
				1 072.974	951.43–94 150.3	4–6	1.62+08	4.20−02	5.93−01	−0.775	A	3
				1 062.664	0.00–94 103.1	2–4	1.48+08	5.00−02	3.49−01	−1.000	A	3
				1 073.518	951.43–94 103.1	4–4	2.26+07	3.90−03	5.51−02	−1.807	B+	3
3		$^2P^\circ-^2S$		*813.8*	*634*–123 509.3	6–2	2.90+09	9.59−02	1.54+00	−0.240	A	3
				815.941	951.43–123 509.3	4–2	1.70+09	8.50−02	9.13−01	−0.469	A	3
				809.656	0.00–123 509.3	2–2	1.20+09	1.18−01	6.29−01	−0.627	A	3
4		$^2P^\circ-^2P$		*749.6*	*634–134 036.8*	6–6	8.55+09	7.21−01	1.07+01	0.636	A	3
				750.221	951.43–134 245.4	4–4	7.08+09	5.97−01	5.89+00	0.378	A	3
				748.393	0.00–133 619.6	2–2	5.47+09	4.59−01	2.26+00	−0.037	A	3
				753.760	951.43–133 619.6	4–2	3.08+09	1.31−01	1.30+00	−0.281	A	3
				744.904	0.00–134 245.4	2–4	1.50+09	2.49−01	1.22+00	−0.303	A	3

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
5	$3s^2(^1\mathrm{S})3p-3s^2(^1\mathrm{S})3d$	$^2\mathrm{P}^\circ-^2\mathrm{D}$		*660.0*	*634–152 141.4*	6–10	1.04+10	1.13+00	1.48+01	0.831	A	3
				661.396	951.43–152 146.8	4–6	1.03+10	1.02+00	8.86+00	0.611	A	3
				657.319	0.00–152 133.2	2–4	8.69+09	1.13+00	4.87+00	0.354	A	3
				661.455	951.43–152 133.2	4–4	1.80+09	1.18−01	1.02+00	−0.326	A	3
6	$3s^2(^1\mathrm{S})3p-3s^2(^1\mathrm{S})4s$	$^2\mathrm{P}^\circ-^2\mathrm{S}$		*553.05*	*634*–181 448.2	6–2	6.10+09	9.32−02	1.02+00	−0.252	A	3
				554.027	951.43–181 448.2	4–2	4.09+09	9.40−02	6.85−01	−0.425	A	3
				551.121	0.00–181 448.2	2–2	2.02+09	9.20−02	3.33−01	−0.735	A	3
7	$3s3p^2-3p^3$	$^4\mathrm{P}-^2\mathrm{D}^\circ$										
				880.132	71 528.7–185 148.0	4–6	2.75+04	4.79−06	5.55−05	−4.718	D	1
				878.186	71 184.1–185 055.2	2–4	2.33+04	5.39−06	3.11−05	−4.967	D	1
				884.380	72 074.4–185 148.0	6–6	1.14+05	1.34−05	2.34−04	−4.095	D+	1
				880.852	71 528.7–185 055.2	4–4	2.65+04	3.09−06	3.58−05	−4.908	D	1
				885.106	72 074.4–185 055.2	6–4	3.17+04	2.48−06	4.34−05	−4.827	D	1
8		$^4\mathrm{P}-^4\mathrm{S}^\circ$		*801.85*	*71 744.1*–196 455.4	12–4	7.79+09	2.50−01	7.93+00	0.477	B+	1
				803.981	72 074.4–196 455.4	6–4	3.87+09	2.50−01	3.96+00	0.176	B+	1
				800.469	71 528.7–196 455.4	4–4	2.62+09	2.51−01	2.65+00	0.002	B+	1
				798.267	71 184.1–196 455.4	2–4	1.32+09	2.52−01	1.32+00	−0.298	B+	1
9		$^4\mathrm{P}-^2\mathrm{P}^\circ$										
				715.114	71 528.7–211 366.6	4–4	3.00+06	2.30−04	2.16−03	−3.036	C	1
				713.306	71 184.1–211 376.3	2–2	1.43+04	1.09−06	5.12−06	−5.662	E	1
				717.915	72 074.4–211 366.6	6–4	2.66+06	1.37−04	1.94−03	−3.085	C	1
				715.064	71 528.7–211 376.3	4–2	5.71+04	2.19−06	2.05−05	−5.057	D	1
				713.356	71 184.1–211 366.6	2–4	1.73+06	2.64−04	1.23−03	−3.277	C	1
10		$^2\mathrm{D}-^2\mathrm{D}^\circ$		*1 099.15*	*94 131.4–185 110.9*	10–10	2.45+08	4.43−02	1.60+00	−0.354	B	1
				1 098.929	94 150.3–185 148.0	6–6	2.30+08	4.16−02	9.03−01	−0.603	B	1
				1 099.480	94 103.1–185 055.2	4–4	2.11+08	3.83−02	5.54−01	−0.815	B	1
				1 100.051	94 150.3–185 055.2	6–4	3.14+07	3.80−03	8.25−02	−1.642	C+	1
				1 098.359	94 103.1–185 148.0	4–6	1.66+07	4.50−03	6.50−02	−1.745	C+	1
11		$^2\mathrm{D}-^4\mathrm{S}^\circ$										
				977.468	94 150.3–196 455.4	6–4	2.86+05	2.73−05	5.27−04	−3.786	D+	1
				977.018	94 103.1–196 455.4	4–4	3.98+04	5.70−06	7.32−05	−4.642	D	1
12		$^2\mathrm{D}-^2\mathrm{P}^\circ$		*852.96*	*94 131.4–211 369.8*	10–6	1.15+09	7.51−02	2.11+00	−0.124	B+	2
				853.124	94 150.3–211 366.6	6–4	1.04+09	7.54−02	1.27+00	−0.344	B+	2
				852.710	94 103.1–211 376.3	4–2	1.15+09	6.28−02	7.05−01	−0.600	B	2
				852.780	94 103.1–211 366.6	4–4	1.09+08	1.19−02	1.33−01	−1.322	B	2
13		$^2\mathrm{S}-^4\mathrm{S}^\circ$										
				1 370.875	123 509.3–196 455.4	2–4	1.65+04	9.29−06	8.38−05	−4.731	D	1
14		$^2\mathrm{S}-^2\mathrm{P}^\circ$		*1 138.17*	123 509.3–*211 369.8*	2–6	3.12+07	1.82−02	1.36−01	−1.439	C+	2
				1 138.209	123 509.3–211 366.6	2–4	3.42+07	1.33−02	9.95−02	−1.575	C+	2
				1 138.084	123 509.3–211 376.3	2–2	2.52+07	4.89−03	3.66−02	−2.010	C+	2
15		$^2\mathrm{P}-^2\mathrm{D}^\circ$		*1 957.9*	*134 036.8–185 110.9*	6–10	3.05+07	2.92−02	1.13+00	−0.756	B	1
				1 964.54	134 245.4–185 148.0	4–6	3.03+07	2.63−02	6.79−01	−0.978	B	1
				1 944.18	133 619.6–185 055.2	2–4	2.66+07	3.01−02	3.85−01	−1.220	B	1
				1 968.12	134 245.4–185 055.2	4–4	4.39+06	2.55−03	6.60−02	−1.991	C+	1

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
16		^{2}P–^{4}S°										
				1 607.459	134 245.4–196 455.4	4–4	1.75+05	6.79−05	1.43−03	−3.566	C	1
				1 591.449	133 619.6–196 455.4	2–4	2.97+04	2.26−05	2.36−04	−4.345	D+	1
17		^{2}P–^{2}P°		*1 293.11*	*134 036.8–211 369.8*	6–6	1.95+08	4.89−02	1.25+00	−0.533	B	2
				1 296.660	134 245.4–211 366.6	4–4	1.61+08	4.05−02	6.91−01	−0.790	B	2
				1 286.063	133 619.6–211 376.3	2–2	1.40+08	3.47−02	2.94−01	−1.159	B	2
				1 296.497	134 245.4–211 376.3	4–2	6.58+07	8.29−03	1.41−01	−1.479	B	2
				1 286.223	133 619.6–211 366.6	2–4	2.93+07	1.45−02	1.22−01	−1.538	B	2
18	$3s3p^2$–$3s3p(^3$P°$)3d$	^{4}P–^{4}P°		*663.86*	*71 744.1–222 377.4*	12–12	6.54+09	4.32−01	1.13+01	0.715	B+	1
				666.116	72 074.4–222 198.3	6–6	3.49+09	2.32−01	3.05+00	0.144	B+	1
				662.428	71 528.7–222 488.6	4–4	3.58+08	2.35−02	2.05−01	−1.027	B	1
				660.030	71 184.1–222 692.4	2–2	1.70+09	1.11−01	4.83−01	−0.654	B	1
				664.831	72 074.4–222 488.6	6–4	2.53+09	1.12−01	1.46+00	−0.173	B+	1
				661.534	71 528.7–222 692.4	4–2	4.89+09	1.60−01	1.39+00	−0.194	B+	1
				663.704	71 528.7–222 198.3	4–6	3.04+09	3.02−01	2.63+00	0.082	B+	1
				660.919	71 184.1–222 488.6	2–4	3.71+09	4.86−01	2.11+00	−0.012	B+	1
19		^{4}P–^{4}D°		*654.51*	*71 744.1–224 530.1*	12–20	1.10+10	1.18+00	3.04+01	1.151	B+	1
				655.553	72 074.4–224 617.3	6–8	1.10+10	9.46−01	1.22+01	0.754	A	1
				653.549	71 528.7–224 539.3	4–6	6.63+09	6.37−01	5.48+00	0.406	B+	1
				652.522	71 184.1–224 435.6	2–4	3.64+09	4.64−01	1.99+00	−0.032	B+	1
				655.889	72 074.4–224 539.3	6–6	4.35+09	2.81−01	3.63+00	0.227	B+	1
				653.993	71 528.7–224 435.6	4–4	6.44+09	4.13−01	3.55+00	0.218	B+	1
				652.918	71 184.1–224 342.7	2–2	8.66+09	5.53−01	2.37+00	0.044	B+	1
				656.335	72 074.4–224 435.6	6–4	9.40+08	4.05−02	5.24−01	−0.614	B	1
				654.390	71 528.7–224 342.7	4–2	2.43+09	7.80−02	6.71−01	−0.506	B	1
20		^{4}P–^{2}D°										
				616.973	71 528.7–233 610.4	4–6	3.93+06	3.37−04	2.73−03	−2.870	C	1
				615.545	71 184.1–233 641.7	2–4	1.59+06	1.81−04	7.33−04	−3.441	D+	1
				619.057	72 074.4–233 610.4	6–6	9.30+05	5.34−05	6.53−04	−3.494	D+	1
				616.854	71 528.7–233 641.7	4–4	1.56+06	8.88−05	7.21−04	−3.450	D+	1
				618.937	72 074.4–233 641.7	6–4	1.01+05	3.85−06	4.71−05	−4.636	D	1
21		^{4}P–^{2}F°										
				587.037	72 074.4–242 421.4	6–8	2.12+06	1.46−04	1.69−03	−3.057	D	1
				587.829	71 528.7–241 646.3	4–6	3.44+05	2.68−05	2.07−04	−3.970	D+	1
				589.720	72 074.4–241 646.3	6–6	1.55+05	8.08−06	9.41−05	−4.314	D	1
22		^{4}P–^{2}P°										
				517.186	71 528.7–264 882.8	4–4	1.87+05	7.51−06	5.11−05	−4.522	D	1
				515.807	71 184.1–265 055.1	2–2	7.71+05	3.08−05	1.04−04	−4.210	D+	1
				518.650	72 074.4–264 882.8	6–4	8.68+04	2.33−06	2.39−05	−4.854	D	1
				516.725	71 528.7–265 055.1	4–2	2.20+05	4.40−06	2.99−05	−4.754	D	1
				516.266	71 184.1–264 882.8	2–4	1.69+06	1.35−04	4.58−04	−3.569	D+	1
23		^{2}D–^{4}F°										
				911.112	94 150.3–203 906.3	6–8	8.84+04	1.47−05	2.64−04	−4.055	D+	1
				912.994	94 103.1–203 632.8	4–6	1.46+04	2.73−06	3.28−05	−4.962	D	1
				913.388	94 150.3–203 632.8	6–6	3.05+05	3.81−05	6.87−04	−3.641	D+	1
				914.581	94 103.1–203 442.8	4–4	5.31+05	6.65−05	8.01−04	−3.575	D+	1
				914.976	94 150.3–203 442.8	6–4	7.41+04	6.20−06	1.12−04	−4.429	D+	1

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
24		^{2}D–^{4}P°										
				779.191	94 150.3–222 488.6	6–4	2.10+05	1.27−05	1.96−04	−4.118	D+	1
				777.670	94 103.1–222 692.4	4–2	1.51+05	6.86−06	7.03−05	−4.562	D	1
				780.957	94 150.3–222 198.3	6–6	1.38+06	1.26−04	1.94−03	−3.121	C	1
				778.904	94 103.1–222 488.6	4–4	6.09+05	5.53−05	5.67−04	−3.655	D+	1
				780.669	94 103.1–222 198.3	4–6	6.61+04	9.06−06	9.31−05	−4.441	D	1
25		^{2}D–^{4}D°										
				766.936	94 150.3–224 539.3	6–6	2.41+06	2.13−04	3.22−03	−2.893	C	1
				767.268	94 103.1–224 435.6	4–4	1.19+06	1.05−04	1.06−03	−3.377	C	1
				767.546	94 150.3–224 435.6	6–4	4.56+05	2.68−05	4.07−04	−3.794	D+	1
				767.816	94 103.1–224 342.7	4–2	9.31+04	4.12−06	4.16−05	−4.783	D	1
				766.477	94 150.3–224 617.3	6–8	1.22+06	1.43−04	2.16−03	−3.067	C	1
				766.658	94 103.1–224 539.3	4–6	1.08+04	1.43−06	1.44−05	−5.243	D	1
26		^{2}D–^{2}D°		*716.89*	*94 131.4–233 622.9*	10–10	8.79+09	6.77−01	1.60+01	0.831	B+	1
				717.051	94 150.3–233 610.4	6–6	8.16+09	6.29−01	8.90+00	0.577	B+	1
				716.648	94 103.1–233 641.7	4–4	7.94+09	6.12−01	5.77+00	0.389	B+	1
				716.890	94 150.3–233 641.7	6–4	8.46+08	4.35−02	6.15−01	−0.583	B	1
				716.808	94 103.1–233 610.4	4–6	6.40+08	7.40−02	6.98−01	−0.529	B	1
27		^{2}D–^{2}F°		*675.87*	*94 131.4–242 089.2*	10–14	4.18+09	4.00−01	8.91+00	0.602	B+	1
				674.440	94 150.3–242 421.4	6–8	4.18+09	3.80−01	5.06+00	0.358	B+	1
				677.768	94 103.1–241 646.3	4–6	3.84+09	3.97−01	3.54+00	0.201	B+	1
				677.984	94 150.3–241 646.3	6–6	3.38+08	2.33−02	3.11−01	−0.854	B	1
28		^{2}D–^{2}P°		*585.45*	*94 131.4–264 940.2*	10–6	6.66+08	2.05−02	3.96−01	−0.688	B	1
				585.712	94 150.3–264 882.8	6–4	5.55+08	1.90−02	2.20−01	−0.943	B	1
				584.960	94 103.1–265 055.1	4–2	7.62+08	1.95−02	1.50−01	−1.108	B	1
				585.550	94 103.1–264 882.8	4–4	6.54+07	3.36−03	2.59−02	−1.872	C+	1
29		^{2}S–^{4}P°										
				1 010.312	123 509.3–222 488.6	2–4	3.34+04	1.02−05	6.79−05	−4.690	D	1
				1 008.236	123 509.3–222 692.4	2–2	1.45+04	2.21−06	1.46−05	−5.355	D	1
30		^{2}S–^{4}D°										
				990.822	123 509.3–224 435.6	2–4	2.83+04	8.33−06	5.43−05	−4.778	D	1
				991.735	123 509.3–224 342.7	2–2	6.21+04	9.16−06	5.98−05	−4.737	D	1
31		^{2}S–^{2}P°		*707.06*	123 509.3–*264 940.2*	2–6	6.84+09	1.54+00	7.16+00	0.489	B+	1
				707.346	123 509.3–264 882.8	2–4	7.13+09	1.07+00	4.98+00	0.330	B+	1
				706.485	123 509.3–265 055.1	2–2	6.28+09	4.70−01	2.18+00	−0.027	B+	1
32		^{2}P–^{4}P°										
				1 133.232	134 245.4–222 488.6	4–4	2.77+03	5.33−07	7.95−06	−5.671	E	1
				1 130.621	134 245.4–222 692.4	4–2	2.11+04	2.02−06	3.00−05	−5.093	D	1
				1 136.972	134 245.4–222 198.3	4–6	4.68+04	1.36−05	2.03−04	−4.264	D+	1
				1 125.252	133 619.6–222 488.6	2–4	1.90+04	7.21−06	5.34−05	−4.841	D	1
33		^{2}P–^{4}D°										
				1 107.495	134 245.4–224 539.3	4–6	3.70+04	1.02−05	1.49−04	−4.389	D+	1
				1 101.128	133 619.6–224 435.6	2–4	1.85+04	6.72−06	4.87−05	−4.872	D	1
				1 108.768	134 245.4–224 435.6	4–4	1.24+04	2.29−06	3.34−05	−5.038	D	1
				1 109.911	134 245.4–224 342.7	4–2	9.88+02	9.12−08	1.33−06	−6.438	E	1

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
34		^{2}P–^{2}D$^\circ$		*1 004.16*	*134 036.8–233 622.9*	6–10	1.77+08	4.46−02	8.85−01	−0.573	B	1
				1 006.391	134 245.4–233 610.4	4–6	1.70+08	3.87−02	5.13−01	−0.810	B	1
				999.779	133 619.6–233 641.7	2–4	1.55+08	4.65−02	3.06−01	−1.032	B	1
				1 006.074	134 245.4–233 641.7	4–4	3.29+07	4.99−03	6.61−02	−1.700	C+	1
35		^{2}P–^{2}P$^\circ$		*763.92*	*134 036.8–264 940.2*	6–6	3.14+09	2.75−01	4.15+00	0.217	B+	1
				765.478	134 245.4–264 882.8	4–4	2.54+09	2.23−01	2.24+00	−0.050	B+	1
				760.829	133 619.6–265 055.1	2–2	2.39+09	2.08−01	1.04+00	−0.381	B+	1
				764.469	134 245.4–265 055.1	4–2	1.02+09	4.46−02	4.48−01	−0.749	B	1
				761.828	133 619.6–264 882.8	2–4	4.79+08	8.33−02	4.18−01	−0.778	B	1
36	$3s3p^2$–$3s^2(^1S)4p$	^{4}P–^{2}P$^\circ$										
				703.252	71 528.7–213 725.3	4–4	7.40+05	5.49−05	5.08−04	−3.658	D+	1
				702.590	71 184.1–213 514.7	2–2	1.24+05	9.16−06	4.23−05	−4.737	D	1
				705.961	72 074.4–213 725.3	6–4	6.67+04	3.32−06	4.63−05	−4.701	D	1
				704.295	71 528.7–213 514.7	4–2	1.52+05	5.64−06	5.23−05	−4.647	D	1
				701.552	71 184.1–213 725.3	2–4	1.13+05	1.67−05	7.72−05	−4.476	D	1
37		^{2}D–^{2}P$^\circ$		*836.65*	*94 131.4–213 655.1*	10–6	2.00+09	1.26−01	3.48+00	0.100	B+	1
				836.295	94 150.3–213 725.3	6–4	1.76+09	1.23−01	2.03+00	−0.132	B+	1
				837.440	94 103.1–213 514.7	4–2	2.13+09	1.12−01	1.23+00	−0.349	B+	1
				835.965	94 103.1–213 725.3	4–4	1.89+08	1.98−02	2.17−01	−1.101	B	1
38		^{2}S–^{2}P$^\circ$		*1 109.31*	123 509.3–*213 655.1*	2–6	6.24+07	3.45−02	2.52−01	−1.161	B	1
				1 108.451	123 509.3–213 725.3	2–4	6.37+07	2.35−02	1.71−01	−1.328	B	1
				1 111.044	123 509.3–213 514.7	2–2	6.00+07	1.11−02	8.12−02	−1.654	C+	1
39		^{2}P–^{2}P$^\circ$		*1 255.99*	*134 036.8–213 655.1*	6–6	6.08+07	1.44−02	3.57−01	−1.063	B	1
				1 258.180	134 245.4–213 725.3	4–4	4.85+07	1.15−02	1.90−01	−1.337	B	1
				1 251.641	133 619.6–213 514.7	2–2	5.12+07	1.20−02	9.90−02	−1.620	C+	1
				1 261.522	134 245.4–213 514.7	4–2	1.90+07	2.26−03	3.75−02	−2.044	C+	1
				1 248.351	133 619.6–213 725.3	2–4	7.92+06	3.70−03	3.04−02	−2.131	C+	1
40	$3s3p^2$–$3s^2(^1S)4f$	^{4}P–b ^{2}F$^\circ$										
				538.977	72 074.4–257 611.0	6–8	1.10+06	6.40−05	6.81−04	−3.416	D+	1
				537.017	71 528.7–257 742.6	4–6	1.51+05	9.79−06	6.92−05	−4.407	D	1
				538.595	72 074.4–257 742.6	6–6	7.11+04	3.09−06	3.29−05	−4.732	D	1
41		^{2}D–b ^{2}F$^\circ$		*611.49*	*94 131.4–257 667.4*	10–14	7.68+09	6.02−01	1.21+01	0.780	B+	1
				611.768	94 150.3–257 611.0	6–8	7.71+09	5.77−01	6.97+00	0.539	B+	1
				611.099	94 103.1–257 742.6	4–6	7.14+09	6.00−01	4.82+00	0.380	B+	1
				611.276	94 150.3–257 742.6	6–6	4.97+08	2.78−02	3.36−01	−0.778	B	1
42	$3s3p^2$–$3s3p(^3P^\circ)4s$	^{4}P–^{4}P$^\circ$		*520.95*	*71 744.1–263 699.4*	12–12	4.46+09	1.82−01	3.74+00	0.339	B	1
				520.852	72 074.4–264 067.7	6–6	3.13+09	1.27−01	1.31+00	−0.118	B+	1
				521.052	71 528.7–263 448.1	4–4	5.92+08	2.41−02	1.65−01	−1.016	B	1
				521.069	71 184.1–263 097.1	2–2	7.42+08	3.02−02	1.03−01	−1.219	B	1
				522.538	72 074.4–263 448.1	6–4	2.02+09	5.51−02	5.68−01	−0.481	B	1
				522.007	71 528.7–263 097.1	4–2	3.72+09	7.59−02	5.21−01	−0.518	B	1
				519.375	71 528.7–264 067.7	4–6	1.34+09	8.12−02	5.55−01	−0.488	B	1
				520.118	71 184.1–263 448.1	2–4	1.85+09	1.50−01	5.14−01	−0.523	B	1
43		^{4}P–^{2}P$^\circ$										
				500.230	71 528.7–271 436.9	4–4	4.77+05	1.79−05	1.17−04	−4.145	D+	2

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				501.599	72 074.4–271 436.9	6–4	2.67+05	6.70−06	6.64−05	−4.396	D	2
				501.761	71 528.7–270 826.7	4–2	5.06+05	9.55−06	6.30−05	−4.418	D	2
				499.369	71 184.1–271 436.9	2–4	6.13+05	4.58−05	1.50−04	−4.038	D+	2
44		^{2}D–^{4}P°										
				590.675	94 150.3–263 448.1	6–4	1.99+06	6.94−05	8.09−04	−3.380	D+	1
				591.737	94 103.1–263 097.1	4–2	1.13+06	2.96−05	2.30−04	−3.927	D+	1
				588.521	94 150.3–264 067.7	6–6	1.28+06	6.64−05	7.72−04	−3.400	D+	1
				590.510	94 103.1–263 448.1	4–4	9.28+05	4.85−05	3.77−04	−3.712	D+	1
				588.358	94 103.1–264 067.7	4–6	8.17+04	6.36−06	4.93−05	−4.594	D	1
45		^{2}D–^{2}P°		*564.65*	*94 131.4–271 233.5*	10–6	3.04+09	8.71−02	1.62+00	−0.060	B	2
				564.058	94 150.3–271 436.9	6–4	2.79+09	8.86−02	9.86−01	−0.274	B	2
				565.855	94 103.1–270 826.7	4–2	2.95+09	7.07−02	5.27−01	−0.549	B	2
				563.908	94 103.1–271 436.9	4–4	3.04+08	1.45−02	1.07−01	−1.237	B	2
46		^{2}S–^{4}P°										
				714.598	123 509.3–263 448.1	2–4	3.31+05	5.07−05	2.38−04	−3.994	D+	1
				716.395	123 509.3–263 097.1	2–2	1.44+05	1.11−05	5.23−05	−4.654	D	1
47		^{2}S–^{2}P°		*676.94*	123 509.3–*271 233.5*	2–6	2.95+09	6.08−01	2.71+00	0.085	B+	2
				676.006	123 509.3–271 436.9	2–4	2.85+09	3.90−01	1.73+00	−0.108	B+	2
				678.806	123 509.3–270 826.7	2–2	3.18+09	2.20−01	9.81−01	−0.357	B	2
48		^{2}P–^{4}P°										
				773.978	134 245.4–263 448.1	4–4	1.62+05	1.45−05	1.48−04	−4.237	D+	1
				772.335	133 619.6–263 097.1	2–2	1.25+04	1.12−06	5.67−06	−5.650	E	1
				776.086	134 245.4–263 097.1	4–2	1.20+05	5.42−06	5.53−05	−4.664	D	1
				770.284	134 245.4–264 067.7	4–6	2.07+04	2.76−06	2.80−05	−4.957	D	1
				770.247	133 619.6–263 448.1	2–4	7.37+04	1.31−05	6.64−05	−4.582	D	1
49		^{2}P–^{2}P°		*728.88*	*134 036.8–271 233.5*	6–6	2.42+08	1.93−02	2.78−01	−0.936	B	2
				728.908	134 245.4–271 436.9	4–4	2.18+08	1.74−02	1.66−01	−1.157	B	2
				728.825	133 619.6–270 826.7	2–2	1.00+08	7.97−03	3.82−02	−1.798	C+	2
				732.165	134 245.4–270 826.7	4–2	7.10+07	2.85−03	2.74−02	−1.943	C+	2
				725.598	133 619.6–271 436.9	2–4	6.14+07	9.69−03	4.63−02	−1.713	C+	2
50	$3s3p^2$–$3s3p(^1P°)3d$	^{2}D–^{2}P°		*541.94*	*94 131.4–278 653.9*	10–6	3.90+08	1.03−02	1.84−01	−0.987	D+	4
				542.029	94 150.3–278 642.4	6–4	3.64+08	1.07−02	1.14−01	−1.192	D+	4
				541.789	94 103.1–278 676.9	4–2	3.64+08	8.02−03	5.71−02	−1.494	D	4
				541.890	94 103.1–278 642.4	4–4	4.12+07	1.81−03	1.29−02	−2.140	D	4
51		^{2}S–^{2}P°		*644.56*	123 509.3–*278 653.9*	2–6	5.56+08	1.04−01	4.41−01	−0.682	D+	4
				644.608	123 509.3–278 642.4	2–4	4.98+08	6.21−02	2.63−01	−0.906	D+	4
				644.464	123 509.3–278 676.9	2–2	6.76+08	4.21−02	1.78−01	−1.075	D+	4
52		^{2}P–^{2}P°		*691.48*	*134 036.8–278 653.9*	6–6	7.21+09	5.17−01	7.06+00	0.492	C	4
				692.535	134 245.4–278 642.4	4–4	5.55+09	3.99−01	3.63+00	0.203	C	4
				689.383	133 619.6–278 676.9	2–2	4.78+09	3.41−01	1.54+00	−0.166	C	4
				692.370	134 245.4–278 676.9	4–2	2.52+09	9.04−02	8.24−01	−0.442	D+	4
				689.547	133 619.6–278 642.4	2–4	1.65+09	2.36−01	1.07+00	−0.326	C	4
53		^{2}P–^{2}D°		*679.63*	*134 036.8–281 176.4*	6–10	1.51+10	1.75+00	2.34+01	1.021	D+	4
				680.336	134 245.4–281 231.6	4–6	1.52+10	1.58+00	1.41+01	0.801	D+	4

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				678.086	133 619.6–281 093.6	2–4	1.22+10	1.68+00	7.49+00	0.526	C	4
				680.975	134 245.4–281 093.6	4–4	2.95+09	2.05−01	1.84+00	−0.086	C	4
54	$3s3p^2$–$3s3p(^1P^\circ)4s$	^2D–$^2P^\circ$		*465.45*	*94 131.4–308 977.2*	10–6	1.69+09	3.30−02	5.06−01	−0.481	D+	4
				465.450	94 150.3–308 996.2	6–4	1.51+09	3.27−02	3.00−01	−0.707	D+	4
				465.471	94 103.1–308 939.3	4–2	1.72+09	2.80−02	1.71−01	−0.951	D+	4
				465.348	94 103.1–308 996.2	4–4	1.76+08	5.70−03	3.49−02	−1.642	D	4
55		^2S–$^2P^\circ$		*539.18*	123 509.3–*308 977.2*	2–6	4.21+08	5.50−02	1.95−01	−0.959	D+	4
				539.122	123 509.3–308 996.2	2–4	4.52+08	3.94−02	1.39−01	−1.103	D+	4
				539.287	123 509.3–308 939.3	2–2	3.63+08	1.58−02	5.62−02	−1.500	D	4
56		^2P–$^2P^\circ$		*571.62*	*134 036.8–308 977.2*	6–6	2.63+09	1.29−01	1.46+00	−0.111	D+	4
				572.243	134 245.4–308 996.2	4–4	2.20+09	1.08−01	8.13−01	−0.365	D+	4
				570.387	133 619.6–308 939.3	2–2	1.82+09	8.90−02	3.34−01	−0.750	D+	4
				572.430	134 245.4–308 939.3	4–2	8.90+08	2.19−02	1.64−01	−1.057	D+	4
				570.201	133 619.6–308 996.2	2–4	4.01+08	3.91−02	1.46−01	−1.107	D+	4
57	$3s3p^2$–$3s3p(^3P^\circ)4d$	^2P–$^2D^\circ$		*492.22*	*134 036.8–337 197.2*	6–10	4.05+08	2.45−02	2.38−01	−0.833	D	5
				492.459	134 245.4–337 308.1	4–6	4.05+08	2.21−02	1.43−01	−1.054	D	5,LS
				491.615	133 619.6–337 030.8	2–4	3.39+08	2.46−02	7.96−02	−1.308	E+	5,LS
				493.132	134 245.4–337 030.8	4–4	6.72+07	2.45−03	1.59−02	−2.009	E+	5,LS
58	$3s^2(^1S)3d$–$3p^3$	^2D–$^2D^\circ$	*3 032.2*	*3 033.1*	*152 141.4–185 110.9*	10–10	9.57+05	1.32−03	1.32−01	−1.879	C+	1
			3 029.31	3 030.19	152 146.8–185 148.0	6–6	9.00+05	1.24−03	7.41−02	−2.128	C+	1
			3 036.60	3 037.48	152 133.2–185 055.2	4–4	8.56+05	1.18−03	4.73−02	−2.326	C+	1
			3 037.85	3 038.74	152 146.8–185 055.2	6–4	1.04+05	9.56−05	5.73−03	−3.241	C	1
			3 028.06	3 028.94	152 133.2–185 148.0	4–6	5.63+04	1.16−04	4.63−03	−3.333	C	1
59		^2D–$^4S^\circ$										
			2 256.20	2 256.90	152 146.8–196 455.4	6–4	9.07+02	4.62−07	2.05−05	−5.557	D	1
			2 255.51	2 256.21	152 133.2–196 455.4	4–4	2.29+02	1.75−07	5.19−06	−6.155	E	1
60		^2D–$^2P^\circ$		*1 688.38*	*152 141.4–211 369.8*	10–6	8.59+07	2.20−02	1.22+00	−0.658	B	2
				1 688.624	152 146.8–211 366.6	6–4	7.59+07	2.16−02	7.21−01	−0.887	B	2
				1 687.960	152 133.2–211 376.3	4–2	8.77+07	1.87−02	4.16−01	−1.126	B	2
				1 688.237	152 133.2–211 366.6	4–4	9.21+06	3.94−03	8.75−02	−1.802	C+	2
61	$3s^2(^1S)3d$–$3s3p(^3P^\circ)3d$	^2D–$^4F^\circ$										
				1 932.01	152 146.8–203 906.3	6–8	1.25+04	9.35−06	3.56−04	−4.251	D+	1
				1 941.76	152 133.2–203 632.8	4–6	9.44+03	8.00−06	2.04−04	−4.495	D+	1
				1 948.95	152 133.2–203 442.8	4–4	7.49+02	4.27−07	1.09−05	−5.768	D	1
62		^2D–$^4P^\circ$										
				1 421.630	152 146.8–222 488.6	6–4	7.92+02	1.60−07	4.49−06	−6.018	E	1
				1 417.250	152 133.2–222 692.4	4–2	1.63+03	2.46−07	4.59−06	−6.007	E	1
				1 427.521	152 146.8–222 198.3	6–6	3.35+04	1.02−05	2.88−04	−4.213	D+	1
				1 421.355	152 133.2–222 488.6	4–4	8.68+03	2.63−06	4.92−05	−4.978	D	1
				1 427.244	152 133.2–222 198.3	4–6	2.06+03	9.43−07	1.77−05	−5.423	D	1
63		^2D–$^4D^\circ$										
				1 383.080	152 133.2–224 435.6	4–4	1.94+03	5.56−07	1.01−05	−5.653	D	1
				1 383.340	152 146.8–224 435.6	6–4	1.08+04	2.06−06	5.64−05	−4.908	D	1
				1 384.859	152 133.2–224 342.7	4–2	2.87+04	4.13−06	7.53−05	−4.782	D	1

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 379.872	152 146.8–224 617.3	6–8	1.52+04	5.77−06	1.57−04	−4.461	D+	1
				1 381.099	152 133.2–224 539.3	4–6	2.82+03	1.21−06	2.20−05	−5.315	D	1
64		^{2}D–^{2}D°		*1 227.27*	*152 141.4–233 622.9*	10–10	2.41+07	5.44−03	2.20−01	−1.264	B	1
				1 227.542	152 146.8–233 610.4	6–6	2.21+07	5.00−03	1.21−01	−1.523	B	1
				1 226.866	152 133.2–233 641.7	4–4	2.17+07	4.89−03	7.89−02	−1.709	C+	1
				1 227.071	152 146.8–233 641.7	6–4	1.84+06	2.77−04	6.71−03	−2.779	C	1
				1 227.337	152 133.2–233 610.4	4–6	2.42+06	8.20−04	1.32−02	−2.484	C+	1
65		^{2}D–^{2}F°		*1 111.76*	*152 141.4–242 089.2*	10–14	4.68+07	1.22−02	4.45−01	−0.914	B	1
				1 107.731	152 146.8–242 421.4	6–8	4.80+07	1.18−02	2.57−01	−1.150	B	1
				1 117.155	152 133.2–241 646.3	4–6	4.11+07	1.15−02	1.69−01	−1.337	B	1
				1 117.325	152 146.8–241 646.3	6–6	4.53+06	8.48−04	1.87−02	−2.293	C+	1
66		^{2}D–^{2}P°		*886.53*	*152 141.4–264 940.2*	10–6	5.88+05	4.16−05	1.21−03	−3.381	C	1
				887.028	152 146.8–264 882.8	6–4	1.21+05	9.48−06	1.66−04	−4.245	D+	1
				885.568	152 133.2–265 055.1	4–2	1.00+04	5.88−07	6.85−06	−5.629	E	1
				886.921	152 133.2–264 882.8	4–4	7.58+05	8.94−05	1.04−03	−3.447	C	1
67	$3s^2(^1S)3d–3s^2(^1S)4p$	^{2}D–^{2}P°		*1 625.65*	*152 141.4–213 655.1*	10–6	3.08+08	7.33−02	3.92+00	−0.135	B+	1
				1 623.943	152 146.8–213 725.3	6–4	2.85+08	7.52−02	2.41+00	−0.346	B+	1
				1 629.155	152 133.2–213 514.7	4–2	2.95+08	5.86−02	1.25+00	−0.630	B+	1
				1 623.585	152 133.2–213 725.3	4–4	3.11+07	1.23−02	2.62−01	−1.308	B	1
68	$3s^2(^1S)3d–3s^2(^1S)4f$	^{2}D–b ^{2}F°		*947.63*	*152 141.4–257 667.4*	10–14	1.08+08	2.04−02	6.37−01	−0.690	B	1
				948.189	152 146.8–257 611.0	6–8	1.12+08	2.02−02	3.78−01	−0.916	B	1
				946.885	152 133.2–257 742.6	4–6	9.67+07	1.95−02	2.43−01	−1.108	B	1
				947.007	152 146.8–257 742.6	6–6	6.35+06	8.53−04	1.59−02	−2.291	C+	1
69	$3s^2(^1S)3d–3s3p(^3P°)4s$	^{2}D–^{4}P°										
				898.462	152 146.8–263 448.1	6–4	8.78+05	7.08−05	1.25−03	−3.372	C	1
				901.194	152 133.2–263 097.1	4–2	3.98+05	2.42−05	2.87−04	−4.014	D+	1
				893.488	152 146.8–264 067.7	6–6	1.03+04	1.23−06	2.16−05	−5.132	D	1
				898.352	152 133.2–263 448.1	4–4	1.30+05	1.58−05	1.86−04	−4.199	D+	1
				893.380	152 133.2–264 067.7	4–6	7.36+02	1.32−07	1.55−06	−6.277	E	1
70		^{2}D–^{2}P°		*839.69*	*152 141.4–271 233.5*	10–6	1.02+09	6.45−02	1.78+00	−0.190	B+	2
				838.293	152 146.8–271 436.9	6–4	9.11+08	6.40−02	1.06+00	−0.416	B+	2
				842.506	152 133.2–270 826.7	4–2	1.01+09	5.36−02	5.94−01	−0.669	B	2
				838.197	152 133.2–271 436.9	4–4	1.12+08	1.18−02	1.30−01	−1.326	B	2
71	$3s^2(^1S)3d–3s3p(^1P°)3d$	^{2}D–^{2}P°		*790.44*	*152 141.4–278 653.9*	10–6	5.53+09	3.11−01	8.09+00	0.493	C	4
				790.541	152 146.8–278 642.4	6–4	5.11+09	3.19−01	4.98+00	0.282	C	4
				790.241	152 133.2–278 676.9	4–2	5.49+09	2.57−01	2.67+00	0.012	C	4
				790.456	152 133.2–278 642.4	4–4	4.47+08	4.19−02	4.35−01	−0.776	D+	4
72		^{2}D–^{2}D°		*774.98*	*152 141.4–281 176.4*	10–10	4.26+09	3.83−01	9.78+00	0.583	C	4
				774.685	152 146.8–281 231.6	6–6	4.01+09	3.61−01	5.52+00	0.336	C	4
				775.432	152 133.2–281 093.6	4–4	4.00+09	3.60−01	3.67+00	0.158	C	4
				775.514	152 146.8–281 093.6	6–4	3.05+08	1.83−02	2.80−01	−0.959	D+	4
				774.603	152 133.2–281 231.6	4–6	2.25+08	3.03−02	3.09−01	−0.916	D+	4
73	$3s^2(^1S)3d–3s3p(^1P°)4s$	^{2}D–^{2}P°		*637.61*	*152 141.4–308 977.2*	10–6	3.02+08	1.11−02	2.32−01	−0.955	D+	4
				637.554	152 146.8–308 996.2	6–4	2.71+08	1.10−02	1.38−01	−1.180	D+	4

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				637.730	152 133.2–308 939.3	4–2	3.18+08	9.69−03	8.13−02	−1.412	D	4
				637.499	152 133.2–308 996.2	4–4	2.54+07	1.55−03	1.29−02	−2.208	D	4
74	$3s^2(^1S)3d$–$3s^2(^1S)5f$	^2D–$^2F^\circ$		*628.09*	*152 141.4–311 355.2*	10–14	3.99+09	3.30−01	6.83+00	0.519	D+	5
				628.110	152 146.8–311 354.5	6–8	3.99+09	3.15−01	3.90+00	0.276	D+	5,LS
				628.050	152 133.2–311 356.1	4–6	3.73+09	3.31−01	2.73+00	0.122	D+	5,LS
				628.104	152 146.8–311 356.1	6–6	2.67+08	1.58−02	1.96−01	−1.023	D	5,LS
75	$3s^2(^1S)3d$–$3s^2(^1S)6f$	^2D–$^2F^\circ$		*554.01*	*152 141.4–332 642.0*	10–14	1.85+09	1.19−01	2.17+00	0.076	D+	5
				554.023	152 146.8–332 644.6	6–8	1.86+09	1.14−01	1.24+00	−0.165	D+	5,LS
				554.000	152 133.2–332 638.6	4–6	1.72+09	1.19−01	8.68−01	−0.322	D	5,LS
				554.042	152 146.8–332 638.6	6–6	1.23+08	5.68−03	6.21−02	−1.468	E+	5,LS
76	$3s^2(^1S)4s$–$3p^3$	^2S–$^2P^\circ$	*3 341.1*	*3 342.1*	181 448.2–*211 369.8*	2–6	2.95+07	1.48−01	3.26+00	−0.529	B+	2
			3 341.46	3 342.42	181 448.2–211 366.6	2–4	2.96+07	9.93−02	2.18+00	−0.702	B+	2
			3 340.38	3 341.34	181 448.2–211 376.3	2–2	2.95+07	4.94−02	1.08+00	−1.005	B+	2
77	$3s^2(^1S)4s$–$3s3p(^3P^\circ)3d$	^2S–$^4P^\circ$										
			2 435.88	2 436.62	181 448.2–222 488.6	2–4	1.23+03	2.19−06	3.51−05	−5.359	D	1
			2 423.85	2 424.58	181 448.2–222 692.4	2–2	5.56+02	4.90−07	7.82−06	−6.009	E	1
78		^2S–$^4D^\circ$										
			2 325.55	2 326.26	181 448.2–224 435.6	2–4	2.00+03	3.25−06	4.97−05	−5.187	D	1
			2 330.59	2 331.30	181 448.2–224 342.7	2–2	4.14+03	3.38−06	5.18−05	−5.170	D	1
79		^2S–$^2P^\circ$		*1 197.72*	181 448.2–*264 940.2*	2–6	4.12+07	2.66−02	2.10−01	−1.274	B	1
				1 198.544	181 448.2–264 882.8	2–4	4.11+07	1.77−02	1.39−01	−1.451	B	1
				1 196.074	181 448.2–265 055.1	2–2	4.17+07	8.95−03	7.05−02	−1.747	C+	1
80	$3s^2(^1S)4s$–$3s^2(^1S)4p$	^2S–$^2P^\circ$	*3 104.0*	*3 104.9*	181 448.2–*213 655.1*	2–6	1.71+08	7.41−01	1.52+01	0.171	A	1
			3 097.27	3 098.17	181 448.2–213 725.3	2–4	1.76+08	5.06−01	1.03+01	0.005	A	1
			3 117.62	3 118.52	181 448.2–213 514.7	2–2	1.62+08	2.37−01	4.85+00	−0.324	B+	1
81	$3s^2(^1S)4s$–$3s3p(^3P^\circ)4s$	^2S–$^4P^\circ$										
				1 219.514	181 448.2–263 448.1	2–4	3.49+05	1.56−04	1.25−03	−3.506	C	1
				1 224.756	181 448.2–263 097.1	2–2	1.30+05	2.91−05	2.35−04	−4.235	D+	1
82		^2S–$^2P^\circ$		*1 113.77*	181 448.2–*271 233.5*	2–6	2.70+07	1.50−02	1.10−01	−1.523	C+	2
				1 111.251	181 448.2–271 436.9	2–4	2.98+07	1.10−02	8.08−02	−1.658	C+	2
				1 118.837	181 448.2–270 826.7	2–2	2.14+07	4.02−03	2.95−02	−2.095	C+	2
83	$3s^2(^1S)4s$–$3s3p(^1P^\circ)3d$	^2S–$^2P^\circ$		*1 028.75*	181 448.2–*278 653.9*	2–6	1.88+07	8.95−03	6.06−02	−1.747	D	4
				1 028.868	181 448.2–278 642.4	2–4	1.95+07	6.19−03	4.19−02	−1.907	D	4
				1 028.503	181 448.2–278 676.9	2–2	1.75+07	2.77−03	1.87−02	−2.256	D	4
84	$3s^2(^1S)4s$–$3s^2(^1S)5p$	^2S–$^2P^\circ$		*963.48*	181 448.2–*285 238.1*	2–6	1.11+08	4.62−02	2.93−01	−1.034	D	5
				962.948	181 448.2–285 296.0	2–4	1.11+08	3.09−02	1.95−01	−1.209	D	5,LS
				964.562	181 448.2–285 122.2	2–2	1.10+08	1.54−02	9.78−02	−1.511	E+	5,LS
85	$3s^2(^1S)4s$–$3s3p(^1P^\circ)4s$	^2S–$^2P^\circ$		*784.14*	181 448.2–*308 977.2*	2–6	6.02+09	1.66+00	8.59+00	0.521	C	4
				784.019	181 448.2–308 996.2	2–4	6.01+09	1.11+00	5.72+00	0.346	C	4
				784.368	181 448.2–308 939.3	2–2	6.03+09	5.56−01	2.87+00	0.046	C	4
86	$3s^2(^1S)4s$–$3s^2(^1S)6p$	^2S–$^2P^\circ$		*728.96*	181 448.2–*318 629.2*	2–6	2.03+08	4.85−02	2.33−01	−1.013	D	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				728.911	181 448.2–318 639.2	2–4	2.03+08	3.24−02	1.55−01	−1.188	D	5,LS
				729.070	181 448.2–318 609.3	2–2	2.03+08	1.62−02	7.77−02	−1.489	E+	5,LS
87	$3p^3$–$3s^2(^1S)4d$	$^4S^°$–^2D										
				1 696.629	196 455.4–255 395.8	4–4	4.08+05	1.76−04	3.92−03	−3.152	C	1
88		$^2P^°$–^2D	*2 270.5*	*2 271.2*	*211 369.8–255 398.5*	6–10	3.48+07	4.48−02	2.01+00	−0.571	C	4
			2 270.29	2 270.99	211 366.6–255 400.3	4–6	3.26+07	3.78−02	1.13+00	−0.820	C	4
			2 271.02	2 271.72	211 376.3–255 395.8	2–4	3.27+07	5.06−02	7.56−01	−0.995	D+	4
			2 270.52	2 271.22	211 366.6–255 395.8	4–4	5.43+06	4.20−03	1.25−01	−1.775	D+	4
89	$3p^3$–$3s^2(^1S)5s$	$^2P^°$–^2S		*1 676.42*	*211 369.8*–271 020.9	6–2	1.53+08	2.15−02	7.11−01	−0.889	D	5
				1 676.325	211 366.6–271 020.9	4–2	1.02+08	2.15−02	4.74−01	−1.066	D	5,LS
				1 676.598	211 376.3–271 020.9	2–2	5.10+07	2.15−02	2.37−01	−1.367	D	5,LS
90	$3p^3$–$3s3p(^3P^°)4p$	$^2D^°$–^2P		*928.72*	*185 110.9–292 785.7*	10–6	8.24+08	6.39−02	1.96+00	−0.194	D+	5
				928.110	185 148.0–292 893.9	6–4	7.47+08	6.43−02	1.17+00	−0.414	D+	5,LS
				930.111	185 055.2–292 569.2	4–2	8.25+08	5.35−02	6.55−01	−0.670	D	5,LS
				927.311	185 055.2–292 893.9	4–4	8.30+07	1.07−02	1.30−01	−1.369	D	5,LS
91		$^2D^°$–^2D		*860.00*	*185 110.9–301 389.8*	10–10	2.10+08	2.33−02	6.59−01	−0.633	D	5
				858.897	185 148.0–301 576.4	6–6	1.97+08	2.18−02	3.69−01	−0.883	D	5,LS
				861.663	185 055.2–301 109.8	4–4	1.88+08	2.09−02	2.37−01	−1.078	D	5,LS
				862.353	185 148.0–301 109.8	6–4	2.09+07	1.55−03	2.64−02	−2.032	E+	5,LS
				858.213	185 055.2–301 576.4	4–6	1.41+07	2.33−03	2.63−02	−2.031	E+	5,LS
92		$^2P^°$–^2P		*1 228.26*	*211 369.8–292 785.7*	6–6	4.44+07	1.00−02	2.44−01	−1.222	D	5
				1 226.583	211 366.6–292 893.9	4–4	3.73+07	8.41−03	1.35−01	−1.473	D	5,LS
				1 231.635	211 376.3–292 569.2	2–2	2.95+07	6.70−03	5.43−02	−1.873	E+	5,LS
				1 231.488	211 366.6–292 569.2	4–2	1.48+07	1.68−03	2.72−02	−2.173	E+	5,LS
				1 226.729	211 376.3–292 893.9	2–4	7.45+06	3.36−03	2.71−02	−2.173	E+	5,LS
93		$^2P^°$–^2S		*1 026.79*	*211 369.8*–308 761.0	6–2	6.33+08	3.33−02	6.76−01	−0.699	D	5
				1 026.753	211 366.6–308 761.0	4–2	4.23+08	3.34−02	4.51−01	−0.874	D	5,LS
				1 026.855	211 376.3–308 761.0	2–2	2.11+08	3.34−02	2.25−01	−1.175	D	5,LS
94	$3p^3$–$3s^2(^1S)5d$	$^2D^°$–^2D		*845.22*	*185 110.9–303 423.2*	10–10	1.04+08	1.11−02	3.09−01	−0.955	D	5
				845.079	185 148.0–303 480.1	6–6	9.71+07	1.04−02	1.73−01	−1.205	D	5,LS
				845.433	185 055.2–303 337.8	4–4	9.33+07	1.00−02	1.11−01	−1.398	D	5,LS
				846.097	185 148.0–303 337.8	6–4	1.04+07	7.42−04	1.24−02	−2.351	E+	5,LS
				844.417	185 055.2–303 480.1	4–6	6.98+06	1.12−03	1.24−02	−2.349	E+	5,LS
95	$3p^3$–$3s3p(^1P^°)4p$	$^2D^°$–^2D		*650.09*	*185 110.9–338 936.7*	10–10	1.49+08	9.43−03	2.02−01	−1.025	E+	5
				650.092	185 148.0–338 972.5	6–6	1.39+08	8.81−03	1.13−01	−1.277	D	5,LS
				650.077	185 055.2–338 883.1	4–4	1.34+08	8.50−03	7.27−02	−1.469	E+	5,LS
				650.470	185 148.0–338 883.1	6–4	1.49+07	6.29−04	8.08−03	−2.423	E	5,LS
				649.700	185 055.2–338 972.5	4–6	9.96+06	9.45−04	8.08−03	−2.423	E	5,LS
96		$^2P^°$–^2D		*783.90*	*211 369.8–338 936.7*	6–10	3.11+08	4.77−02	7.38−01	−0.543	D	5
				783.663	211 366.6–338 972.5	4–6	3.11+08	4.30−02	4.43−01	−0.764	D	5,LS
				784.272	211 376.3–338 883.1	2–4	2.59+08	4.78−02	2.46−01	−1.020	D	5,LS
				784.212	211 366.6–338 883.1	4–4	5.18+07	4.78−03	4.93−02	−1.719	E+	5,LS
97		$^2P^°$–^2P		*777.80*	*211 369.8–339 938.2*	6–6	5.16+08	4.68−02	7.19−01	−0.552	D	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				777.400	211 366.6–340 000.5	4–4	4.32+08	3.91−02	4.00−01	−0.806	D	5,LS
				778.589	211 376.3–339 813.7	2–2	3.43+08	3.12−02	1.59−01	−1.205	D	5,LS
				778.531	211 366.6–339 813.7	4–2	1.72+08	7.81−03	8.00−02	−1.505	E+	5,LS
				777.459	211 376.3–340 000.5	2–4	8.61+07	1.56−02	7.98−02	−1.506	E+	5,LS
98	$3p^3$–$3s3p(^3P^\circ)4f$	$^2D^\circ$–^2F		*624.21*	*185 110.9–345 313.0*	10–14	2.44+09	1.99−01	4.10+00	0.299	D+	5
				624.141	185 148.0–345 368.1	6–8	2.44+09	1.90−01	2.34+00	0.057	D+	5,LS
				624.281	185 055.2–345 239.5	4–6	2.28+09	2.00−01	1.64+00	−0.097	D+	5,LS
				624.643	185 148.0–345 239.5	6–6	1.62+08	9.50−03	1.17−01	−1.244	D	5,LS
99	$3s3p(^3P^\circ)3d$–$3s^2(^1S)4d$	$^4F^\circ$–^2D										
				1 941.97	203 906.3–255 400.3	8–6	3.72+03	1.58−06	8.07−05	−4.898	D	1
				1 931.88	203 632.8–255 395.8	6–4	2.63+03	9.80−07	3.73−05	−5.231	D	1
				1 931.71	203 632.8–255 400.3	6–6	3.56+02	1.99−07	7.60−06	−5.923	E	1
				1 924.82	203 442.8–255 395.8	4–4	1.99+04	1.10−05	2.79−04	−4.357	D+	1
100		$^4P^\circ$–^2D										
			3 037.55	3 038.43	222 488.6–255 400.3	4–6	1.17+03	2.43−06	9.73−05	−5.012	D	1
			3 056.90	3 057.79	222 692.4–255 395.8	2–4	4.07+02	1.14−06	2.29−05	−5.642	D	1
			3 010.99	3 011.87	222 198.3–255 400.3	6–6	1.95+01	2.65−08	1.57−06	−6.799	E	1
			3 037.96	3 038.85	222 488.6–255 395.8	4–4	1.35+02	1.87−07	7.49−06	−6.126	E	1
101		$^4D^\circ$–^2D										
			3 229.02	3 229.95	224 435.6–255 395.8	4–4	1.21+02	1.89−07	8.05−06	−6.121	E	1
			3 247.61	3 248.55	224 617.3–255 400.3	8–6	1.65+03	1.96−06	1.67−04	−4.805	D+	1
			3 239.87	3 240.81	224 539.3–255 395.8	6–4	3.79+02	3.98−07	2.54−05	−5.622	D	1
			3 228.55	3 229.48	224 435.6–255 400.3	4–6	1.07+03	2.51−06	1.06−04	−4.998	D+	1
			3 219.36	3 220.29	224 342.7–255 395.8	2–4	1.84+03	5.71−06	1.21−04	−4.942	D+	1
102		$^2D^\circ$–^2D	*4 591.0*	*4 592.3*	*233 622.9–255 398.5*	10–10	4.08+02	1.29−06	1.95−04	−4.889	D+	1
			4 588.00	4 589.28	233 610.4–255 400.3	6–6	1.73+02	5.45−07	4.93−05	−5.485	D	1
			4 595.55	4 596.83	233 641.7–255 395.8	4–4	1.07+02	3.40−07	2.05−05	−5.866	D	1
			4 588.94	4 590.23	233 610.4–255 395.8	6–4	5.80+02	1.22−06	1.10−04	−5.135	D+	1
			4 594.60	4 595.88	233 641.7–255 400.3	4–6	5.29+01	2.51−07	1.52−05	−5.998	D	1
103		$^2F^\circ$–^2D	*7 511*	*7 514*	*242 089.2–255 398.5*	14–10	2.41+05	1.46−03	5.05−01	−1.690	B	1
			7 702.7	7 704.8	242 421.4–255 400.3	8–6	2.22+05	1.48−03	3.00−01	−1.927	B	1
			7 271.0	7 273.0	241 646.3–255 395.8	6–4	2.52+05	1.33−03	1.91−01	−2.098	B	1
			7 268.6	7 270.6	241 646.3–255 400.3	6–6	1.19+04	9.47−05	1.36−02	−3.245	C+	1
104	$3s3p(^3P^\circ)3d$–$3s^2(^1S)5s$	$^2P^\circ$–^2S	*16 441*	*16 445*	*264 940.2*–271 020.9	6–2	3.25+05	4.40−03	1.43+00	−1.578	D	5
			16 287.2	16 291.7	264 882.8–271 020.9	4–2	2.23+05	4.44−03	9.52−01	−1.751	D	5,LS
			16 757.6	16 762.2	265 055.1–271 020.9	2–2	1.03+05	4.32−03	4.76−01	−2.063	D	5,LS
105	$3s3p(^3P^\circ)3d$–$3s3p(^3P^\circ)4p$	$^4F^\circ$–^4D		*1 111.75*	*203 909.6–293 857.6*	28–20	9.96+08	1.32−01	1.35+01	0.568	D+	5
				1 110.898	204 264.9–294 282.2	10–8	8.92+08	1.32−01	4.82+00	0.121	D+	5,LS
				1 113.210	203 906.3–293 736.6	8–6	8.11+08	1.13−01	3.31+00	−0.044	D+	5,LS
				1 113.210	203 632.8–293 463.1	6–4	7.99+08	9.90−02	2.17+00	−0.226	D+	5,LS
				1 112.743	203 442.8–293 310.8	4–2	9.96+08	9.25−02	1.35+00	−0.432	D+	5,LS
				1 106.490	203 906.3–294 282.2	8–8	1.03+08	1.89−02	5.50−01	−0.820	D	5,LS
				1 109.831	203 632.8–293 736.6	6–6	1.74+08	3.22−02	7.05−01	−0.714	D	5,LS
				1 110.861	203 442.8–293 463.1	4–4	2.00+08	3.70−02	5.41−01	−0.830	D	5,LS
				1 103.151	203 632.8–294 282.2	6–8	5.30+06	1.29−03	2.81−02	−2.111	E+	5,LS
				1 107.496	203 442.8–293 736.6	4–6	9.61+06	2.65−03	3.86−02	−1.975	E+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
106		$^4P^{\circ}-^4P$		*1 326.41*	*222 377.4–297 768.9*	12–12	2.75+08	7.25−02	3.80+00	−0.060	D	5
				1 319.052	222 198.3–298 010.3	6–6	1.96+08	5.11−02	1.33+00	−0.513	D+	5,LS
				1 331.485	222 488.6–297 592.7	4–4	3.62+07	9.63−03	1.68−01	−1.414	D	5,LS
				1 338.604	222 692.4–297 397.1	2–2	4.47+07	1.20−02	1.05−01	−1.620	D	5,LS
				1 326.358	222 198.3–297 592.7	6–4	1.24+08	2.18−02	5.71−01	−0.883	D	5,LS
				1 334.962	222 488.6–297 397.1	4–2	2.25+08	3.00−02	5.27−01	−0.921	D	5,LS
				1 324.123	222 488.6–298 010.3	4–6	8.29+07	3.27−02	5.70−01	−0.883	D	5,LS
				1 335.108	222 692.4–297 592.7	2–4	1.12+08	6.01−02	5.28−01	−0.920	D	5,LS
107		$^4P^{\circ}-^4S$		*1 298.84*	*222 377.4–299 369.3*	12–4	7.24+08	6.11−02	3.13+00	−0.135	D+	5
				1 295.824	222 198.3–299 369.3	6–4	3.66+08	6.14−02	1.57+00	−0.434	D+	5,LS
				1 300.717	222 488.6–299 369.3	4–4	2.41+08	6.12−02	1.04+00	−0.611	D+	5,LS
				1 304.174	222 692.4–299 369.3	2–4	1.20+08	6.10−02	5.23−01	−0.914	D	5,LS
108		$^4D^{\circ}-^4D$		*1 442.43*	*224 530.1–293 857.6*	20–20	9.67+07	3.02−02	2.86+00	−0.219	D	5
				1 435.443	224 617.3–294 282.2	8–8	8.45+07	2.61−02	9.86−01	−0.680	D	5,LS
				1 445.143	224 539.3–293 736.6	6–6	5.53+07	1.73−02	4.93−01	−0.984	D	5,LS
				1 448.698	224 435.6–293 463.1	4–4	3.81+07	1.20−02	2.28−01	−1.319	D	5,LS
				1 449.946	224 342.7–293 310.8	2–2	4.76+07	1.50−02	1.43−01	−1.523	D	5,LS
				1 446.774	224 617.3–293 736.6	8–6	1.83+07	4.30−03	1.63−01	−1.463	D	5,LS
				1 450.878	224 539.3–293 463.1	6–4	3.34+07	7.02−03	2.01−01	−1.376	D	5,LS
				1 451.901	224 435.6–293 310.8	4–2	4.75+07	7.51−03	1.43−01	−1.522	D	5,LS
				1 433.838	224 539.3–294 282.2	6–8	1.41+07	5.78−03	1.63−01	−1.460	D	5,LS
				1 442.981	224 435.6–293 736.6	4–6	2.26+07	1.06−02	2.01−01	−1.373	D	5,LS
				1 446.751	224 342.7–293 463.1	2–4	2.41+07	1.51−02	1.43−01	−1.520	D	5,LS
109		$^4D^{\circ}-^4P$		*1 365.40*	*224 530.1–297 768.9*	20–12	5.70+08	9.56−02	8.59+00	0.281	D+	5
				1 362.528	224 617.3–298 010.3	8–6	4.59+08	9.59−02	3.44+00	−0.115	D+	5,LS
				1 368.862	224 539.3–297 592.7	6–4	3.57+08	6.68−02	1.80+00	−0.397	D+	5,LS
				1 370.586	224 435.6–297 397.1	4–2	2.82+08	3.97−02	7.16−01	−0.799	D	5,LS
				1 361.081	224 539.3–298 010.3	6–6	1.04+08	2.88−02	7.74−01	−0.762	D	5,LS
				1 366.921	224 435.6–297 592.7	4–4	1.82+08	5.10−02	9.18−01	−0.690	D	5,LS
				1 368.843	224 342.7–297 397.1	2–2	2.83+08	7.96−02	7.17−01	−0.798	D	5,LS
				1 359.163	224 435.6–298 010.3	4–6	1.16+07	4.81−03	8.60−02	−1.716	E+	5,LS
				1 365.188	224 342.7–297 592.7	2–4	2.86+07	1.60−02	1.43−01	−1.495	D	5,LS
110		$^2D^{\circ}-^2P$		*1 690.25*	*233 622.9–292 785.7*	10–6	1.58+08	4.05−02	2.25+00	−0.393	D+	5
				1 686.810	233 610.4–292 893.9	6–4	1.43+08	4.07−02	1.35+00	−0.612	D+	5,LS
				1 697.001	233 641.7–292 569.2	4–2	1.56+08	3.37−02	7.53−01	−0.870	D	5,LS
				1 687.701	233 641.7–292 893.9	4–4	1.59+07	6.78−03	1.50−01	−1.567	D	5,LS
111		$^2D^{\circ}-^2D$		*1 475.65*	*233 622.9–301 389.8*	10–10	2.75+07	8.97−03	4.36−01	−1.047	D	5
				1 471.324	233 610.4–301 576.4	6–6	2.59+07	8.42−03	2.44−01	−1.297	D	5,LS
				1 482.182	233 641.7–301 109.8	4–4	2.45+07	8.06−03	1.57−01	−1.492	D	5,LS
				1 481.495	233 610.4–301 109.8	6–4	2.72+06	5.97−04	1.74−02	−2.446	E+	5,LS
				1 472.002	233 641.7–301 576.4	4–6	1.85+06	9.02−04	1.74−02	−2.443	E+	5,LS
112		$^2F^{\circ}-^2D$		*1 686.32*	*242 089.2–301 389.8*	14–10	2.55+08	7.76−02	6.03+00	0.036	D+	5
				1 690.474	242 421.4–301 576.4	8–6	2.41+08	7.75−02	3.45+00	−0.208	D+	5,LS
				1 681.704	241 646.3–301 109.8	6–4	2.57+08	7.27−02	2.41+00	−0.360	D+	5,LS
				1 668.611	241 646.3–301 576.4	6–6	1.25+07	5.23−03	1.72−01	−1.503	D	5,LS
113		$^2P^{\circ}-^2P$	*3 590.2*	*3 591.2*	*264 940.2–292 785.7*	6–6	4.86+07	9.39−02	6.66+00	−0.249	D+	5
			3 568.99	3 570.01	264 882.8–292 893.9	4–4	4.13+07	7.89−02	3.70+00	−0.501	D+	5,LS
			3 633.46	3 634.50	265 055.1–292 569.2	2–2	3.13+07	6.20−02	1.48+00	−0.907	D+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			3 610.85	3 611.88	264 882.8–292 569.2	4–2	1.60+07	1.56−02	7.42−01	−1.205	D	5,LS
			3 591.08	3 592.11	265 055.1–292 893.9	2–4	8.12+06	3.14−02	7.42−01	−1.202	D	5,LS
114		$^2P^{\circ}-^2S$	*2 281.3*	*2 282.0*	*264 940.2–308 761.0*	6–2	6.44+07	1.67−02	7.55−01	−0.999	D	5
			2 278.33	2 279.04	264 882.8–308 761.0	4–2	4.32+07	1.68−02	5.04−01	−1.173	D	5,LS
			2 287.32	2 288.02	265 055.1–308 761.0	2–2	2.13+07	1.67−02	2.51−01	−1.476	D	5,LS
115	$3s3p(^3P^{\circ})3d-3s^2(^1S)5d$	$^2D^{\circ}-^2D$		*1 432.66*	*233 622.9–303 423.2*	10–10	2.47+07	7.60−03	3.59−01	−1.119	D	5
				1 431.236	233 610.4–303 480.1	6–6	2.32+07	7.11−03	2.01−01	−1.370	D	5,LS
				1 434.801	233 641.7–303 337.8	4–4	2.22+07	6.84−03	1.29−01	−1.563	D	5,LS
				1 434.156	233 610.4–303 337.8	6–4	2.47+06	5.07−04	1.43−02	−2.517	E+	5,LS
				1 431.877	233 641.7–303 480.1	4–6	1.65+06	7.62−04	1.43−02	−2.516	E+	5,LS
116		$^2F^{\circ}-^2D$		*1 630.42*	*242 089.2–303 423.2*	14–10	1.52+08	4.33−02	3.25+00	−0.217	D+	5
				1 637.768	242 421.4–303 480.1	8–6	1.44+08	4.33−02	1.86+00	−0.460	D+	5,LS
				1 620.969	241 646.3–303 337.8	6–4	1.55+08	4.08−02	1.30+00	−0.611	D+	5,LS
				1 617.238	241 646.3–303 480.1	6–6	7.45+06	2.92−03	9.32−02	−1.756	E+	5,LS
117		$^2P^{\circ}-^2D$	*2 597.8*	*2 598.6*	*264 940.2–303 423.2*	6–10	4.76+07	8.04−02	4.13+00	−0.317	D+	5
			2 590.08	2 590.85	264 882.8–303 480.1	4–6	4.82+07	7.27−02	2.48+00	−0.536	D+	5,LS
			2 611.37	2 612.15	265 055.1–303 337.8	2–4	3.92+07	8.01−02	1.37+00	−0.795	D+	5,LS
			2 599.67	2 600.44	264 882.8–303 337.8	4–4	7.94+06	8.05−03	2.75−01	−1.492	D	5,LS
118	$3s3p(^3P^{\circ})3d-3s^2(^1S)5g$	$^2F^{\circ}-^2G$		*1 474.23*	*242 089.2–309 921.1*	14–18	9.84+06	4.12−03	2.80−01	−1.239	D	5
				1 481.490	242 421.4–309 921.0	8–10	1.00+07	4.12−03	1.60−01	−1.482	D	5,LS
				1 464.667	241 646.3–309 921.2	6–8	9.07+06	3.89−03	1.12−01	−1.632	D	5,LS
				1 481.486	242 421.4–309 921.2	8–8	6.26+05	2.06−04	8.03−03	−2.783	E	5,LS
119	$3s3p(^3P^{\circ})3d-3p^2(^3P)3d$	$^4F^{\circ}-^4F$				28–28						5
				890.900	204 264.9–316 510.9	10–10	1.53+09	1.82−01	5.33+00	0.260	D+	5,LS
				890.658	203 906.3–316 182.9	8–8	1.27+09	1.51−01	3.54+00	0.082	D+	5,LS
				890.554	203 632.8–315 922.5	6–6	1.14+09	1.36−01	2.39+00	−0.088	D+	5,LS
				890.544	203 442.8–315 733.7	4–4	1.34+09	1.59−01	1.86+00	−0.197	D+	5,LS
				892.728	203 906.3–315 922.5	8–6	2.29+08	2.05−02	4.82−01	−0.785	D	5,LS
				892.053	203 632.8–315 733.7	6–4	4.45+08	3.54−02	6.23−01	−0.673	D	5,LS
				888.493	203 632.8–316 182.9	6–8	1.74+08	2.75−02	4.82−01	−0.783	D	5,LS
				889.049	203 442.8–315 922.5	4–6	2.99+08	5.32−02	6.22−01	−0.672	D	5,LS
120		$^4D^{\circ}-^4F$		*1 091.11*	*224 530.1–316 180.1*	20–28	2.53+08	6.32−02	4.54+00	0.102	D+	5
				1 088.215	224 617.3–316 510.9	8–10	2.55+08	5.67−02	1.62+00	−0.343	D+	5,LS
				1 091.184	224 539.3–316 182.9	6–8	2.17+08	5.17−02	1.11+00	−0.508	D+	5,LS
				1 093.053	224 435.6–315 922.5	4–6	1.89+08	5.08−02	7.31−01	−0.692	D	5,LS
				1 094.200	224 342.7–315 733.7	2–4	1.76+08	6.31−02	4.54−01	−0.899	D	5,LS
				1 092.113	224 617.3–316 182.9	8–8	3.60+07	6.44−03	1.85−01	−1.288	D	5,LS
				1 094.293	224 539.3–315 922.5	6–6	6.13+07	1.10−02	2.37−01	−1.180	D	5,LS
				1 095.313	224 435.6–315 733.7	4–4	7.00+07	1.26−02	1.81−01	−1.298	D	5,LS
				1 095.228	224 617.3–315 922.5	8–6	2.42+06	3.27−04	9.43−03	−2.582	E	5,LS
				1 096.559	224 539.3–315 733.7	6–4	4.99+06	6.00−04	1.30−02	−2.444	E+	5,LS
121	$3s3p(^3P^{\circ})3d-3s3p(^1P^{\circ})4p$	$^2D^{\circ}-^2D$		*949.54*	*233 622.9–338 936.7*	10–10	1.14+08	1.54−02	4.81−01	−0.812	D	5
				949.108	233 610.4–338 972.5	6–6	1.07+08	1.44−02	2.70−01	−1.063	D	5,LS
				950.196	233 641.7–338 883.1	4–4	1.03+08	1.39−02	1.73−01	−1.255	D	5,LS
				949.914	233 610.4–338 883.1	6–4	1.14+07	1.03−03	1.93−02	−2.209	E+	5,LS
				949.390	233 641.7–338 972.5	4–6	7.60+06	1.54−03	1.92−02	−2.210	E+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
122		$^2D^\circ-^2P$		*940.60*	*233 622.9–339 938.2*	10–6	3.47+08	2.76−02	8.54−01	−0.559	D	5
				939.937	233 610.4–340 000.5	6–4	3.13+08	2.76−02	5.12−01	−0.781	D	5,LS
				941.868	233 641.7–339 813.7	4–2	3.46+08	2.30−02	2.85−01	−1.036	D	5,LS
				940.214	233 641.7–340 000.5	4–4	3.47+07	4.60−03	5.69−02	−1.735	E+	5,LS
123		$^2F^\circ-^2D$		*1 032.55*	*242 089.2–338 936.7*	14–10	1.91+08	2.18−02	1.04+00	−0.515	D	5
				1 035.721	242 421.4–338 972.5	8–6	1.81+08	2.18−02	5.94−01	−0.758	D	5,LS
				1 028.417	241 646.3–338 883.1	6–4	1.94+08	2.05−02	4.16−01	−0.910	D	5,LS
				1 027.473	241 646.3–338 972.5	6–6	9.29+06	1.47−03	2.98−02	−2.055	E+	5,LS
124	$3s3p(^3P^\circ)3d-3s3p(^3P^\circ)4f$	$^4F^\circ-^4F$				28–28						5
				690.255	204 264.9–349 138.9	10–10	3.84+09	2.74−01	6.22+00	0.438	D+	5,LS
				689.017	203 906.3–349 040.5	8–8	3.22+09	2.29−01	4.15+00	0.263	D+	5,LS
				688.011	203 632.8–348 979.3	6–6	2.92+09	2.07−01	2.81+00	0.094	D+	5,LS
				687.261	203 442.8–348 947.9	4–4	3.40+09	2.41−01	2.18+00	−0.016	D+	5,LS
				689.308	203 906.3–348 979.3	8–6	5.82+08	3.11−02	5.64−01	−0.604	D	5,LS
				688.160	203 632.8–348 947.9	6–4	1.13+09	5.36−02	7.28−01	−0.493	D	5,LS
				687.721	203 632.8–349 040.5	6–8	4.39+08	4.15−02	5.63−01	−0.604	D	5,LS
				687.113	203 442.8–348 979.3	4–6	7.59+08	8.06−02	7.29−01	−0.492	D	5,LS
125		$^4F^\circ-^4G$		*673.28*	*203 909.6–352 435.4*	28–36	6.81+09	5.95−01	3.69+01	1.222	D+	5
				673.484	204 264.9–352 746.5	10–12	6.82+09	5.56−01	1.23+01	0.745	C	5,LS
				673.271	203 906.3–352 434.9	8–10	6.24+09	5.30−01	9.39+00	0.627	D+	5,LS
				672.959	203 632.8–352 230.3	6–8	5.88+09	5.32−01	7.07+00	0.504	D+	5,LS
				672.747	203 442.8–352 087.2	4–6	5.86+09	5.96−01	5.28+00	0.377	D+	5,LS
				674.900	204 264.9–352 434.9	10–10	5.61+08	3.83−02	8.51−01	−0.417	D	5,LS
				674.200	203 906.3–352 230.3	8–8	9.21+08	6.28−02	1.11+00	−0.299	D+	5,LS
				673.608	203 632.8–352 087.2	6–6	9.41+08	6.40−02	8.51−01	−0.416	D	5,LS
				675.834	204 264.9–352 230.3	10–8	2.04+07	1.12−03	2.49−02	−1.951	E+	5,LS
				674.851	203 906.3–352 087.2	8–6	3.38+07	1.73−03	3.07−02	−1.859	E+	5,LS
126		$^4P^\circ-^4D$		*748.89*	*222 377.4–355 907.6*	12–20	5.55+09	7.77−01	2.30+01	0.970	D+	5
				749.248	222 198.3–355 665.5	6–8	5.55+09	6.23−01	9.22+00	0.573	D+	5,LS
				749.323	222 488.6–355 942.4	4–6	3.88+09	4.90−01	4.83+00	0.292	D+	5,LS
				749.175	222 692.4–356 172.6	2–4	2.31+09	3.89−01	1.91+00	−0.109	D+	5,LS
				747.697	222 198.3–355 942.4	6–6	1.67+09	1.40−01	2.06+00	−0.076	D+	5,LS
				748.033	222 488.6–356 172.6	4–4	2.97+09	2.49−01	2.45+00	−0.002	D+	5,LS
				748.787	222 692.4–356 241.8	2–2	4.63+09	3.89−01	1.91+00	−0.109	D+	5,LS
				746.412	222 198.3–356 172.6	6–4	2.80+08	1.56−02	2.30−01	−1.029	D	5,LS
				747.646	222 488.6–356 241.8	4–2	9.31+08	3.90−02	3.84−01	−0.807	D	5,LS
127		$^4D^\circ-^4F$		*803.09*	*224 530.1–349 049.3*	20–28	1.69+09	2.29−01	1.21+01	0.661	D+	5
				803.074	224 617.3–349 138.9	8–10	1.70+09	2.05−01	4.33+00	0.215	D+	5,LS
				803.205	224 539.3–349 040.5	6–8	1.45+09	1.87−01	2.96+00	0.050	D+	5,LS
				802.931	224 435.6–348 979.3	4–6	1.27+09	1.84−01	1.94+00	−0.133	D+	5,LS
				802.535	224 342.7–348 947.9	2–4	1.19+09	2.30−01	1.21+00	−0.337	D+	5,LS
				803.709	224 617.3–349 040.5	8–8	2.41+08	2.33−02	4.93−01	−0.730	D	5,LS
				803.600	224 539.3–348 979.3	6–6	4.12+08	3.99−02	6.33−01	−0.621	D	5,LS
				803.134	224 435.6–348 947.9	4–4	4.75+08	4.59−02	4.85−01	−0.736	D	5,LS
				804.104	224 617.3–348 979.3	8–6	1.64+07	1.19−03	2.52−02	−2.021	E+	5,LS
				803.803	224 539.3–348 947.9	6–4	3.38+07	2.18−03	3.46−02	−1.883	E+	5,LS
128		$^4D^\circ-^4D$		*761.17*	*224 530.1–355 907.6*	20–20	9.92+08	8.61−02	4.32+00	0.236	D	5
				763.078	224 617.3–355 665.5	8–8	8.46+08	7.39−02	1.48+00	−0.228	D+	5,LS
				761.017	224 539.3–355 942.4	6–6	5.70+08	4.95−02	7.44−01	−0.527	D	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				759.088	224 435.6–356 172.6	4–4	4.02+08	3.47−02	3.46−01	−0.858	D	5,LS
				758.155	224 342.7–356 241.8	2–2	5.04+08	4.34−02	2.16−01	−1.061	D	5,LS
				761.469	224 617.3–355 942.4	8–6	1.89+08	1.23−02	2.46−01	−1.007	D	5,LS
				759.686	224 539.3–356 172.6	6–4	3.50+08	2.02−02	3.03−01	−0.916	D	5,LS
				758.690	224 435.6–356 241.8	4–2	5.03+08	2.17−02	2.16−01	−1.061	D	5,LS
				762.624	224 539.3–355 665.5	6–8	1.41+08	1.64−02	2.47−01	−1.007	D	5,LS
				760.417	224 435.6–355 942.4	4–6	2.33+08	3.03−02	3.03−01	−0.916	D	5,LS
				758.553	224 342.7–356 172.6	2–4	2.51+08	4.33−02	2.16−01	−1.062	D	5,LS
129		^{2}D°–^{2}F		*895.33*	*233 622.9–345 313.0*	10–14	3.43+09	5.77−01	1.70+01	0.761	D+	5
				894.793	233 610.4–345 368.1	6–8	3.44+09	5.50−01	9.72+00	0.519	D+	5,LS
				896.075	233 641.7–345 239.5	4–6	3.20+09	5.77−01	6.80+00	0.363	D+	5,LS
				895.824	233 610.4–345 239.5	6–6	2.29+08	2.75−02	4.86−01	−0.783	D	5,LS
130		^{2}F°–^{2}F		*968.77*	*242 089.2–345 313.0*	14–14	2.11+09	2.97−01	1.33+01	0.619	D+	5
				971.376	242 421.4–345 368.1	8–8	1.85+09	2.62−01	6.70+00	0.321	D+	5,LS
				965.314	241 646.3–345 239.5	6–6	2.28+09	3.19−01	6.08+00	0.282	D+	5,LS
				972.591	242 421.4–345 239.5	8–6	9.10+07	9.68−03	2.48−01	−1.111	D	5,LS
				964.117	241 646.3–345 368.1	6–8	7.00+07	1.30−02	2.47−01	−1.108	D	5,LS
131	$3s^2(^1S)4p$–$3s^2(^1S)4d$	^{2}P°–^{2}D	*2 394.9*	*2 395.6*	*213 655.1–255 398.5*	6–10	5.33+08	7.64−01	3.62+01	0.661	A	1
			2 398.79	2 399.52	213 725.3–255 400.3	4–6	5.42+08	7.01−01	2.21+01	0.448	A	1
			2 386.98	2 387.71	213 514.7–255 395.8	2–4	4.32+08	7.38−01	1.16+01	0.169	A	1
			2 399.05	2 399.78	213 725.3–255 395.8	4–4	9.03+07	7.80−02	2.46+00	−0.506	B+	1
132	$3s^2(^1S)4p$–$3s^2(^1S)5s$	^{2}P°–^{2}S		*1 743.20*	*213 655.1–271 020.9*	6–2	1.21+09	1.84−01	6.32+00	0.043	D+	5
				1 745.335	213 725.3–271 020.9	4–2	8.06+08	1.84−01	4.22+00	−0.133	D+	5,LS
				1 738.943	213 514.7–271 020.9	2–2	4.06+08	1.84−01	2.10+00	−0.434	D+	5,LS
133	$3s^2(^1S)4p$–$3s3p(^3P°)4p$	^{2}P°–^{2}P		*1 263.73*	*213 655.1–292 785.7*	6–6	3.62+07	8.66−03	2.16−01	−1.284	D	5
				1 263.127	213 725.3–292 893.9	4–4	3.03+07	7.24−03	1.20−01	−1.538	D	5,LS
				1 264.950	213 514.7–292 569.2	2–2	2.41+07	5.78−03	4.81−02	−1.937	E+	5,LS
				1 268.329	213 725.3–292 569.2	4–2	1.19+07	1.44−03	2.40−02	−2.240	E+	5,LS
				1 259.776	213 514.7–292 893.9	2–4	6.09+06	2.90−03	2.40−02	−2.237	E+	5,LS
134		^{2}P°–^{2}D		*1 139.80*	*213 655.1–301 389.8*	6–10	5.72+07	1.86−02	4.18−01	−0.952	D	5
				1 138.290	213 725.3–301 576.4	4–6	5.77+07	1.68−02	2.51−01	−1.173	D	5,LS
				1 141.616	213 514.7–301 109.8	2–4	4.76+07	1.86−02	1.39−01	−1.429	D	5,LS
				1 144.368	213 725.3–301 109.8	4–4	9.47+06	1.86−03	2.80−02	−2.128	E+	5,LS
135	$3s^2(^1S)4p$–$3s^2(^1S)6s$	^{2}P°–^{2}S		*1 022.02*	*213 655.1–311 500.6*	6–2	9.62+08	5.02−02	1.01+00	−0.521	D	5
				1 022.753	213 725.3–311 500.6	4–2	6.40+08	5.02−02	6.76−01	−0.697	D	5,LS
				1 020.555	213 514.7–311 500.6	2–2	3.22+08	5.03−02	3.38−01	−0.997	D	5,LS
136	$3s^2(^1S)4p$–$3s^2(^1S)7s$	^{2}P°–^{2}S		*838.15*	*213 655.1–332 965.6*	6–2	5.18+08	1.82−02	3.01−01	−0.962	D	5
				838.643	213 725.3–332 965.6	4–2	3.45+08	1.82−02	2.01−01	−1.138	D	5,LS
				837.164	213 514.7–332 965.6	2–2	1.73+08	1.82−02	1.00−01	−1.439	D	5,LS
137	$3s^2(^1S)4p$–$3s3p(^1P°)4p$	^{2}P°–^{2}D		*798.20*	*213 655.1–338 936.7*	6–10	3.01+09	4.79−01	7.55+00	0.458	D+	5
				798.421	213 725.3–338 972.5	4–6	3.01+09	4.31−01	4.53+00	0.237	D+	5,LS
				797.649	213 514.7–338 883.1	2–4	2.52+09	4.80−01	2.52+00	−0.018	D+	5,LS
				798.991	213 725.3–338 883.1	4–4	5.01+08	4.79−02	5.04−01	−0.718	D	5,LS
138		^{2}P°–^{2}P		*791.87*	*213 655.1–339 938.2*	6–6	5.03+09	4.73−01	7.40+00	0.453	D+	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				791.921	213 725.3–340 000.5	4–4	4.20+09	3.95−01	4.11+00	0.199	D+	5,LS
				791.772	213 514.7–339 813.7	2–2	3.36+09	3.16−01	1.64+00	−0.199	D+	5,LS
				793.094	213 725.3–339 813.7	4–2	1.67+09	7.88−02	8.23−01	−0.501	D	5,LS
				790.603	213 514.7–340 000.5	2–4	8.43+08	1.58−01	8.22−01	−0.500	D	5,LS
139		$^2P^\circ-^2S$		*768.22*	*213 655.1*–343 826.2	6–2	3.24+09	9.54−02	1.45+00	−0.242	D	5
				768.634	213 725.3–343 826.2	4–2	2.15+09	9.54−02	9.65−01	−0.418	D	5,LS
				767.392	213 514.7–343 826.2	2–2	1.08+09	9.56−02	4.83−01	−0.719	D	5,LS
140	$3s^2(^1S)4d-3s3p(^3P^\circ)3d$	$^2D-^2P^\circ$	*10 477*	*10 480*	*255 398.5–264 940.2*	10–6	9.61+04	9.49−04	3.28−01	−2.023	B	1
			10 542.9	10 545.7	255 400.3–264 882.8	6–4	8.51+04	9.46−04	1.97−01	−2.246	B	1
			10 349.9	10 352.7	255 395.8–265 055.1	4–2	9.96+04	8.00−04	1.09−01	−2.495	B	1
			10 537.9	10 540.7	255 395.8–264 882.8	4–4	9.35+03	1.56−04	2.16−02	−3.205	C+	1
141	$3s^2(^1S)4d-3s^2(^1S)4f$	^2D–b $^2F^\circ$		*2 268.9* cm^{-1}	*255 398.5–257 667.4*	10–14	5.59+04	2.28−02	3.31+01	−0.642	A	1
				2 210.7 cm^{-1}	255 400.3–257 611.0	6–8	5.16+04	2.11−02	1.88+01	−0.898	A	1
				2 346.8 cm^{-1}	255 395.8–257 742.6	4–6	5.84+04	2.39−02	1.33+01	−1.020	A	1
				2 342.3 cm^{-1}	255 400.3–257 742.6	6–6	4.15+03	1.13−03	9.57−01	−2.169	B	1
142	$3s^2(^1S)4d-3s3p(^3P^\circ)4s$	$^2D-^4P^\circ$										
			12 422.4	12 425.8	255 400.3–263 448.1	6–4	4.62+01	7.12−07	1.74−04	−5.369	D+	1
			12 981.3	12 984.8	255 395.8–263 097.1	4–2	1.70+01	2.15−07	3.67−05	−6.066	D	1
			12 415.4	12 418.8	255 395.8–263 448.1	4–4	4.64+00	1.07−07	1.75−05	−6.369	D	1
143		$^2D-^2P^\circ$	*6 313*	*6 315*	*255 398.5–271 233.5*	10–6	1.56+05	5.59−04	1.16−01	−2.253	D	4
			6 234.0	6 235.7	255 400.3–271 436.9	6–4	1.65+05	6.40−04	7.87−02	−2.416	D	4
			6 478.7	6 480.5	255 395.8–270 826.7	4–2	1.08+05	3.40−04	2.89−02	−2.866	D	4
			6 232.3	6 234.0	255 395.8–271 436.9	4–4	1.82+04	1.06−04	8.70−03	−3.373	E+	4
144	$3s^2(^1S)4d-3s3p(^1P^\circ)3d$	$^2D-^2P^\circ$	*4 298.9*	*4 300.1*	*255 398.5–278 653.9*	10–6	3.20+05	5.33−04	7.54−02	−2.273	D	4
			4 301.33	4 302.54	255 400.3–278 642.4	6–4	3.01+05	5.56−04	4.72−02	−2.477	D	4
			4 294.12	4 295.33	255 395.8–278 676.9	4–2	2.95+05	4.08−04	2.30−02	−2.787	D	4
			4 300.49	4 301.70	255 395.8–278 642.4	4–4	3.31+04	9.20−05	5.20−03	−3.434	E+	4
145	$3s^2(^1S)4d-3s^2(^1S)5p$	$^2D-^2P^\circ$	*3 350.3*	*3 351.3*	*255 398.5–285 238.1*	10–6	2.53+08	2.56−01	2.82+01	0.408	C	5
			3 344.00	3 344.96	255 400.3–285 296.0	6–4	2.30+08	2.57−01	1.69+01	0.188	C	5,LS
			3 363.05	3 364.01	255 395.8–285 122.2	4–2	2.51+08	2.13−01	9.43+00	−0.070	D+	5,LS
			3 343.50	3 344.46	255 395.8–285 296.0	4–4	2.56+07	4.29−02	1.88+00	−0.765	D+	5,LS
146	$3s^2(^1S)4d-3s3p(^1P^\circ)4s$	$^2D-^2P^\circ$		*1 866.4*	*255 398.5–308 977.2*	10–6	4.63+07	1.45−02	8.91−01	−0.839	D+	4
				1 865.81	255 400.3–308 996.2	6–4	4.13+07	1.44−02	5.30−01	−1.063	D+	4
				1 867.64	255 395.8–308 939.3	4–2	4.70+07	1.23−02	3.02−01	−1.308	D+	4
				1 865.66	255 395.8–308 996.2	4–4	4.57+06	2.39−03	5.86−02	−2.020	D	4
147	$3s^2(^1S)4d-3s^2(^1S)5f$	$^2D-^2F^\circ$		*1 787.1*	*255 398.5–311 355.2*	10–14	4.57+08	3.07−01	1.80+01	0.487	C	5
				1 787.18	255 400.3–311 354.5	6–8	4.57+08	2.92−01	1.03+01	0.244	C	5,LS
				1 786.98	255 395.8–311 356.1	4–6	4.27+08	3.07−01	7.22+00	0.089	D+	5,LS
				1 787.12	255 400.3–311 356.1	6–6	3.05+07	1.46−02	5.15−01	−1.057	D	5,LS
148	$3s^2(^1S)4d-3s^2(^1S)6p$	$^2D-^2P^\circ$		*1 581.51*	*255 398.5–318 629.2*	10–6	1.41+08	3.17−02	1.65+00	−0.499	D	5
				1 581.305	255 400.3–318 639.2	6–4	1.27+08	3.17−02	9.90−01	−0.721	D	5,LS
				1 581.941	255 395.8–318 609.3	4–2	1.41+08	2.64−02	5.50−01	−0.976	D	5,LS
				1 581.193	255 395.8–318 639.2	4–4	1.41+07	5.28−03	1.09−01	−1.675	D	5,LS
149	$3s^2(^1S)4d-3s^2(^1S)6f$	$^2D-^2F^\circ$		*1 294.61*	*255 398.5–332 642.0*	10–14	3.57+08	1.26−01	5.35+00	0.100	D+	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 294.594	255 400.3–332 644.6	6–8	3.58+08	1.20−01	3.06+00	−0.143	D+	5,LS
				1 294.619	255 395.8–332 638.6	4–6	3.34+08	1.26−01	2.14+00	−0.298	D+	5,LS
				1 294.694	255 400.3–332 638.6	6–6	2.39+07	6.00−03	1.53−01	−1.444	D	5,LS
150	$3s^2(^1S)4d–3s^2(^1S)7p$	$^2D–^2P^\circ$		*1 229.20*	*255 398.5–336 752.2*	10–6	7.21+07	9.80−03	3.97−01	−1.009	D	5
				1 229.104	255 400.3–336 760.4	6–4	6.52+07	9.84−03	2.38−01	−1.229	D	5,LS
				1 229.409	255 395.8–336 735.7	4–2	7.24+07	8.20−03	1.32−01	−1.484	D	5,LS
				1 229.036	255 395.8–336 760.4	4–4	7.24+06	1.64−03	2.65−02	−2.183	E+	5,LS
151	$3s^2(^1S)4d–3s3p(^1P^\circ)4s$	$^2D–^2D^\circ$		*798.78*	*255 398.5–380 590.0*	10–10	5.22+09	5.00−01	1.31+01	0.699	D+	5
				798.730	255 400.3–380 599.1	6–6	4.88+09	4.67−01	7.36+00	0.447	D+	5,LS
				798.846	255 395.8–380 576.4	4–4	4.70+09	4.50−01	4.73+00	0.255	D+	5,LS
				798.875	255 400.3–380 576.4	6–4	5.22+08	3.33−02	5.25−01	−0.699	D	5,LS
				798.701	255 395.8–380 599.1	4–6	3.49+08	5.00−02	5.25−01	−0.699	D	5,LS
152	$3s3p(^3P^\circ)4p–3s^2(^1S)4f$	b $^2F^\circ–^2D$	*2 286.5*	*2 287.2*	*257 667.4–301 389.8*	14–10	2.11+07	1.18−02	1.24+00	−0.782	D	5
			2 273.81	2 274.52	257 611.0–301 576.4	8–6	2.05+07	1.19−02	7.12−01	−1.021	D	5,LS
			2 305.18	2 305.89	257 742.6–301 109.8	6–4	2.05+07	1.09−02	4.96−01	−1.184	D	5,LS
			2 280.64	2 281.34	257 742.6–301 576.4	6–6	1.01+06	7.90−04	3.56−02	−2.324	E+	5,LS
153	$3s^2(^1S)5g–3s^2(^1S)4f$	b $^2F^\circ–^2G$		*1 913.7*	*257 667.4–309 921.1*	14–18	6.71+08	4.74−01	4.18+01	0.822	C	5
				1 911.68	257 611.0–309 921.0	8–10	6.94+08	4.75−01	2.39+01	0.580	C	5,LS
				1 916.49	257 742.6–309 921.2	6–8	6.03+08	4.43−01	1.67+01	0.425	C	5,LS
				1 911.67	257 611.0–309 921.2	8–8	4.34+07	2.38−02	1.19+00	−0.720	D+	5,LS
154	$3s3p(^1P^\circ)4p–3s^2(^1S)4f$	b $^2F^\circ–^2D$		*1 230.48*	*257 667.4–338 936.7*	14–10	1.42+08	2.31−02	1.31+00	−0.490	D	5
				1 229.083	257 611.0–338 972.5	8–6	1.36+08	2.31−02	7.47−01	−0.733	D	5,LS
				1 232.430	257 742.6–338 883.1	6–4	1.42+08	2.15−02	5.23−01	−0.889	D	5,LS
				1 231.074	257 742.6–338 972.5	6–6	6.78+06	1.54−03	3.74−02	−2.034	E+	5,LS
155	$3s3p(^3P^\circ)4f–3s^2(^1S)4f$	b $^2F^\circ–^2F$		*1 140.96*	*257 667.4–345 313.0*	14–14	4.79+08	9.34−02	4.91+00	0.116	D+	5
				1 139.509	257 611.0–345 368.1	8–8	4.26+08	8.29−02	2.48+00	−0.178	D+	5,LS
				1 142.898	257 742.6–345 239.5	6–6	5.11+08	1.00−01	2.25+00	−0.222	D+	5,LS
				1 141.181	257 611.0–345 239.5	8–6	2.09+07	3.06−03	9.19−02	−1.611	E+	5,LS
				1 141.220	257 742.6–345 368.1	6–8	1.57+07	4.09−03	9.22−02	−1.610	E+	5,LS
156	$3s3p(^3P^\circ)4s–3s3p(^3P^\circ)4p$	$^4P^\circ–^4D$	*3 314.9*	*3 315.8*	*263 699.4–293 857.6*	12–20	1.95+08	5.36−01	7.02+01	0.808	C	5
			3 308.72	3 309.67	264 067.7–294 282.2	6–8	1.96+08	4.30−01	2.81+01	0.412	C	5,LS
			3 300.63	3 301.58	263 448.1–293 736.6	4–6	1.39+08	3.40−01	1.47+01	0.134	C	5,LS
			3 292.21	3 293.16	263 097.1–293 463.1	2–4	8.30+07	2.70−01	5.85+00	−0.268	D+	5,LS
			3 369.56	3 370.53	264 067.7–293 736.6	6–6	5.58+07	9.51−02	6.33+00	−0.244	D+	5,LS
			3 330.71	3 331.67	263 448.1–293 463.1	4–4	1.03+08	1.71−01	7.50+00	−0.165	D+	5,LS
			3 308.80	3 309.76	263 097.1–293 310.8	2–2	1.64+08	2.69−01	5.86+00	−0.269	D+	5,LS
			3 400.92	3 401.89	264 067.7–293 463.1	6–4	9.08+06	1.05−02	7.05−01	−1.201	D	5,LS
			3 347.70	3 348.66	263 448.1–293 310.8	4–2	3.16+07	2.66−02	1.17+00	−0.973	D+	5,LS
157		$^4P^\circ–^4P$	*2 934.3*	*2 935.2*	*263 699.4–297 768.9*	12–12	2.73+08	3.52−01	4.08+01	0.626	D+	5
			2 945.29	2 946.15	264 067.7–298 010.3	6–6	1.89+08	2.46−01	1.43+01	0.169	C	5,LS
			2 927.86	2 928.72	263 448.1–297 592.7	4–4	3.66+07	4.71−02	1.81+00	−0.725	D+	5,LS
			2 914.60	2 915.45	263 097.1–297 397.1	2–2	4.64+07	5.92−02	1.13+00	−0.927	D+	5,LS
			2 981.98	2 982.85	264 067.7–297 592.7	6–4	1.17+08	1.04−01	6.12+00	−0.205	D+	5,LS
			2 944.73	2 945.59	263 448.1–297 397.1	4–2	2.24+08	1.46−01	5.66+00	−0.234	D+	5,LS
			2 892.49	2 893.33	263 448.1–298 010.3	4–6	8.55+07	1.61−01	6.13+00	−0.191	D+	5,LS
			2 898.07	2 898.92	263 097.1–297 592.7	2–4	1.18+08	2.98−01	5.68+00	−0.225	D+	5,LS
158		$^4P^\circ–^4S$	*2 802.7*	*2 803.5*	*263 699.4–299 369.3*	12–4	3.52+08	1.38−01	1.53+01	0.219	D+	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 831.90	2 832.73	264 067.7–299 369.3	6–4	1.71+08	1.37−01	7.66+00	−0.085	D+	5,LS
			2 783.05	2 783.87	263 448.1–299 369.3	4–4	1.20+08	1.39−01	5.09+00	−0.255	D+	5,LS
			2 756.12	2 756.93	263 097.1–299 369.3	2–4	6.19+07	1.41−01	2.55+00	−0.550	D+	5,LS
159		$^2P^\circ-^2P$	*4 638.6*	*4 639.9*	*271 233.5–292 785.7*	6–6	4.70+07	1.52−01	1.39+01	−0.040	D+	5
			4 659.18	4 660.48	271 436.9–292 893.9	4–4	3.87+07	1.26−01	7.73+00	−0.298	D+	5,LS
			4 598.00	4 599.29	270 826.7–292 569.2	2–2	3.22+07	1.02−01	3.08+00	−0.690	D+	5,LS
			4 730.77	4 732.09	271 436.9–292 569.2	4–2	1.48+07	2.48−02	1.54+00	−1.003	D+	5,LS
			4 530.34	4 531.61	270 826.7–292 893.9	2–4	8.40+06	5.17−02	1.54+00	−0.985	D+	5,LS
160		$^2P^\circ-^2D$	*3 315.1*	*3 316.1*	*271 233.5–301 389.8*	6–10	4.01+07	1.10−01	7.22+00	−0.180	D+	5
			3 316.95	3 317.91	271 436.9–301 576.4	4–6	4.01+07	9.92−02	4.33+00	−0.401	D+	5,LS
			3 301.22	3 302.17	270 826.7–301 109.8	2–4	3.39+07	1.11−01	2.41+00	−0.654	D+	5,LS
			3 369.11	3 370.08	271 436.9–301 109.8	4–4	6.40+06	1.09−02	4.83−01	−1.361	D	5,LS
161		$^2P^\circ-^2S$	*2 663.9*	*2 664.7*	*271 233.5–308 761.0*	6–2	2.14+08	7.58−02	3.99+00	−0.342	D+	5
			2 678.44	2 679.23	271 436.9–308 761.0	4–2	1.40+08	7.54−02	2.66+00	−0.521	D+	5,LS
			2 635.35	2 636.14	270 826.7–308 761.0	2–2	7.36+07	7.66−02	1.33+00	−0.815	D+	5,LS
162	$3s3p(^3P^\circ)4s-3s^2(^1S)5d$	$^2P^\circ-^2D$	*3 105.7*	*3 106.6*	*271 233.5–303 423.2*	6–10	1.91+08	4.60−01	2.82+01	0.441	C	5
			3 119.88	3 120.79	271 436.9–303 480.1	4–6	1.89+08	4.13−01	1.69+01	0.218	C	5,LS
			3 074.98	3 075.87	270 826.7–303 337.8	2–4	1.64+08	4.66−01	9.43+00	−0.031	D+	5,LS
			3 133.80	3 134.71	271 436.9–303 337.8	4–4	3.10+07	4.57−02	1.88+00	−0.738	D+	5,LS
163	$3s3p(^3P^\circ)4s-3s^2(^1S)6s$	$^2P^\circ-^2S$	*2 482.7*	*2 483.4*	*271 233.5–311 500.6*	6–2	2.65+08	8.17−02	4.01+00	−0.310	D+	5
			2 495.27	2 496.03	271 436.9–311 500.6	4–2	1.75+08	8.15−02	2.67+00	−0.487	D+	5,LS
			2 457.84	2 458.58	270 826.7–311 500.6	2–2	9.13+07	8.28−02	1.34+00	−0.781	D+	5,LS
164	$3s3p(^3P^\circ)4s-3s3p(^1P^\circ)4p$	$^2P^\circ-^2D$		*1 477.04*	*271 233.5–338 936.7*	6–10	4.22+07	2.30−02	6.72−01	−0.860	D	5
				1 480.701	271 436.9–338 972.5	4–6	4.20+07	2.07−02	4.03−01	−1.082	D	5,LS
				1 469.370	270 826.7–338 883.1	2–4	3.58+07	2.32−02	2.24−01	−1.333	D	5,LS
				1 482.663	271 436.9–338 883.1	4–4	6.98+06	2.30−03	4.49−02	−2.036	E+	5,LS
165		$^2P^\circ-^2S$		*1 377.55*	*271 233.5–343 826.2*	6–2	1.00+08	9.49−03	2.58−01	−1.245	D	5
				1 381.420	271 436.9–343 826.2	4–2	6.62+07	9.47−03	1.72−01	−1.422	D	5,LS
				1 369.872	270 826.7–343 826.2	2–2	3.39+07	9.55−03	8.61−02	−1.719	E+	5,LS
166	$3s^2(^1S)5s-3s3p(^1P^\circ)3d$	$^2S-^2P^\circ$	*13 097*	*13 101*	*271 020.9–278 653.9*	2–6	4.06+05	3.13−02	2.70+00	−1.203	D+	5
			13 117.2	13 120.8	271 020.9–278 642.4	2–4	4.05+05	2.09−02	1.80+00	−1.379	D+	5,LS
			13 058.1	13 061.7	271 020.9–278 676.9	2–2	4.11+05	1.05−02	9.03−01	−1.678	D	5,LS
167	$3s^2(^1S)5s-3s^2(^1S)5p$	$^2S-^2P^\circ$	*7 032*	*7 034*	*271 020.9–285 238.1*	2–6	6.04+07	1.34+00	6.22+01	0.428	C	5
			7 003.3	7 005.2	271 020.9–285 296.0	2–4	6.12+07	9.01−01	4.15+01	0.256	C	5,LS
			7 089.6	7 091.5	271 020.9–285 122.2	2–2	5.90+07	4.45−01	2.07+01	−0.051	C	5,LS
168	$3s^2(^1S)5s-3s3p(^1P^\circ)4s$	$^2S-^2P^\circ$	*2 633.8*	*2 634.6*	*271 020.9–308 977.2*	2–6	1.36+07	4.24−02	7.36−01	−1.072	D	5
			2 632.51	2 633.29	271 020.9–308 996.2	2–4	1.36+07	2.83−02	4.90−01	−1.247	D	5,LS
			2 636.46	2 637.24	271 020.9–308 939.3	2–2	1.36+07	1.42−02	2.46−01	−1.547	D	5,LS
169	$3s3p(^1P^\circ)3d-3s3p(^3P^\circ)4p$	$^2P^\circ-^2D$	*4 397.1*	*4 398.3*	*278 653.9–301 389.8*	6–10	3.02+06	1.46−02	1.27+00	−1.057	D	5
			4 359.11	4 360.34	278 642.4–301 576.4	4–6	3.11+06	1.33−02	7.63−01	−1.274	D	5,LS
			4 456.49	4 457.74	278 676.9–301 109.8	2–4	2.42+06	1.44−02	4.22−01	−1.541	D	5,LS
			4 449.64	4 450.89	278 642.4–301 109.8	4–4	4.85+05	1.44−03	8.44−02	−2.240	E+	5,LS
170		$^2D^\circ-^2P$	*8 611*	*8 614*	*281 176.4–292 785.7*	10–6	1.10+06	7.36−03	2.09+00	−1.133	D+	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			8 572.3	8 574.6	281 231.6–292 893.9	6–4	1.01+06	7.41−03	1.25+00	−1.352	D+	5,LS
			8 711.7	8 714.1	281 093.6–292 569.2	4–2	1.07+06	6.08−03	6.97−01	−1.614	D	5,LS
			8 472.0	8 474.4	281 093.6–292 893.9	4–4	1.16+05	1.25−03	1.39−01	−2.301	D	5,LS
171		$^2D^\circ-^2D$	*4 945.8*	*4 947.2*	*281 176.4–301 389.8*	10–10	1.20+06	4.41−03	7.19−01	−1.356	D	5
			4 913.89	4 915.26	281 231.6–301 576.4	6–6	1.15+06	4.15−03	4.02−01	−1.604	D	5,LS
			4 994.56	4 995.95	281 093.6–301 109.8	4–4	1.05+06	3.94−03	2.59−01	−1.802	D	5,LS
			5 029.23	5 030.64	281 231.6–301 109.8	6–4	1.15+05	2.90−04	2.88−02	−2.759	E+	5,LS
			4 880.78	4 882.15	281 093.6–301 576.4	4–6	8.36+04	4.48−04	2.88−02	−2.747	E+	5,LS
172	$3s3p(^1P^\circ)3d-3s^2(^1S)5d$	$^2P^\circ-^2D$	*4 036.1*	*4 037.3*	*278 653.9–303 423.2*	6–10	1.29+07	5.27−02	4.20+00	−0.500	D+	5
			4 025.00	4 026.14	278 642.4–303 480.1	4–6	1.31+07	4.77−02	2.52+00	−0.719	D+	5,LS
			4 053.86	4 055.00	278 676.9–303 337.8	2–4	1.07+07	5.26−02	1.40+00	−0.978	D+	5,LS
			4 048.19	4 049.34	278 642.4–303 337.8	4–4	2.14+06	5.27−03	2.81−01	−1.676	D	5,LS
173		$^2D^\circ-^2D$	*4 493.8*	*4 495.0*	*281 176.4–303 423.2*	10–10	8.20+05	2.48−03	3.67−01	−1.606	D	5
			4 493.42	4 494.69	281 231.6–303 480.1	6–6	7.66+05	2.32−03	2.06−01	−1.856	D	5,LS
			4 494.29	4 495.55	281 093.6–303 337.8	4–4	7.39+05	2.24−03	1.32−01	−2.048	D	5,LS
			4 522.35	4 523.62	281 231.6–303 337.8	6–4	8.07+04	1.65−04	1.47−02	−3.004	E+	5,LS
			4 465.72	4 466.98	281 093.6–303 480.1	4–6	5.59+04	2.51−04	1.47−02	−2.998	E+	5,LS
174	$3s3p(^1P^\circ)3d-3s^2(^1S)6s$	$^2P^\circ-^2S$	*3 043.6*	*3 044.4*	*278 653.9–311 500.6*	6–2	3.13+07	1.45−02	8.71−01	−1.060	D	5
			3 042.50	3 043.38	278 642.4–311 500.6	4–2	2.09+07	1.45−02	5.81−01	−1.237	D	5,LS
			3 045.69	3 046.58	278 676.9–311 500.6	2–2	1.04+07	1.45−02	2.90−01	−1.538	D	5,LS
175	$3s3p(^1P^\circ)3d-3s^2(^1S)7s$	$^2P^\circ-^2S$		*1 841.2*	*278 653.9–332 965.6*	6–2	2.51+07	4.26−03	1.55−01	−1.592	D	5
				1 840.83	278 642.4–332 965.6	4–2	1.69+07	4.28−03	1.03−01	−1.766	D	5,LS
				1 842.00	278 676.9–332 965.6	2–2	8.41+06	4.28−03	5.19−02	−2.068	E+	5,LS
176	$3s3p(^1P^\circ)3d-3s3p(^1P^\circ)4p$	$^2P^\circ-^2P$		*1 631.74*	*278 653.9–339 938.2*	6–6	1.51+08	6.04−02	1.95+00	−0.441	D+	5
				1 629.777	278 642.4–340 000.5	4–4	1.27+08	5.06−02	1.08+00	−0.694	D+	5,LS
				1 635.676	278 676.9–339 813.7	2–2	1.00+08	4.03−02	4.34−01	−1.094	D	5,LS
				1 634.754	278 642.4–339 813.7	4–2	5.04+07	1.01−02	2.17−01	−1.394	D	5,LS
				1 630.694	278 676.9–340 000.5	2–4	2.53+07	2.02−02	2.16−01	−1.394	D	5,LS
177		$^2P^\circ-^2S$		*1 534.39*	*278 653.9–343 826.2*	6–2	2.80+08	3.30−02	9.99−01	−0.703	D	5
				1 534.124	278 642.4–343 826.2	4–2	1.87+08	3.30−02	6.66−01	−0.879	D	5,LS
				1 534.936	278 676.9–343 826.2	2–2	9.34+07	3.30−02	3.33−01	−1.180	D	5,LS
178		$^2D^\circ-^2D$		*1 731.29*	*281 176.4–338 936.7*	10–10	2.53+07	1.14−02	6.48−01	−0.943	D	5
				1 731.875	281 231.6–338 972.5	6–6	2.36+07	1.06−02	3.62−01	−1.197	D	5,LS
				1 730.418	281 093.6–338 883.1	4–4	2.29+07	1.03−02	2.34−01	−1.385	D	5,LS
				1 734.560	281 231.6–338 883.1	6–4	2.52+06	7.58−04	2.59−02	−2.342	E+	5,LS
				1 727.745	281 093.6–338 972.5	4–6	1.70+06	1.14−03	2.59−02	−2.341	E+	5,LS
179		$^2D^\circ-^2P$		*1 701.79*	*281 176.4–339 938.2*	10–6	2.70+08	7.04−02	3.94+00	−0.152	D+	5
				1 701.580	281 231.6–340 000.5	6–4	2.44+08	7.06−02	2.37+00	−0.373	D+	5,LS
				1 702.994	281 093.6–339 813.7	4–2	2.70+08	5.87−02	1.31+00	−0.629	D+	5,LS
				1 697.594	281 093.6–340 000.5	4–4	2.73+07	1.18−02	2.63−01	−1.326	D	5,LS
180	$3s3p(^1P^\circ)3d-3s3p(^3P^\circ)4f$	$^2D^\circ-^2F$		*1 559.17*	*281 176.4–345 313.0*	10–14	2.59+08	1.32−01	6.78+00	0.121	D+	5
				1 559.175	281 231.6–345 368.1	6–8	2.59+08	1.26−01	3.88+00	−0.121	D+	5,LS
				1 558.946	281 093.6–345 239.5	4–6	2.42+08	1.32−01	2.71+00	−0.277	D+	5,LS
				1 562.307	281 231.6–345 239.5	6–6	1.72+07	6.29−03	1.94−01	−1.423	D	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
181	$3s^2(^1S)5p$–$3s3p(^3P^\circ)4p$	$^2P^\circ$–^2P	13 246	13 249	285 238.1–292 785.7	6–6	2.17+05	5.72−03	1.50+00	−1.464	D	5
			13 157.9	13 161.5	285 296.0–292 893.9	4–4	1.85+05	4.81−03	8.33−01	−1.716	D	5,LS
			13 424.6	13 428.2	285 122.2–292 569.2	2–2	1.39+05	3.77−03	3.33−01	−2.123	D	5,LS
			13 745.3	13 749.1	285 296.0–292 569.2	4–2	6.51+04	9.22−04	1.66−01	−2.433	D	5,LS
			12 863.7	12 867.2	285 122.2–292 893.9	2–4	3.97+04	1.97−03	1.66−01	−2.405	D	5,LS
182		$^2P^\circ$–^2D	6 190	6 191	285 238.1–301 389.8	6–10	6.59+07	6.31−01	7.72+01	0.578	C	5
			6 140.7	6 142.4	285 296.0–301 576.4	4–6	6.75+07	5.73−01	4.63+01	0.360	C	5,LS
			6 253.1	6 254.8	285 122.2–301 109.8	2–4	5.33+07	6.25−01	2.57+01	0.097	C	5,LS
			6 321.8	6 323.6	285 296.0–301 109.8	4–4	1.03+07	6.19−02	5.15+00	−0.606	D+	5,LS
183		$^2P^\circ$–^2S	4 250.0	4 251.2	285 238.1–308 761.0	6–2	1.56+08	1.41−01	1.19+01	−0.073	D+	5
			4 260.47	4 261.67	285 296.0–308 761.0	4–2	1.04+08	1.41−01	7.91+00	−0.249	D+	5,LS
			4 229.14	4 230.33	285 122.2–308 761.0	2–2	5.29+07	1.42−01	3.95+00	−0.547	D+	5,LS
184	$3s^2(^1S)5p$–$3s^2(^1S)5d$	$^2P^\circ$–^2D	5 497.5	5 499.0	285 238.1–303 423.2	6–10	8.47+07	6.40−01	6.95+01	0.584	C	5
			5 497.78	5 499.31	285 296.0–303 480.1	4–6	8.48+07	5.77−01	4.17+01	0.363	C	5,LS
			5 488.28	5 489.80	285 122.2–303 337.8	2–4	7.11+07	6.42−01	2.32+01	0.109	C	5,LS
			5 541.15	5 542.68	285 296.0–303 337.8	4–4	1.38+07	6.36−02	4.64+00	−0.594	D+	5,LS
185	$3s^2(^1S)5p$–$3s^2(^1S)6s$	$^2P^\circ$–^2S	3 806.6	3 807.7	285 238.1–311 500.6	6–2	1.89+08	1.37−01	1.03+01	−0.085	D+	5
			3 815.04	3 816.12	285 296.0–311 500.6	4–2	1.26+08	1.37−01	6.88+00	−0.261	D+	5,LS
			3 789.90	3 790.98	285 122.2–311 500.6	2–2	6.36+07	1.37−01	3.42+00	−0.562	D+	5,LS
186	$3s^2(^1S)5p$–$3s^2(^1S)7s$	$^2P^\circ$–^2S	2 094.6	2 095.2	285 238.1–332 965.6	6–2	1.69+08	3.70−02	1.53+00	−0.654	D+	5
			2 097.11	2 097.77	285 296.0–332 965.6	4–2	1.12+08	3.70−02	1.02+00	−0.830	D+	5,LS
			2 089.49	2 090.15	285 122.2–332 965.6	2–2	5.68+07	3.72−02	5.11−01	−1.128	D	5,LS
187	$3s^2(^1S)5p$–$3s3p(^1P^\circ)4p$	$^2P^\circ$–^2D		1 862.2	285 238.1–338 936.7	6–10	1.70+07	1.48−02	5.43−01	−1.052	D	5
				1 863.01	285 296.0–338 972.5	4–6	1.70+07	1.33−02	3.26−01	−1.274	D	5,LS
				1 860.09	285 122.2–338 883.1	2–4	1.43+07	1.48−02	1.81−01	−1.529	D	5,LS
				1 866.12	285 296.0–338 883.1	4–4	2.82+06	1.47−03	3.61−02	−2.231	E+	5,LS
188	$3s3p(^3P^\circ)4p$–$3s3p(^1P^\circ)4s$	^2D–$^2P^\circ$	13 176	13 180	301 389.8–308 977.2	10–6	3.96+05	6.20−03	2.69+00	−1.208	D+	5
			13 473.8	13 477.5	301 576.4–308 996.2	6–4	3.35+05	6.08−03	1.61+00	−1.438	D+	5,LS
			12 768.7	12 772.2	301 109.8–308 939.3	4–2	4.37+05	5.34−03	8.98−01	−1.670	D	5,LS
			12 676.6	12 680.1	301 109.8–308 996.2	4–4	4.48+04	1.08−03	1.80−01	−2.365	D	5,LS
189		^2S–$^2P^\circ$		216.2 cm^{-1}	308 761.0–308 977.2	2–6	1.17+01	1.12−03	3.42+00	−2.650	D+	5
				235.2 cm^{-1}	308 761.0–308 996.2	2–4	1.51+01	8.17−04	2.28+00	−2.787	D+	5,LS
				178.3 cm^{-1}	308 761.0–308 939.3	2–2	6.55+00	3.09−04	1.14+00	−3.209	D+	5,LS
190	$3s3p(^3P^\circ)4p$–$3s^2(^1S)5f$	^2D–$^2F^\circ$	10 032	10 035	301 389.8–311 355.2	10–14	2.08+07	4.40−01	1.45+02	0.643	C	5
			10 224.1	10 226.9	301 576.4–311 354.5	6–8	1.97+07	4.11−01	8.30+01	0.392	C	5,LS
			9 756.9	9 759.6	301 109.8–311 356.1	4–6	2.11+07	4.53−01	5.82+01	0.258	C	5,LS
			10 222.5	10 225.3	301 576.4–311 356.1	6–6	1.31+06	2.06−02	4.16+00	−0.908	D+	5,LS
191	$3s3p(^3P^\circ)4p$–$3s^2(^1S)6p$	^2P–$^2P^\circ$	3 868.3	3 869.4	292 785.7–318 629.2	6–6	1.20+06	2.69−03	2.05−01	−1.792	D	5
			3 883.10	3 884.20	292 893.9–318 639.2	4–4	9.86+05	2.23−03	1.14−01	−2.050	D	5,LS
			3 839.14	3 840.23	292 569.2–318 609.3	2–2	8.19+05	1.81−03	4.57−02	−2.441	E+	5,LS
			3 887.62	3 888.72	292 893.9–318 609.3	4–2	3.93+05	4.46−04	2.28−02	−2.749	E+	5,LS
			3 834.74	3 835.83	292 569.2–318 639.2	2–4	2.05+05	9.04−04	2.28−02	−2.743	E+	5,LS
192		^2D–$^2P^\circ$	5 799	5 801	301 389.8–318 629.2	10–6	6.62+07	2.00−01	3.83+01	0.301	C	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			5 859.1	5 860.7	301 576.4–318 639.2	6–4	5.80+07	1.99−01	2.30+01	0.077	C	5,LS
			5 712.9	5 714.4	301 109.8–318 609.3	4–2	6.94+07	1.70−01	1.27+01	−0.167	C	5,LS
			5 703.1	5 704.7	301 109.8–318 639.2	4–4	6.99+06	3.41−02	2.56+00	−0.865	D+	5,LS
193		^{2}S–^{2}P°	*10 131*	*10 134*	*308 761.0–318 629.2*	2–6	1.81+07	8.38−01	5.59+01	0.224	C	5
			10 120.5	10 123.3	308 761.0–318 639.2	2–4	1.82+07	5.60−01	3.73+01	0.049	C	5,LS
			10 151.3	10 154.0	308 761.0–318 609.3	2–2	1.80+07	2.79−01	1.86+01	−0.253	C	5,LS
194	$3s3p(^3P°)4p–3s^2(^1S)6f$	^{2}D–^{2}F°	*3 198.9*	*3 199.8*	*301 389.8–332 642.0*	10–14	3.77+07	8.09−02	8.52+00	−0.092	D+	5
			3 217.80	3 218.73	301 576.4–332 644.6	6–8	3.70+07	7.67−02	4.87+00	−0.337	D+	5,LS
			3 170.79	3 171.70	301 109.8–332 638.6	4–6	3.61+07	8.17−02	3.41+00	−0.486	D+	5,LS
			3 218.42	3 219.35	301 576.4–332 638.6	6–6	2.47+06	3.83−03	2.43−01	−1.639	D	5,LS
195	$3s3p(^3P°)4p–3s3p(^3P°)4d$	^{2}P–^{2}D°	*2 251.0*	*2 251.7*	*292 785.7–337 197.2*	6–10	6.05+08	7.66−01	3.41+01	0.662	C	5
			2 250.83	2 251.53	292 893.9–337 308.1	4–6	6.07+08	6.92−01	2.05+01	0.442	C	5,LS
			2 248.43	2 249.13	292 569.2–337 030.8	2–4	5.07+08	7.69−01	1.13+01	0.187	C	5,LS
			2 264.98	2 265.68	292 893.9–337 030.8	4–4	9.93+07	7.64−02	2.27+00	−0.515	D+	5,LS
196		^{2}P–^{2}P°		*1 900.8*	*292 785.7–345 394.2*	6–6	3.98+08	2.15−01	8.09+00	0.111	D+	5
				1 908.94	292 893.9–345 278.9	4–4	3.28+08	1.79−01	4.50+00	−0.145	D+	5,LS
				1 884.82	292 569.2–345 624.7	2–2	2.72+08	1.45−01	1.79+00	−0.538	D+	5,LS
				1 896.42	292 893.9–345 624.7	4–2	1.34+08	3.61−02	9.01−01	−0.840	D	5,LS
				1 897.18	292 569.2–345 278.9	2–4	6.68+07	7.21−02	9.00−01	−0.841	D	5,LS
197		^{4}D–^{4}D°	*2 349.5*	*2 350.2*	*293 857.6–336 406.5*	20–20	1.93+08	1.60−01	2.48+01	0.505	D+	5
			2 365.88	2 366.61	294 282.2–336 536.8	8–8	1.63+08	1.37−01	8.53+00	0.040	D+	5,LS
			2 345.62	2 346.34	293 736.6–336 356.2	6–6	1.12+08	9.21−02	4.26+00	−0.258	D+	5,LS
			2 333.88	2 334.60	293 463.1–336 297.0	4–4	7.91+07	6.46−02	1.98+00	−0.588	D+	5,LS
			2 327.87	2 328.59	293 310.8–336 255.3	2–2	9.97+07	8.10−02	1.24+00	−0.790	D+	5,LS
			2 376.04	2 376.76	294 282.2–336 356.2	8–6	3.56+07	2.26−02	1.41+00	−0.743	D+	5,LS
			2 348.88	2 349.60	293 736.6–336 297.0	6–4	6.79+07	3.75−02	1.74+00	−0.648	D+	5,LS
			2 336.16	2 336.87	293 463.1–336 255.3	4–2	9.84+07	4.03−02	1.24+00	−0.793	D+	5,LS
			2 335.72	2 336.44	293 736.6–336 536.8	6–8	2.81+07	3.07−02	1.41+00	−0.735	D+	5,LS
			2 330.66	2 331.38	293 463.1–336 356.2	4–6	4.63+07	5.66−02	1.73+00	−0.645	D+	5,LS
			2 325.61	2 326.33	293 310.8–336 297.0	2–4	5.00+07	8.11−02	1.24+00	−0.790	D+	5,LS
198		^{4}D–^{4}F°	*2 275.0*	*2 275.7*	*293 857.6–337 799.6*	20–28	9.00+08	9.78−01	1.47+02	1.291	C	5
			2 283.92	2 284.62	294 282.2–338 053.1	8–10	8.91+08	8.71−01	5.24+01	0.843	C	5,LS
			2 271.30	2 272.00	293 736.6–337 750.7	6–8	7.76+08	8.01−01	3.59+01	0.682	C	5,LS
			2 262.84	2 263.54	293 463.1–337 641.6	4–6	6.87+08	7.91−01	2.35+01	0.500	C	5,LS
			2 262.25	2 262.95	293 310.8–337 501.0	2–4	6.41+08	9.84−01	1.46+01	0.294	C	5,LS
			2 299.81	2 300.52	294 282.2–337 750.7	8–8	1.24+08	9.86−02	5.97+00	−0.103	D+	5,LS
			2 276.94	2 277.64	293 736.6–337 641.6	6–6	2.19+08	1.70−01	7.64+00	0.009	D+	5,LS
			2 270.07	2 270.77	293 463.1–337 501.0	4–4	2.54+08	1.96−01	5.86+00	−0.106	D+	5,LS
			2 305.60	2 306.30	294 282.2–337 641.6	8–6	8.36+06	5.00−03	3.03−01	−1.398	D	5,LS
			2 284.26	2 284.96	293 736.6–337 501.0	6–4	1.78+07	9.29−03	4.19−01	−1.254	D	5,LS
199		^{4}D–^{4}P°	*2 139.9*	*2 140.6*	*293 857.6–340 573.5*	20–12	3.45+07	1.42−02	2.01+00	−0.547	D	5
			2 167.35	2 168.03	294 282.2–340 407.1	8–6	2.67+07	1.41−02	8.05−01	−0.948	D	5,LS
			2 129.35	2 130.03	293 736.6–340 684.4	6–4	2.21+07	1.00−02	4.20−01	−1.222	D	5,LS
			2 109.57	2 110.23	293 463.1–340 851.2	4–2	1.80+07	6.02−03	1.67−01	−1.618	D	5,LS
			2 142.01	2 142.68	293 736.6–340 407.1	6–6	6.20+06	4.27−03	1.80−01	−1.591	D	5,LS
			2 117.02	2 117.69	293 463.1–340 684.4	4–4	1.14+07	7.67−03	2.13−01	−1.513	D	5,LS
			2 102.81	2 103.47	293 310.8–340 851.2	2–2	1.82+07	1.21−02	1.67−01	−1.616	D	5,LS
			2 129.53	2 130.20	293 463.1–340 407.1	4–6	7.01+05	7.15−04	2.00−02	−2.544	E+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 110.21	2 110.88	293 310.8–340 684.4	2–4	1.80+06	2.41−03	3.35−02	−2.317	E+	5,LS
200		^{4}P–^{4}D$^\circ$	*2 587.4*	*2 588.2*	*297 768.9–336 406.5*	12–20	4.40+08	7.36−01	7.53+01	0.946	C	5
			2 594.84	2 595.62	298 010.3–336 536.8	6–8	4.37+08	5.88−01	3.01+01	0.548	C	5,LS
			2 578.97	2 579.75	297 592.7–336 356.2	4–6	3.11+08	4.66−01	1.58+01	0.270	C	5,LS
			2 569.93	2 570.70	297 397.1–336 297.0	2–4	1.87+08	3.71−01	6.28+00	−0.130	D+	5,LS
			2 607.06	2 607.84	298 010.3–336 356.2	6–6	1.29+08	1.32−01	6.80+00	−0.101	D+	5,LS
			2 582.92	2 583.69	297 592.7–336 297.0	4–4	2.36+08	2.36−01	8.02+00	−0.025	D+	5,LS
			2 572.69	2 573.46	297 397.1–336 255.3	2–2	3.73+08	3.70−01	6.26+00	−0.131	D+	5,LS
			2 611.09	2 611.87	298 010.3–336 297.0	6–4	2.14+07	1.46−02	7.53−01	−1.057	D	5,LS
			2 585.71	2 586.48	297 592.7–336 255.3	4–2	7.36+07	3.69−02	1.25+00	−0.831	D+	5,LS
201		^{4}P–^{4}P$^\circ$	*2 335.5*	*2 336.2*	*297 768.9–340 573.5*	12–12	3.36+08	2.75−01	2.54+01	0.519	D+	5
			2 357.95	2 358.67	298 010.3–340 407.1	6–6	2.29+08	1.91−01	8.89+00	0.059	D+	5,LS
			2 319.92	2 320.63	297 592.7–340 684.4	4–4	4.57+07	3.69−02	1.12+00	−0.831	D+	5,LS
			2 300.57	2 301.28	297 397.1–340 851.2	2–2	5.86+07	4.65−02	7.04−01	−1.032	D	5,LS
			2 342.62	2 343.34	298 010.3–340 684.4	6–4	1.50+08	8.22−02	3.80+00	−0.307	D+	5,LS
			2 310.97	2 311.68	297 592.7–340 851.2	4–2	2.90+08	1.16−01	3.53+00	−0.333	D+	5,LS
			2 334.95	2 335.66	297 592.7–340 407.1	4–6	1.01+08	1.24−01	3.81+00	−0.305	D+	5,LS
			2 309.44	2 310.15	297 397.1–340 684.4	2–4	1.45+08	2.32−01	3.52+00	−0.333	D+	5,LS
202		^{4}S–^{4}P$^\circ$	*2 426.2*	*2 426.9*	299 369.3–*340 573.5*	4–12	4.44+08	1.18+00	3.76+01	0.674	C	5
			2 436.04	2 436.78	299 369.3–340 407.1	4–6	4.40+08	5.87−01	1.88+01	0.371	C	5,LS
			2 419.69	2 420.42	299 369.3–340 684.4	4–4	4.49+08	3.94−01	1.25+01	0.198	C	5,LS
			2 409.96	2 410.69	299 369.3–340 851.2	4–2	4.55+08	1.98−01	6.28+00	−0.101	D+	5,LS
203		^{2}D–^{2}D$^\circ$	*2 791.9*	*2 792.7*	*301 389.8–337 197.2*	10–10	5.68+07	6.64−02	6.11+00	−0.178	D+	5
			2 797.81	2 798.64	301 576.4–337 308.1	6–6	5.27+07	6.19−02	3.42+00	−0.430	D+	5,LS
			2 783.07	2 783.89	301 109.8–337 030.8	4–4	5.17+07	6.00−02	2.20+00	−0.620	D+	5,LS
			2 819.69	2 820.52	301 576.4–337 030.8	6–4	5.52+06	4.39−03	2.44−01	−1.579	D	5,LS
			2 761.74	2 762.56	301 109.8–337 308.1	4–6	3.92+06	6.72−03	2.44−01	−1.571	D	5,LS
204		^{2}D–^{2}P$^\circ$	*2 271.8*	*2 272.5*	*301 389.8–345 394.2*	10–6	4.21+07	1.95−02	1.46+00	−0.710	D	5
			2 287.49	2 288.20	301 576.4–345 278.9	6–4	3.71+07	1.94−02	8.76−01	−0.934	D	5,LS
			2 245.74	2 246.44	301 109.8–345 624.7	4–2	4.36+07	1.65−02	4.88−01	−1.180	D	5,LS
			2 263.33	2 264.03	301 109.8–345 278.9	4–4	4.26+06	3.27−03	9.74−02	−1.883	E+	5,LS
205		^{2}S–^{2}P$^\circ$	*2 729.0*	*2 729.8*	308 761.0–*345 394.2*	2–6	1.85+08	6.21−01	1.12+01	0.094	D+	5
			2 737.57	2 738.38	308 761.0–345 278.9	2–4	1.84+08	4.13−01	7.44+00	−0.083	D+	5,LS
			2 711.89	2 712.70	308 761.0–345 624.7	2–2	1.89+08	2.09−01	3.73+00	−0.379	D+	5,LS
206	$3s3p(^3P^\circ)4p–3s^2(^1S)7p$	^{2}D–^{2}P$^\circ$	*2 827.0*	*2 827.9*	*301 389.8–336 752.2*	10–6	1.87+07	1.35−02	1.25+00	−0.870	D	5
			2 841.37	2 842.20	301 576.4–336 760.4	6–4	1.66+07	1.34−02	7.52−01	−1.095	D	5,LS
			2 806.12	2 806.95	301 109.8–336 735.7	4–2	1.91+07	1.13−02	4.17−01	−1.345	D	5,LS
			2 804.18	2 805.00	301 109.8–336 760.4	4–4	1.92+06	2.27−03	8.38−02	−2.042	E+	5,LS
207	$3s3p(^3P^\circ)4p–3s3p(^1P^\circ)4d$	^{2}D–^{2}D$^\circ$		*1 262.62*	*301 389.8–380 590.0*	10–10	4.67+07	1.12−02	4.64−01	−0.951	D	5
				1 265.459	301 576.4–380 599.1	6–6	4.33+07	1.04−02	2.60−01	−1.205	D	5,LS
				1 258.390	301 109.8–380 576.4	4–4	4.26+07	1.01−02	1.67−01	−1.394	D	5,LS
				1 265.823	301 576.4–380 576.4	6–4	4.64+06	7.43−04	1.85−02	−2.351	E+	5,LS
				1 258.031	301 109.8–380 599.1	4–6	3.15+06	1.12−03	1.85−02	−2.349	E+	5,LS
208	$3s^2(^1S)5d–3s3p(^1P^\circ)4s$	^{2}D–^{2}P$^\circ$	*18 000*	*18 005*	*303 423.2–308 977.2*	10–6	5.42+05	1.58−02	9.36+00	−0.801	D+	5
			18 124	18 129	303 480.1–308 996.2	6–4	4.78+05	1.57−02	5.62+00	−1.026	D+	5,LS
			17 847	17 852	303 337.8–308 939.3	4–2	5.57+05	1.33−02	3.12+00	−1.274	D+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			17 668.0	17 672.8	303 337.8–308 996.2	4–4	5.72+04	2.68−03	6.23−01	−1.970	D	5,LS
209	$3s^2(^1S)5d–3s^2(^1S)5f$	$^2D–^2F^\circ$	*12 604*	*12 607*	*303 423.2–311 355.2*	10–14	1.27+07	4.22−01	1.75+02	0.625	C+	5
			12 695.9	12 699.4	303 480.1–311 354.5	6–8	1.24+07	4.01−01	1.00+02	0.381	C+	5,LS
			12 468.1	12 471.5	303 337.8–311 356.1	4–6	1.22+07	4.28−01	7.02+01	0.234	C	5,LS
			12 693.3	12 696.8	303 480.1–311 356.1	6–6	8.28+05	2.00−02	5.01+00	−0.921	D+	5,LS
210	$3s^2(^1S)5d–3s^2(^1S)6p$	$^2D–^2P^\circ$	*6 575*	*6 576*	*303 423.2–318 629.2*	10–6	5.35+07	2.08−01	4.51+01	0.318	C	5
			6 594.9	6 596.7	303 480.1–318 639.2	6–4	4.78+07	2.08−01	2.71+01	0.096	C	5,LS
			6 546.3	6 548.1	303 337.8–318 609.3	4–2	5.41+07	1.74−01	1.50+01	−0.157	C	5,LS
			6 533.5	6 535.3	303 337.8–318 639.2	4–4	5.45+06	3.49−02	3.00+00	−0.855	D+	5,LS
211	$3s^2(^1S)5d–3s^2(^1S)6f$	$^2D–^2F^\circ$	*3 421.5*	*3 422.5*	*303 423.2–332 642.0*	10–14	5.91+07	1.45−01	1.64+01	0.161	D+	5
			3 427.84	3 428.83	303 480.1–332 644.6	6–8	5.87+07	1.38−01	9.34+00	−0.082	D+	5,LS
			3 411.90	3 412.88	303 337.8–332 638.6	4–6	5.57+07	1.46−01	6.56+00	−0.234	D+	5,LS
			3 428.55	3 429.53	303 480.1–332 638.6	6–6	3.91+06	6.90−03	4.67−01	−1.383	D	5,LS
212	$3s^2(^1S)5d–3s3p(^3P^\circ)4d$	$^2D–^2D^\circ$	*2 960.0*	*2 960.9*	*303 423.2–337 197.2*	10–10	3.84+07	5.05−02	4.92+00	−0.297	D+	5
			2 955.27	2 956.13	303 480.1–337 308.1	6–6	3.62+07	4.74−02	2.76+00	−0.546	D+	5,LS
			2 967.11	2 967.98	303 337.8–337 030.8	4–4	3.44+07	4.55−02	1.77+00	−0.740	D+	5,LS
			2 979.69	2 980.56	303 480.1–337 030.8	6–4	3.78+06	3.36−03	1.97−01	−1.696	D	5,LS
			2 942.89	2 943.75	303 337.8–337 308.1	4–6	2.62+06	5.10−03	1.97−01	−1.690	D	5,LS
213		$^2D–^2P^\circ$	*2 381.9*	*2 382.6*	*303 423.2–345 394.2*	10–6	2.12+07	1.08−02	8.51−01	−0.967	D	5
			2 391.68	2 392.41	303 480.1–345 278.9	6–4	1.89+07	1.08−02	5.10−01	−1.188	D	5,LS
			2 364.08	2 364.80	303 337.8–345 624.7	4–2	2.18+07	9.13−03	2.84−01	−1.437	D	5,LS
			2 383.57	2 384.30	303 337.8–345 278.9	4–4	2.12+06	1.81−03	5.68−02	−2.140	E+	5,LS
214	$3s^2(^1S)5d–3s^2(^1S)7p$	$^2D–^2P^\circ$	*2 999.5*	*3 000.4*	*303 423.2–336 752.2*	10–6	3.28+07	2.65−02	2.62+00	−0.577	D+	5
			3 003.91	3 004.78	303 480.1–336 760.4	6–4	2.95+07	2.66−02	1.57+00	−0.797	D+	5,LS
			2 993.33	2 994.20	303 337.8–336 735.7	4–2	3.30+07	2.22−02	8.75−01	−1.052	D	5,LS
			2 991.12	2 991.99	303 337.8–336 760.4	4–4	3.32+06	4.45−03	1.75−01	−1.750	D	5,LS
215	$3s3p(^1P^\circ)4s–3s^2(^1S)6s$	$^2P^\circ–^2S$		*2 523.4* cm^{-1}	*308 977.2–311 500.6*	6–2	2.14+05	1.68−02	1.31+01	−0.997	D+	5
				2 504.4 cm^{-1}	308 996.2–311 500.6	4–2	1.40+05	1.67−02	8.78+00	−1.175	D+	5,LS
				2 561.3 cm^{-1}	308 939.3–311 500.6	2–2	7.44+04	1.70−02	4.37+00	−1.469	D+	5,LS
216	$3s3p(^1P^\circ)4s–3s^2(^1S)7s$	$^2P^\circ–^2S$	*4 167.5*	*4 168.7*	*308 977.2–332 965.6*	6–2	3.76+06	3.26−03	2.69−01	−1.709	D	5
			4 170.81	4 171.99	308 996.2–332 965.6	4–2	2.50+06	3.26−03	1.79−01	−1.885	D	5,LS
			4 160.93	4 162.11	308 939.3–332 965.6	2–2	1.26+06	3.27−03	8.96−02	−2.184	E+	5,LS
217	$3s3p(^1P^\circ)4s–3s3p(^1P^\circ)4p$	$^2P^\circ–^2D$	*3 336.9*	*3 337.8*	*308 977.2–338 936.7*	6–10	1.05+08	2.93−01	1.93+01	0.245	C	5
			3 335.01	3 335.97	308 996.2–338 972.5	4–6	1.06+08	2.65−01	1.16+01	0.025	C	5,LS
			3 338.63	3 339.59	308 939.3–338 883.1	2–4	8.79+07	2.94−01	6.46+00	−0.231	D+	5,LS
			3 344.99	3 345.95	308 996.2–338 883.1	4–4	1.75+07	2.93−02	1.29+00	−0.931	D+	5,LS
218		$^2P^\circ–^2P$	*3 228.9*	*3 229.9*	*308 977.2–339 938.2*	6–6	1.81+08	2.83−01	1.80+01	0.230	C	5
			3 224.43	3 225.36	308 996.2–340 000.5	4–4	1.52+08	2.37−01	1.00+01	−0.023	C	5,LS
			3 237.99	3 238.93	308 939.3–339 813.7	2–2	1.20+08	1.89−01	4.03+00	−0.423	D+	5,LS
			3 243.97	3 244.91	308 996.2–339 813.7	4–2	5.97+07	4.71−02	2.01+00	−0.725	D+	5,LS
			3 218.52	3 219.45	308 939.3–340 000.5	2–4	3.06+07	9.50−02	2.01+00	−0.721	D+	5,LS
219		$^2P^\circ–^2S$	*2 868.7*	*2 869.5*	*308 977.2*–343 826.2	6–2	9.57+07	3.94−02	2.23+00	−0.626	D+	5
			2 870.25	2 871.09	308 996.2–343 826.2	4–2	6.38+07	3.94−02	1.49+00	−0.802	D+	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 865.56	2 866.41	308 939.3–343 826.2	2–2	3.20+07	3.94−02	7.43−01	−1.103	D	5,LS
220	$3s^2(^1S)5g-3s^2(^1S)5f$	$^2G-^2F^\circ$		*1 434.1* cm^{-1}	*309 921.1–311 355.2*	18–14	9.72+04	5.51−02	2.28+02	−0.004	C+	5
				1 433.5 cm^{-1}	309 921.0–311 354.5	10–8	9.75+04	5.69−02	1.30+02	−0.245	C+	5,LS
				1 434.9 cm^{-1}	309 921.2–311 356.1	8–6	9.12+04	4.98−02	9.13+01	−0.400	C	5,LS
				1 433.3 cm^{-1}	309 921.2–311 354.5	8–8	4.86+03	3.55−03	6.52+00	−1.547	D+	5,LS
221	$3s^2(^1S)5g-3s^2(^1S)6f$	$^2G-^2F^\circ$	*4 400.0*	*4 401.2*	*309 921.1–332 642.0*	18–14	3.59+06	8.12−03	2.12+00	−0.835	D+	5
			4 399.48	4 400.71	309 921.0–332 644.6	10–8	3.60+06	8.36−03	1.21+00	−1.078	D+	5,LS
			4 400.68	4 401.91	309 921.2–332 638.6	8–6	3.36+06	7.31−03	8.47−01	−1.233	D	5,LS
			4 399.51	4 400.75	309 921.2–332 644.6	8–8	1.80+05	5.22−04	6.05−02	−2.379	E+	5,LS
222	$3s^2(^1S)5f-3s3p(^1P^\circ)4p$	$^2F^\circ-^2D$	*3 624.6*	*3 625.6*	*311 355.2–338 936.7*	14–10	1.29+07	1.81−02	3.03+00	−0.596	D+	5
			3 619.79	3 620.83	311 354.5–338 972.5	8–6	1.23+07	1.82−02	1.73+00	−0.837	D+	5,LS
			3 631.76	3 632.80	311 356.1–338 883.1	6–4	1.28+07	1.69−02	1.21+00	−0.994	D+	5,LS
			3 620.00	3 621.04	311 356.1–338 972.5	6–6	6.16+05	1.21−03	8.65−02	−2.139	E+	5,LS
223	$3s^2(^1S)6s-3s^2(^1S)6p$	$^2S-^2P^\circ$	*14 024*	*14 028*	311 500.6–*318 629.2*	2–6	1.23+07	1.09+00	1.01+02	0.338	C	5
			14 004.5	14 008.3	311 500.6–318 639.2	2–4	1.24+07	7.30−01	6.73+01	0.164	C	5,LS
			14 063.4	14 067.3	311 500.6–318 609.3	2–2	1.22+07	3.63−01	3.36+01	−0.139	C	5,LS
224	$3s^2(^1S)6s-3s3p(^3P^\circ)4d$	$^2S-^2P^\circ$	*2 949.5*	*2 950.4*	311 500.6–*345 394.2*	2–6	1.05+08	4.12−01	8.00+00	−0.084	D+	5
			2 959.62	2 960.48	311 500.6–345 278.9	2–4	1.04+08	2.74−01	5.34+00	−0.261	D+	5,LS
			2 929.62	2 930.48	311 500.6–345 624.7	2–2	1.07+08	1.38−01	2.66+00	−0.559	D+	5,LS
225	$3s^2(^1S)6s-3s^2(^1S)7p$	$^2S-^2P^\circ$	*3 959.0*	*3 960.1*	311 500.6–*336 752.2*	2–6	2.29+06	1.61−02	4.21−01	−1.492	D	5
			3 957.74	3 958.86	311 500.6–336 760.4	2–4	2.30+06	1.08−02	2.81−01	−1.666	D	5,LS
			3 961.61	3 962.73	311 500.6–336 735.7	2–2	2.29+06	5.40−03	1.40−01	−1.967	D	5,LS
226	$3p^2(^3P)3d-3s3p(^3P^\circ)4d$	$^4F-^4D^\circ$	*4 942.7*	*4 944.0*	*316 180.1–336 406.5*	28–20	4.99+06	1.31−02	5.95+00	−0.436	D+	5
			4 992.14	4 993.53	316 510.9–336 536.8	10–8	4.31+06	1.29−02	2.12+00	−0.889	D+	5,LS
			4 955.66	4 957.05	316 182.9–336 356.2	8–6	4.05+06	1.12−02	1.46+00	−1.048	D+	5,LS
			4 906.73	4 908.10	315 922.5–336 297.0	6–4	4.10+06	9.87−03	9.56−01	−1.228	D	5,LS
			4 871.55	4 872.91	315 733.7–336 255.3	4–2	5.21+06	9.28−03	5.95−01	−1.430	D	5,LS
			4 911.69	4 913.06	316 182.9–336 536.8	8–8	5.17+05	1.87−03	2.42−01	−1.825	D	5,LS
			4 892.51	4 893.88	315 922.5–336 356.2	6–6	8.94+05	3.21−03	3.10−01	−1.715	D	5,LS
			4 861.67	4 863.03	315 733.7–336 297.0	4–4	1.05+06	3.72−03	2.38−01	−1.827	D	5,LS
			4 849.65	4 851.00	315 922.5–336 536.8	6–8	2.74+04	1.29−04	1.23−02	−3.111	E+	5,LS
			4 847.72	4 849.07	315 733.7–336 356.2	4–6	5.03+04	2.66−04	1.69−02	−2.973	E+	5,LS
227		$^4F-^4F^\circ$				28–28						5
			4 640.75	4 642.05	316 510.9–338 053.1	10–10	3.53+05	1.14−03	1.74−01	−1.943	D	5,LS
			4 635.24	4 636.54	316 182.9–337 750.7	8–8	2.95+05	9.51−04	1.16−01	−2.119	D	5,LS
			4 602.95	4 604.24	315 922.5–337 641.6	6–6	2.72+05	8.64−04	7.85−02	−2.285	E+	5,LS
			4 592.76	4 594.05	315 733.7–337 501.0	4–4	3.19+05	1.01−03	6.11−02	−2.394	E+	5,LS
			4 658.81	4 660.11	316 182.9–337 641.6	8–6	5.28+04	1.29−04	1.58−02	−2.986	E+	5,LS
			4 632.94	4 634.24	315 922.5–337 501.0	6–4	1.04+05	2.23−04	2.04−02	−2.874	E+	5,LS
			4 579.95	4 581.23	315 922.5–337 750.7	6–8	4.15+04	1.74−04	1.57−02	−2.981	E+	5,LS
			4 563.28	4 564.56	315 733.7–337 641.6	4–6	7.24+04	3.39−04	2.03−02	−2.868	E+	5,LS
228	$3s^2(^1S)6p-3s^2(^1S)7s$	$^2P^\circ-^2S$	*6 973*	*6 975*	*318 629.2–332 965.6*	6–2	1.71+08	4.16−01	5.73+01	0.397	C	5
			6 978.2	6 980.1	318 639.2–332 965.6	4–2	1.14+08	4.16−01	3.82+01	0.221	C	5,LS
			6 963.7	6 965.6	318 609.3–332 965.6	2–2	5.73+07	4.17−01	1.91+01	−0.079	C	5,LS
229	$3s^2(^1S)6p-3s3p(^1P^\circ)4p$	$^2P^\circ-^2D$	*4 922.9*	*4 924.3*	*318 629.2–338 936.7*	6–10	2.21+07	1.34−01	1.31+01	−0.095	D+	5

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			4 916.67	4 918.04	318 639.2–338 972.5	4–6	2.22+07	1.21−01	7.83+00	−0.315	D+	5,LS
			4 931.10	4 932.47	318 609.3–338 883.1	2–4	1.84+07	1.34−01	4.35+00	−0.572	D+	5,LS
			4 938.38	4 939.76	318 639.2–338 883.1	4–4	3.66+06	1.34−02	8.71−01	−1.271	D	5,LS
230		^{2}P°–^{2}P	*4 691.5*	*4 692.9*	*318 629.2–339 938.2*	6–6	5.03+06	1.66−02	1.54+00	−1.002	D	5
			4 680.05	4 681.36	318 639.2–340 000.5	4–4	4.23+06	1.39−02	8.56−01	−1.255	D	5,LS
			4 714.68	4 716.00	318 609.3–339 813.7	2–2	3.30+06	1.10−02	3.41−01	−1.658	D	5,LS
			4 721.34	4 722.66	318 639.2–339 813.7	4–2	1.65+06	2.76−03	1.71−01	−1.957	D	5,LS
			4 673.51	4 674.82	318 609.3–340 000.5	2–4	8.50+05	5.57−03	1.71−01	−1.953	D	5,LS
231		^{2}P°–^{2}S	*3 967.6*	*3 968.7*	*318 629.2–343 826.2*	6–2	5.27+07	4.15−02	3.25+00	−0.604	D+	5
			3 969.18	3 970.30	318 639.2–343 826.2	4–2	3.51+07	4.15−02	2.17+00	−0.780	D+	5,LS
			3 964.47	3 965.59	318 609.3–343 826.2	2–2	1.76+07	4.15−02	1.08+00	−1.081	D+	5,LS
232	$3s^2(^1S)6f–3s3p(^1P°)4p$	^{2}F°–^{2}D	*15 882*	*15 886*	*332 642.0–338 936.7*	14–10	6.88+06	1.86−01	1.36+02	0.416	C	5
			15 798.7	15 803.0	332 644.6–338 972.5	8–6	6.66+06	1.87−01	7.78+01	0.175	C	5,LS
			16 009.7	16 014.1	332 638.6–338 883.1	6–4	6.71+06	1.72−01	5.44+01	0.014	C	5,LS
			15 783.7	15 788.1	332 638.6–338 972.5	6–6	3.34+05	1.25−02	3.89+00	−1.125	D+	5,LS
233	$3s^2(^1S)7s–3s3p(^3P°)4d$	^{2}S–^{2}P°	*8 044*	*8 046*	332 965.6–*345 394.2*	2–6	4.72+05	1.37−02	7.28−01	−1.562	D	5
			8 119.1	8 121.3	332 965.6–345 278.9	2–4	4.60+05	9.09−03	4.86−01	−1.740	D	5,LS
			7 897.3	7 899.5	332 965.6–345 624.7	2–2	4.99+05	4.67−03	2.42−01	−2.030	D	5,LS
234	$3s^2(^1S)7s–3s^2(^1S)7p$	^{2}S–^{2}P°		*3 786.6* cm^{-1}	332 965.6–*336 752.2*	2–6	6.29+06	1.97+00	3.43+02	0.595	C+	5
				3 794.8 cm^{-1}	332 965.6–336 760.4	2–4	6.34+06	1.32+00	2.29+02	0.422	C+	5,LS
				3 770.1 cm^{-1}	332 965.6–336 735.7	2–2	6.20+06	6.54−01	1.14+02	0.117	C+	5,LS
235	$3s3p(^3P°)4d–3s3p(^1P°)4p$	^{2}D°–^{2}D		*1 739.5* cm^{-1}	*337 197.2–338 936.7*	10–10	2.56+02	1.27−04	2.40−01	−2.896	E+	5
				1 664.4 cm^{-1}	*337 308.1*–338 972.5	6–6	2.09+02	1.13−04	1.34−01	−3.169	D	5,LS
				1 852.3 cm^{-1}	337 030.8–338 883.1	4–4	2.79+02	1.22−04	8.67−02	−3.312	E+	5,LS
				1 575.0 cm^{-1}	337 308.1–338 883.1	6–4	1.90+01	7.66−06	9.60−03	−4.338	E	5,LS
				1 941.7 cm^{-1}	337 030.8–338 972.5	4–6	2.38+01	1.42−05	9.63−03	−4.246	E	5,LS
236	$3s3p(^3P°)4d–3s3p(^3P°)4f$	^{4}D°–^{4}F	*7 907*	*7 910*	*336 406.5–349 049.3*	20–28	1.78+07	2.33−01	1.21+02	0.668	C	5
			7 933.0	7 935.2	336 536.8–349 138.9	8–10	1.76+07	2.08−01	4.34+01	0.221	C	5,LS
			7 881.6	7 883.8	336 356.2–349 040.5	6–8	1.54+07	1.91−01	2.97+01	0.059	C	5,LS
			7 882.8	7 885.0	336 297.0–348 979.3	4–6	1.34+07	1.88−01	1.95+01	−0.124	C	5,LS
			7 876.4	7 878.6	336 255.3–348 947.9	2–4	1.26+07	2.35−01	1.21+01	−0.328	C	5,LS
			7 995.4	7 997.6	336 536.8–349 040.5	8–8	2.45+06	2.35−02	4.95+00	−0.726	D+	5,LS
			7 919.8	7 922.0	336 356.2–348 979.3	6–6	4.30+06	4.05−02	6.33+00	−0.614	D+	5,LS
			7 902.4	7 904.6	336 297.0–348 947.9	4–4	5.00+06	4.68−02	4.87+00	−0.728	D+	5,LS
			8 034.8	8 037.0	336 536.8–348 979.3	8–6	1.64+05	1.19−03	2.51−01	−2.021	D	5,LS
			7 939.6	7 941.7	336 356.2–348 947.9	6–4	3.52+05	2.22−03	3.48−01	−1.875	D	5,LS
237		^{4}D°–^{4}D	*5 126.5*	*5 127.9*	*336 406.5–355 907.6*	20–20	1.23+07	4.85−02	1.64+01	−0.013	D+	5
			5 226.29	5 227.75	336 536.8–355 665.5	8–8	9.98+06	4.09−02	5.63+00	−0.485	D+	5,LS
			5 104.21	5 105.64	336 356.2–355 942.4	6–6	7.17+06	2.80−02	2.82+00	−0.775	D+	5,LS
			5 029.89	5 031.29	336 297.0–356 172.6	4–4	5.22+06	1.98−02	1.31+00	−1.101	D+	5,LS
			5 001.98	5 003.38	336 255.3–356 241.8	2–2	6.63+06	2.49−02	8.20−01	−1.303	D	5,LS
			5 151.72	5 153.15	336 536.8–355 942.4	8–6	2.31+06	6.90−03	9.36−01	−1.258	D	5,LS
			5 044.92	5 046.33	336 356.2–356 172.6	6–4	4.52+06	1.15−02	1.14+00	−1.161	D+	5,LS
			5 012.44	5 013.84	336 297.0–356 241.8	4–2	6.58+06	1.24−02	8.18−01	−1.305	D	5,LS
			5 177.41	5 178.85	336 356.2–355 665.5	6–8	1.71+06	9.16−03	9.37−01	−1.260	D	5,LS
			5 088.83	5 090.25	336 297.0–355 942.4	4–6	2.95+06	1.72−02	1.15+00	−1.162	D+	5,LS
			5 019.36	5 020.76	336 255.3–356 172.6	2–4	3.29+06	2.49−02	8.23−01	−1.303	D	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
238		^{2}D°–^{2}F	*12 318*	*12 322*	*337 197.2–345 313.0*	10–14	2.38+06	7.59−02	3.08+01	−0.120	C	5
			12 403.6	12 406.9	337 308.1–345 368.1	6–8	2.34+06	7.20−02	1.76+01	−0.365	C	5,LS
			12 178.9	12 182.2	337 030.8–345 239.5	4–6	2.31+06	7.70−02	1.23+01	−0.511	C	5,LS
			12 604.7	12 608.1	337 308.1–345 239.5	6–6	1.49+05	3.54−03	8.81−01	−1.673	D	5,LS
239		^{4}F°–^{4}F					28–28					5
			9 018.1	9 020.5	338 053.1–349 138.9	10–10	1.39+06	1.70−02	5.04+00	−0.770	D+	5,LS
			8 855.1	8 857.6	337 750.7–349 040.5	8–8	1.22+06	1.44−02	3.35+00	−0.939	D+	5,LS
			8 817.7	8 820.1	337 641.6–348 979.3	6–6	1.12+06	1.31−02	2.28+00	−1.105	D+	5,LS
			8 733.6	8 736.0	337 501.0–348 947.9	4–4	1.35+06	1.54−02	1.77+00	−1.210	D+	5,LS
			8 903.4	8 905.8	337 750.7–348 979.3	8–6	2.19+05	1.95−03	4.57−01	−1.807	D	5,LS
			8 842.2	8 844.6	337 641.6–348 947.9	6–4	4.34+05	3.39−03	5.92−01	−1.692	D	5,LS
			8 770.4	8 772.8	337 641.6–349 040.5	6–8	1.72+05	2.64−03	4.57−01	−1.800	D	5,LS
			8 709.7	8 712.1	337 501.0–348 979.3	4–6	3.02+05	5.16−03	5.92−01	−1.685	D	5,LS
240		^{4}F°–^{4}G	*6 831*	*6 833*	*337 799.6–352 435.4*	28–36	4.17+07	3.75−01	2.36+02	1.021	C	5
			6 803.9	6 805.8	338 053.1–352 746.5	10–12	4.22+07	3.52−01	7.88+01	0.547	C	5,LS
			6 808.2	6 810.0	337 750.7–352 434.9	8–10	3.87+07	3.36−01	6.02+01	0.429	C	5,LS
			6 852.7	6 854.6	337 641.6–352 230.3	6–8	3.57+07	3.35−01	4.53+01	0.303	C	5,LS
			6 853.9	6 855.8	337 501.0–352 087.2	4–6	3.55+07	3.75−01	3.38+01	0.176	C	5,LS
			6 951.3	6 953.2	338 053.1–352 434.9	10–10	3.28+06	2.38−02	5.44+00	−0.623	D+	5,LS
			6 904.4	6 906.3	337 750.7–352 230.3	8–8	5.50+06	3.93−02	7.14+00	−0.503	D+	5,LS
			6 920.6	6 922.5	337 641.6–352 087.2	6–6	5.55+06	3.99−02	5.45+00	−0.621	D+	5,LS
			7 051.6	7 053.6	338 053.1–352 230.3	10–8	1.15+05	6.88−04	1.59−01	−2.162	D	5,LS
			6 973.3	6 975.2	337 750.7–352 087.2	8–6	1.96+05	1.07−03	1.96−01	−2.068	D	5,LS
241		^{4}F°–^{4}D	*5 520.9*	*5 522.4*	*337 799.6–355 907.6*	28–20	2.30+06	7.51−03	3.82+00	−0.677	D	5
			5 676.2	5 677.8	338 053.1–355 665.5	10–8	1.89+06	7.32−03	1.36+00	−1.135	D+	5,LS
			5 495.49	5 497.01	337 750.7–355 942.4	8–6	1.91+06	6.49−03	9.39−01	−1.285	D	5,LS
			5 394.86	5 396.36	337 641.6–356 172.6	6–4	1.99+06	5.78−03	6.16−01	−1.460	D	5,LS
			5 334.47	5 335.95	337 501.0–356 241.8	4–2	2.56+06	5.46−03	3.83−01	−1.661	D	5,LS
			5 580.43	5 581.98	337 750.7–355 665.5	8–8	2.27+05	1.06−03	1.55−01	−2.072	D	5,LS
			5 462.72	5 464.24	337 641.6–355 942.4	6–6	4.13+05	1.85−03	1.99−01	−1.955	D	5,LS
			5 354.24	5 355.73	337 501.0–356 172.6	4–4	5.04+05	2.17−03	1.53−01	−2.061	D	5,LS
			5 546.65	5 548.19	337 641.6–355 665.5	6–8	1.18+04	7.25−05	7.94−03	−3.362	E	5,LS
			5 421.07	5 422.58	337 501.0–355 942.4	4–6	2.31+04	1.53−04	1.09−02	−3.213	E+	5,LS
242		^{4}P°–^{4}D	*6 520*	*6 521*	*340 573.5–355 907.6*	12–20	4.30+07	4.57−01	1.18+02	0.739	C	5
			6 552.0	6 553.8	340 407.1–355 665.5	6–8	4.25+07	3.65−01	4.72+01	0.340	C	5,LS
			6 552.1	6 553.9	340 684.4–355 942.4	4–6	2.97+07	2.87−01	2.47+01	0.060	C	5,LS
			6 525.0	6 526.8	340 851.2–356 172.6	2–4	1.79+07	2.29−01	9.84+00	−0.339	D+	5,LS
			6 435.2	6 437.0	340 407.1–355 942.4	6–6	1.35+07	8.36−02	1.06+01	−0.300	C	5,LS
			6 454.7	6 456.5	340 684.4–356 172.6	4–4	2.37+07	1.48−01	1.25+01	−0.228	C	5,LS
			6 495.7	6 497.5	340 851.2–356 241.8	2–2	3.63+07	2.30−01	9.84+00	−0.337	D+	5,LS
			6 341.2	6 343.0	340 407.1–356 172.6	6–4	2.34+06	9.42−03	1.18+00	−1.248	D+	5,LS
			6 426.0	6 427.8	340 684.4–356 241.8	4–2	7.49+06	2.32−02	1.96+00	−1.032	D+	5,LS
243	$3s^2(^1S)7p$–$3s3p(^1P°)4p$	^{2}P°–^{2}D		*2 184.5* cm^{-1}	*336 752.2–338 936.7*	6–10	7.24+05	3.79−01	3.43+02	0.357	C+	5
				2 212.1 cm^{-1}	336 760.4–338 972.5	4–6	7.55+05	3.47−01	2.06+02	0.142	C+	5,LS
				2 147.4 cm^{-1}	336 735.7–338 883.1	2–4	5.75+05	3.74−01	1.14+02	−0.126	C+	5,LS
				2 122.7 cm^{-1}	336 760.4–338 883.1	4–4	1.11+05	3.70−02	2.29+01	−0.830	C	5,LS
244		^{2}P°–^{2}S	*14 132*	*14 136*	*336 752.2*–343 826.2	6–2	2.73+07	2.73−01	7.62+01	0.214	C	5
			14 148.8	14 152.7	336 760.4–343 826.2	4–2	1.82+07	2.73−01	5.08+01	0.038	C	5,LS
			14 099.5	14 103.4	336 735.7–343 826.2	2–2	9.19+06	2.74−01	2.54+01	−0.261	C	5,LS

TABLE 14. Transition probabilities of allowed lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
245	$3s3p(^1P^\circ)4p-3s3p(^3P^\circ)4d$	$^2D-^2P^\circ$	*15 482*	*15 486*	*338 936.7–345 394.2*	10–6	2.56+05	5.53−03	2.82+00	−1.257	D+	5
			15 852.6	15 856.9	338 972.5–345 278.9	6–4	2.15+05	5.40−03	1.69+00	−1.489	D+	5,LS
			14 829.2	14 833.3	338 883.1–345 624.7	4–2	2.92+05	4.81−03	9.39−01	−1.716	D	5,LS
			15 631.0	15 635.3	338 883.1–345 278.9	4–4	2.49+04	9.13−04	1.88−01	−2.437	D	5,LS
246		$^2P-^2P^\circ$	*18 323*	*18 328*	*339 938.2–345 394.2*	6–6	2.37+04	1.19−03	4.32−01	−2.146	D	5
			18 940	18 945	340 000.5–345 278.9	4–4	1.79+04	9.62−04	2.40−01	−2.415	D	5,LS
			17 204.0	17 208.7	339 813.7–345 624.7	2–2	1.91+04	8.47−04	9.59−02	−2.771	E+	5,LS
			17 775.5	17 780.3	340 000.5–345 624.7	4–2	8.65+03	2.05−04	4.80−02	−3.086	E+	5,LS
			18 293	18 298	339 813.7–345 278.9	2–4	3.96+03	3.98−04	4.79−02	−3.099	E+	5,LS
247		$^2S-^2P^\circ$		*1 568.0* cm^{-1}	*343 826.2–345 394.2*	2–6	2.16+04	3.96−02	1.66+01	−1.101	C	5
				1 452.7 cm^{-1}	343 826.2–345 278.9	2–4	1.72+04	2.45−02	1.11+01	−1.310	C	5,LS
				1 798.5 cm^{-1}	343 826.2–345 624.7	2–2	3.26+04	1.51−02	5.52+00	−1.520	D+	5,LS
248	$3s3p(^1P^\circ)4p-3s3p(^1P^\circ)4d$	$^2D-^2D^\circ$	*2 400.0*	*2 400.8*	*338 936.7–380 590.0*	10–10	9.63+07	8.32−02	6.58+00	−0.080	D+	5
			2 401.58	2 402.31	338 972.5–380 599.1	6–6	8.98+07	7.77−02	3.68+00	−0.331	D+	5,LS
			2 397.74	2 398.47	338 883.1–380 576.4	4–4	8.71+07	7.51−02	2.37+00	−0.522	D+	5,LS
			2 402.89	2 403.62	338 972.5–380 576.4	6–4	9.61+06	5.55−03	2.63−01	−1.478	D	5,LS
			2 396.43	2 397.16	338 883.1–380 599.1	4–6	6.45+06	8.34−03	2.63−01	−1.477	D	5,LS
249		$^2P-^2D^\circ$	*2 459.2*	*2 459.9*	*339 938.2–380 590.0*	6–10	4.90+08	7.41−01	3.60+01	0.648	C	5
			2 462.39	2 463.14	340 000.5–380 599.1	4–6	4.90+08	6.68−01	2.16+01	0.427	C	5,LS
			2 452.48	2 453.22	339 813.7–380 576.4	2–4	4.13+08	7.45−01	1.20+01	0.173	C	5,LS
			2 463.77	2 464.52	340 000.5–380 576.4	4–4	8.15+07	7.42−02	2.40+00	−0.528	D+	5,LS
250	$3s3p(^3P^\circ)4f-3s3p(^1P^\circ)4d$	$^2F-^2D^\circ$	*2 833.9*	*2 834.7*	*345 313.0–380 590.0*	14–10	1.62+06	1.40−03	1.82−01	−1.708	D	5
			2 837.57	2 838.41	345 368.1–380 599.1	8–6	1.55+06	1.40−03	1.04−01	−1.951	D	5,LS
			2 829.07	2 829.90	345 239.5–380 576.4	6–4	1.64+06	1.31−03	7.32−02	−2.105	E+	5,LS
			2 827.25	2 828.09	345 239.5–380 599.1	6–6	7.80+04	9.36−05	5.22−03	−3.251	E	5,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2002b); Ref. 2 = Froese Fischer *et al.* (2006); Ref. 3 = Hibbert *et al.* (2002); Ref. 4 = Gupta and Msezane (2000a); Ref. 5 = Mendoza *et al.* (1995).

References for Allowed Transitions of S IV

Froese Fischer, Co, 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Gupta, G. P. and A. Z. Msezane, 2000a, Astrophys. J., Suppl. Ser. **130**, 227.

Hibbert, A., T. Brage, and J. Fleming, 2002, Mon. Not. R. Astron. Soc. **333**, 885.

Mendoza, C., W. Eissner, M. Le Dourneuf, and C. J. Zeippen, 1995, J. Phys. B **28**, 3485. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

4.4.2. Forbidden Transitions for S IV

The magnetic dipole (M1) and electric quadrupole (E2) transition rates were taken from extended calculations of Froese Fischer (2002a) who used the MCDHF method. In the present table, line strengths were determined from calculated transition probabilities and wavelengths.

A wavelength finding list of forbidden lines for S IV is given in Table 15, and the transition probabilities for the lines are provided in Table 16.

TABLE 15. Wavelength finding list for forbidden lines of S IV

Wavelength (vac.) (Å)	Mult. No.
475.229	4
491.539	5
493.848	5
509.021	3
511.499	3
540.108	2
540.379	2
542.898	2
543.172	2
909.757	17
914.296	17
1 144.884	18
1 145.503	18
1 235.137	13
1 235.344	13
1 240.416	13
1 240.626	13
1 248.870	13
1 249.082	13
1 585.759	8
1 594.472	8
1 601.653	8
1 608.467	8
1 610.542	8
1 624.822	8
1 722.840	14
1 723.244	14
1 724.242	14
1 724.646	14
1 911.13	7
1 923.79	7
1 944.21	7
Wavelength (air) (Å)	**Mult. No.**
2 090.13	19
2 117.85	19
2 490.39	10
2 493.32	10
2 529.83	10
2 532.85	10
3 399.67	9
3 405.13	9
3 410.24	20
3 411.83	20
3 490.93	15
3 492.58	15
3 798.15	21
3 811.59	21
4 353.00	6
4 361.97	6
4 419.31	6
4 428.55	6
4 528.56	6
4 538.26	6
5 395.97	16
5 399.93	16
5 584.60	16
5 588.85	16
6 700.2	22
9 311.8	11
9 888.2	11
Wave number (cm^{-1})	**Mult. No.**
951.43	1
625.8	12

TABLE 16. Transition probabilities of forbidden lines for S IV

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s^2(^1S)3p3-s^2(^1S)3p$	$^2P^\circ-^2P^\circ$									
				951.43 cm^{-1}	0.00–951.43	2–4	M1	7.74−03	1.33+00	A	1
				951.43 cm^{-1}	0.00–951.43	2–4	E2	1.65−07	7.57+00	B+	1
2	$3s^2(^1S)3p-3p^3$	$^2P^\circ-^2D^\circ$									
				540.108	0.00–185 148.0	2–6	E2	7.35+03	1.81+00	B+	1
				542.898	951.43–185 148.0	4–6	E2	3.94+04	9.94+00	B+	1
				540.379	0.00–185 055.2	2–4	E2	2.23+04	3.67+00	B+	1
				543.172	951.43–185 055.2	4–4	M1	4.53−02	1.07−06	D	1
				543.172	951.43–185 055.2	4–4	E2	2.45+04	4.14+00	B+	1
3		$^2P^\circ-^4S^\circ$									
				511.499	951.43–196 455.4	4–4	M1	1.13−01	2.24−06	D	1
				511.499	951.43–196 455.4	4–4	E2	2.47+01	3.09−03	C+	1

TABLE 16. Transition probabilities of forbidden lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				509.021	0.00–196 455.4	2–4	E2	9.50+02	1.15−01	B	1
4		$^2P^\circ-^2P^\circ$									
				475.229	951.43–211 376.3	4–2	E2	1.43+05	6.21+00	B+	1
5	$3s^2(^1S)3p-3s3p(^3P^\circ)3d$	$^2P^\circ-^4F^\circ$									
				491.539	0.00–203 442.8	2–4	E2	6.32−01	6.47−05	D+	1
				493.848	951.43–203 442.8	4–4	E2	4.56−01	4.78−05	D+	1
6	$3s3p^2-3s3p^2$	$^4P-^2D$									
			4 353.00	4 354.22	71 184.1–94 150.3	2–6	E2	6.94−02	5.82−01	B	1
			4 419.31	4 420.55	71 528.7–94 150.3	4–6	M1	2.91−02	5.58−04	C	1
			4 361.97	4 363.19	71 184.1–94 103.1	2–4	M1	1.39−02	1.71−04	C	1
			4 361.97	4 363.19	71 184.1–94 103.1	2–4	E2	7.10−02	4.01−01	B	1
			4 528.56	4 529.83	72 074.4–94 150.3	6–6	M1	1.38−01	2.84−03	C+	1
			4 528.56	4 529.83	72 074.4–94 150.3	6–6	E2	2.28−03	2.33−02	B	1
			4 428.55	4 429.80	71 528.7–94 103.1	4–4	M1	5.25−02	6.76−04	C	1
			4 538.26	4 539.53	72 074.4–94 103.1	6–4	M1	1.60−02	2.21−04	C	1
7		$^4P-^2S$									
				1 944.21	72 074.4–123 509.3	6–2	E2	8.43+01	4.18+00	B+	1
				1 923.79	71 528.7–123 509.3	4–2	M1	1.15+00	6.07−04	C	1
				1 923.79	71 528.7–123 509.3	4–2	E2	9.69+00	4.55−01	B	1
				1 911.13	71 184.1–123 509.3	2–2	M1	2.46−01	1.27−04	C	1
8		$^4P-^2P$									
				1 594.472	71 528.7–134 245.4	4–4	M1	5.14−02	3.09−05	D+	1
				1 594.472	71 528.7–134 245.4	4–4	E2	4.56−03	1.67−04	C	1
				1 601.653	71 184.1–133 619.6	2–2	M1	9.05−02	2.75−05	D+	1
				1 624.822	72 074.4–133 619.6	6–2	E2	4.08+01	8.24−01	B	1
				1 608.467	72 074.4–134 245.4	6–4	M1	6.57−02	4.05−05	D+	1
				1 608.467	72 074.4–134 245.4	6–4	E2	3.90−03	1.50−04	C	1
				1 610.542	71 528.7–133 619.6	4–2	E2	5.08+00	9.82−02	B	1
				1 585.759	71 184.1–134 245.4	2–4	M1	2.39−02	1.41−05	D+	1
				1 585.759	71 184.1–134 245.4	2–4	E2	2.00+01	7.14−01	B	1
9		$^2D-^2S$									
			3 405.13	3 406.11	94 150.3–123 509.3	6–2	E2	6.99+00	5.72+00	B+	1
			3 399.67	3 400.64	94 103.1–123 509.3	4–2	E2	4.82+00	3.91+00	B+	1
10		$^2D-^2P$									
			2 532.85	2 533.61	94 150.3–133 619.6	6–2	E2	1.90+00	3.54−01	B	1
			2 493.32	2 494.07	94 150.3–134 245.4	6–4	M1	8.88−02	2.04−04	C	1
			2 493.32	2 494.07	94 150.3–134 245.4	6–4	E2	1.87−01	6.45−02	B	1
			2 529.83	2 530.59	94 103.1–133 619.6	4–2	M1	9.38−02	1.12−04	C	1
			2 529.83	2 530.59	94 103.1–133 619.6	4–2	E2	1.32−01	2.44−02	B	1
			2 490.39	2 491.14	94 103.1–134 245.4	4–4	M1	1.54−01	3.52−04	C	1
			2 490.39	2 491.14	94 103.1–134 245.4	4–4	E2	2.00−01	6.84−02	B	1
11		$^2S-^2P$									
			9 311.8	9 314.4	123 509.3–134 245.4	2–4	M1	2.23−02	2.67−03	C+	1
			9 311.8	9 314.4	123 509.3–134 245.4	2–4	E2	9.94−03	2.49+00	B+	1
			9 888.2	9 890.9	123 509.3–133 619.6	2–2	M1	7.40−02	5.31−03	C+	1
12		$^2P-^2P$									

TABLE 16. Transition probabilities of forbidden lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				625.8 cm^{-1}	133 619.6–134 245.4	2–4	M1	2.20−03	1.33+00	A	1
13	$3s3p^2$–$3s^2(^1S)3d$	^4P–^2D									
				1 235.137	71 184.1–152 146.8	2–6	E2	8.64+00	1.33−01	B	1
				1 240.416	71 528.7–152 146.8	4–6	M1	1.75−02	7.44−06	D	1
				1 240.416	71 528.7–152 146.8	4–6	E2	1.70−02	2.68−04	C	1
				1 235.344	71 184.1–152 133.2	2–4	M1	9.46−03	2.64−06	D	1
				1 235.344	71 184.1–152 133.2	2–4	E2	9.70+00	9.96−02	B	1
				1 248.870	72 074.4–152 146.8	6–6	M1	9.32−02	4.03−05	D+	1
				1 248.870	72 074.4–152 146.8	6–6	E2	1.36−03	2.20−05	D+	1
				1 240.626	71 528.7–152 133.2	4–4	M1	3.70−02	1.04−05	D+	1
				1 240.626	71 528.7–152 133.2	4–4	E2	9.02−03	9.46−05	D+	1
				1 249.082	72 074.4–152 133.2	6–4	M1	9.44−03	2.72−06	D	1
14		^2D–^2D									
				1 724.242	94 150.3–152 146.8	6–6	E2	4.14−02	3.38−03	C+	1
				1 723.244	94 103.1–152 133.2	4–4	E2	9.12−02	4.94−03	C+	1
				1 724.646	94 150.3–152 133.2	6–4	E2	7.08−02	3.86−03	C+	1
				1 722.840	94 103.1–152 146.8	4–6	E2	3.59−02	2.92−03	C+	1
15		^2S–^2D									
			3 490.93	3 491.92	123 509.3–152 146.8	2–6	E2	9.22−01	2.56+00	B+	1
			3 492.58	3 493.58	123 509.3–152 133.2	2–4	E2	8.75−01	1.62+00	B+	1
16		^2P–^2D									
			5 395.97	5 397.47	133 619.6–152 146.8	2–6	E2	6.08−03	1.49−01	B	1
			5 584.60	5 586.16	134 245.4–152 146.8	4–6	M1	4.96−03	1.92−04	C	1
			5 584.60	5 586.16	134 245.4–152 146.8	4–6	E2	8.45−03	2.46−01	B	1
			5 399.93	5 401.43	133 619.6–152 133.2	2–4	M1	4.54−03	1.06−04	C	1
			5 588.85	5 590.40	134 245.4–152 133.2	4–4	M1	1.33−02	3.44−04	C	1
			5 588.85	5 590.40	134 245.4–152 133.2	4–4	E2	2.69−03	5.24−02	B	1
17	$3s3p^2$–$3s^2(^1S)4s$	^4P–^2S									
				914.296	72 074.4–181 448.2	6–2	E2	1.58+01	1.80−02	B	1
				909.757	71 528.7–181 448.2	4–2	E2	1.74+00	1.93−03	C+	1
18		^2D–^2S									
				1 145.503	94 150.3–181 448.2	6–2	E2	1.35+03	4.76+00	B+	1
				1 144.884	94 103.1–181 448.2	4–2	E2	9.02+02	3.16+00	B+	1
19		^2P–^2S									
			2 117.85	2 118.52	134 245.4–181 448.2	4–2	E2	3.76−03	2.86−04	C	1
			2 090.13	2 090.80	133 619.6–181 448.2	2–2	M1	3.38−03	2.28−06	D	1
20	$3s^2(^1S)3d$–$3s^2(^1S)4s$	^2D–^2S									
			3 411.83	3 412.81	152 146.8–181 448.2	6–2	E2	3.80+01	3.14+01	B+	1
			3 410.24	3 411.22	152 133.2–181 448.2	4–2	E2	2.55+01	2.10+01	B+	1
21	$3p^3$–$3p^3$	$^2D^\circ$–$^2P^\circ$									
			3 811.59	3 812.68	185 148.0–211 376.3	6–2	E2	2.41−01	3.47−01	B	1
			3 798.15	3 799.23	185 055.2–211 376.3	4–2	M1	1.29−01	5.23−04	C	1
			3 798.15	3 799.23	185 055.2–211 376.3	4–2	E2	2.51+00	3.54+00	B+	1
22		$^4S^\circ$–$^2P^\circ$									

TABLE 16. Transition probabilities of forbidden lines for S IV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			6 700.2	6 702.0	196 455.4–211 376.3	4–2	M1	6.25−02	1.39−03	C+	1
			6 700.2	6 702.0	196 455.4–211 376.3	4–2	E2	7.51−02	1.81+00	B+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006).

References for Forbidden Transitions of S IV

Froese Fischer, Co, 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.5. S V

$Z=16$
Magnesium Isoelectronic Sequence
Ground State $1s^22s^22p^63s^2\ ^1S_0$
Ionization Energy: 585 514.1 cm^{-1} (72.594 49 eV)

4.5.1. Allowed Transitions for S V

Froese Fischer *et al.* (2006) performed extensive calculations using the MCHF method with BP corrections. They computed energy levels and transition probabilities among the low-lying fine-structure levels up to $n=4$. Their results were adopted for the present tabulation.

Gupta and Msezane (2000b) computed the S V spectrum with the CIV3. Their results were taken for transitions from levels of the $3p4s$ configuration.

For the $3s^2$-$3snp$ ($n=5-8$) transitions, we included transition rates from Almaraz *et al.* (2000) who also applied the CIV3 method.

Oscillator strengths from the R-matrix calculations of the OP (Butler *et al.*, 1993) were taken for strong transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S V is given in Table 17, and the transition probabilities for these lines are provided in Table 18.

TABLE 17. Wavelength finding list for allowed lines of S V

Wavelength (vac.) (Å)	Mult. No.
187.02	8
192.56	7
202.96	6
223.25	5
286.09	4
286.401	3
319.487	22
319.851	22
319.865	22
320.610	22
320.632	22
320.646	22
369.75	23
418.437	64
418.446	64
418.447	64
418.456	64
418.462	64
418.463	64
433.30	42
437.501	19
438.209	19
439.677	19
439.913	41
445.318	44

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (vac.) (Å)	Mult. No.
445.94	39
447.668	44
451.319	43
452.305	43
452.904	43
453.132	43
453.779	43
454.730	43
461.172	40
487.56	65
518.25	21
528.61	45
533.883	16
534.754	62
534.770	62
534.795	62
536.063	16
537.301	62
537.318	62
538.211	62
540.023	93
541.235	93
542.169	20
542.800	93
568.285	60
568.295	60
568.303	60
568.304	60
568.324	60
568.332	60
577.62	28
603.442	32
641.87	34
643.410	33
647.700	27
648.210	27
648.921	27
650.09	63
658.009	26
658.083	11
658.252	15
659.635	26
659.833	15
659.857	15
663.126	15
663.166	15
663.190	15
668.596	36
670.269	35
670.404	36
670.656	35
672.086	35
672.262	35
673.907	36
674.162	35
675.607	35
676.252	31

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (vac.) (Å)	Mult. No.
677.325	31
678.102	31
678.96	61
680.339	31
680.901	31
681.686	31
686.127	30
686.896	30
688.031	30
689.809	30
691.722	30
693.519	30
696.62	18
705.34	91
707.4	94
742.31	25
752.48	115
752.56	115
752.68	115
758.0	116
758.064	50
758.116	50
768.863	85
770.367	24
771.323	85
772.836	24
773.310	85
774.506	85
775.487	85
775.798	85
780.739	29
785.495	29
786.47	2
822.12	86
849.239	10
852.176	10
854.768	10
854.868	10
857.826	10
860.471	10
872.654	57
872.697	57
872.939	88
873.082	56
873.125	56
873.192	56
875.506	56
875.549	56
875.78	38
875.803	88
875.805	56
877.650	88
878.649	37
883.514	49
883.583	49
884.152	87
884.418	49

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (vac.) (Å)	Mult. No.
884.462	49
884.531	49
885.497	74
885.743	49
885.787	49
887.090	87
888.294	87
888.5	114
889.74	113
889.85	113
890.02	113
891.260	87
893.172	87
893.234	87
900.808	48
902.761	48
902.807	48
903.43	104
904.161	89
905.545	89
905.824	48
905.870	48
905.943	48
906.221	73
906.244	9
906.541	89
908.493	89
909.891	89
910.544	89
912.543	9
913.562	73
915.082	102
916.195	73
917.746	102
919.191	102
919.520	102
921.622	102
922.210	102
924.22	14
927.675	17
927.723	17
929.24	92
930.01	129
956.64	140
957.69	76
964.168	101
968.188	101
971.171	101
971.236	101
971.603	101
974.607	101
990.601	75
994.46	103
1 039.92	55
1 069.372	47
1 069.436	47
1 069.538	47

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (vac.) (Å)	Mult. No.
1 071.11	90
1 122.031	46
1 128.666	46
1 128.779	46
1 133.901	46
1 133.973	46
1 134.088	46
1 192.16	146
1 197.34	146
1 199.134	1
1 208.16	146
1 230.51	100
1 260.767	99
1 261.386	99
1 266.453	99
1 268.49	59
1 274.523	58
1 278.82	112
1 283.689	111
1 283.911	111
1 283.920	111
1 284.210	111
1 284.259	111
1 284.267	111
1 291.471	54
1 293.497	54
1 296.333	54
1 333.113	53
1 339.804	53
1 342.9	147
1 348.37	157
1 348.89	157
1 349.89	157
1 351.437	13
1 365.749	13
1 371.215	77
1 371.612	77
1 371.876	77
1 373.315	13
1 379.057	77
1 379.459	77
1 381.5	158
1 389.265	77
1 446.11	79
1 457.091	139
1 458.085	139
1 461.230	139
1 479.152	78
1 479.614	78
1 479.920	78
1 501.76	12
1 572.238	119
1 572.241	119
1 572.384	119
1 572.389	119
1 572.446	119
1 572.594	119

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (vac.) (Å)	Mult. No.
1 642.80	155
1 643.57	155
1 645.06	155
1 686.4	156
1 691.8	145
1 731.48	52
1 747.564	118
1 747.641	118
1 747.824	118
1 749.252	118
1 749.328	118
1 750.130	118
1 770.17	120
1 867.6	185
1 867.9	185
1 868.1	185
1 892.26	51
1 903.5	154
1 904.6	154
1 906.6	154
1 907.22	51
1 913.25	81
1 927.06	81
1 971.52	80
1 972.34	80
1 972.88	80
1 987.02	80
1 987.3	110
1 987.57	80
1 997.10	80
Wavelength (air) (Å)	**Mult. No.**
2 008.83	83
2 020.62	83
2 020.67	109
2 021.24	109
2 022.10	109
2 026.72	109
2 027.29	109
2 028.64	109
2 063.58	96
2 074.10	82
2 074.70	82
2 077.18	96
2 079.6	98
2 080.49	82
2 081.40	82
2 082.01	82
2 082.7	127
2 085.75	82
2 086.67	82
2 125.9	183
2 126.3	183
2 126.6	183
2 131.37	95

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (air) (Å)	Mult. No.
2 132.51	95
2 133.14	95
2 135	184
2 146.06	95
2 147.04	95
2 147.68	95
2 149.63	97
2 150.27	97
2 352.1	172
2 353.3	172
2 356.8	172
2 366.8	117
2 402.4	194
2 476.4	152
2 478.1	152
2 481.5	152
2 488	195
2 504	153
2 553.41	124
2 574.10	124
2 606.79	137
2 609.98	137
2 620.07	137
2 634.24	124
2 635.00	70
2 636.7	181
2 637.3	181
2 637.6	181
2 638.91	69
2 641	182
2 661.19	69
2 663.95	69
2 668.7	138
2 674.14	123
2 689.45	123
2 712.41	123
2 730.78	123
2 739.10	123
2 779.27	123
2 800.5	126
2 907.5	162
2 907.8	162
2 909.69	66
2 930.17	66
2 948.1	165
2 948.8	165
2 949.3	165
2 962.70	66
3 077.7	143
3 084	163
3 118.9	192
3 156.8	179
3 157.7	179
3 158.2	179
3 184.81	122
3 187.7	212

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (air) (Å)	Mult. No.
3 189.1	212
3 189.73	122
3 189.9	212
3 198.94	122
3 222.07	122
3 251.8	84
3 277.38	122
3 290.20	160
3 290.26	160
3 290.58	160
3 290.72	160
3 290.78	160
3 291.72	160
3 299	193
3 316.85	122
3 340	180
3 397.3	72
3 440.99	71
3 452.2	161
3 604.77	68
3 713.5	108
3 857.24	107
3 859.33	107
3 862.47	107
3 904.41	67
3 910.4	125
3 993.87	107
3 996.10	107
4 012	211
4 024.7	210
4 026.9	210
4 028.1	210
4 037	178
4 044.70	107
4 060.0	177
4 061.5	177
4 062.3	177
4 063.9	134
4 148.0	203
4 177.19	170
4 181.00	170
4 191.90	170
4 395.43	135
4 398.93	135
4 404.50	135
4 416.89	135
4 427.69	135
4 433.33	135
4 447.8	151
4 482.3	136
4 536.63	150
4 537.7	198
4 542.55	150
4 549.47	150
4 553.97	150
4 553.99	150

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (air) (Å)	Mult. No.
4 555.42	150
4 567.2	171
4 577.01	141
4 654.26	141
4 654.36	141
4 692	188
4 735.5	215
4 805	216
4 821.46	141
4 822.16	141
4 822.28	141
4 850.7	189
4 905.5	106
4 954.0	144
4 975	199
5 528.3	190
5 530.6	190
5 534.9	190
5 755	227
5 838	130
5 860.3	128
5 911.5	128
5 927.9	128
6 058	191
6 139	175
6 142	175
6 144	175
6 264	209
6 355	208
6 360	208
6 363	208
6 391	221
6 417	142
6 716.7	105
6 721.9	105
6 723.0	105
6 728.7	105
6 731.5	105
6 732.6	105
6 861	176
6 993.2	168
6 999.4	168
7 003.9	168
7 027.6	168
7 030.0	168
7 034.5	168
7 107	222
8 129	133
8 293	169
8 386	202
8 655	213
8 987	225
9 152	214
9 215	226
10 540	206
10 556	206

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wavelength (air) (Å)	Mult. No.
10 564	206
11 467	220
12 441	207
12 786	228
12 799	232
12 952	229
12 989.2	131
13 651	200
13 659	167
14 088.0	131
14 387.2	131
14 745.0	131
14 847.5	131
15 037	196
15 180.3	131
15 545.0	166
15 696.8	166
15 750.7	166
15 930	121
16 888	201
16 910	201
16 949	201
17 008.5	148
17 090.5	148
17 092.0	148
17 244.4	148
17 253.3	148
17 254.8	148
17 356	218
17 938	149
18 546	174
Wave number (cm^{-1})	**Mult. No.**
4 737	197
4 506	219
4 122	173
4 112	173
4 108	173
3 462	217
2 872	205
2 440	204
2 426	204
2 418	204
2 165.6	132
2 164	223
1 934	186
1 741	224
1 325.7	164
1 289	230
1 241	231
592.2	159
589.1	159
586.1	159
581.3	159

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wave number (cm^{-1})	Mult. No.
580.8	159
577.8	159

TABLE 17. Wavelength finding list for allowed lines of S V—Continued

Wave number (cm^{-1})	Mult. No.
108	187

TABLE 18. Transition probabilities of allowed lines for S V

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s^2$–$3s3p$	^1S–$^3P^\circ$										
				1 199.134	0.0–83 393.5	1–3	1.65+05	1.06−04	4.20−04	−3.975	B+	1
2		^1S–$^1P^\circ$		786.47	0.0–127 150.7	1–3	4.87+09	1.36+00	3.51+00	0.134	A	1
3	$3s^2$–$3s4p$	^1S–$^3P^\circ$										
				286.401	0.0–349 161.1	1–3	6.11+08	2.25−02	2.12−02	−1.648	C+	1
4		^1S–$^1P^\circ$		286.09	0.0–349 534.4	1–3	2.43+09	8.93−02	8.41−02	−1.049	C+	1
5	$3s^2$–$3s5p$	^1S–$^1P^\circ$		223.25	0.0–447 925.9	1–3	1.52+09	3.42−02	2.51−02	−1.466	C	3
6	$3s^2$–$3s6p$	^1S–$^1P^\circ$		202.96	0.0–492 706.0	1–3	4.31+08	7.99−03	5.34−03	−2.097	D+	3
7	$3s^2$–$3s7p$	^1S–$^1P^\circ$		192.56	0.0–519332	1–3	3.00+08	5.00−03	3.17−03	−2.301	D+	3
8	$3s^2$–$3s8p$	^1S–$^1P^\circ$		187.02	0.0–534691	1–3	3.11+08	4.89−03	3.01−03	−2.311	D+	3
9	$3s3p$–$3p^2$	$^3P^\circ$–^1D										
				906.244	83 393.5–193 739.1	3–5	5.48+06	1.13−03	1.00−02	−2.470	B	1
				912.543	84 155.2–193 739.1	5–5	1.11+07	1.39−03	2.08−02	−2.158	B	1
10		$^3P^\circ$–^3P		*854.84*	*83 775.6–200 756.6*	9–9	4.14+09	4.53−01	1.15+01	0.610	A	1
				854.768	84 155.2–201 146.0	5–5	3.10+09	3.40−01	4.78+00	0.230	A	1
				854.868	83 393.5–200 370.6	3–3	1.04+09	1.14−01	9.62−01	−0.466	A	1
				860.471	84 155.2–200 370.6	5–3	1.69+09	1.13−01	1.59+00	−0.248	A	1
				857.826	83 393.5–199 967.2	3–1	4.11+09	1.51−01	1.28+00	−0.344	A	1
				849.239	83 393.5–201 146.0	3–5	1.05+09	1.90−01	1.59+00	−0.244	A	1
				852.176	83 024.0–200 370.6	1–3	1.40+09	4.57−01	1.28+00	−0.340	A	1
11		$^3P^\circ$–^1S										
				658.083	83 393.5–235 350.0	3–1	2.29+06	4.95−05	3.21−04	−3.828	B	1
12		$^1P^\circ$–^1D		1 501.76	127 150.7–193 739.1	3–5	1.91+08	1.08−01	1.60+00	−0.489	A	1
13		$^1P^\circ$–^3P										
				1 365.749	127 150.7–200 370.6	3–3	3.02+04	8.46−06	1.14−04	−4.596	B	1
				1 373.315	127 150.7–199 967.2	3–1	4.46+05	4.20−05	5.70−04	−3.900	B	1
				1 351.437	127 150.7–201 146.0	3–5	1.30+06	5.93−04	7.92−03	−2.750	B	1
14		$^1P^\circ$–^1S		924.22	127 150.7–235 350.0	3–1	4.00+09	1.71−01	1.56+00	−0.290	A	1
15	$3s3p$–$3s3d$	$^3P^\circ$–^3D		*661.49*	*83 775.6–234 950.1*	9–15	6.31+09	6.90−01	1.35+01	0.793	B+	1
				663.126	84 155.2–234 956.0	5–7	6.28+09	5.79−01	6.32+00	0.462	B+	1
				659.833	83 393.5–234 947.1	3–5	4.77+09	5.19−01	3.38+00	0.192	B+	1
				658.252	83 024.0–234 941.5	1–3	3.56+09	6.93−01	1.50+00	−0.159	B+	1
				663.166	84 155.2–234 947.1	5–5	1.57+09	1.03−01	1.12+00	−0.288	B+	1
				659.857	83 393.5–234 941.5	3–3	2.65+09	1.73−01	1.12+00	−0.285	B+	1
				663.190	84 155.2–234 941.5	5–3	1.74+08	6.89−03	7.52−02	−1.463	C+	1
16		$^3P^\circ$–^1D										

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				533.883	83 393.5–270 700.4	3–5	2.51+06	1.79−04	9.42−04	−3.270	D	1
				536.063	84 155.2–270 700.4	5–5	1.62+05	6.97−06	6.15−05	−4.458	E	1
17		$^1P^\circ-^3D$										
				927.675	127 150.7–234 947.1	3–5	2.64+05	5.68−05	5.20−04	−3.769	D	1
				927.723	127 150.7–234 941.5	3–3	1.49+05	1.92−05	1.76−04	−4.240	D	1
18		$^1P^\circ-^1D$		696.62	127 150.7–270 700.4	3–5	1.12+10	1.35+00	9.31+00	0.607	B+	1
19	$3s3p-3s4s$	$^3P^\circ-^3S$		*438.94*	*83 775.6–311 595.1*	9–3	1.11+10	1.06−01	1.38+00	−0.020	B	1
				439.677	84 155.2–311 595.1	5–3	6.16+09	1.07−01	7.75−01	−0.272	B	1
				438.209	83 393.5–311 595.1	3–3	3.68+09	1.06−01	4.58−01	−0.498	B	1
				437.501	83 024.0–311 595.1	1–3	1.22+09	1.05−01	1.51−01	−0.979	B	1
20		$^1P^\circ-^3S$										
				542.169	127 150.7–311 595.1	3–3	5.34+05	2.35−05	1.25−04	−4.152	D	1
21		$^1P^\circ-^1S$		518.25	127 150.7–320 108.0	3–1	6.35+09	8.52−02	4.36−01	−0.592	B	1
22	$3s3p-3s4d$	$^3P^\circ-^3D$		*320.23*	*83 775.6–396 046.5*	9–15	1.36+09	3.49−02	3.32−01	−0.503	C+	1
				320.610	84 155.2–396 060.6	5–7	1.37+09	2.96−02	1.56−01	−0.830	B	1
				319.851	83 393.5–396 039.5	3–5	1.01+09	2.59−02	8.19−02	−1.110	C+	1
				319.487	83 024.0–396 025.5	1–3	7.48+08	3.43−02	3.61−02	−1.465	C+	1
				320.632	84 155.2–396 039.5	5–5	3.47+08	5.34−03	2.82−02	−1.573	C+	1
				319.865	83 393.5–396 025.5	3–3	5.68+08	8.71−03	2.75−02	−1.583	C+	1
				320.646	84 155.2–396 025.5	5–3	3.88+07	3.58−04	1.89−03	−2.747	C	1
23		$^1P^\circ-^1D$		369.75	127 150.7–397 605.2	3–5	1.94+08	6.63−03	2.42−02	−1.701	C+	1
24	$3p^2-3p3d$	$^1D-^3F^\circ$										
				770.367	193 739.1–323 547.3	5–7	5.26+05	6.55−05	8.30−04	−3.485	B	1
				772.836	193 739.1–323 132.6	5–5	2.33+07	2.09−03	2.65−02	−1.981	B	1
25		$^1D-^1D^\circ$		742.31	193 739.1–328 454.3	5–5	4.74+09	3.91−01	4.78+00	0.291	B+	1
26		$^1D-^3P^\circ$										
				658.009	193 739.1–345 712.8	5–3	6.13+06	2.39−04	2.58−03	−2.923	C	1
				659.635	193 739.1–345 338.2	5–5	3.40+06	2.21−04	2.40−03	−2.957	C	1
27		$^1D-^3D^\circ$										
				648.210	193 739.1–348 010.2	5–5	1.95+07	1.23−03	1.31−02	−2.211	B	1
				648.921	193 739.1–347 841.1	5–3	1.39+07	5.27−04	5.63−03	−2.579	D	1
				647.700	193 739.1–348 131.5	5–7	6.32+07	5.57−03	5.93−02	−1.555	B	1
28		$^1D-^1F^\circ$		577.62	193 739.1–366 862.0	5–7	9.51+09	6.66−01	6.33+00	0.522	A	1
29		$^3P-^1D^\circ$										
				780.739	200 370.6–328 454.3	3–5	1.72+06	2.62−04	2.01−03	−3.105	B	1
				785.495	201 146.0–328 454.3	5–5	1.25+07	1.16−03	1.49−02	−2.237	B	1
30		$^3P-^3P^\circ$		*690.73*	*200 756.6–345 531.4*	9–9	5.11+09	3.65−01	7.48+00	0.517	A	1
				693.519	201 146.0–345 338.2	5–5	2.76+09	1.99−01	2.27+00	−0.002	A	1
				688.031	200 370.6–345 712.8	3–3	6.47+08	4.59−02	3.11−01	−0.861	A	1
				691.722	201 146.0–345 712.8	5–3	1.81+09	7.80−02	8.87−01	−0.409	A	1
				686.896	200 370.6–345 953.0	3–1	5.11+09	1.21−01	8.17−01	−0.440	A	1
				689.809	200 370.6–345 338.2	3–5	2.36+09	2.80−01	1.90+00	−0.076	A	1
				686.127	199 967.2–345 712.8	1–3	2.72+09	5.75−01	1.29+00	−0.240	A	1
31		$^3P-^3D^\circ$		*679.00*	*200 756.6–348 033.0*	9–15	8.89+09	1.02+00	2.06+01	0.963	A	1
				680.339	201 146.0–348 131.5	5–7	8.89+09	8.64−01	9.67+00	0.635	A	1

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				677.325	200 370.6–348 010.2	3–5	5.65+09	6.47−01	4.32+00	0.288	A	1
				676.252	199 967.2–347 841.1	1–3	3.99+09	8.22−01	1.82+00	−0.085	A	1
				680.901	201 146.0–348 010.2	5–5	3.24+09	2.25−01	2.52+00	0.051	A	1
				678.102	200 370.6–347 841.1	3–3	4.40+09	3.03−01	2.03+00	−0.041	A	1
				681.686	201 146.0–347 841.1	5–3	5.23+08	2.19−02	2.45−01	−0.961	A	1
32		^{3}P$-^1$F$^\circ$										
				603.442	201 146.0–366 862.0	5–7	5.64+07	4.31−03	4.27−02	−1.667	B	1
33	$3p^2-3s4p$	^{1}D$-^3$P$^\circ$										
				643.410	193 739.1–349 161.1	5–3	3.27+08	1.22−02	1.28−01	−1.215	C+	1
34		^{1}D$-^1$P$^\circ$		641.87	193 739.1–349 534.4	5–3	1.37+09	5.06−02	5.35−01	−0.597	B	1
35		^{3}P$-^3$P$^\circ$		*673.05*	*200 756.6–349 333.0*	9–9	2.56+06	1.74−04	3.47−03	−2.805	D	1
				674.162	201 146.0–349 478.3	5–5	3.91+05	2.67−05	2.96−04	−3.875	D	1
				672.086	200 370.6–349 161.1	3–3	1.34+06	9.05−05	6.00−04	−3.566	D	1
				675.607	201 146.0–349 161.1	5–3	2.13+06	8.73−05	9.70−04	−3.360	D	1
				672.262	200 370.6–349 122.2	3–1	2.13+04	4.80−07	3.18−06	−5.842	E	1
				670.656	200 370.6–349 478.3	3–5	1.17+06	1.32−04	8.73−04	−3.402	D	1
				670.269	199 967.2–349 161.1	1–3	1.63+06	3.29−04	7.24−04	−3.483	D	1
36		^{3}P$-^1$P$^\circ$										
				670.404	200 370.6–349 534.4	3–3	8.37+06	5.64−04	3.73−03	−2.772	D+	1
				673.907	201 146.0–349 534.4	5–3	9.14+06	3.74−04	4.14−03	−2.728	D+	1
				668.596	199 967.2–349 534.4	1–3	1.25+07	2.50−03	5.51−03	−2.602	D+	1
37		^{1}S$-^3$P$^\circ$										
				878.649	235 350.0–349 161.1	1–3	1.68+07	5.83−03	1.68−02	−2.234	C	1
38		^{1}S$-^1$P$^\circ$		875.78	235 350.0–349 534.4	1–3	7.59+07	2.62−02	7.55−02	−1.582	C+	1
39	$3p^2-3s4f$	^{1}D$-^1$F$^\circ$		445.94	193 739.1–417 984.9	5–7	4.28+08	1.78−02	1.31−01	−1.051	B	1
40		^{3}P$-^1$F$^\circ$										
				461.172	201 146.0–417 984.9	5–7	2.94+06	1.31−04	9.95−04	−3.184	D	1
41	$3p^2-3p4s$	^{1}D$-^3$P$^\circ$										
				439.913	193 739.1–421 056.8	5–3	1.58+07	2.75−04	1.99−03	−2.862	D	2
42		^{1}D$-^1$P$^\circ$		433.30	193 739.1–424 526.0	5–3	6.16+09	1.04−01	7.42−01	−0.284	C	2
43		^{3}P$-^3$P$^\circ$		*452.99*	*200 756.6–421 514.4*	9–9	6.26+09	1.93−01	2.59+00	0.240	C	2
				452.904	201 146.0–421 943.4	5–5	4.74+09	1.46−01	1.08+00	−0.137	C+	2
				453.132	200 370.6–421 056.8	3–3	1.56+09	4.80−02	2.14−01	−0.842	C	2
				454.730	201 146.0–421 056.8	5–3	2.57+09	4.77−02	3.57−01	−0.623	C	2
				453.779	200 370.6–420 742.2	3–1	6.32+09	6.50−02	2.91−01	−0.710	C	2
				451.319	200 370.6–421 943.4	3–5	1.58+09	8.06−02	3.59−01	−0.617	C	2
				452.305	199 967.2–421 056.8	1–3	2.09+09	1.92−01	2.85−01	−0.717	C	2
44		^{3}P$-^1$P$^\circ$										
				447.668	201 146.0–424 526.0	5–3	1.06+07	1.90−04	1.40−03	−3.022	D	2
				445.318	199 967.2–424 526.0	1–3	1.19+07	1.06−03	1.56−03	−2.975	D	2
45		^{1}S$-^1$P$^\circ$		528.61	235 350.0–424 526.0	1–3	1.31+09	1.65−01	2.87−01	−0.783	C	2
46	$3s3d-3p3d$	^{3}D$-^3$F$^\circ$		*1 127.06*	*234 950.1–323 676.9*	15–21	7.04+08	1.88−01	1.04+01	0.450	B+	1
				1 122.031	234 956.0–324 080.1	7–9	7.15+08	1.73−01	4.48+00	0.083	B+	1
				1 128.666	234 947.1–323 547.3	5–7	6.17+08	1.65−01	3.06+00	−0.084	B+	1
				1 133.901	234 941.5–323 132.6	3–5	5.73+08	1.84−01	2.06+00	−0.258	B+	1
				1 128.779	234 956.0–323 547.3	7–7	8.57+07	1.64−02	4.25−01	−0.940	B	1

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 133.973	234 947.1–323 132.6	5–5	1.14+08	2.19−02	4.08−01	−0.961	B	1
				1 134.088	234 956.0–323 132.6	7–5	3.46+06	4.76−04	1.24−02	−2.477	C+	1
47		^{3}D−^{1}D°										
				1 069.436	234 947.1–328 454.3	5–5	6.22+05	1.07−04	1.87−03	−3.272	D+	1
				1 069.538	234 956.0–328 454.3	7–5	9.01+05	1.10−04	2.72−03	−3.114	D+	1
				1 069.372	234 941.5–328 454.3	3–5	3.56+06	1.02−03	1.07−02	−2.514	C	1
48		^{3}D−^{3}P°		*904.31*	*234 950.1–345 531.4*	15–9	2.06+09	1.52−01	6.77+00	0.358	B+	1
				905.943	234 956.0–345 338.2	7–5	1.92+09	1.69−01	3.51+00	0.073	B+	1
				902.807	234 947.1–345 712.8	5–3	1.81+09	1.32−01	1.96+00	−0.180	B+	1
				900.808	234 941.5–345 953.0	3–1	2.10+09	8.53−02	7.58−01	−0.592	B	1
				905.870	234 947.1–345 338.2	5–5	1.30+08	1.60−02	2.39−01	−1.097	B	1
				902.761	234 941.5–345 712.8	3–3	2.73+08	3.33−02	2.97−01	−1.000	B	1
				905.824	234 941.5–345 338.2	3–5	2.63+06	5.38−04	4.81−03	−2.792	C	1
49		^{3}D−^{3}D°		*884.31*	*234 950.1–348 033.0*	15–15	1.96+09	2.30−01	1.00+01	0.538	B+	1
				883.583	234 956.0–348 131.5	7–7	1.73+09	2.02−01	4.11+00	0.150	B+	1
				884.462	234 947.1–348 010.2	5–5	1.55+09	1.82−01	2.65+00	−0.041	B+	1
				885.743	234 941.5–347 841.1	3–3	1.73+09	2.03−01	1.77+00	−0.215	B+	1
				884.531	234 956.0–348 010.2	7–5	8.89+07	7.45−03	1.51−01	−1.283	B	1
				885.787	234 947.1–347 841.1	5–3	2.23+08	1.57−02	2.29−01	−1.105	B	1
				883.514	234 947.1–348 131.5	5–7	2.34+08	3.83−02	5.57−01	−0.718	B	1
				884.418	234 941.5–348 010.2	3–5	3.29+08	6.44−02	5.62−01	−0.714	B	1
50		^{3}D−^{1}F°										
				758.064	234 947.1–366 862.0	5–7	1.73+04	2.08−06	2.59−05	−4.983	E	1
				758.116	234 956.0–366 862.0	7–7	8.91+05	7.68−05	1.34−03	−3.270	D+	1
51		^{1}D−^{3}F°										
				1 892.26	270 700.4–323 547.3	5–7	3.87+04	2.91−05	9.06−04	−3.837	D	1
				1 907.22	270 700.4–323 132.6	5–5	2.85+05	1.55−04	4.87−03	−3.111	D+	1
52		^{1}D−^{1}D°		1 731.48	270 700.4–328 454.3	5–5	7.32+07	3.29−02	9.38−01	−0.784	B	1
53		^{1}D−^{3}P°										
				1 333.113	270 700.4–345 712.8	5–3	2.86+05	4.58−05	1.00−03	−3.640	D+	1
				1 339.804	270 700.4–345 338.2	5–5	5.52+04	1.49−05	3.27−04	−4.128	D	1
54		^{1}D−^{3}D°										
				1 293.497	270 700.4–348 010.2	5–5	2.08+04	5.23−06	1.11−04	−4.583	D	1
				1 296.333	270 700.4–347 841.1	5–3	2.94+06	4.45−04	9.48−03	−2.653	D+	1
				1 291.471	270 700.4–348 131.5	5–7	1.19+05	4.18−05	8.88−04	−3.680	D	1
55		^{1}D−^{1}F°		1 039.92	270 700.4–366 862.0	5–7	1.50+09	3.41−01	5.83+00	0.232	B+	1
56	3s3d−3s4p	^{3}D−^{3}P°		*874.26*	*234 950.1–349 333.0*	15–9	1.48+09	1.01−01	4.38+00	0.180	B	1
				873.192	234 956.0–349 478.3	7–5	1.35+09	1.10−01	2.21+00	−0.114	B+	1
				875.549	234 947.1–349 161.1	5–3	9.25+08	6.38−02	9.19−01	−0.496	B	1
				875.805	234 941.5–349 122.2	3–1	1.58+09	6.07−02	5.24−01	−0.740	B	1
				873.125	234 947.1–349 478.3	5–5	2.22+08	2.54−02	3.64−01	−0.896	B	1
				875.506	234 941.5–349 161.1	3–3	3.44+08	3.96−02	3.42−01	−0.925	B	1
				873.082	234 941.5–349 478.3	3–5	1.39+07	2.66−03	2.29−02	−2.098	C+	1
57		^{3}D−^{1}P°										
				872.697	234 947.1–349 534.4	5–3	2.72+08	1.86−02	2.67−01	−1.032	C+	1
				872.654	234 941.5–349 534.4	3–3	4.72+07	5.39−03	4.64−02	−1.791	C	1
58		^{1}D−^{3}P°										
				1 274.523	270 700.4–349 161.1	5–3	1.34+08	1.96−02	4.11−01	−1.009	C+	1

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
59		^{1}D–^{1}P°		1 268.49	270 700.4–349 534.4	5–3	5.66+08	8.19–02	1.71+00	–0.388	B+	1
60	3s3d–3s4f	^{3}D–^{3}F°		*568.30*	*234 950.1–410 914.1*	15–21	1.25+10	8.50–01	2.39+01	1.106	B+	1
				568.304	234 956.0–410 918.1	7–9	1.26+10	7.84–01	1.02+01	0.739	B+	1
				568.295	234 947.1–410 912.1	5–7	1.12+10	7.59–01	7.09+00	0.579	B+	1
				568.285	234 941.5–410 909.6	3–5	1.06+10	8.53–01	4.78+00	0.408	B+	1
				568.324	234 956.0–410 912.1	7–7	1.40+09	6.76–02	8.85–01	–0.325	B	1
				568.303	234 947.1–410 909.6	5–5	1.96+09	9.47–02	8.85–01	–0.325	B	1
				568.332	234 956.0–410 909.6	7–5	5.58+07	1.93–03	2.52–02	–1.869	C+	1
61		^{1}D–^{1}F°		678.96	270 700.4–417 984.9	5–7	1.15+10	1.11+00	1.24+01	0.744	B+	1
62	3s3d–3p4s	^{3}D–^{3}P°		*536.01*	*234 950.1–421 514.4*	15–9	5.08+07	1.31–03	3.48–02	–1.707	D	2
				534.795	234 956.0–421 943.4	7–5	4.29+07	1.31–03	1.61–02	–2.038	D+	2
				537.318	234 947.1–421 056.8	5–3	3.81+07	9.90–04	8.76–03	–2.305	D	2
				538.211	234 941.5–420 742.2	3–1	5.16+07	7.46–04	3.96–03	–2.650	D	2
				534.770	234 947.1–421 943.4	5–5	7.57+06	3.24–04	2.85–03	–2.790	D	2
				537.301	234 941.5–421 056.8	3–3	1.27+07	5.48–04	2.90–03	–2.784	D	2
				534.754	234 941.5–421 943.4	3–5	5.03+05	3.60–05	1.89–04	–3.967	E	2
63		^{1}D–^{1}P°		650.09	270 700.4–424 526.0	5–3	1.98+09	7.54–02	8.07–01	–0.424	C	2
64	3s3d–3s5f	^{3}D–^{3}F°		*418.45*	*234 950.1–473 927.7*	15–21	5.38+09	1.98–01	4.08+00	0.473	D	4
				418.456	234 956.0–473 929.5	7–9	5.39+09	1.82–01	1.75+00	0.105	D	4,LS
				418.446	234 947.1–473 926.5	5–7	4.79+09	1.76–01	1.21+00	–0.056	D	4,LS
				418.437	234 941.5–473 926.0	3–5	4.53+09	1.98–01	8.18–01	–0.226	E+	4,LS
				418.462	234 956.0–473 926.5	7–7	5.98+08	1.57–02	1.51–01	–0.959	E+	4,LS
				418.447	234 947.1–473 926.0	5–5	8.38+08	2.20–02	1.51–01	–0.959	E+	4,LS
				418.463	234 956.0–473 926.0	7–5	2.37+07	4.44–04	4.28–03	–2.508	E	4,LS
65		^{1}D–^{1}F°		487.56	270 700.4–475 802.5	5–7	4.77+09	2.38–01	1.91+00	0.076	D	4
66	3s4s–3p3d	^{3}S–^{3}P°	*2 945.8*	*2 946.7*	311 595.1–345 531.4	3–9	3.59+04	1.40–04	4.08–03	–3.377	C	1
			2 962.70	2 963.57	311 595.1–345 338.2	3–5	3.24+04	7.11–05	2.08–03	–3.671	C	1
			2 930.17	2 931.03	311 595.1–345 712.8	3–3	3.89+04	5.01–05	1.45–03	–3.823	C	1
			2 909.69	2 910.54	311 595.1–345 953.0	3–1	4.55+04	1.93–05	5.53–04	–4.237	D+	1
67		^{1}S–^{3}P°										
			3 904.41	3 905.52	320 108.0–345 712.8	1–3	1.30+04	8.92–05	1.14–03	–4.050	D+	1
68		^{1}S–^{3}D°										
			3 604.77	3 605.80	320 108.0–347 841.1	1–3	2.66+05	1.55–03	1.84–02	–2.810	C	1
69	3s4s–3s4p	^{3}S–^{3}P°	*2 649.1*	*2 649.9*	311 595.1–*349 333.0*	3–9	2.89+08	9.14–01	2.39+01	0.438	B+	1
			2 638.91	2 639.69	311 595.1–349 478.3	3–5	3.13+08	5.45–01	1.42+01	0.214	B+	1
			2 661.19	2 661.98	311 595.1–349 161.1	3–3	2.46+08	2.62–01	6.88+00	–0.105	B+	1
			2 663.95	2 664.74	311 595.1–349 122.2	3–1	3.04+08	1.08–01	2.84+00	–0.489	B+	1
70		^{3}S–^{1}P°										
			2 635.00	2 635.79	311 595.1–349 534.4	3–3	6.07+07	6.33–02	1.64+00	–0.721	B	1
71		^{1}S–^{3}P°										
			3 440.99	3 441.97	320 108.0–349 161.1	1–3	2.35+07	1.25–01	1.41+00	–0.903	B	1
72		^{1}S–^{1}P°	3 397.3	3 398.3	320 108.0–349 534.4	1–3	1.01+08	5.26–01	5.88+00	–0.279	B+	1
73	3s4s–3p4s	^{3}S–^{3}P°		*909.76*	311 595.1–*421 514.4*	3–9	2.14+09	7.96–01	7.15+00	0.378	C+	2

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				906.221	311 595.1–421 943.4	3–5	2.17+09	4.46−01	3.98+00	0.126	C+	2
				913.562	311 595.1–421 056.8	3–3	2.10+09	2.63−01	2.37+00	−0.103	C+	2
				916.195	311 595.1–420 742.2	3–1	2.11+09	8.84−02	8.00−01	−0.576	C	2
74		$^3S-^1P^\circ$										
				885.497	311 595.1–424 526.0	3–3	2.98+06	3.51−04	3.06−03	−2.978	D	2
75		$^1S-^3P^\circ$										
				990.601	320 108.0–421 056.8	1–3	8.20+06	3.62−03	1.18−02	−2.441	D	2
76		$^1S-^1P^\circ$		957.69	320 108.0–424 526.0	1–3	2.47+09	1.02+00	3.21+00	0.009	C+	2
77	$3p3d-3s4d$	$^3F^\circ$-^3D		*1 381.80*	*323 676.9–396 046.5*	21–15	5.60+07	1.15−02	1.09+00	−0.617	B	1
				1 389.265	324 080.1–396 060.6	9–7	5.07+07	1.14−02	4.69−01	−0.989	B	1
				1 379.459	323 547.3–396 039.5	7–5	5.03+07	1.02−02	3.25−01	−1.146	B	1
				1 371.876	323 132.6–396 025.5	5–3	5.74+07	9.71−03	2.19−01	−1.314	B	1
				1 379.057	323 547.3–396 060.6	7–7	4.40+06	1.26−03	3.99−02	−2.055	C+	1
				1 371.612	323 132.6–396 039.5	5–5	6.29+06	1.77−03	4.00−02	−2.053	C+	1
				1 371.215	323 132.6–396 060.6	5–7	1.25+05	4.94−05	1.11−03	−3.607	C	1
78		$^1D^\circ$-^3D										
				1 479.614	328 454.3–396 039.5	5–5	2.40+04	7.88−06	1.91−04	−4.405	D	1
				1 479.920	328 454.3–396 025.5	5–3	2.48+05	4.89−05	1.19−03	−3.612	D+	1
				1 479.152	328 454.3–396 060.6	5–7	1.78+03	8.15−07	1.98−05	−5.390	E	1
79		$^1D^\circ$-^1D		1 446.11	328 454.3–397 605.2	5–5	1.16+06	3.65−04	8.69−03	−2.739	C	1
80		$^3P^\circ$-^3D		*1 979.6*	*345 531.4–396 046.5*	9–15	1.33+05	1.30−04	7.64−03	−2.932	C	1
				1 971.52	345 338.2–396 060.6	5–7	1.34+05	1.09−04	3.53−03	−3.264	C	1
				1 987.02	345 712.8–396 039.5	3–5	1.22+05	1.20−04	2.36−03	−3.444	C	1
				1 997.10	345 953.0–396 025.5	1–3	9.17+04	1.65−04	1.08−03	−3.783	C	1
				1 972.34	345 338.2–396 039.5	5–5	1.28+04	7.49−06	2.43−04	−4.427	D+	1
				1 987.57	345 712.8–396 025.5	3–3	3.57+04	2.11−05	4.14−04	−4.199	D+	1
				1 972.88	345 338.2–396 025.5	5–3	1.47+03	5.14−07	1.67−05	−5.590	D	1
81		$^3P^\circ$-^1D										
				1 927.06	345 712.8–397 605.2	3–5	1.60+05	1.49−04	2.82−03	−3.350	D+	1
				1 913.25	345 338.2–397 605.2	5–5	7.15+02	3.92−07	1.23−05	−5.708	E	1
82		$^3D^\circ$-^3D	*2 082.1*	*2 082.7*	*348 033.0–396 046.5*	15–15	2.38+05	1.55−04	1.59−02	−2.634	C	1
			2 085.75	2 086.42	348 131.5–396 060.6	7–7	1.03+05	6.71−05	3.22−03	−3.328	C	1
			2 081.40	2 082.06	348 010.2–396 039.5	5–5	2.68+05	1.74−04	5.96−03	−3.060	C	1
			2 074.70	2 075.36	347 841.1–396 025.5	3–3	1.80+05	1.16−04	2.38−03	−3.458	C	1
			2 086.67	2 087.33	348 131.5–396 039.5	7–5	3.46+03	1.61−06	7.75−05	−4.948	D	1
			2 082.01	2 082.67	348 010.2–396 025.5	5–3	3.24+04	1.27−05	4.33−04	−4.197	D+	1
			2 080.49	2 081.15	348 010.2–396 060.6	5–7	1.21+05	1.10−04	3.77−03	−3.260	C	1
			2 074.10	2 074.76	347 841.1–396 039.5	3–5	3.49+03	3.76−06	7.69−05	−4.948	D	1
83		$^3D^\circ$-^1D										
			2 020.62	2 021.28	348 131.5–397 605.2	7–5	2.32+04	1.02−05	4.73−04	−4.146	D	1
			2 008.83	2 009.48	347 841.1–397 605.2	3–5	2.28+06	2.30−03	4.55−02	−2.161	C	1
84		$^1F^\circ$-^1D	3 251.8	3 252.8	366 862.0–397 605.2	7–5	3.85+07	4.36−02	3.27+00	−0.515	B+	1
85	$3p3d-3p4p$	$^3F^\circ$-^3D		*774.92*	*323 676.9–452 723.2*	21–15	1.84+09	1.19−01	6.35+00	0.398	D	4
				774.506	324 080.1–453 194.7	9–7	1.70+09	1.19−01	2.73+00	0.030	D	4,LS
				775.798	323 547.3–452 446.8	7–5	1.63+09	1.05−01	1.87+00	−0.134	D	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				775.487	323 132.6–452 083.8	5–3	1.84+09	9.97−02	1.27+00	−0.302	D	4,LS
				771.323	323 547.3–453 194.7	7–7	1.49+08	1.33−02	2.36−01	−1.031	E+	4,LS
				773.310	323 132.6–452 446.8	5–5	2.07+08	1.86−02	2.36−01	−1.032	E+	4,LS
				768.863	323 132.6–453 194.7	5–7	4.25+06	5.27−04	6.67−03	−2.579	E	4,LS
86		^{1}D°-^{1}P		822.12	328 454.3–450 091.5	5–3	1.42+09	8.65−02	1.17+00	−0.364	D	4
87		^{3}P°-^{3}P		*887.72*	*345 531.4–458 178.9*	9–9	9.45+08	1.12−01	2.94+00	0.003	E+	4
				884.152	345 338.2–458 440.9	5–5	7.20+08	8.44−02	1.22+00	−0.375	D	4,LS
				891.260	345 712.8–457 913.5	3–3	2.34+08	2.79−02	2.45−01	−1.077	E+	4,LS
				888.294	345 338.2–457 913.5	5–3	3.94+08	2.80−02	4.09−01	−0.854	E+	4,LS
				893.234	345 712.8–457 665.5	3–1	9.30+08	3.71−02	3.27−01	−0.954	E+	4,LS
				887.090	345 712.8–458 440.9	3–5	2.37+08	4.67−02	4.09−01	−0.854	E+	4,LS
				893.172	345 953.0–457 913.5	1–3	3.09+08	1.11−01	3.26−01	−0.955	E+	4,LS
88		^{3}P°-^{3}S		*874.41*	*345 531.4–459 893.7*	9–3	2.02+09	7.73−02	2.00+00	−0.158	D	4
				872.939	345 338.2–459 893.7	5–3	1.13+09	7.76−02	1.11+00	−0.411	D	4,LS
				875.803	345 712.8–459 893.7	3–3	6.73+08	7.74−02	6.69−01	−0.634	E+	4,LS
				877.650	345 953.0–459 893.7	1–3	2.23+08	7.72−02	2.23−01	−1.112	E+	4,LS
89		^{3}D°-^{3}P		907.89	348 033.0–458 178.9	15–9	1.26+09	9.31−02	4.18+00	0.145	D	4
				906.541	348 131.5–458 440.9	7–5	1.06+09	9.36−02	1.95+00	−0.184	D	4,LS
				909.891	348 010.2–457 913.5	5–3	9.40+08	7.00−02	1.04+00	−0.456	D	4,LS
				910.544	347 841.1–457 665.5	3–1	1.25+09	5.18−02	4.65−01	−0.809	E+	4,LS
				905.545	348 010.2–458 440.9	5–5	1.90+08	2.34−02	3.48−01	−0.932	E+	4,LS
				908.493	347 841.1–457 913.5	3–3	3.14+08	3.89−02	3.49−01	−0.933	E+	4,LS
				904.161	347 841.1–458 440.9	3–5	1.28+07	2.61−03	2.33−02	−2.106	E	4,LS
90		^{1}F°-^{1}D		1 071.11	366 862.0–460 223.4	7–5	4.48+08	5.51−02	1.36+00	−0.414	D	4
91	$3p3d-3s5d$	^{1}D°-^{1}D		705.34	328 454.3–470 229.4	5–5	1.46+09	1.09−01	1.26+00	−0.264	D	4
92	$3p3d-3s5g$	^{1}F°-^1G		929.24	366 862.0–474 476.8	7–9	3.68+08	6.12−02	1.31+00	−0.368	D	4
93	$3p3d-3s6g$	^{3}F°-^3G		*541.61*	*323 676.9–508 310*	21–27	2.85+09	1.61−01	6.04+00	0.529	D	4
				542.800	324 080.1–508 310	9–11	2.83+09	1.53−01	2.46+00	0.139	D	4,LS
				541.235	323 547.3–508 310	7–9	2.69+09	1.52−01	1.89+00	0.027	D	4,LS
				540.023	323 132.6–508 310	5–7	2.65+09	1.62−01	1.44+00	−0.092	D	4,LS
				542.800	324 080.1–508 310	9–9	1.78+08	7.85−03	1.26−01	−1.151	E+	4,LS
				541.235	323 547.3–508 310	7–7	2.30+08	1.01−02	1.26−01	−1.151	E+	4,LS
				542.800	324 080.1–508 310	9–7	3.49+06	1.20−04	1.93−03	−2.967	E	4,LS
94		^{1}F°-^1G		707.4	366 862.0–508 218	7–9	1.74+09	1.67−01	2.73+00	0.068	D	4
95	$3s4p-3s4d$	^{3}P°-^{3}D	*2 140.0*	*2 140.7*	*349 333.0–396 046.5*	9–15	7.45+08	8.53−01	5.41+01	0.885	B+	1
			2 146.06	2 146.74	349 478.3–396 060.6	5–7	7.93+08	7.67−01	2.71+01	0.584	B+	1
			2 132.51	2 133.18	349 161.1–396 039.5	3–5	4.86+08	5.52−01	1.16+01	0.219	B+	1
			2 131.37	2 132.05	349 122.2–396 025.5	1–3	4.47+08	9.14−01	6.41+00	−0.039	B+	1
			2 147.04	2 147.71	349 478.3–396 039.5	5–5	1.97+08	1.37−01	4.82+00	−0.164	B+	1
			2 133.14	2 133.82	349 161.1–396 025.5	3–3	2.70+08	1.84−01	3.87+00	−0.258	B+	1
			2 147.68	2 148.36	349 478.3–396 025.5	5–3	2.19+07	9.09−03	3.21−01	−1.342	B	1
96		^{3}P°-^{1}D										
			2 063.58	2 064.23	349 161.1–397 605.2	3–5	1.61+08	1.72−01	3.50+00	−0.287	B	1
			2 077.18	2 077.84	349 478.3–397 605.2	5–5	2.38+03	1.54−06	5.27−05	−5.114	E	1
97		^{1}P°-^{3}D										

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 149.63	2 150.30	349 534.4–396 039.5	3–5	1.16+08	1.34−01	2.83+00	−0.396	B	1
			2 150.27	2 150.95	349 534.4–396 025.5	3–3	6.35+07	4.41−02	9.36−01	−0.878	C+	1
98		$^1P^\circ$-^1D	2 079.6	2 080.3	349 534.4–397 605.2	3–5	6.48+08	7.01−01	1.44+01	0.323	B+	1
99	$3s4p-3p5s$	$^3P^\circ$-^3S		*1 264.13*	*349 333.0–428 439.0*	9–3	2.41+09	1.92−01	7.20+00	0.238	D	4
				1 266.453	349 478.3–428 439.0	5–3	1.33+09	1.92−01	4.00+00	−0.018	D	4,LS
				1 261.386	349 161.1–428 439.0	3–3	8.09+08	1.93−01	2.40+00	−0.237	D	4,LS
				1 260.767	349 122.2–428 439.0	1–3	2.70+08	1.93−01	8.01−01	−0.714	E+	4,LS
100	$3s4p-3s5s$	$^1P^\circ$-^1S		1 230.51	349 534.4–430 801.7	3–1	2.34+09	1.77−01	2.15+00	−0.275	D	4
101	$3s4p-3p4p$	$^3P^\circ$-^3D		*967.21*	*349 333.0–452 723.2*	9–15	2.12+09	4.97−01	1.42+01	0.651	D	4
				964.168	349 478.3–453 194.7	5–7	2.15+09	4.19−01	6.65+00	0.321	D	4,LS
				968.188	349 161.1–452 446.8	3–5	1.59+09	3.72−01	3.55+00	0.048	D	4,LS
				971.236	349 122.2–452 083.8	1–3	1.17+09	4.95−01	1.58+00	−0.305	D	4,LS
				971.171	349 478.3–452 446.8	5–5	5.25+08	7.42−02	1.18+00	−0.431	D	4,LS
				971.603	349 161.1–452 083.8	3–3	8.76+08	1.24−01	1.19+00	−0.429	D	4,LS
				974.607	349 478.3–452 083.8	5–3	5.77+07	4.93−03	7.90−02	−1.608	E	4,LS
102		$^3P^\circ$-^3P		*918.73*	*349 333.0–458 178.9*	9–9	1.78+09	2.25−01	6.12+00	0.306	E+	4
				917.746	349 478.3–458 440.9	5–5	1.34+09	1.69−01	2.55+00	−0.073	D	4,LS
				919.520	349 161.1–457 913.5	3–3	4.43+08	5.62−02	5.10−01	−0.773	E+	4,LS
				922.210	349 478.3–457 913.5	5–3	7.33+08	5.61−02	8.51−01	−0.552	E+	4,LS
				921.622	349 161.1–457 665.5	3–1	1.76+09	7.48−02	6.80−01	−0.649	E+	4,LS
				915.082	349 161.1–458 440.9	3–5	4.50+08	9.42−02	8.51−01	−0.549	E+	4,LS
				919.191	349 122.2–457 913.5	1–3	5.92+08	2.25−01	6.80−01	−0.648	E+	4,LS
103		$^1P^\circ$-^1P		994.46	349 534.4–450 091.5	3–3	2.60+09	3.86−01	3.79+00	0.064	D	4
104		$^1P^\circ$-^1D		903.43	349 534.4–460 223.4	3–5	1.50+09	3.06−01	2.73+00	−0.037	D	4
105	$3s4d-3s4f$	^3D-$^3F^\circ$	*6 724*	*6 726*	*396 046.5–410 914.1*	15–21	2.69+07	2.56−01	8.50+01	0.584	B	2
			6 728.7	6 730.6	396 060.6–410 918.1	7–9	2.69+07	2.35−01	3.64+01	0.216	B	2
			6 721.9	6 723.8	396 039.5–410 912.1	5–7	2.40+07	2.28−01	2.52+01	0.057	B	2
			6 716.7	6 718.6	396 025.5–410 909.6	3–5	2.27+07	2.56−01	1.70+01	−0.115	B	2
			6 731.5	6 733.3	396 060.6–410 912.1	7–7	2.99+06	2.03−02	3.15+00	−0.847	C+	2
			6 723.0	6 724.9	396 039.5–410 909.6	5–5	4.20+06	2.85−02	3.15+00	−0.846	C+	2
			6 732.6	6 734.5	396 060.6–410 909.6	7–5	1.19+05	5.80−04	8.99−02	−2.391	D+	2
106		^1D-$^1F^\circ$	4 905.5	4 906.8	397 605.2–417 984.9	5–7	6.10+07	3.08−01	2.49+01	0.188	B	2
107	$3s4d-3p4s$	^3D-$^3P^\circ$	*3 925.4*	*3 926.5*	*396 046.5–421 514.4*	15–9	4.85+05	6.72−04	1.30−01	−1.997	D+	2
			3 862.47	3 863.57	396 060.6–421 943.4	7–5	4.29+05	6.86−04	6.11−02	−2.319	D+	2
			3 996.10	3 997.23	396 039.5–421 056.8	5–3	3.50+05	5.02−04	3.30−02	−2.600	D+	2
			4 044.70	4 045.85	396 025.5–420 742.2	3–1	4.04+05	3.30−04	1.32−02	−3.004	D+	2
			3 859.33	3 860.42	396 039.5–421 943.4	5–5	7.87+04	1.76−04	1.11−02	−3.056	D+	2
			3 993.87	3 995.00	396 025.5–421 056.8	3–3	1.19+05	2.84−04	1.12−02	−3.070	D+	2
			3 857.24	3 858.34	396 025.5–421 943.4	3–5	5.35+03	1.99−05	7.58−04	−4.224	E	2
108		^1D-$^1P^\circ$	3 713.5	3 714.6	397 605.2–424 526.0	5–3	8.34+04	1.04−04	6.33−03	−3.284	D	2
109	$3s4d-3s5p$	^3D-$^3P^\circ$	*2 024.4*	*2 025.1*	*396 046.5–445 427.3*	15–9	6.93+08	2.56−01	2.56+01	0.584	D	4
			2 022.10	2 022.76	396 060.6–445 498.1	7–5	5.87+08	2.57−01	1.19+01	0.255	D+	4,LS
			2 027.29	2 027.95	396 039.5–445 350.5	5–3	5.19+08	1.92−01	6.40+00	−0.018	D	4,LS
			2 028.64	2 029.29	396 025.5–445 303.7	3–1	6.90+08	1.42−01	2.84+00	−0.371	D	4,LS
			2 021.24	2 021.89	396 039.5–445 498.1	5–5	1.05+08	6.42−02	2.13+00	−0.493	D	4,LS
			2 026.72	2 027.37	396 025.5–445 350.5	3–3	1.74+08	1.07−01	2.14+00	−0.493	D	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 020.67	2 021.32	396 025.5–445 498.1	3–5	6.98+06	7.13−03	1.42−01	−1.670	E+	4,LS
110		^{1}D-^{1}P°		1 987.3	397 605.2–447 925.9	5–3	7.01+08	2.49−01	8.14+00	0.095	D	4
111	3s4d−3s5f	^{3}D-^{3}F°		*1 284.01*	*396 046.5–473 927.7*	15–21	1.41+09	4.89−01	3.10+01	0.865	D	4
				1 284.210	396 060.6–473 929.5	7–9	1.42+09	4.50−01	1.33+01	0.498	D+	4,LS
				1 283.911	396 039.5–473 926.5	5–7	1.26+09	4.35−01	9.19+00	0.337	D	4,LS
				1 283.689	396 025.5–473 926.0	3–5	1.19+09	4.90−01	6.21+00	0.167	D	4,LS
				1 284.259	396 060.6–473 926.5	7–7	1.58+08	3.90−02	1.15+00	−0.564	D	4,LS
				1 283.920	396 039.5–473 926.0	5–5	2.21+08	5.46−02	1.15+00	−0.564	D	4,LS
				1 284.267	396 060.6–473 926.0	7–5	6.23+06	1.10−03	3.25−02	−2.114	E	4,LS
112		^{1}D-^{1}F°		1 278.82	397 605.2–475 802.5	5–7	1.13+09	3.89−01	8.18+00	0.289	D	4
113	3s4d−3s6f	^{3}D-^{3}F°		*889.9*	*396 046.5–508 418*	15–21	1.30+09	2.16−01	9.47+00	0.511	D	4
				890.02	396 060.6–508 418	7–9	1.30+09	1.98−01	4.06+00	0.142	D	4,LS
				889.85	396 039.5–508 418	5–7	1.16+09	1.92−01	2.81+00	−0.018	D	4,LS
				889.74	396 025.5–508 418	3–5	1.09+09	2.16−01	1.89+00	−0.188	D	4,LS
				890.02	396 060.6–508 418	7–7	1.45+08	1.72−02	3.52−01	−0.919	E+	4,LS
				889.85	396 039.5–508 418	5–5	2.03+08	2.41−02	3.53−01	−0.919	E+	4,LS
				890.02	396 060.6–508 418	7–5	5.72+06	4.85−04	9.94−03	−2.469	E	4,LS
114		^{1}D-^{1}F°		888.5	397 605.2–510 152	5–7	1.49+09	2.48−01	3.62+00	0.093	D	4
115	3s4d−3s7f	^{3}D-^{3}F°		*752.6*	*396 046.5–528 920*	15–21	6.60+08	7.85−02	2.92+00	0.071	E+	4
				752.68	396 060.6–528 920	7–9	6.62+08	7.23−02	1.25+00	−0.296	D	4,LS
				752.56	396 039.5–528 920	5–7	5.88+08	6.99−02	8.65−01	−0.457	E+	4,LS
				752.48	396 025.5–528 920	3–5	5.56+08	7.87−02	5.84−01	−0.627	E+	4,LS
				752.68	396 060.6–528 920	7–7	7.37+07	6.26−03	1.08−01	−1.358	E+	4,LS
				752.56	396 039.5–528 920	5–5	1.03+08	8.77−03	1.08−01	−1.358	E+	4,LS
				752.68	396 060.6–528 920	7–5	2.92+06	1.77−04	3.07−03	−2.907	E	4,LS
116		^{1}D-^{1}F°		758.0	397 605.2–529 527	5–7	7.38+08	8.90−02	1.11+00	−0.352	D	4
117	3s4f−3p4p	^{1}F°-^{1}D	2 366.8	2 367.5	417 984.9–460 223.4	7–5	1.29+08	7.77−02	4.24+00	−0.264	D	4
118	3s4f−3s5d	^{3}F°-^{3}D		*1 748.78*	*410 914.1–468 096.9*	21–15	1.12+08	3.66−02	4.43+00	−0.114	D	4
				1 747.824	410 918.1–468 132.1	9–7	1.03+08	3.67−02	1.90+00	−0.481	D	4,LS
				1 749.328	410 912.1–468 076.9	7–5	9.95+07	3.26−02	1.31+00	−0.642	D	4,LS
				1 750.130	410 909.6–468 048.2	5–3	1.12+08	3.08−02	8.87−01	−0.812	E+	4,LS
				1 747.641	410 912.1–468 132.1	7–7	8.93+06	4.09−03	1.64−01	−1.543	E+	4,LS
				1 749.252	410 909.6–468 076.9	5–5	1.25+07	5.72−03	1.64−01	−1.544	E+	4,LS
				1 747.564	410 909.6–468 132.1	5–7	2.51+05	1.61−04	4.63−03	−3.094	E	4,LS
119	3s4f−3s5g	^{3}F°-^{3}G		*1 572.28*	*410 914.1–474 515.9*	21–27	2.31+09	1.10+00	1.20+02	1.364	D+	4
				1 572.238	410 918.1–474 521.7	9–11	2.32+09	1.05+00	4.89+01	0.975	D+	4,LS
				1 572.241	410 912.1–474 515.6	7–9	2.16+09	1.03+00	3.73+01	0.858	D+	4,LS
				1 572.384	410 909.6–474 507.3	5–7	2.12+09	1.10+00	2.84+01	0.740	D+	4,LS
				1 572.389	410 918.1–474 515.6	9–9	1.45+08	5.37−02	2.50+00	−0.316	D	4,LS
				1 572.446	410 912.1–474 507.3	7–7	1.86+08	6.90−02	2.50+00	−0.316	D	4,LS
				1 572.594	410 918.1–474 507.3	9–7	2.83+06	8.17−04	3.80−02	−2.134	E	4,LS
120		^{1}F°-^{1}G		1 770.17	417 984.9–474 476.8	7–9	1.53+09	9.22−01	3.76+01	0.810	D+	4
121	3p4s−3s5s	^{1}P°-^{1}S	15 930	15 934	424 526.0–430 801.7	3–1	1.93+06	2.45−02	3.85+00	−1.134	D	4
122	3p4s−3p4p	^{3}P°-^{3}D	*3 203.3*	*3 204.2*	*421 514.4–452 723.2*	9–15	1.91+08	4.91−01	4.66+01	0.645	D+	4

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			3 198.94	3 199.87	421 943.4–453 194.7	5–7	1.93+08	4.14−01	2.18+01	0.316	D+	4,LS
			3 184.81	3 185.73	421 056.8–452 446.8	3–5	1.46+08	3.71−01	1.16+01	0.046	D+	4,LS
			3 189.73	3 190.65	420 742.2–452 083.8	1–3	1.08+08	4.94−01	5.18+00	−0.306	D	4,LS
			3 277.38	3 278.32	421 943.4–452 446.8	5–5	4.47+07	7.21−02	3.89+00	−0.443	D	4,LS
			3 222.07	3 223.00	421 056.8–452 083.8	3–3	7.83+07	1.22−01	3.88+00	−0.437	D	4,LS
			3 316.85	3 317.81	421 943.4–452 083.8	5–3	4.80+06	4.75−03	2.59−01	−1.624	E+	4,LS
123		^{3}P°-^{3}P	*2 726.6*	*2 727.4*	*421 514.4–458 178.9*	9–9	2.94+08	3.28−01	2.65+01	0.470	D	4
			2 739.10	2 739.91	421 943.4–458 440.9	5–5	2.18+08	2.46−01	1.10+01	0.090	D+	4,LS
			2 712.41	2 713.21	421 056.8–457 913.5	3–3	7.52+07	8.30−02	2.22+00	−0.604	D	4,LS
			2 779.27	2 780.09	421 943.4–457 913.5	5–3	1.16+08	8.10−02	3.70+00	−0.393	D	4,LS
			2 730.78	2 731.59	421 056.8–457 665.5	3–1	2.95+08	1.10−01	2.96+00	−0.481	D	4,LS
			2 674.14	2 674.93	421 056.8–458 440.9	3–5	7.83+07	1.40−01	3.69+00	−0.377	D	4,LS
			2 689.45	2 690.25	420 742.2–457 913.5	1–3	1.03+08	3.35−01	2.96+00	−0.475	D	4,LS
124		^{3}P°-^{3}S	*2 604.8*	*2 605.6*	*421 514.4–459 893.7*	9–3	3.72+08	1.26−01	9.75+00	0.055	D	4
			2 634.24	2 635.03	421 943.4–459 893.7	5–3	2.00+08	1.25−01	5.42+00	−0.204	D	4,LS
			2 574.10	2 574.87	421 056.8–459 893.7	3–3	1.29+08	1.28−01	3.25+00	−0.416	D	4,LS
			2 553.41	2 554.18	420 742.2–459 893.7	1–3	4.39+07	1.29−01	1.08+00	−0.889	D	4,LS
125		^{1}P°-^{1}P	3 910.4	3 911.5	424 526.0–450 091.5	3–3	8.71+07	2.00−01	7.72+00	−0.222	D	4
126		^{1}P°-^{1}D	2 800.5	2 801.3	424 526.0–460 223.4	3–5	3.74+08	7.34−01	2.03+01	0.343	D+	4
127		^{1}P°-^{1}S	2 082.7	2 083.3	424 526.0–472 526.1	3–1	4.26+08	9.23−02	1.90+00	−0.558	D	4
128	3*p*5*s*−3*s*5*p*	^{3}S-^{3}P°	*5 885*	*5 886*	*428 439.0–445 427.3*	3–9	9.01+07	1.40+00	8.17+01	0.623	D+	4
			5 860.3	5 862.0	428 439.0–445 498.1	3–5	9.14+07	7.85−01	4.54+01	0.372	D+	4,LS
			5 911.5	5 913.1	428 439.0–445 350.5	3–3	8.91+07	4.67−01	2.72+01	0.146	D+	4,LS
			5 927.9	5 929.5	428 439.0–445 303.7	3–1	8.82+07	1.55−01	9.07+00	−0.333	D	4,LS
129	3*p*5*s*−3*s*8*p*	^{3}S-^{3}P°				3–9						4
				930.01	428 439.0–535 965	3–5	6.06+08	1.31−01	1.20+00	−0.406	D	4,LS
130	3*s*5*s*−3*s*5*p*	^{1}S-^{1}P°	5 838	5 840	430 801.7–447 925.9	1–3	8.21+07	1.26+00	2.42+01	0.100	D+	4
131	3*s*5*p*−3*p*4*p*	^{3}P°-^{3}D	*13 703*	*13 706*	*445 427.3–452 723.2*	9–15	6.91+05	3.24−02	1.32+01	−0.535	D	4
			12 989.2	12 992.8	445 498.1–453 194.7	5–7	8.13+05	2.88−02	6.15+00	−0.842	D	4,LS
			14 088.0	14 091.9	445 350.5–452 446.8	3–5	4.78+05	2.37−02	3.29+00	−1.148	D	4,LS
			14 745.0	14 749.0	445 303.7–452 083.8	1–3	3.09+05	3.02−02	1.46+00	−1.520	D	4,LS
			14 387.2	14 391.2	445 498.1–452 446.8	5–5	1.49+05	4.64−03	1.09+00	−1.635	D	4,LS
			14 847.5	14 851.6	445 350.5–452 083.8	3–3	2.27+05	7.50−03	1.10+00	−1.648	D	4,LS
			15 180.3	15 184.4	445 498.1–452 083.8	5–3	1.41+04	2.93−04	7.32−02	−2.834	E	4,LS
132		^{1}P°-^{1}P		2 165.6 cm^{-1}	447 925.9–450 091.5	3–3	7.34+03	2.35−03	1.07+00	−2.152	D	4
133		^{1}P°-^{1}D	8129	8132	447 925.9–460 223.4	3–5	1.04+07	1.72−01	1.38+01	−0.287	D+	4
134		^{1}P°-^{1}S	4 063.9	4 065.0	447 925.9–472 526.1	3–1	7.72+07	6.38−02	2.56+00	−0.718	D	4
135	3*s*5*p*−3*s*5*d*	^{3}P°-^{3}D	*4 410.0*	*4 411.2*	*445 427.3–468 096.9*	9–15	2.76+08	1.34+00	1.76+02	1.081	D+	4
			4 416.89	4 418.13	445 498.1–468 132.1	5–7	2.76+08	1.13+00	8.21+01	0.752	D+	4,LS
			4 398.93	4 400.17	445 350.5–468 076.9	3–5	2.09+08	1.01+00	4.38+01	0.481	D+	4,LS
			4 395.43	4 396.67	445 303.7–468 048.2	1–3	1.55+08	1.35+00	1.95+01	0.130	D+	4,LS
			4 427.69	4 428.93	445 498.1–468 076.9	5–5	6.83+07	2.01−01	1.46+01	0.002	D+	4,LS
			4 404.50	4 405.73	445 350.5–468 048.2	3–3	1.16+08	3.37−01	1.46+01	0.005	D+	4,LS
			4 433.33	4 434.57	445 498.1–468 048.2	5–3	7.57+06	1.34−02	9.77−01	−1.174	E+	4,LS
136		^{1}P°-^{1}D	4 482.3	4 483.6	447 925.9–470 229.4	3–5	1.96+08	9.85−01	4.36+01	0.471	D+	4

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
137	$3s5p-3s6s$	$^{3}P^{\circ}-{}^{3}S$	*2 615.2*	*2 616.0*	*445 427.3–483 653.6*	9–3	7.87+08	2.69−01	2.09+01	0.384	D+	4
			2 620.07	2 620.85	445 498.1–483 653.6	5–3	4.35+08	2.69−01	1.16+01	0.129	D+	4,LS
			2 609.98	2 610.75	445 350.5–483 653.6	3–3	2.64+08	2.70−01	6.96+00	−0.092	D	4,LS
			2 606.79	2 607.57	445 303.7–483 653.6	1–3	8.83+07	2.70−01	2.31+00	−0.569	D	4,LS
138		$^{1}P^{\circ}-{}^{1}S$	2 668.7	2 669.5	447 925.9–485 386.8	3–1	5.98+08	2.13−01	5.61+00	−0.194	D	4
139	$3s5p-3s7s$	$^{3}P^{\circ}-{}^{3}S$		*1 459.72*	*445 427.3*–513 933.6	9–3	4.18+08	4.45−02	1.93+00	−0.397	D	4
				1 461.230	445 498.1–513 933.6	5–3	2.32+08	4.45−02	1.07+00	−0.653	D	4,LS
				1 458.085	445 350.5–513 933.6	3–3	1.40+08	4.46−02	6.42−01	−0.874	E+	4,LS
				1 457.091	445 303.7–513 933.6	1–3	4.67+07	4.46−02	2.13−01	−1.351	E+	4,LS
140	$3s5p-3s9d$	$^{3}P^{\circ}-{}^{3}D$				9–15						4
				956.64	445 498.1–550031	5–7	6.20+08	1.19−01	1.87+00	−0.225	D	4,LS
141	$3p4p-3s5f$	$^{3}D-{}^{3}F^{\circ}$	*4 714.7*	*4 716.0*	*452 723.2–473 927.7*	15–21	2.24+07	1.04−01	2.43+01	0.193	D	4
			4 821.46	4 822.81	453 194.7–473 929.5	7–9	2.10+07	9.41−02	1.04+01	−0.181	D+	4,LS
			4 654.26	4 655.56	452 446.8–473 926.5	5–7	2.07+07	9.43−02	7.22+00	−0.327	D	4,LS
			4 577.01	4 578.29	452 083.8–473 926.0	3–5	2.06+07	1.08−01	4.88+00	−0.489	D	4,LS
			4 822.16	4 823.51	453 194.7–473 926.5	7–7	2.34+06	8.15−03	9.05−01	−1.244	E+	4,LS
			4 654.36	4 655.67	452 446.8–473 926.0	5–5	3.63+06	1.18−02	9.04−01	−1.229	E+	4,LS
			4 822.28	4 823.62	453 194.7–473 926.0	7–5	9.23+04	2.30−04	2.55−02	−2.793	E	4,LS
142		$^{1}D-{}^{1}F^{\circ}$	6 417	6 419	460 223.4–475 802.5	5–7	3.44+07	2.97−01	3.14+01	0.172	D+	4
143	$3p4p-3s6p$	$^{1}D-{}^{1}P^{\circ}$	3 077.7	3 078.6	460 223.4–492 706.0	5–3	1.18+08	1.01−01	5.11+00	−0.297	D	4
144		$^{1}S-{}^{1}P^{\circ}$	4 954.0	4 955.4	472 526.1–492 706.0	1–3	2.35+07	2.60−01	4.24+00	−0.585	D	4
145	$3p4p-3s7p$	$^{1}D-{}^{1}P^{\circ}$		1 691.8	460 223.4–519 332	5–3	1.59+08	4.09−02	1.14+00	−0.689	D	4
146	$3p4p-3s8p$	$^{3}D-{}^{3}P^{\circ}$				15–9						4
				1 208.16	453 194.7–535 965	7–5	2.74+08	4.28−02	1.19+00	−0.523	D	4,LS
				1 197.34	452 446.8–535 965	5–5	5.03+07	1.08−02	2.12−01	−1.268	E+	4,LS
				1 192.16	452 083.8–535 965	3–5	3.38+06	1.20−03	1.41−02	−2.444	E	4,LS
147		$^{1}D-{}^{1}P^{\circ}$		1 342.9	460 223.4–534 691	5–3	3.37+08	5.47−02	1.21+00	−0.563	D	4
148	$3s5d-3s5f$	$^{3}D-{}^{3}F^{\circ}$	*17 146*	*17 150*	*468 096.9–473 927.7*	15–21	5.72+06	3.53−01	2.99+02	0.724	D+	4
			17 244.4	17 249.1	468 132.1–473 929.5	7–9	5.63+06	3.23−01	1.28+02	0.354	D+	4,LS
			17 090.5	17 095.2	468 076.9–473 926.5	5–7	5.13+06	3.15−01	8.86+01	0.197	D+	4,LS
			17 008.5	17 013.2	468 048.2–473 926.0	3–5	4.92+06	3.56−01	5.98+01	0.029	D+	4,LS
			17 253.3	17 258.0	468 132.1–473 926.5	7–7	6.24+05	2.79−02	1.10+01	−0.709	D+	4,LS
			17 092.0	17 096.6	468 076.9–473 926.0	5–5	9.01+05	3.95−02	1.11+01	−0.704	D+	4,LS
			17 254.8	17 259.5	468 132.1–473 926.0	7–5	2.47+04	7.88−04	3.13−01	−2.258	E+	4,LS
149		$^{1}D-{}^{1}F^{\circ}$	17 938	17 943	470 229.4–475 802.5	5–7	3.74+06	2.53−01	7.47+01	0.102	D+	4
150	$3s5d-3s6p$	$^{3}D-{}^{3}P^{\circ}$	*4 552.9*	*4 554.2*	*468 096.9–490 054.7*	15–9	1.81+08	3.38−01	7.61+01	0.705	D+	4
			4 553.97	4 555.25	468 132.1–490 084.8	7–5	1.53+08	3.39−01	3.55+01	0.375	D+	4,LS
			4 555.42	4 556.70	468 076.9–490 022.6	5–3	1.36+08	2.54−01	1.90+01	0.104	D+	4,LS
			4 553.99	4 555.27	468 048.2–490 000.8	3–1	1.81+08	1.88−01	8.45+00	−0.249	D	4,LS
			4 542.55	4 543.82	468 076.9–490 084.8	5–5	2.75+07	8.50−02	6.35+00	−0.372	D	4,LS
			4 549.47	4 550.75	468 048.2–490 022.6	3–3	4.54+07	1.41−01	6.33+00	−0.374	D	4,LS
			4 536.63	4 537.91	468 048.2–490 084.8	3–5	1.84+06	9.46−03	4.23−01	−1.547	E+	4,LS
151		$^{1}D-{}^{1}P^{\circ}$	4 447.8	4 449.1	470 229.4–492 706.0	5–3	1.45+08	2.58−01	1.89+01	0.111	D+	4
152	$3s5d-3s6f$	$^{3}D-{}^{3}F^{\circ}$	*2 479*	*2 480*	*468 096.9–508 418*	15–21	3.76+08	4.86−01	5.95+01	0.863	D+	4

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 481.5	2 482.3	468 132.1–508 418	7–9	3.76+08	4.47−01	2.55+01	0.495	D+	4,LS
			2 478.1	2 478.9	468 076.9–508 418	5–7	3.36+08	4.33−01	1.76+01	0.335	D+	4,LS
			2 476.4	2 477.1	468 048.2–508 418	3–5	3.18+08	4.88−01	1.19+01	0.166	D+	4,LS
			2 481.5	2 482.3	468 132.1–508 418	7–7	4.19+07	3.87−02	2.21+00	−0.567	D	4,LS
			2 478.1	2 478.9	468 076.9–508 418	5–5	5.89+07	5.43−02	2.21+00	−0.566	D	4,LS
			2 481.5	2 482.3	468 132.1–508 418	7–5	1.65+06	1.09−03	6.23−02	−2.117	E	4,LS
153		^{1}D$-^1$F°	2 504	2 505	470 229.4–510 152	5–7	3.09+08	4.07−01	1.68+01	0.309	D+	4
154	3s5d−3s7p	^{3}D$-^3$P°				15–9						4
				1 906.6	468 132.1–520 582	7–5	9.33+07	3.63−02	1.59+00	−0.595	D	4,LS
				1 904.6	468 076.9–520 582	5–5	1.67+07	9.10−03	2.85−01	−1.342	E+	4,LS
				1 903.5	468 048.2–520 582	3–5	1.12+06	1.01−03	1.89−02	−2.519	E	4,LS
155	3s5d−3s7f	^{3}D$-^3$F°		*1 644.1*	*468 096.9–528 920*	15–21	2.61+08	1.48−01	1.20+01	0.346	D	4
				1 645.06	468 132.1–528 920	7–9	2.61+08	1.36−01	5.15+00	−0.021	D	4,LS
				1 643.57	468 076.9–528 920	5–7	2.33+08	1.32−01	3.57+00	−0.180	D	4,LS
				1 642.80	468 048.2–528 920	3–5	2.21+08	1.49−01	2.41+00	−0.350	D	4,LS
				1 645.06	468 132.1–528 920	7–7	2.91+07	1.18−02	4.47−01	−1.083	E+	4,LS
				1 643.57	468 076.9–528 920	5–5	4.10+07	1.66−02	4.49−01	−1.081	E+	4,LS
				1 645.06	468 132.1–528 920	7–5	1.15+06	3.34−04	1.26−02	−2.631	E	4,LS
156		^{1}D$-^1$F°		1 686.4	470 229.4–529 527	5–7	1.99+08	1.19−01	3.30+00	−0.225	D	4
157	3s5d−3s8f	^{3}D$-^3$F°		*1 349.3*	*468 096.9–542 212*	15–21	1.75+08	6.69−02	4.45+00	0.002	D	4
				1 349.89	468 132.1–542 212	7–9	1.75+08	6.14−02	1.91+00	−0.367	D	4,LS
				1 348.89	468 076.9–542 212	5–7	1.56+08	5.95−02	1.32+00	−0.527	D	4,LS
				1 348.37	468 048.2–542 212	3–5	1.47+08	6.69−02	8.90−01	−0.697	E+	4,LS
				1 349.89	468 132.1–542 212	7–7	1.95+07	5.32−03	1.65−01	−1.429	E+	4,LS
				1 348.89	468 076.9–542 212	5–5	2.73+07	7.46−03	1.65−01	−1.428	E+	4,LS
				1 349.89	468 132.1–542 212	7–5	7.69+05	1.50−04	4.66−03	−2.979	E	4,LS
158		^{1}D$-^1$F°		1 381.5	470 229.4–542 615	5–7	1.30+08	5.19−02	1.18+00	−0.586	D	4
159	3s5f−3s5g	^{3}F°$-^3$G		*588.2* cm^{-1}	*473 927.7–474 515.9*	21–27	3.58+03	1.99−02	2.34+02	−0.379	D+	4
				592.2 cm^{-1}	473 929.5–474 521.7	9–11	3.66+03	1.91−02	9.55+01	−0.765	D+	4,LS
				589.1 cm^{-1}	473 926.5–474 515.6	7–9	3.37+03	1.87−02	7.31+01	−0.883	D+	4,LS
				581.3 cm^{-1}	473 926.0–474 507.3	5–7	3.17+03	1.97−02	5.57+01	−1.007	D+	4,LS
				586.1 cm^{-1}	473 929.5–474 515.6	9–9	2.21+02	9.66−04	4.88+00	−2.061	D	4,LS
				580.8 cm^{-1}	473 926.5–474 507.3	7–7	2.77+02	1.23−03	4.88+00	−2.065	D	4,LS
				577.8 cm^{-1}	473 929.5–474 507.3	9–7	4.15+00	1.45−05	7.43−02	−3.884	E	4,LS
160	3s5f−3s6d	^{3}F°$-^3$D	*3 290.9*	*3 291.8*	*473 927.7–504 306.1*	21–15	7.31+07	8.48−02	1.93+01	0.251	D	4
			3 290.58	3 291.53	473 929.5–504 310.5	9–7	6.72+07	8.49−02	8.27+00	−0.117	D	4,LS
			3 290.78	3 291.73	473 926.5–504 305.7	7–5	6.50+07	7.54−02	5.71+00	−0.278	D	4,LS
			3 291.72	3 292.67	473 926.0–504 296.5	5–3	7.31+07	7.13−02	3.86+00	−0.448	D	4,LS
			3 290.26	3 291.21	473 926.5–504 310.5	7–7	5.82+06	9.46−03	7.17−01	−1.179	E+	4,LS
			3 290.72	3 291.67	473 926.0–504 305.7	5–5	8.12+06	1.32−02	7.15−01	−1.180	E+	4,LS
			3 290.20	3 291.15	473 926.0–504 310.5	5–7	1.64+05	3.74−04	2.02−02	−2.728	E	4,LS
161		^{1}F°$-^1$D	3 452.2	3 453.2	475 802.5–504 761.4	7–5	7.35+07	9.39−02	7.47+00	−0.182	D	4
162	3s5f−3s6g	^{3}F°$-^3$G	*2 908*	*2 908*	*473 927.7–508 310*	21–27	6.50+08	1.06+00	2.13+02	1.348	D+	4
			2 907.8	2 908.6	473 929.5–508 310	9–11	6.51+08	1.01+00	8.70+01	0.959	D+	4,LS
			2 907.5	2 908.4	473 926.5–508 310	7–9	6.08+08	9.92−01	6.64+01	0.842	D+	4,LS
			2 907.5	2 908.3	473 926.0–508 310	5–7	5.97+08	1.06+00	5.07+01	0.724	D+	4,LS
			2 907.8	2 908.6	473 929.5–508 310	9–9	4.06+07	5.15−02	4.43+00	−0.334	D	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log *gf*	Acc.	Source[b]
			2 907.5	2 908.4	473 926.5–508 310	7–7	5.22+07	6.62−02	4.43+00	−0.334	D	4,LS
			2 907.8	2 908.6	473 929.5–508 310	9–7	7.96+05	7.85−04	6.76−02	−2.151	E	4,LS
163		$^1F^{\circ}-^1G$	3 084	3 085	475 802.5–508 218	7–9	6.37+08	1.17+00	8.31+01	0.913	D+	4
164	$3s5g-3s5f$	$^1G-^1F^{\circ}$		1 325.7 cm^{-1}	474 476.8–475 802.5	9–7	4.44+04	2.95−02	6.59+01	−0.576	D+	4
165	$3s5g-3s6f$	$^3G-^3F^{\circ}$	*2 949*	*2 950*	*474 515.9–508 418*	27–21	1.00+07	1.02−02	2.67+00	−0.560	E+	4
			2 949.3	2 950.2	474 521.7–508 418	11–9	9.55+06	1.02−02	1.08+00	−0.950	D	4,LS
			2 948.8	2 949.6	474 515.6–508 418	9–7	9.44+06	9.58−03	8.37−01	−1.064	E+	4,LS
			2 948.1	2 948.9	474 507.3–508 418	7–5	1.01+07	9.40−03	6.38−01	−1.182	E+	4,LS
			2 948.8	2 949.6	474 515.6–508 418	9–9	4.91+05	6.40−04	5.59−02	−2.240	E	4,LS
			2 948.1	2 948.9	474 507.3–508 418	7–7	6.31+05	8.23−04	5.59−02	−2.240	E	4,LS
			2 948.1	2 948.9	474 507.3–508 418	7–9	7.45+03	1.25−05	8.49−04	−4.058	E	4,LS
166	$3s6s-3s6p$	$^3S-^3P^{\circ}$	*15 618*	*15 622*	*483 653.6–490 054.7*	3–9	1.14+07	1.25+00	1.93+02	0.574	D+	4
			15 545.0	15 549.2	483 653.6–490 084.8	3–5	1.16+07	7.00−01	1.07+02	0.322	D+	4,LS
			15 696.8	15 701.1	483 653.6–490 022.6	3–3	1.13+07	4.16−01	6.44+01	0.096	D+	4,LS
			15 750.7	15 755.0	483 653.6–490 000.8	3–1	1.11+07	1.38−01	2.14+01	−0.383	D+	4,LS
167		$^1S-^1P^{\circ}$	13 659	13 663	485 386.8–492 706.0	1–3	1.62+07	1.36+00	6.11+01	0.134	D+	4
168	$3s6p-3s6d$	$^3P^{\circ}-^3D$	*7 015*	*7 017*	*490 054.7–504 306.1*	9–15	1.64+08	2.01+00	4.19+02	1.257	D+	4
			7 027.6	7 029.5	490 084.8–504 310.5	5–7	1.63+08	1.69+00	1.95+02	0.927	D+	4,LS
			6 999.4	7 001.3	490 022.6–504 305.7	3–5	1.24+08	1.52+00	1.05+02	0.659	D+	4,LS
			6 993.2	6 995.1	490 000.8–504 296.5	1–3	9.22+07	2.03+00	4.67+01	0.307	D+	4,LS
			7 030.0	7 031.9	490 084.8–504 305.7	5–5	4.07+07	3.02−01	3.49+01	0.179	D+	4,LS
			7 003.9	7 005.8	490 022.6–504 296.5	3–3	6.87+07	5.06−01	3.50+01	0.181	D+	4,LS
			7 034.5	7 036.5	490 084.8–504 296.5	5–3	4.51+06	2.01−02	2.32+00	−0.998	D	4,LS
169		$^1P^{\circ}-^1D$	8 293	8 295	492 706.0–504 761.4	3–5	9.51+07	1.64+00	1.34+02	0.692	D+	4
170	$3s6p-3s7s$	$^3P^{\circ}-^3S$	*4 186.6*	*4 187.8*	*490 054.7–513 933.6*	9–3	4.44+08	3.89−01	4.83+01	0.544	D+	4
			4 191.90	4 193.08	490 084.8–513 933.6	5–3	2.46+08	3.89−01	2.68+01	0.289	D+	4,LS
			4 181.00	4 182.18	490 022.6–513 933.6	3–3	1.49+08	3.90−01	1.61+01	0.068	D+	4,LS
			4 177.19	4 178.37	490 000.8–513 933.6	1–3	4.97+07	3.90−01	5.36+00	−0.409	D	4,LS
171		$^1P^{\circ}-^1S$	4 567.2	4 568.5	492 706.0–514 595.2	3–1	3.04+08	3.17−01	1.43+01	−0.022	D+	4
172	$3s6p-3s8s$	$^3P^{\circ}-^3S$	*2 355*	*2 356*	*490 054.7–532 503*	9–3	2.10+08	5.84−02	4.07+00	−0.279	D	4
			2 356.8	2 357.5	490 084.8–532 503	5–3	1.17+08	5.85−02	2.26+00	−0.534	D	4,LS
			2 353.3	2 354.0	490 022.6–532 503	3–3	7.05+07	5.86−02	1.36+00	−0.755	D	4,LS
			2 352.1	2 352.8	490 000.8–532 503	1–3	2.36+07	5.87−02	4.54−01	−1.231	E+	4,LS
173	$3s6d-3s6f$	$^3D-^3F^{\circ}$		*4 112* cm^{-1}	*504 306.1–508 418*	15–21	5.01+06	6.22−01	7.47+02	0.970	D+	4
				4 108 cm^{-1}	504 310.5–508 418	7–9	5.01+06	5.72−01	3.21+02	0.602	D+	4,LS
				4 112 cm^{-1}	504 305.7–508 418	5–7	4.46+06	5.54−01	2.21+02	0.442	D+	4,LS
				4 122 cm^{-1}	504 296.5–508 418	3–5	4.25+06	6.25−01	1.49+02	0.273	D+	4,LS
				4 108 cm^{-1}	504 310.5–508 418	7–7	5.58+05	4.96−02	2.78+01	−0.459	D+	4,LS
				4 112 cm^{-1}	504 305.7–508 418	5–5	7.84+05	6.95−02	2.78+01	−0.459	D+	4,LS
				4 108 cm^{-1}	504 310.5–508 418	7–5	2.21+04	1.40−03	7.85−01	−2.009	E+	4,LS
174		$^1D-^1F^{\circ}$	*18 546*	*18 551*	*504 761.4–510 152*	5–7	9.84+06	7.11−01	2.17+02	0.551	D+	4
175	$3s6d-3s7p$	$^3D-^3P^{\circ}$				15–9						4
			6 144	6 146	504 310.5–520 582	7–5	1.36+08	5.52−01	7.81+01	0.587	D+	4,LS
			6 142	6 144	504 305.7–520 582	5–5	2.44+07	1.38−01	1.39+01	−0.161	D+	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			6 139	6 140	504 296.5–520 582	3–5	1.63+06	1.54−02	9.33−01	−1.335	E+	4,LS
176		^{1}D−^{1}P°	*6 861*	*6 863*	*504 761.4–519 332*	5–3	1.12+08	4.76−01	5.38+01	0.377	D+	4
177	3s6d−3s7f	^{3}D−^{3}F°	4 062	4 063	504 306.1–528 920	15–21	1.10+08	3.79−01	7.61+01	0.755	D+	4
			4 062.3	4 063.5	504 310.5–528 920	7–9	1.10+08	3.49−01	3.26+01	0.388	D+	4,LS
			4 061.5	4 062.7	504 305.7–528 920	5–7	9.76+07	3.38−01	2.26+01	0.228	D+	4,LS
			4 060.0	4 061.2	504 296.5–528 920	3–5	9.22+07	3.80−01	1.52+01	0.057	D+	4,LS
			4 062.3	4 063.5	504 310.5–528 920	7–7	1.22+07	3.02−02	2.82+00	−0.675	D	4,LS
			4 061.5	4 062.7	504 305.7–528 920	5–5	1.71+07	4.23−02	2.82+00	−0.675	D	4,LS
			4 062.3	4 063.5	504 310.5–528 920	7–5	4.82+05	8.53−04	7.98−02	−2.224	E	4,LS
178		^{1}D−^{1}F°	4 037	4 038	504 761.4–529 527	5–7	9.10+07	3.11−01	2.07+01	0.192	D+	4
179	3s6d−3s8p	^{3}D−^{3}P°				15–9						4
			3 158.2	3 159.1	504 310.5–535 965	7–5	3.34+07	3.57−02	2.59+00	−0.602	D	4,LS
			3 157.7	3 158.6	504 305.7–535 965	5–5	5.96+06	8.92−03	4.63−01	−1.351	E+	4,LS
			3 156.8	3 157.7	504 296.5–535 965	3–5	3.98+05	9.92−04	3.09−02	−2.526	E	4,LS
180		^{1}D−^{1}P°	3 340	3 341	504 761.4–534 691	5–3	2.41+07	2.42−02	1.33+00	−0.917	D	4
181	3s6d−3s8f	^{3}D−^{3}F°	*2 637*	*2 638*	*504 306.1–542 212*	15–21	9.09+07	1.33−01	1.73+01	0.300	D	4
			2 637.6	2 638.4	504 310.5–542 212	7–9	9.09+07	1.22−01	7.41+00	−0.069	D	4,LS
			2 637.3	2 638.1	504 305.7–542 212	5–7	8.08+07	1.18−01	5.12+00	−0.229	D	4,LS
			2 636.7	2 637.4	504 296.5–542 212	3–5	7.65+07	1.33−01	3.46+00	−0.399	D	4,LS
			2 637.6	2 638.4	504 310.5–542 212	7–7	1.02+07	1.06−02	6.44−01	−1.130	E+	4,LS
			2 637.3	2 638.1	504 305.7–542 212	5–5	1.42+07	1.48−02	6.42−01	−1.131	E+	4,LS
			2 637.6	2 638.4	504 310.5–542 212	7–5	4.00+05	2.98−04	1.81−02	−2.681	E	4,LS
182		^{1}D−^{1}F°	2 641	2 642	504 761.4–542 615	5–7	8.32+07	1.22−01	5.30+00	−0.215	D	4
183	3s6d−3s9f	^{3}D−^{3}F°	*2 126*	*2 127*	*504 306.1–551 320*	15–21	6.82+07	6.48−02	6.80+00	−0.012	D	4
			2 126.6	2 127.2	504 310.5–551 320	7–9	6.83+07	5.96−02	2.92+00	−0.380	D	4,LS
			2 126.3	2 127.0	504 305.7–551 320	5–7	6.07+07	5.77−02	2.01+00	−0.540	D	4,LS
			2 125.9	2 126.6	504 296.5–551 320	3–5	5.74+07	6.49−02	1.36+00	−0.711	D	4,LS
			2 126.6	2 127.2	504 310.5–551 320	7–7	7.62+06	5.17−03	2.53−01	−1.441	E+	4,LS
			2 126.3	2 127.0	504 305.7–551 320	5–5	1.07+07	7.23−03	2.53−01	−1.442	E+	4,LS
			2 126.6	2 127.2	504 310.5–551 320	7–5	3.01+05	1.46−04	7.15−03	−2.991	E	4,LS
184		^{1}D−^{1}F°	2 135	2 136	504 761.4–551 575	5–7	6.41+07	6.14−02	2.16+00	−0.513	D	4
185	3s6d−3s10f	^{3}D−^{3}F°		1 868	504 306.1–557 842	15–21	5.15+07	3.77−02	3.48+00	−0.248	D	4
				1 868.1	504 310.5–557 842	7–9	5.15+07	3.46−02	1.49+00	−0.616	D	4,LS
				1 867.9	504 305.7–557 842	5–7	4.57+07	3.35−02	1.03+00	−0.776	D	4,LS
				1 867.6	504 296.5–557 842	3–5	4.33+07	3.77−02	6.95−01	−0.947	E+	4,LS
				1 868.1	504 310.5–557 842	7–7	5.73+06	3.00−03	1.29−01	−1.678	E+	4,LS
				1 867.9	504 305.7–557 842	5–5	8.03+06	4.20−03	1.29−01	−1.678	E+	4,LS
				1 868.1	504 310.5–557 842	7–5	2.26+05	8.46−05	3.64−03	−3.228	E	4,LS
186	3s6g−3s6f	^{1}G−^{1}F°		1 934 cm^{-1}	508 218–510 152	9–7	3.56+05	1.11−01	1.70+02	−0.000	D+	4
187		^{3}G−^{3}F°		*108* cm^{-1}	*508 310–508 418*	27–21	6.19+01	6.19−03	5.09+02	−0.777	D+	4
				108 cm^{-1}	508 310–508 418	11–9	5.91+01	6.22−03	2.08+02	−1.165	D+	4,LS
				108 cm^{-1}	508 310–508 418	9–7	5.83+01	5.82−03	1.59+02	−1.281	D+	4,LS
				108 cm^{-1}	508 310–508 418	7–5	6.21+01	5.70−03	1.21+02	−1.399	D+	4,LS
				108 cm^{-1}	508 310–508 418	9–9	3.02+00	3.89−04	1.06+01	−2.456	D+	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				108 cm^{-1}	508 310–508 418	7–7	3.89+00	5.00−04	1.06+01	−2.456	D+	4,LS
				108 cm^{-1}	508 310–508 418	7–9	4.61–02	7.62–06	1.62–01	-4.273	E+	4,LS
188	$3s6g-3s7f$	^{1}G$-^1$F°	4 692	4 693	508 218–529 527	9–7	3.08+06	7.91−03	1.10+00	−1.148	D	4
189		^{3}G$-^3$F°	*4 851*	*4 852*	*508 310–528 920*	27–21	2.88+06	7.90−03	3.41+00	−0.671	D	4
			4 850.7	4 852.0	508 310–528 920	11–9	2.75+06	7.94−03	1.39+00	−1.059	D	4,LS
			4 850.7	4 852.0	508 310–528 920	9–7	2.71+06	7.43−03	1.06+00	−1.175	D	4,LS
			4 850.7	4 852.0	508 310–528 920	7–5	2.89+06	7.29−03	8.14−01	−1.292	E+	4,LS
			4 850.7	4 852.0	508 310–528 920	9–9	1.41+05	4.96−04	7.12−02	−2.350	E	4,LS
			4 850.7	4 852.0	508 310–528 920	7–7	1.81+05	6.38−04	7.13−02	−2.350	E	4,LS
			4 850.7	4 852.0	508 310–528 920	7–9	2.14+03	9.72−06	1.08−03	−4.167	E	4,LS
190	$3s6f-3s7d$	^{3}F°$-^3$D	*5 530*	*5 532*	*508 418–526 494.9*	21–15	4.19+07	1.37−01	5.25+01	0.459	D+	4
			5 528.3	5 529.8	508 418–526 501.7	9–7	3.87+07	1.38−01	2.26+01	0.094	D+	4,LS
			5 530.6	5 532.2	508 418–526 494.1	7–5	3.72+07	1.22−01	1.55+01	−0.069	D+	4,LS
			5 534.9	5 536.4	508 418–526 480.3	5–3	4.21+07	1.16−01	1.05+01	−0.237	D+	4,LS
			5 528.3	5 529.8	508 418–526 501.7	7–7	3.34+06	1.53−02	1.94+00	−0.970	D	4,LS
			5 530.6	5 532.2	508 418–526 494.1	5–5	4.68+06	2.15−02	1.95+00	−0.969	D	4,LS
			5 528.3	5 529.8	508 418–526 501.7	5–7	9.44+04	6.06−04	5.51−02	−2.519	E	4,LS
191		^{1}F°$-^1$D	6 058	6 059	510 152–526 655.3	7–5	2.79+07	1.10−01	1.53+01	−0.114	D+	4
192	$3s6f-3s8d$	^{3}F°$-^3$D				21–15						4
			3 118.9	3 119.8	508 418–540 471	9–7	2.55+07	2.90−02	2.68+00	−0.583	D	4,LS
			3 118.9	3 119.8	508 418–540 471	7–7	2.21+06	3.23−03	2.32−01	−1.646	E+	4,LS
			3 118.9	3 119.8	508 418–540 471	5–7	6.26+04	1.28−04	6.57−03	−3.194	E	4,LS
193		^{1}F°$-^1$D	3 299	3 300	510 152–540 451	7–5	3.27+07	3.81−02	2.90+00	−0.574	D	4
194	$3s6f-3s9d$	^{3}F°$-^3$D				21–15						4
			2 402.4	2 403.1	508 418–550 031	9–7	2.92+07	1.97−02	1.40+00	−0.751	D	4,LS
			2 402.4	2 403.1	508 418–550 031	7–7	2.53+06	2.19−03	1.21−01	−1.814	E+	4,LS
			2 402.4	2 403.1	508 418–550 031	5–7	7.14+04	8.65−05	3.42−03	−3.364	E	4,LS
195		^{1}F°$-^1$D	2 488	2 489	510 152–550 334	7–5	3.42+07	2.27−02	1.30+00	−0.799	D	4
196	$3s7s-3s7p$	^{3}S$-^3$P°				3–9						4
			15 037	15 041	513 933.6–520 582	3–5	2.58+07	1.46+00	2.16+02	0.641	D+	4,LS
197		^{1}S$-^1$P°		4 737 cm^{-1}	514 595.2–519 332	1–3	9.19+06	1.84+00	1.28+02	0.265	D+	4
198	$3s7s-3s8p$	^{3}S$-^3$P°				3–9						4
			4 537.7	4 539.0	513 933.6–535 965	3–5	4.39+06	2.26−02	1.01+00	−1.169	D	4,LS
199		^{1}S$-^1$P°	4 975	4 976	514 595.2–534 691	1–3	1.09+07	1.21−01	1.99+00	−0.917	D	4
200	$3s7p-3s7d$	^{1}P°$-^1$D	13 651	13 655	519 332–526 655.3	3–5	2.42+07	1.13+00	1.52+02	0.530	D+	4
201		^{3}P°$-^3$D				9–15						4
			16 888	16 893	520 582–526 501.7	5–7	2.25+07	1.35+00	3.75+02	0.829	D+	4,LS
			16 910	16 914	520 582–526 494.1	5–5	5.59+06	2.40−01	6.68+01	0.079	D+	4,LS
			16 949	16 954	520 582–526 480.3	5–3	6.19+05	1.60−02	4.46+00	−1.097	D	4,LS
202	$3s7p-3s8s$	^{3}P°$-^3$S				9–3						4
			8 386	8 389	520 582–532 503	5–3	6.27+07	3.97−01	5.48+01	0.298	D+	4,LS
203	$3s7p-3s9s$	^{3}P°$-^3$S				9–3						4

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			4 148.0	4 149.2	520 582–544 683	5–3	3.96+07	6.13−02	4.18+00	−0.514	D	4,LS
204	$3s7d-3s7f$	^{3}D$-^3$F$^\circ$		*2 425* cm^{-1}	*526 494.9–528 920*	15–21	2.09+06	7.46−01	1.52+03	1.049	D+	4
				2 418 cm^{-1}	526 501.7–528 920	7–9	2.08+06	6.84−01	6.51+02	0.680	D+	4,LS
				2 426 cm^{-1}	526 494.1–528 920	5–7	1.86+06	6.64−01	4.50+02	0.521	D+	4,LS
				2 440 cm^{-1}	526 480.3–528 920	3–5	1.79+06	7.51−01	3.04+02	0.353	D+	4,LS
				2 418 cm^{-1}	526 501.7–528 920	7–7	2.31+05	5.93−02	5.65+01	−0.382	D+	4,LS
				2 426 cm^{-1}	526 494.1–528 920	5–5	3.27+05	8.33−02	5.65+01	−0.380	D+	4,LS
				2 418 cm^{-1}	526 501.7–528 920	7–5	9.12+03	1.67−03	1.59+00	−1.932	D	4,LS
205		^{1}D$-^1$F$^\circ$		2 872 cm^{-1}	526 655.3–529 527	5–7	1.91+06	4.85−01	2.78+02	0.385	D+	4
206	$3s7d-3s8p$	^{3}D$-^3$P$^\circ$				15–9						4
			10 564	10 567	526 501.7–535 965	7–5	4.53+07	5.42−01	1.31+02	0.579	D+	4,LS
			10 556	10 559	526 494.1–535 965	5–5	8.13+06	1.36−01	2.36+01	−0.167	D+	4,LS
			10 540	10 543	526 480.3–535 965	3–5	5.44+05	1.51−02	1.57+00	−1.344	D	4,LS
207		^{1}D$-^1$P$^\circ$	12 441	12 444	526 655.3–534 691	5–3	2.06+07	2.88−01	5.89+01	0.158	D+	4
208	$3s7d-3s8f$	^{3}D$-^3$F$^\circ$	*6 361*	*6 362*	*526 494.9–542 212*	15–21	4.32+07	3.67−01	1.15+02	0.741	D+	4
			6 363	6 365	526 501.7–542 212	7–9	4.31+07	3.37−01	4.94+01	0.373	D+	4,LS
			6 360	6 362	526 494.1–542 212	5–7	3.84+07	3.26−01	3.41+01	0.212	D+	4,LS
			6 355	6 357	526 480.3–542 212	3–5	3.64+07	3.68−01	2.31+01	0.043	D+	4,LS
			6 363	6 365	526 501.7–542 212	7–7	4.81+06	2.92−02	4.28+00	−0.690	D	4,LS
			6 360	6 362	526 494.1–542 212	5–5	6.74+06	4.09−02	4.28+00	−0.689	D	4,LS
			6 363	6 365	526 501.7–542 212	7–5	1.90+05	8.24−04	1.20−01	−2.239	E+	4,LS
209		^{1}D$-^1$F$^\circ$	6 264	6 266	526 655.3–542 615	5–7	1.99+07	1.64−01	1.69+01	−0.086	D+	4
210	$3s7d-3s9f$	^{3}D$-^3$F$^\circ$	*4 027*	*4 028*	*526 494.9–551 320*	15–21	3.76+07	1.28−01	2.54+01	0.283	D	4
			4 028.1	4 029.3	526 501.7–551 320	7–9	3.77+07	1.18−01	1.09+01	−0.083	D+	4,LS
			4 026.9	4 028.1	526 494.1–551 320	5–7	3.35+07	1.14−01	7.55+00	−0.244	D	4,LS
			4 024.7	4 025.8	526 480.3–551 320	3–5	3.16+07	1.28−01	5.08+00	−0.416	D	4,LS
			4 028.1	4 029.3	526 501.7–551 320	7–7	4.19+06	1.02−02	9.46−01	−1.146	E+	4,LS
			4 026.9	4 028.1	526 494.1–551 320	5–5	5.88+06	1.43−02	9.47−01	−1.146	E+	4,LS
			4 028.1	4 029.3	526 501.7–551 320	7–5	1.66+05	2.88−04	2.67−02	−2.696	E	4,LS
211		^{1}D$-^1$F$^\circ$	4 012	4 013	526 655.3–551 575	5–7	1.91+07	6.45−02	4.26+00	−0.491	D	4
212	$3s7d-3s10f$	^{3}D$-^3$F$^\circ$	*3 189*	*3 190*	*526 494.9–557 842*	15–21	2.96+07	6.33−02	9.97+00	−0.023	D	4
			3 189.9	3 190.8	526 501.7–557 842	7–9	2.96+07	5.82−02	4.27+00	−0.390	D	4,LS
			3 189.1	3 190.0	526 494.1–557 842	5–7	2.64+07	5.64−02	2.96+00	−0.550	D	4,LS
			3 187.7	3 188.6	526 480.3–557 842	3–5	2.50+07	6.35−02	1.99+00	−0.720	D	4,LS
			3 189.9	3 190.8	526 501.7–557 842	7–7	3.31+06	5.05−03	3.71−01	−1.452	E+	4,LS
			3 189.1	3 190.0	526 494.1–557 842	5–5	4.63+06	7.07−03	3.71−01	−1.452	E+	4,LS
			3 189.9	3 190.8	526 501.7–557 842	7–5	1.30+05	1.42−04	1.04−02	−3.003	E	4,LS
213	$3s7f-3s8d$	^{3}F$^\circ-^3$D				21–15						4
			8 655	8 657	528 920–540 471	9–7	2.38+07	2.08−01	5.33+01	0.272	D+	4,LS
			8 655	8 657	528 920–540 471	7–7	2.06+06	2.32−02	4.62+00	−0.789	D	4,LS
			8 655	8 657	528 920–540 471	5–7	5.83+04	9.16−04	1.30−01	−2.339	E+	4,LS
214		^{1}F$^\circ-^1$D	9 152	9 154	529 527–540 451	7–5	3.03+07	2.72−01	5.73+01	0.280	D+	4
215	$3s7f-3s9d$	^{3}F$^\circ-^3$D				21–15						4
			4 735.5	4 736.9	528 920–550 031	9–7	1.44+07	3.76−02	5.27+00	−0.471	D	4,LS

TABLE 18. Transition probabilities of allowed lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			4 735.5	4 736.9	528 920–550 031	7–7	1.25+06	4.19−03	4.57−01	−1.533	E+	4,LS
			4 735.5	4 736.9	528 920–550 031	5–7	3.52+04	1.66−04	1.29−02	−3.081	E	4,LS
216		$^1F^\circ-^1D$	4 805	4 806	529 527–550 334	7–5	1.94+07	4.80−02	5.32+00	−0.474	D	4
217	$3s8s-3s8p$	$^3S-^3P^\circ$				3–9						4
				3 462 cm^{-1}	532 503–535 965	3–5	5.37+06	1.12+00	3.19+02	0.526	D+	4,LS
218	$3s8p-3s8d$	$^1P^\circ-^1D$	17 356	17 361	534 691–540 451	3–5	2.64+07	1.99+00	3.41+02	0.776	D+	4
219		$^3P^\circ-^3D$				9–15						4
				4 506 cm^{-1}	535 965–540 471	5–7	1.42+07	1.47+00	5.36+02	0.866	D+	4,LS
220	$3s8p-3s9s$	$^3P^\circ-^3S$				9–3						4
			11 467	11 471	535 965–544 683	5–3	3.02+07	3.57−01	6.73+01	0.252	D+	4,LS
221	$3s8p-3s9d$	$^1P^\circ-^1D$	6 391	6 393	534 691–550 334	3–5	4.33+06	4.42−02	2.79+00	−0.877	D	4
222		$^3P^\circ-^3D$				9–15						4
			7 107	7 109	535 965–550 031	5–7	1.48+06	1.57−02	1.83+00	−1.105	D	4,LS
223	$3s8d-3s8f$	$^1D-^1F^\circ$		2 164 cm^{-1}	540 451–542 615	5–7	2.72+06	1.22+00	9.27+02	0.785	D+	4
224		$^3D-^3F^\circ$				15–21						4
				1 741 cm^{-1}	540 471–542 212	7–9	1.41+06	8.94−01	1.18+03	0.796	C	4,LS
				1 741 cm^{-1}	540 471–542 212	7–7	1.57+05	7.74−02	1.02+02	−0.266	D+	4,LS
				1 741 cm^{-1}	540 471–542 212	7–5	6.17+03	2.18−03	2.88+00	−1.816	D	4,LS
225	$3s8d-3s9f$	$^1D-^1F^\circ$	8 987	8 990	540 451–551 575	5–7	1.31+07	2.22−01	3.28+01	0.045	D+	4
226		$^3D-^3F^\circ$				15–21						4
			9 215	9 217	540 471–551 320	7–9	1.72+07	2.82−01	5.98+01	0.295	D+	4,LS
			9 215	9 217	540 471–551 320	7–7	1.92+06	2.44−02	5.18+00	−0.768	D	4,LS
			9 215	9 217	540 471–551 320	7–5	7.57+04	6.89−04	1.46−01	−2.317	E+	4,LS
227	$3s8d-3s10f$	$^3D-^3F^\circ$				15–21						4
			5 755	5 757	540 471–557 842	7–9	1.64+07	1.05−01	1.39+01	−0.134	D+	4,LS
			5 755	5 757	540 471–557 842	7–7	1.83+06	9.11−03	1.20+00	−1.195	D	4,LS
			5 755	5 757	540 471–557 842	7–5	7.24+04	2.57−04	3.40−02	−2.745	E	4,LS
228	$3s8f-3s9d$	$^3F^\circ-^3D$				21–15						4
			12 786	12 789	542 212–550 031	9–7	1.67+07	3.18−01	1.20+02	0.457	D+	4,LS
			12 786	12 789	542 212–550 031	7–7	1.45+06	3.55−02	1.04+01	−0.605	D+	4,LS
			12 786	12 789	542 212–550 031	5–7	4.08+04	1.40−03	2.94−01	−2.155	E+	4,LS
229		$^1F^\circ-^1D$	12 952	12 955	542 615–550 334	7–5	2.12+07	3.82−01	1.14+02	0.427	D+	4
230	$3s9d-3s9f$	$^3D-^3F^\circ$				15–21						4
				1 289 cm^{-1}	550 031–551 320	7–9	6.29+05	7.29−01	1.30+03	0.708	C	4,LS
				1 289 cm^{-1}	550 031–551 320	7–7	6.99+04	6.31−02	1.12+02	−0.355	D+	4,LS
				1 289 cm^{-1}	550 031–551 320	7–5	2.76+03	1.78−03	3.18+00	−1.904	D	4,LS
231		$^1D-^1F^\circ$		1 241 cm^{-1}	550 334–551 575	5–7	7.97+05	1.09+00	1.44+03	0.736	C	4
232	$3s9d-3s10f$	$^3D-^3F^\circ$				15–21						4
			12 799	12 802	550 031–557 842	7–9	2.23+06	7.05−02	2.07+01	−0.307	D+	4,LS
			12 799	12 802	550 031–557 842	7–7	2.49+05	6.11−03	1.80+00	−1.369	D	4,LS
			12 799	12 802	550 031–557 842	7–5	9.79+03	1.72−04	5.07−02	−2.919	E	4,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006); Ref. 2 = Gupta and Msezane (2000b); Ref. 3 = Almaraz *et al.* (2000); Ref. 4 = Butler *et al.* (1993).

References for Allowed Transitions of S V

Almaraz, M. A., A. Hibbert, C. Lavin, I. Martin, and K. L. Bell, 2000, J. Phys. B **33**, 3277.

Butler, K., C. Mendoza, and C. J. Zeippen, 1993, J. Phys. B **26**, 4409. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Gupta, G. P. and A. Z. Msezane, 2000b, At. Data Nucl. Data Tables **74**, 267.

4.5.2. Forbidden Transitions for S V

Froese Fischer *et al.* (2006) performed extensive calculations using the MCHF method with BP corrections. The calculations extend to the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to 3*s*4*p*.

Three M2 transitions from Rydberg states were included from Ray *et al.* (1989), who computed using the time-dependent coupled Hartree-Fock (TDCHF) theory.

A wavelength finding list of forbidden lines for S V is given in Table 19, and the transition probabilities for these lines are provided in Table 20.

TABLE 19. Wavelength finding list for forbidden lines of S V

Wavelength (vac.) (Å)	Mult. No.
192.093	9
204.046	8
224.468	7
304.456	6
352.773	18
353.723	18
369.412	5
377.378	17
377.732	17
377.905	17
378.147	17
378.822	17
378.996	17
379.239	17
381.215	16
381.222	16
381.760	16
381.974	16
382.325	16
382.873	16
407.448	15
408.062	15
409.334	15
416.400	14
416.478	14
416.797	14
417.120	14
417.168	23
417.725	14
418.450	14
425.628	4
452.777	22
453.123	22
457.536	21
458.321	21
496.762	20
497.151	3
499.075	3
509.174	19
510.251	19
516.158	2
661.398	12
675.479	34
676.769	34
758.032	35
767.218	32
813.444	33
927.598	13
1 188.28	1
1 299.354	28
1 413.763	30
1 421.872	30
1 437.724	30
Wavelength (air) (Å)	**Mult. No.**
2 265.50	11
2 284.63	11
2 286.09	37
2 325.11	11
2 336.72	37
2 402.49	25
2 602.87	38
2 827.99	31
2 857.95	29
2 857.99	27
2 890.55	29
2 891.29	29
2 891.76	29
2 922.78	27
2 956.84	29
2 957.62	29
2 958.11	29
4 380.81	36
4 427.42	36

TABLE 19. Wavelength finding list for forbidden lines of S V—Continued

Wavelength (air) (Å)	Mult. No.
4 510.25	36
4 587.79	36
4 702.77	36
5 769.5	39
13 497.2	24
15 075.4	24

TABLE 19. Wavelength finding list for forbidden lines of S V—Continued

Wave number (cm^{-1})	Mult. No.
775.4	26
761.7	10

TABLE 20. Transition probabilities of forbidden lines for S V

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s^2$–$3s3p$	^1S–$^3P^\circ$									
				1 188.28	0–84 155.2	1–5	M2	6.82−02	5.42+01	A	1
2	$3s^2$–$3p^2$	^1S–^1D									
				516.158	0–193 739.1	1–5	E2	3.41+04	5.58+00	B+	1
3		^1S–^3P									
				497.151	0–201 146.0	1–5	E2	2.05+02	2.78−02	B	1
				499.075	0–200 370.6	1–3	M1	1.66−01	2.29−06	D	1
4	$3s^2$–$3s3d$	^1S–^3D									
				425.628	0–234 947.1	1–5	E2	9.57−03	5.96−07	D	1
5		^1S–^1D									
				369.412	0–270 700.4	1–5	E2	3.15+05	9.68+00	B+	1
6	$3s^2$–$3p3d$	^1S–$^1D^\circ$									
				304.456	0–328 454.3	1–5	M2	3.35−01	2.93−01	B+	1
7	$3s^2$–$3s5p$	^1S–$^3P^\circ$									
				224.468	0–445 498.1	1–5	M2	2.04+00	3.90−01	D	2
8	$3s^2$–$3s6p$	^1S–$^3P^\circ$									
				204.046	0–490 084.8	1–5	M2	1.39+00	1.64−01	D	2
9	$3s^2$–$3s7p$	^1S–$^3P^\circ$									
				192.093	0–520582	1–5	M2	9.77−01	8.57−02	D	2
10	$3s3p$–$3s3p$	$^3P^\circ$–$^3P^\circ$									
				761.7 cm^{-1}	83 393.5–84 155.2	3–5	M1	5.96−03	2.50+00	B+	1
11		$^3P^\circ$–$^1P^\circ$									
			2 284.63	2 285.34	83 393.5–127 150.7	3–3	M1	1.62−01	2.15−04	C	1
			2 284.63	2 285.34	83 393.5–127 150.7	3–3	E2	1.36−02	2.26−03	C+	1
			2 325.11	2 325.82	84 155.2–127 150.7	5–3	M1	2.57−01	3.59−04	C	1
			2 325.11	2 325.82	84 155.2–127 150.7	5–3	E2	7.84−03	1.43−03	C+	1
			2 265.50	2 266.20	83 024.0–127 150.7	1–3	M1	2.22−01	2.87−04	C	1
12	$3s3p$–$3p^2$	$^3P^\circ$–^1S									
				661.398	84 155.2–235 350.0	5–1	M2	1.09+00	9.24+00	B+	1

TABLE 20. Transition probabilities of forbidden lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
13	$3s3p-3s3d$	$^1P^\circ-^3D$									
				927.598	127 150.7–234 956.0	3–7	M2	1.72−01	5.54+01	A	1
14	$3s3p-3p3d$	$^3P^\circ-^3F^\circ$									
				416.797	84 155.2–324 080.1	5–9	E2	1.92+05	1.94+01	A	1
				416.400	83 393.5–323 547.3	3–7	E2	1.30+05	1.01+01	A	1
				416.478	83 024.0–323 132.6	1–5	E2	9.03+04	5.05+00	B+	1
				417.725	84 155.2–323 547.3	5–7	E2	6.12+04	4.86+00	B+	1
				417.120	83 393.5–323 132.6	3–5	E2	8.81+04	4.96+00	B+	1
				418.450	84 155.2–323 132.6	5–5	E2	1.17+04	6.73−01	B+	1
15		$^3P^\circ-^1D^\circ$									
				407.448	83 024.0–328 454.3	1–5	E2	8.27+02	4.14−02	B	1
				408.062	83 393.5–328 454.3	3–5	E2	1.32+02	6.67−03	C+	1
				409.334	84 155.2–328 454.3	5–5	E2	1.19+02	6.12−03	C+	1
16		$^3P^\circ-^3P^\circ$									
				382.873	84 155.2–345 338.2	5–5	E2	3.51+04	1.29+00	B+	1
				381.215	83 393.5–345 712.8	3–3	E2	6.96+04	1.50+00	B+	1
				381.974	84 155.2–345 953.0	5–1	E2	1.71+05	1.24+00	B+	1
				382.325	84 155.2–345 712.8	5–3	E2	1.02+05	2.23+00	B+	1
				381.760	83 393.5–345 338.2	3–5	E2	8.73+04	3.15+00	B+	1
				381.222	83 024.0–345 338.2	1–5	E2	4.97+04	1.78+00	B+	1
17		$^3P^\circ-^3D^\circ$									
				377.732	83 393.5–348 131.5	3–7	E2	5.67+04	2.72+00	B+	1
				377.378	83 024.0–348 010.2	1–5	E2	4.35+04	1.48+00	B+	1
				378.822	84 155.2–348 131.5	5–7	E2	1.22+05	5.94+00	B+	1
				377.905	83 393.5–348 010.2	3–5	E2	6.71+03	2.30−01	B+	1
				378.996	84 155.2–348 010.2	5–5	E2	1.27+05	4.44+00	B+	1
				378.147	83 393.5–347 841.1	3–3	E2	1.08+05	2.23+00	B+	1
				379.239	84 155.2–347 841.1	5–3	E2	7.00+04	1.47+00	B+	1
18		$^3P^\circ-^1F^\circ$									
				352.773	83 393.5–366 862.0	3–7	E2	5.39+01	1.83−03	C+	1
				353.723	84 155.2–366 862.0	5–7	E2	5.99+00	2.07−04	C	1
19		$^1P^\circ-^3F^\circ$									
				509.174	127 150.7–323 547.3	3–7	E2	2.75+00	5.88−04	C	1
				510.251	127 150.7–323 132.6	3–5	E2	2.99+02	4.61−02	B	1
20		$^1P^\circ-^1D^\circ$									
				496.762	127 150.7–328 454.3	3–5	E2	8.00+04	1.08+01	A	1
21		$^1P^\circ-^3P^\circ$									
				457.536	127 150.7–345 712.8	3–3	E2	3.26+01	1.74−03	C+	1
				458.321	127 150.7–345 338.2	3–5	E2	1.03+02	9.30−03	C+	1
22		$^1P^\circ-^3D^\circ$									
				452.777	127 150.7–348 010.2	3–5	E2	5.13+00	4.35−04	C	1
				453.123	127 150.7–347 841.1	3–3	E2	4.12+02	2.10−02	B	1
23		$^1P^\circ-^1F^\circ$									
				417.168	127 150.7–366 862.0	3–7	E2	5.49+03	4.33−01	B+	1

TABLE 20. Transition probabilities of forbidden lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
24	$3p^2$–$3p^2$	^{1}D–^{3}P									
			15 075.4	15 079.5	193 739.1–200 370.6	5–3	M1	2.88−02	1.09−02	B	1
			13 497.2	13 500.9	193 739.1–201 146.0	5–5	M1	7.20−02	3.28−02	B	1
25		^{1}D–^{1}S									
			2 402.49	2 403.22	193 739.1–235 350.0	5–1	E2	1.12+02	7.99+00	B+	1
26		^{3}P–^{3}P									
				775.4 cm^{-1}	200 370.6–201 146.0	3–5	M1	6.26−03	2.48+00	B+	1
27		^{3}P–^{1}S									
			2 922.78	2 923.63	201 146.0–235 350.0	5–1	E2	2.94−01	5.60−02	B	1
			2 857.99	2 858.83	200 370.6–235 350.0	3–1	M1	1.93+00	1.67−03	C+	1
28	$3p^2$–$3s3d$	^{1}D–^{1}D									
				1 299.354	193 739.1–270 700.4	5–5	M1	1.00−03	4.06−07	B	1
29		^{3}P–^{3}D									
			2 890.55	2 891.39	200 370.6–234 956.0	3–7	E2	6.21−02	7.84−02	B	1
			2 857.95	2 858.78	199 967.2–234 947.1	1–5	E2	6.44−02	5.49−02	B	1
			2 956.84	2 957.70	201 146.0–234 956.0	5–7	E2	1.09−01	1.54−01	B+	1
			2 891.29	2 892.14	200 370.6–234 947.1	3–5	E2	1.47−02	1.32−02	B	1
			2 957.62	2 958.48	201 146.0–234 947.1	5–5	E2	9.53−02	9.63−02	B	1
			2 891.76	2 892.61	200 370.6–234 941.5	3–3	E2	1.36−01	7.35−02	B	1
			2 958.11	2 958.97	201 146.0–234 941.5	5–3	E2	4.08−02	2.48−02	B	1
30		^{3}P–^{1}D									
				1 413.763	199 967.2–270 700.4	1–5	E2	1.15−01	2.90−03	C+	1
				1 421.872	200 370.6–270 700.4	3–5	M1	5.89−02	3.13−05	D+	1
				1 421.872	200 370.6–270 700.4	3–5	E2	1.70−03	4.40−05	D+	1
				1 437.724	201 146.0–270 700.4	5–5	M1	1.70−01	9.38−05	D+	1
				1 437.724	201 146.0–270 700.4	5–5	E2	8.84−03	2.42−04	C	1
31		^{1}S–^{1}D									
			2 827.99	2 828.82	235 350.0–270 700.4	1–5	E2	4.59+00	3.71+00	B+	1
32	$3p^2$–$3p3d$	^{1}D–^{3}F°									
				767.218	193 739.1–324 080.1	5–9	M2	9.11−01	1.46+02	A	1
33		^{3}P–^{3}F°									
				813.444	201 146.0–324 080.1	5–9	M2	1.62−01	3.48+01	A	1
34		^{3}P–^{3}D°									
				676.769	200 370.6–348 131.5	3–7	M2	2.88−01	1.91+01	A	1
				675.479	199 967.2–348 010.2	1–5	M2	2.90−01	1.36+01	A	1
35	$3s3d$–$3p3d$	^{3}D–^{1}F°									
				758.032	234 941.5–366 862.0	3–7	M2	2.40−01	2.82+01	A	1
36	$3p3d$–$3p3d$	^{3}F°–^{3}P°									
			4 702.77	4 704.09	324 080.1–345 338.2	9–5	E2	1.34+00	1.37+01	A	1
			4 510.25	4 511.52	323 547.3–345 712.8	7–3	E2	1.39+00	6.97+00	B+	1
			4 380.81	4 382.04	323 132.6–345 953.0	5–1	E2	2.45+00	3.52+00	B+	1

TABLE 20. Transition probabilities of forbidden lines for S V—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			4 587.79	4 589.07	323 547.3–345 338.2	7–5	E2	4.07−01	3.70+00	B+	1
			4 427.42	4 428.66	323 132.6–345 712.8	5–3	E2	7.75−01	3.53+00	B+	1
37		^{3}F°–^{1}F°									
			2 336.72	2 337.44	324 080.1–366 862.0	9–7	M1	1.66−01	5.51−04	C	1
			2 286.09	2 286.79	323 132.6–366 862.0	5–7	M1	1.80−01	5.58−04	C	1
38		^{1}D°–^{1}F°									
			2 602.87	2 603.64	328 454.3–366 862.0	5–7	E2	2.04−01	1.52−01	B+	1
39	3*s*4*p*–3*p*3*d*	^{1}P°–^{1}F°									
			5 769.5	5 771.1	349 534.4–366 862.0	3–7	E2	4.90−01	1.95+01	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer *et al.* (2006); Ref. 2 = Ray *et al.* (1989).

References for Forbidden Transitions of S V

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables 92, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Ray, D., P. K. Mukherjee, and H. P. Roy, 1989, Astrophys. J. **346**, 1045.

4.6. S VI

$Z=16$
Sodium Isoelectronic Sequence
Ground State $1s^2 2s^2 2p^6 3s\ ^2S_{1/2}$
Ionization Energy: 710 194.7 cm^{-1} (88.052 92 eV)

4.6.1. Allowed Transitions for S VI

All transition probabilities were selected from the extensive *ab initio* nonorthogonal B-spline CI calculations performed by Froese Fischer *et al.* (2006). These calculations cover lines from upper states up to $12f$. For the smaller range of transitions in S VI (up to $4f$ states), Froese Fischer (2002a, 2002b) also made calculations using two other methods: the MCDHF method and the MCHF method with BP corrections.

A wavelength finding list of allowed lines for S VI is given in Table 21, and the transition probabilities for these lines are provided in Table 22.

TABLE 21. Wavelength finding list for allowed lines of S VI

Wavelength (vac.) (Å)	Mult. No.
152.282	7
152.290	7
155.853	6
155.865	6
161.494	5
161.514	5
171.328	4
171.365	4
180.353	19
180.765	19
184.823	18
185.256	18
188.028	17
188.476	17
191.479	3
191.560	3
191.786	16
192.252	16
197.112	15
197.605	15
203.675	14
204.197	14
204.200	14
213.737	13
214.316	13
227.183	12
227.831	12
227.837	12
236.293	32
236.311	32
241.602	31
241.621	31
244.348	30
244.367	30
244.368	30
248.987	2
249.271	2
249.426	29
249.446	29
251.112	11
251.912	11
253.673	28
253.694	28
253.706	28
261.802	27
261.824	27
268.965	26
268.988	26
269.019	26
283.473	25
283.499	25
289.082	10
290.127	10
290.142	10
297.396	24
297.425	24
297.505	24
328.583	23
328.618	23
340.499	38
340.539	38
358.883	37
358.949	37
363.865	22
363.908	22
364.157	22
385.844	48
386.527	48
388.931	9
390.275	36
390.390	36
390.852	9
406.898	47
407.658	47
422.762	46
423.582	46
442.247	45
443.145	45
453.134	35
453.386	35
456.977	60
457.013	60
464.624	21
464.695	21
471.632	44
472.653	44
477.258	59
477.297	59
488.095	58
488.135	58
488.176	58
505.840	65

TABLE 21. Wavelength finding list for allowed lines of S VI—Continued

Wavelength (vac.) (Å)	Mult. No.
508.786	57
508.830	57
511.029	43
512.205	43
512.227	43
526.775	56
526.823	56
526.917	56
542.650	64
563.084	55
563.138	55
579.480	42
581.022	42
597.294	54
597.355	54
597.564	54
607.40	63
627.901	34
628.771	34
648.489	20
648.626	20
650.420	20
655.43	70
655.57	70
673.888	53
673.965	53
690.234	41
692.370	41
692.422	41
706.470	8
712.670	8
712.836	8
723.00	78
724.16	78
727.12	69
727.39	69
745.094	62
745.140	62
758.281	52
758.378	52
758.987	52
800.63	77
802.04	77
802.71	88
802.78	88
864.45	76
866.10	76
867.46	87
867.54	87
868.689	68
869.259	68
903.94	86
904.03	86
904.21	86
920.97	92
933.378	1
944.523	1
950.05	75
952.04	75
971.504	40
975.845	40
977.559	85
977.664	85
1 000.372	51
1 000.542	51
1 046.21	84
1 046.33	84
1 046.77	84
1 050.74	91
1 096.856	74
1 099.514	74
1 198.919	61
1 199.077	61
1 199.865	83
1 200.024	83
1 205.73	96
1 206.22	96
1 256.728	67
1 258.671	67
1 302.26	102
1 304.34	102
1 324.02	90
1 336.471	73
1 340.271	73
1 340.420	73
1 355.51	110
1 355.66	110
1 366.665	82
1 366.871	82
1 368.077	82
1 419.392	50
1 419.735	50
1 423.846	50
1 472.90	95
1 474.01	95
1 551.01	109
1 551.21	109
1 577.79	101
1 580.86	101
1 662.47	113
1 671.63	108
1 671.86	108
1 672.58	108
1 846.5	100
1 847.00	81
1 847.38	81
1 850.7	100
1 933.91	72
1 942.12	107
1 942.19	72
1 942.43	107
1 975.21	39
1 992.56	39
1 993.23	39

TABLE 21. Wavelength finding list for allowed lines of S VI—Continued

Wavelength (air) (Å)	Mult. No.
2 138.7	112
2 198.05	94
2 201.70	94
2 216.52	89
2 216.93	89
2 232.5	106
2 233.0	106
2 235.1	106
2 285.8	99
2 292.2	99
2 299.4	116
2 301.2	116
2 306.7	126
2 426.6	120
2 431.0	120
2 587.33	33
2 618.36	33
2 656.91	80
2 657.69	80
2 665.61	80
2 936.9	125
3 072.50	105
3 073.29	105
3 230.0	128
3 372.00	98
3 386.02	98
3 401.8	124
3 405.7	124
3 516.1	115
3 522.5	115
3 597.6	119
3 607.4	119
3 689.3	111
4 162.28	71
4 198.89	71
4 200.83	71
4 219.1	136
4 469.94	104
4 471.60	104
4 485.08	104
4 747.9	123
5 271.1	130
5 280.6	130

TABLE 21. Wavelength finding list for allowed lines of S VI—Continued

Wavelength (air) (Å)	Mult. No.
5 328.7	132
5 343.2	132
5 384.7	118
5 406.7	118
5 508.99	66
5 576.72	66
5 699	127
6 944	135
6 970	122
6 995	122
7 515.8	97
7 581.0	97
7 585.8	97
8 333	137
9 211.3	49
9 225.7	49
9 720	140
10 061.2	93
10 187.1	93
10 260	134
10 296	134
12 275	117
12 390	117
16 607.9	114
16 818.8	114
17 502.2	79
17 536.0	79
18 683	131
18 863	131
Wave number (cm^{-1})	**Mult. No.**
3 922	129
3 871	129
3 700	138
3 666	138
3 336.4	103
3 328.1	103
2 103	121
1 412	133
986	139

TABLE 22. Transition probabilities of allowed lines for S VI

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$3s$–$3p$	^{2}S–^{2}P°		*937.1*	0–*106 716.3*	2–6	1.64+09	6.48−01	4.00+00	0.113	A+	1
				933.378	0.0–107 137.7	2–4	1.67+09	4.36−01	2.67+00	−0.059	A+	1
				944.523	0.0–105 873.6	2–2	1.61+09	2.15−01	1.33+00	−0.367	A+	1
2	$3s$–$4p$	^{2}S–^{2}P°		*249.08*	0–*401 474.5*	2–6	2.98+09	8.33−02	1.37−01	−0.778	B+	1
				248.987	0.0–401 627.1	2–4	2.95+09	5.48−02	8.99−02	−0.960	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				249.271	0.0–401 169.2	2–2	3.06+09	2.85−02	4.67−02	−1.244	B+	1
3	3*s*–5*p*	^{2}S–^{2}P°		*191.51*	0–*522 176.0*	2–6	1.95+09	3.21−02	4.05−02	−1.192	B+	1
				191.479	0.0–522 249.5	2–4	1.93+09	2.12−02	2.67−02	−1.373	B+	1
				191.560	0.0–522 029.1	2–2	1.99+09	1.09−02	1.38−02	−1.662	B+	1
4	3*s*–6*p*	^{2}S–^{2}P°		*171.34*	0–*583 633.2*	2–6	1.20+09	1.58−02	1.79−02	−1.500	B+	1
				171.328	0.0–583 674.1	2–4	1.19+09	1.05−02	1.18−02	−1.678	B+	1
				171.365	0.0–583 551.3	2–2	1.22+09	5.38−03	6.07−03	−1.968	B+	1
5	3*s*–7*p*	^{2}S–^{2}P°		*161.50*	0–*619 193.2*	2–6	7.71+08	9.05−03	9.62−03	−1.742	B+	1
				161.494	0.0–619 218.4	2–4	7.65+08	5.99−03	6.36−03	−1.922	B+	1
				161.514	0.0–619 142.9	2–2	7.85+08	3.07−03	3.26−03	−2.212	B+	1
6	3*s*–8*p*	^{2}S–^{2}P°		*155.86*	0–*641 614*	2–6	5.19+08	5.67−03	5.82−03	−1.945	B+	1
				155.853	0.0–641 631	2–4	5.16+08	3.76−03	3.85−03	−2.124	B+	1
				155.865	0.0–641 580	2–2	5.29+08	1.93−03	1.97−03	−2.413	B+	1
7	3*s*–9*p*	^{2}S–^{2}P°		*152.28*	0–*656 664*	2–6	3.65+08	3.81−03	3.82−03	−2.118	B+	1
				152.282	0.0–656 675	2–4	3.63+08	2.52−03	2.53−03	−2.298	B+	1
				152.290	0.0–656 641	2–2	3.72+08	1.29−03	1.29−03	−2.588	B+	1
8	3*p*–3*d*	^{2}P°–^{2}D		*710.60*	*106 716.3–247 442.0*	6–10	4.98+09	6.28−01	8.82+00	0.576	A+	1
				712.670	107 137.7–247 455.0	4–6	4.95+09	5.65−01	5.30+00	0.354	A+	1
				706.470	105 873.6–247 422.5	2–4	4.22+09	6.31−01	2.93+00	0.101	A+	1
				712.836	107 137.7–247 422.5	4–4	8.25+08	6.28−02	5.89−01	−0.600	A	1
9	3*p*–4*s*	^{2}P°–^{2}S		*390.21*	*106 716.3–362 988.8*	6–2	1.32+10	1.01−01	7.76−01	−0.218	A	1
				390.852	107 137.7–362 988.8	4–2	8.85+09	1.01−01	5.21−01	−0.394	A	1
				388.931	105 873.6–362 988.8	2–2	4.40+09	9.97−02	2.55−01	−0.700	A	1
10	3*p*–4*d*	^{2}P°–^{2}D		*289.78*	*106 716.3–451 807.0*	6–10	3.12+09	6.56−02	3.75−01	−0.405	A	1
				290.127	107 137.7–451 813.8	4–6	3.16+09	5.97−02	2.28−01	−0.622	A	1
				289.082	105 873.6–451 796.8	2–4	2.56+09	6.43−02	1.22−01	−0.891	A	1
				290.142	107 137.7–451 796.8	4–4	5.26+08	6.64−03	2.53−02	−1.576	B+	1
11	3*p*–5*s*	^{2}P°–^{2}S		*251.64*	*106 716.3–504 102.4*	6–2	5.51+09	1.74−02	8.67−02	−0.981	B+	1
				251.912	107 137.7–504 102.4	4–2	3.69+09	1.75−02	5.81−02	−1.155	B+	1
				251.112	105 873.6–504 102.4	2–2	1.84+09	1.74−02	2.86−02	−1.458	B+	1
12	3*p*–5*d*	^{2}P°–^{2}D		*227.62*	*106 716.3–546 054.2*	6–10	2.73+09	3.54−02	1.59−01	−0.673	B+	1
				227.831	107 137.7–546 058.6	4–6	2.75+09	3.21−02	9.62−02	−0.891	B+	1
				227.183	105 873.6–546 047.6	2–4	2.26+09	3.49−02	5.22−02	−1.156	B+	1
				227.837	107 137.7–546 047.6	4–4	4.58+08	3.56−03	1.06−02	−1.846	B+	1
13	3*p*–6*s*	^{2}P°–^{2}S		*214.12*	*106 716.3–573 737.7*	6–2	2.87+09	6.58−03	2.78−02	−1.404	B+	1
				214.316	107 137.7–573 737.7	4–2	1.92+09	6.62−03	1.86−02	−1.577	B+	1
				213.737	105 873.6–573 737.7	2–2	9.58+08	6.56−03	9.23−03	−1.882	B+	1
14	3*p*–6*d*	^{2}P°–^{2}D		*204.02*	*106 716.3–596 858.0*	6–10	1.86+09	1.94−02	7.81−02	−0.934	B+	1
				204.197	107 137.7–596 861.3	4–6	1.87+09	1.76−02	4.72−02	−1.152	B+	1
				203.675	105 873.6–596 853.0	2–4	1.54+09	1.92−02	2.57−02	−1.416	B+	1
				204.200	107 137.7–596 853.0	4–4	3.12+08	1.95−03	5.25−03	−2.108	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
15	$3p$–$7s$	^{2}P°–^{2}S		*197.44*	*106 716.3–613 198.8*	6–2	1.70+09	3.31−03	1.29−02	−1.702	B+	1
				197.605	107 137.7–613 198.8	4–2	1.13+09	3.32−03	8.63−03	−1.877	B+	1
				197.112	105 873.6–613 198.8	2–2	5.65+08	3.29−03	4.27−03	−2.182	B+	1
16	$3p$–$7d$	^{2}P°–^{2}D		*192.10*	*106 716.3–627 287*	6–10	1.27+09	1.17−02	4.43−02	−1.154	B+	1
				192.252	107 137.7–627 287	4–6	1.27+09	1.06−02	2.67−02	−1.373	B+	1
				191.786	105 873.6–627 287	2–4	1.05+09	1.16−02	1.46−02	−1.635	B+	1
				192.252	107 137.7–627 287	4–4	2.12+08	1.17−03	2.97−03	−2.330	B+	1
17	$3p$–$8s$	^{2}P°–^{2}S		*188.33*	*106 716.3–637 709*	6–2	1.09+09	1.92−03	7.16−03	−1.939	B+	1
				188.476	107 137.7–637 709	4–2	7.26+08	1.93−03	4.79−03	−2.112	B+	1
				188.028	105 873.6–637 709	2–2	3.62+08	1.92−03	2.37−03	−2.416	B+	1
18	$3p$–$8d$	^{2}P°–^{2}D		*185.11*	*106 716.3–646 931*	6–10	8.84+08	7.57−03	2.77−02	−1.343	B+	1
				185.256	107 137.7–646 931	4–6	8.88+08	6.85−03	1.67−02	−1.562	B+	1
				184.823	105 873.6–646 931	2–4	7.33+08	7.50−03	9.13−03	−1.824	B+	1
				185.256	107 137.7–646 931	4–4	1.48+08	7.61−04	1.85−03	−2.517	B+	1
19	$3p$–$9d$	^{2}P°–^{2}D		*180.63*	*106 716.3–660 341*	6–10	6.34+08	5.17−03	1.85−02	−1.508	B+	1
				180.765	107 137.7–660 341	4–6	6.39+08	4.70−03	1.11−02	−1.726	B+	1
				180.353	105 873.6–660 341	2–4	5.28+08	5.15−03	6.11−03	−1.987	B+	1
				180.765	107 137.7–660 341	4–4	1.06+08	5.21−04	1.24−03	−2.681	B+	1
20	$3d$–$4p$	^{2}D–^{2}P°		*649.21*	*247 442.0–401 474.5*	10–6	2.75+09	1.04−01	2.23+00	0.017	A	1
				648.626	247 455.0–401 627.1	6–4	2.47+09	1.04−01	1.33+00	−0.205	A	1
				650.420	247 422.5–401 169.2	4–2	2.76+09	8.74−02	7.49−01	−0.456	A	1
				648.489	247 422.5–401 627.1	4–4	2.74+08	1.73−02	1.47−01	−1.160	A	1
21	$3d$–$4f$	^{2}D–^{2}F°		*464.67*	*247 442.0–462 650.1*	10–14	1.95+10	8.85−01	1.35+01	0.947	A+	1
				464.695	247 455.0–462 650.1	6–8	1.95+10	8.43−01	7.74+00	0.704	A+	1
				464.624	247 422.5–462 650.1	4–6	1.82+10	8.85−01	5.41+00	0.549	A+	1
				464.695	247 455.0–462 650.1	6–6	1.30+09	4.22−02	3.87−01	−0.597	A	1
22	$3d$–$5p$	^{2}D–^{2}P°		*363.99*	*247 442.0–522 176.0*	10–6	1.01+09	1.20−02	1.44−01	−0.921	B+	1
				363.908	247 455.0–522 249.5	6–4	9.08+08	1.20−02	8.63−02	−1.143	B+	1
				364.157	247 422.5–522 029.1	4–2	1.01+09	1.01−02	4.82−02	−1.394	B+	1
				363.865	247 422.5–522 249.5	4–4	1.01+08	2.00−03	9.57−03	−2.097	B+	1
23	$3d$–$5f$	^{2}D–^{2}F°		*328.60*	*247 442.0–551 759.6*	10–14	7.29+09	1.65−01	1.79+00	0.217	A	1
				328.618	247 455.0–551 759.6	6–8	7.32+09	1.58−01	1.02+00	−0.023	A	1
				328.583	247 422.5–551 759.6	4–6	6.83+09	1.66−01	7.17−01	−0.178	B+	1
				328.618	247 455.0–551 759.6	6–6	4.88+08	7.90−03	5.12−02	−1.324	B+	1
24	$3d$–$6p$	^{2}D–^{2}P°		*297.45*	*247 442.0–583 633.2*	10–6	5.07+08	4.04−03	3.95−02	−1.394	B+	1
				297.425	247 455.0–583 674.1	6–4	4.57+08	4.04−03	2.37−02	−1.615	B+	1
				297.505	247 422.5–583 551.3	4–2	5.09+08	3.38−03	1.32−02	−1.869	B+	1
				297.396	247 422.5–583 674.1	4–4	5.07+07	6.72−04	2.63−03	−2.571	B+	1
25	$3d$–$6f$	^{2}D–^{2}F°		*283.49*	*247 442.0–600 189.4*	10–14	3.64+09	6.14−02	5.73−01	−0.212	B+	1
				283.499	247 455.0–600 189.4	6–8	3.65+09	5.86−02	3.28−01	−0.454	B+	1
				283.473	247 422.5–600 189.4	4–6	3.40+09	6.15−02	2.29−01	−0.609	B+	1
				283.499	247 455.0–600 189.4	6–6	2.43+08	2.93−03	1.64−02	−1.755	B+	1
26	$3d$–$7p$	^{2}D–^{2}P°		*269.00*	*247 442.0–619 193.2*	10–6	2.95+08	1.92−03	1.70−02	−1.717	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				268.988	247 455.0–619 218.4	6–4	2.66+08	1.92−03	1.02−02	−1.939	B+	1
				269.019	247 422.5–619 142.9	4–2	2.96+08	1.61−03	5.69−03	−2.191	B+	1
				268.965	247 422.5–619 218.4	4–4	2.94+07	3.19−04	1.13−03	−2.894	B+	1
27	3*d*–7*f*	^{2}D–^{2}F°		*261.82*	*247 442.0–629 390.3*	10–14	2.10+09	3.02−02	2.60−01	−0.520	B+	1
				261.824	247 455.0–629 390.3	6–8	2.11+09	2.89−02	1.49−01	−0.761	B+	1
				261.802	247 422.5–629 390.3	4–6	1.97+09	3.03−02	1.04−01	−0.916	B+	1
				261.824	247 455.0–629 390.3	6–6	1.41+08	1.44−03	7.47−03	−2.063	B+	1
28	3*d*–8*p*	^{2}D–^{2}P°		*253.70*	*247 442.0–641 614*	10–6	1.88+08	1.09−03	9.08−03	−1.963	B+	1
				253.694	247 455.0–641 631	6–4	1.69+08	1.09−03	5.45−03	−2.184	B+	1
				253.706	247 422.5–641 580	4–2	1.88+08	9.08−04	3.03−03	−2.440	B+	1
				253.673	247 422.5–641 631	4–4	1.87+07	1.81−04	6.03−04	−3.140	B+	1
29	3*d*–8*f*	^{2}D–^{2}F°		*249.44*	*247 442.0–648 343.2*	10–14	1.34+09	1.75−02	1.44−01	−0.757	B+	1
				249.446	247 455.0–648 343.2	6–8	1.34+09	1.67−02	8.21−02	−0.999	B+	1
				249.426	247 422.5–648 343.2	4–6	1.25+09	1.75−02	5.74−02	−1.155	B+	1
				249.446	247 455.0–648 343.2	6–6	8.93+07	8.33−04	4.10−03	−2.301	B+	1
30	3*d*–9*p*	^{2}D–^{2}P°		*244.37*	*247 442.0–656 664*	10–6	1.27+08	6.83−04	5.49−03	−2.166	B+	1
				244.367	247 455.0–656 675	6–4	1.15+08	6.84−04	3.30−03	−2.387	B+	1
				244.368	247 422.5–656 641	4–2	1.27+08	5.71−04	1.83−03	−2.641	B+	1
				244.348	247 422.5–656 675	4–4	1.27+07	1.13−04	3.65−04	−3.345	B+	1
31	3*d*–9*f*	^{2}D–^{2}F°		*241.61*	*247 442.0–661 327*	10–14	9.07+08	1.11−02	8.84−02	−0.955	B+	1
				241.621	247 455.0–661 327	6–8	9.08+08	1.06−02	5.05−02	−1.197	B+	1
				241.602	247 422.5–661 327	4–6	8.48+08	1.11−02	3.54−02	−1.353	B+	1
				241.621	247 455.0–661 327	6–6	6.05+07	5.30−04	2.52−03	−2.498	B+	1
32	3*d*–10*f*	^{2}D–^{2}F°		*236.30*	*247 442.0–670 626*	10–14	6.45+08	7.56−03	5.88−02	−1.121	B+	1
				236.311	247 455.0–670 626	6–8	6.46+08	7.21−03	3.36−02	−1.364	B+	1
				236.293	247 422.5–670 626	4–6	6.03+08	7.57−03	2.35−02	−1.519	B+	1
				236.311	247 455.0–670 626	6–6	4.30+07	3.60−04	1.68−03	−2.666	B+	1
33	4*s*–4*p*	^{2}S–^{2}P°	*2 597.6*	*2 598.4*	*362 988.8–401 474.5*	2–6	3.24+08	9.84−01	1.68+01	0.294	A+	1
			2 587.33	2 588.11	362 988.8–401 627.1	2–4	3.29+08	6.61−01	1.12+01	0.121	A+	1
			2 618.36	2 619.14	362 988.8–401 169.2	2–2	3.18+08	3.27−01	5.63+00	−0.184	A+	1
34	4*s*–5*p*	^{2}S–^{2}P°		*628.19*	*362 988.8–522 176.0*	2–6	4.00+08	7.11−02	2.94−01	−0.847	A	1
				627.901	362 988.8–522 249.5	2–4	3.96+08	4.69−02	1.93−01	−1.028	A	1
				628.771	362 988.8–522 029.1	2–2	4.14+08	2.45−02	1.01−01	−1.310	A	1
35	4*s*–6*p*	^{2}S–^{2}P°		*453.22*	*362 988.8–583 633.2*	2–6	3.24+08	2.99−02	8.93−02	−1.223	B+	1
				453.134	362 988.8–583 674.1	2–4	3.21+08	1.97−02	5.88−02	−1.405	B+	1
				453.386	362 988.8–583 551.3	2–2	3.32+08	1.02−02	3.05−02	−1.690	B+	1
36	4*s*–7*p*	^{2}S–^{2}P°		*390.31*	*362 988.8–619 193.2*	2–6	2.25+08	1.54−02	3.96−02	−1.511	B+	1
				390.275	362 988.8–619 218.4	2–4	2.23+08	1.02−02	2.61−02	−1.690	B+	1
				390.390	362 988.8–619 142.9	2–2	2.30+08	5.26−03	1.35−02	−1.978	B+	1
37	4*s*–8*p*	^{2}S–^{2}P°		*358.91*	*362 988.8–641 614*	2–6	1.57+08	9.11−03	2.15−02	−1.739	B+	1
				358.883	362 988.8–641 631	2–4	1.56+08	6.02−03	1.42−02	−1.919	B+	1
				358.949	362 988.8–641 580	2–2	1.60+08	3.10−03	7.32−03	−2.208	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
38	$4s$–$9p$	^{2}S–^{2}P°		*340.51*	*362 988.8–656 664*	2–6	1.13+08	5.88−03	1.32−02	−1.930	B+	1
				340.499	362 988.8–656 675	2–4	1.12+08	3.89−03	8.71−03	−2.109	B+	1
				340.539	362 988.8–656 641	2–2	1.15+08	2.00−03	4.48−03	−2.398	B+	1
39	$4p$–$4d$	^{2}P°–^{2}D		*1 986.8*	*401 474.5–451 807.0*	6–10	9.88+08	9.75−01	3.83+01	0.767	A+	1
				1 992.56	401 627.1–451 813.8	4–6	9.82+08	8.77−01	2.30+01	0.545	A+	1
				1 975.21	401 169.2–451 796.8	2–4	8.37+08	9.80−01	1.27+01	0.292	A+	1
				1 993.23	401 627.1–451 796.8	4–4	1.63+08	9.74−02	2.55+00	−0.409	A+	1
40	$4p$–$5s$	^{2}P°–^{2}S		*974.39*	*401 474.5–504 102.4*	6–2	3.64+09	1.72−01	3.32+00	0.014	A+	1
				975.845	401 627.1–504 102.4	4–2	2.44+09	1.74−01	2.23+00	−0.157	A+	1
				971.504	401 169.2–504 102.4	2–2	1.21+09	1.72−01	1.09+00	−0.463	A+	1
41	$4p$–$5d$	^{2}P°–^{2}D		*691.66*	*401 474.5–546 054.2*	6–10	2.67+08	3.20−02	4.37−01	−0.717	A	1
				692.370	401 627.1–546 058.6	4–6	2.72+08	2.93−02	2.67−01	−0.931	A	1
				690.234	401 169.2–546 047.6	2–4	2.16+08	3.09−02	1.40−01	−1.209	A	1
				692.422	401 627.1–546 047.6	4–4	4.55+07	3.27−03	2.98−02	−1.883	B+	1
42	$4p$–$6s$	^{2}P°–^{2}S		*580.51*	*401 474.5–573 737.7*	6–2	1.72+09	2.90−02	3.32−01	−0.759	B+	1
				581.022	401 627.1–573 737.7	4–2	1.15+09	2.91−02	2.22−01	−0.934	B+	1
				579.480	401 169.2–573 737.7	2–2	5.73+08	2.89−02	1.10−01	−1.238	B+	1
43	$4p$–$6d$	^{2}P°–^{2}D		*511.81*	*401 474.5–596 858.0*	6–10	3.34+08	2.19−02	2.21−01	−0.881	B+	1
				512.205	401 627.1–596 861.3	4–6	3.38+08	1.99−02	1.34−01	−1.099	B+	1
				511.029	401 169.2–596 853.0	2–4	2.74+08	2.14−02	7.21−02	−1.369	B+	1
				512.227	401 627.1–596 853.0	4–4	5.65+07	2.22−03	1.49−02	−2.052	B+	1
44	$4p$–$7s$	^{2}P°–^{2}S		*472.31*	*401 474.5–613 198.8*	6–2	9.80+08	1.09−02	1.02−01	−1.184	B+	1
				472.653	401 627.1–613 198.8	4–2	6.55+08	1.10−02	6.82−02	−1.357	B+	1
				471.632	401 169.2–613 198.8	2–2	3.26+08	1.09−02	3.37−02	−1.662	B+	1
45	$4p$–$7d$	^{2}P°–^{2}D		*442.85*	*401 474.5–627 287*	6–10	2.71+08	1.33−02	1.16−01	−1.098	B+	1
				443.145	401 627.1–627 287	4–6	2.74+08	1.21−02	7.04−02	−1.315	B+	1
				442.247	401 169.2–627 287	2–4	2.23+08	1.31−02	3.80−02	−1.582	B+	1
				443.145	401 627.1–627 287	4–4	4.57+07	1.34−03	7.84−03	−2.271	B+	1
46	$4p$–$8s$	^{2}P°–^{2}S		*423.31*	*401 474.5–637 709*	6–2	6.14+08	5.50−03	4.60−02	−1.481	B+	1
				423.582	401 627.1–637 709	4–2	4.11+08	5.53−03	3.08−02	−1.655	B+	1
				422.762	401 169.2–637 709	2–2	2.05+08	5.49−03	1.52−02	−1.959	B+	1
47	$4p$–$8d$	^{2}P°–^{2}D		*407.40*	*401 474.5–646 931*	6–10	2.05+08	8.51−03	6.85−02	−1.292	B+	1
				407.658	401 627.1–646 931	4–6	2.07+08	7.73−03	4.15−02	−1.510	B+	1
				406.898	401 169.2–646 931	2–4	1.69+08	8.39−03	2.24−02	−1.775	B+	1
				407.658	401 627.1–646 931	4–4	3.45+07	8.61−04	4.62−03	−2.463	B+	1
48	$4p$–$9d$	^{2}P°–^{2}D		*386.30*	*401 474.5–660 341*	6–10	1.55+08	5.76−03	4.40−02	−1.461	B+	1
				386.527	401 627.1–660 341	4–6	1.56+08	5.24−03	2.66−02	−1.679	B+	1
				385.844	401 169.2–660 341	2–4	1.27+08	5.69−03	1.44−02	−1.944	B+	1
				386.527	401 627.1–660 341	4–4	2.60+07	5.83−04	2.96−03	−2.632	B+	1
49	$4d$–$4f$	^{2}D–^{2}F°	*9 220*	*9 222*	*451 807.0–462 650.1*	10–14	8.11+06	1.45−01	4.40+01	0.161	A+	1
			9 225.7	9 228.2	451 813.8–462 650.1	6–8	8.12+06	1.38−01	2.51+01	−0.082	A+	1
			9 211.3	9 213.8	451 796.8–462 650.1	4–6	7.62+06	1.45−01	1.76+01	−0.237	A+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			9 225.7	9 228.2	451 813.8–462 650.1	6–6	5.41+05	6.91−03	1.26+00	−1.382	A+	1
50	4*d*–5*p*	^{2}D–^{2}P°		*1 421.08*	*451 807.0–522 176.0*	10–6	1.18+09	2.15−01	1.01+01	0.332	A+	1
				1 419.735	451 813.8–522 249.5	6–4	1.07+09	2.15−01	6.02+00	0.111	A+	1
				1 423.846	451 796.8–522 029.1	4–2	1.19+09	1.81−01	3.38+00	−0.140	A+	1
				1 419.392	451 796.8–522 249.5	4–4	1.18+08	3.58−02	6.68−01	−0.844	A	1
51	4*d*–5*f*	^{2}D–^{2}F°		*1 000.47*	*451 807.0–551 759.6*	10–14	3.19+09	6.70−01	2.21+01	0.826	A+	1
				1 000.542	451 813.8–551 759.6	6–8	3.20+09	6.40−01	1.26+01	0.584	A+	1
				1 000.372	451 796.8–551 759.6	4–6	2.99+09	6.72−01	8.85+00	0.429	A+	1
				1 000.542	451 813.8–551 759.6	6–6	2.13+08	3.20−02	6.32−01	−0.717	A	1
52	4*d*–6*p*	^{2}D–^{2}P°		*758.57*	*451 807.0–583 633.2*	10–6	5.06+08	2.62−02	6.53−01	−0.582	B+	1
				758.378	451 813.8–583 674.1	6–4	4.56+08	2.62−02	3.92−01	−0.804	B+	1
				758.987	451 796.8–583 551.3	4–2	5.07+08	2.19−02	2.18−01	−1.057	B+	1
				758.281	451 796.8–583 674.1	4–4	5.06+07	4.37−03	4.35−02	−1.757	B+	1
53	4*d*–6*f*	^{2}D–^{2}F°		*673.93*	*451 807.0–600 189.4*	10–14	1.82+09	1.74−01	3.85+00	0.241	A	1
				673.965	451 813.8–600 189.4	6–8	1.83+09	1.66−01	2.20+00	−0.002	A	1
				673.888	451 796.8–600 189.4	4–6	1.70+09	1.74−01	1.54+00	−0.157	A	1
				673.965	451 813.8–600 189.4	6–6	1.22+08	8.29−03	1.10−01	−1.303	B+	1
54	4*d*–7*p*	^{2}D–^{2}P°		*597.42*	*451 807.0–619 193.2*	10–6	2.80+08	8.98−03	1.77−01	−1.047	B+	1
				597.355	451 813.8–619 218.4	6–4	2.52+08	8.99−03	1.06−01	−1.268	B+	1
				597.564	451 796.8–619 142.9	4–2	2.80+08	7.50−03	5.90−02	−1.523	B+	1
				597.294	451 796.8–619 218.4	4–4	2.80+07	1.50−03	1.17−02	−2.222	B+	1
55	4*d*–7*f*	^{2}D–^{2}F°		*563.12*	*451 807.0–629 390.3*	10–14	1.10+09	7.35−02	1.36+00	−0.134	B+	1
				563.138	451 813.8–629 390.3	6–8	1.10+09	7.00−02	7.78−01	−0.377	B+	1
				563.084	451 796.8–629 390.3	4–6	1.03+09	7.35−02	5.45−01	−0.532	B+	1
				563.138	451 813.8–629 390.3	6–6	7.36+07	3.50−03	3.89−02	−1.678	B+	1
56	4*d*–8*p*	^{2}D–^{2}P°		*526.85*	*451 807.0–641 614*	10–6	1.74+08	4.34−03	7.52−02	−1.363	B+	1
				526.823	451 813.8–641 631	6–4	1.56+08	4.34−03	4.51−02	−1.584	B+	1
				526.917	451 796.8–641 580	4–2	1.74+08	3.62−03	2.51−02	−1.839	B+	1
				526.775	451 796.8–641 631	4–4	1.74+07	7.23−04	5.01−03	−2.539	B+	1
57	4*d*–8*f*	^{2}D–^{2}F°		*508.81*	*451 807.0–648 343.2*	10–14	7.17+08	3.90−02	6.53−01	−0.409	B+	1
				508.830	451 813.8–648 343.2	6–8	7.17+08	3.71−02	3.73−01	−0.652	B+	1
				508.786	451 796.8–648 343.2	4–6	6.69+08	3.90−02	2.61−01	−0.807	B+	1
				508.830	451 813.8–648 343.2	6–6	4.78+07	1.85−03	1.86−02	−1.955	B+	1
58	4*d*–9*p*	^{2}D–^{2}P°		*488.15*	*451 807.0–656 664*	10–6	1.16+08	2.48−03	3.99−02	−1.606	B+	1
				488.135	451 813.8–656 675	6–4	1.04+08	2.49−03	2.39−02	−1.826	B+	1
				488.176	451 796.8–656 641	4–2	1.16+08	2.07−03	1.33−02	−2.082	B+	1
				488.095	451 796.8–656 675	4–4	1.16+07	4.14−04	2.66−03	−2.781	B+	1
59	4*d*–9*f*	^{2}D–^{2}F°		*477.28*	*451 807.0–661 327*	10–14	4.91+08	2.35−02	3.68−01	−0.629	B+	1
				477.297	451 813.8–661 327	6–8	4.92+08	2.24−02	2.11−01	−0.872	B+	1
				477.258	451 796.8–661 327	4–6	4.59+08	2.35−02	1.47−01	−1.027	B+	1
				477.297	451 813.8–661 327	6–6	3.28+07	1.12−03	1.05−02	−2.173	B+	1
60	4*d*–10*f*	^{2}D–^{2}F°		*457.00*	*451 807.0–670 626*	10–14	3.51+08	1.54−02	2.32−01	−0.812	B+	1
				457.013	451 813.8–670 626	6–8	3.53+08	1.47−02	1.32−01	−1.055	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				456.977	451 796.8–670 626	4–6	3.29+08	1.55−02	9.30−02	−1.208	B+	1
				457.013	451 813.8–670 626	6–6	2.35+07	7.36−04	6.64−03	−2.355	B+	1
61	4f–5d	^{2}F°–^{2}D		1 198.98	462 650.1–546 054.2	14–10	1.52+08	2.35−02	1.30+00	−0.483	B+	1
				1 198.919	462 650.1–546 058.6	8–6	1.45+08	2.35−02	7.41−01	−0.726	B+	1
				1 199.077	462 650.1–546 047.6	6–4	1.53+08	2.20−02	5.19−01	−0.879	B+	1
				1 198.919	462 650.1–546 058.6	6–6	7.26+06	1.56−03	3.70−02	−2.029	B+	1
62	4f–6d	^{2}F°–^{2}D		745.11	462 650.1–596 858.0	14–10	6.56+07	3.90−03	1.34−01	−1.263	B+	1
				745.094	462 650.1–596 861.3	8–6	6.25+07	3.90−03	7.65−02	−1.506	B+	1
				745.140	462 650.1–596 853.0	6–4	6.57+07	3.65−03	5.36−02	−1.660	B+	1
				745.094	462 650.1–596 861.3	6–6	3.12+06	2.60−04	3.82−03	−2.807	B+	1
63	4f–7d	^{2}F°–^{2}D		607.4	462 650.1–627 287	14–10	3.50+07	1.38−03	3.87−02	−1.714	B+	1
				607.40	462 650.1–627 287	8–6	3.34+07	1.39−03	2.21−02	−1.954	B+	1
				607.40	462 650.1–627 287	6–4	3.51+07	1.29−03	1.55−02	−2.111	B+	1
				607.40	462 650.1–627 287	6–6	1.67+06	9.24−05	1.10−03	−3.256	B+	1
64	4f–8d	^{2}F°–^{2}D		542.65	462 650.1–646 931	14–10	2.12+07	6.70−04	1.67−02	−2.028	B+	1
				542.650	462 650.1–646 931	8–6	2.02+07	6.70−04	9.57−03	−2.271	B+	1
				542.650	462 650.1–646 931	6–4	2.13+07	6.26−04	6.70−03	−2.425	B+	1
				542.650	462 650.1–646 931	6–6	1.01+06	4.46−05	4.78−04	−3.573	B+	1
65	4f–9d	^{2}F°–^{2}D		505.84	462 650.1–660 341	14–10	1.39+07	3.82−04	8.90−03	−2.272	B+	1
				505.840	462 650.1–660 341	8–6	1.33+07	3.82−04	5.09−03	−2.515	B+	1
				505.840	462 650.1–660 341	6–4	1.40+07	3.57−04	3.56−03	−2.669	B+	1
				505.840	462 650.1–660 341	6–6	6.64+05	2.55−05	2.54−04	−3.815	B+	1
66	5s–5p	^{2}S–^{2}P°	5 531.4	5 532.9	504 102.4–522 176.0	2–6	9.39+07	1.29+00	4.71+01	0.412	A+	1
			5 508.99	5 510.52	504 102.4–522 249.5	2–4	9.52+07	8.67−01	3.14+01	0.239	A+	1
			5 576.72	5 578.27	504 102.4–522 029.1	2–2	9.18+07	4.28−01	1.57+01	−0.068	A+	1
67	5s–6p	^{2}S–^{2}P°		1 257.37	504 102.4–583 633.2	2–6	9.38+07	6.67−02	5.52−01	−0.875	B+	1
				1 256.728	504 102.4–583 674.1	2–4	9.23+07	4.37−02	3.61−01	−1.058	B+	1
				1 258.671	504 102.4–583 551.3	2–2	9.70+07	2.30−02	1.91−01	−1.337	B+	1
68	5s–7p	^{2}S–^{2}P°		868.88	504 102.4–619 193.2	2–6	8.55+07	2.90−02	1.66−01	−1.237	B+	1
				868.689	504 102.4–619 218.4	2–4	8.47+07	1.92−02	1.09−01	−1.416	B+	1
				869.259	504 102.4–619 142.9	2–2	8.80+07	9.97−03	5.70−02	−1.700	B+	1
69	5s–8p	^{2}S–^{2}P°		727.2	504 102.4–641 614	2–6	6.45+07	1.54−02	7.35−02	−1.511	B+	1
				727.12	504 102.4–641 631	2–4	6.39+07	1.01−02	4.84−02	−1.695	B+	1
				727.39	504 102.4–641 580	2–2	6.61+07	5.24−03	2.51−02	−1.980	B+	1
70	5s–9p	^{2}S–^{2}P°		655.5	504 102.4–656 664	2–6	4.77+07	9.22−03	3.98−02	−1.734	B+	1
				655.43	504 102.4–656 675	2–4	4.73+07	6.10−03	2.63−02	−1.914	B+	1
				655.57	504 102.4–656 641	2–2	4.89+07	3.15−03	1.35−02	−2.201	B+	1
71	5p–5d	^{2}P°–^{2}D	4 186.7	4 187.9	522 176.0–546 054.2	6–10	2.90+08	1.27+00	1.05+02	0.882	A+	1
			4 198.89	4 200.07	522 249.5–546 058.6	4–6	2.88+08	1.14+00	6.31+01	0.659	A+	1
			4 162.28	4 163.46	522 029.1–546 047.6	2–4	2.45+08	1.28+00	3.49+01	0.408	A+	1
			4 200.83	4 202.02	522 249.5–546 047.6	4–4	4.79+07	1.27−01	7.01+00	−0.294	A+	1
72	5p–6s	^{2}P°–^{2}S		1 939.4	522 176.0–573 737.7	6–2	1.31+09	2.46−01	9.42+00	0.169	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 942.19	522 249.5–573 737.7	4–2	8.75+08	2.47−01	6.32+00	−0.005	A	1
				1 933.91	522 029.1–573 737.7	2–2	4.35+08	2.44−01	3.10+00	−0.312	A	1
73	5*p*–6*d*	^{2}P°–^{2}D		*1 339.01*	*522 176.0–596 858.0*	6–10	4.01+07	1.79−02	4.75−01	−0.969	B+	1
				1 340.271	522 249.5–596 861.3	4–6	4.10+07	1.66−02	2.92−01	−1.178	B+	1
				1 336.471	522 029.1–596 853.0	2–4	3.18+07	1.71−02	1.50−01	−1.466	B+	1
				1 340.420	522 249.5–596 853.0	4–4	6.88+06	1.85−03	3.27−02	−2.131	B+	1
74	5*p*–7*s*	^{2}P°–^{2}S		*1 098.63*	*522 176.0*–613 198.8	6–2	6.72+08	4.05−02	8.79−01	−0.614	B+	1
				1 099.514	522 249.5–613 198.8	4–2	4.49+08	4.07−02	5.88−01	−0.788	B+	1
				1 096.856	522 029.1–613 198.8	2–2	2.24+08	4.03−02	2.91−01	−1.094	B+	1
75	5*p*–7*d*	^{2}P°–^{2}D		*951.4*	*522 176.0–627 287*	6–10	6.64+07	1.50−02	2.82−01	−1.046	B+	1
				952.04	522 249.5–627 287	4–6	6.73+07	1.37−02	1.72−01	−1.261	B+	1
				950.05	522 029.1–627 287	2–4	5.39+07	1.46−02	9.12−02	−1.535	B+	1
				952.04	522 249.5–627 287	4–4	1.13+07	1.53−03	1.92−02	−2.213	B+	1
76	5*p*–8*s*	^{2}P°–^{2}S		*865.6*	*522 176.0–637 709*	6–2	4.05+08	1.52−02	2.59−01	−1.040	B+	1
				866.10	522 249.5–637 709	4–2	2.71+08	1.52−02	1.73−01	−1.216	B+	1
				864.45	522 029.1–637 709	2–2	1.35+08	1.51−02	8.62−02	−1.520	B+	1
77	5*p*–8*d*	^{2}P°–^{2}D		*801.6*	*522 176.0–646 931*	6–10	6.10+07	9.79−03	1.55−01	−1.231	B+	1
				802.04	522 249.5–646 931	4–6	6.17+07	8.92−03	9.42−02	−1.448	B+	1
				800.63	522 029.1–646 931	2–4	4.97+07	9.56−03	5.03−02	−1.719	B+	1
				802.04	522 249.5–646 931	4–4	1.03+07	9.94−04	1.05−02	−2.401	B+	1
78	5*p*–9*d*	^{2}P°–^{2}D		*723.8*	*522 176.0–660 341*	6–10	5.00+07	6.55−03	9.36−02	−1.406	B+	1
				724.16	522 249.5–660 341	4–6	5.06+07	5.96−03	5.68−02	−1.623	B+	1
				723.00	522 029.1–660 341	2–4	4.09+07	6.42−03	3.05−02	−1.891	B+	1
				724.16	522 249.5–660 341	4–4	8.45+06	6.64−04	6.33−03	−2.576	B+	1
79	5*d*–5*f*	^{2}D–^{2}F°	*17 522*	*17 527*	*546 054.2–551 759.6*	10–14	4.17+06	2.69−01	1.55+02	0.430	A	1
			17 536.0	17 540.8	546 058.6–551 759.6	6–8	4.16+06	2.56−01	8.87+01	0.186	A	1
			17 502.2	17 507.0	546 047.6–551 759.6	4–6	3.91+06	2.69−01	6.21+01	0.032	A	1
			17 536.0	17 540.8	546 058.6–551 759.6	6–6	2.78+05	1.28−02	4.43+00	−1.115	A	1
80	5*d*–6*p*	^{2}D–^{2}P°	*2 660.3*	*2 661.1*	*546 054.2–583 633.2*	10–6	5.16+08	3.29−01	2.88+01	0.517	A	1
			2 657.69	2 658.48	546 058.6–583 674.1	6–4	4.65+08	3.29−01	1.72+01	0.295	A	1
			2 665.61	2 666.40	546 047.6–583 551.3	4–2	5.19+08	2.76−01	9.70+00	0.043	A	1
			2 656.91	2 657.70	546 047.6–583 674.1	4–4	5.17+07	5.47−02	1.91+00	−0.660	A	1
81	5*d*–6*f*	^{2}D–^{2}F°		*1 847.2*	*546 054.2–600 189.4*	10–14	8.01+08	5.74−01	3.49+01	0.759	A	1
				1 847.38	546 058.6–600 189.4	6–8	8.03+08	5.48−01	2.00+01	0.517	A	1
				1 847.00	546 047.6–600 189.4	4–6	7.50+08	5.75−01	1.39+01	0.362	A	1
				1 847.38	546 058.6–600 189.4	6–6	5.36+07	2.74−02	1.00+00	−0.784	A	1
82	5*d*–7*p*	^{2}D–^{2}P°		*1 367.26*	*546 054.2–619 193.2*	10–6	2.42+08	4.08−02	1.84+00	−0.389	A	1
				1 366.871	546 058.6–619 218.4	6–4	2.18+08	4.07−02	1.10+00	−0.612	A	1
				1 368.077	546 047.6–619 142.9	4–2	2.43+08	3.40−02	6.13−01	−0.866	B+	1
				1 366.665	546 047.6–619 218.4	4–4	2.42+07	6.79−03	1.22−01	−1.566	B+	1
83	5*d*–7*f*	^{2}D–^{2}F°		*1 199.96*	*546 054.2–629 390.3*	10–14	5.51+08	1.67−01	6.58+00	0.223	A	1
				1 200.024	546 058.6–629 390.3	6–8	5.51+08	1.59−01	3.76+00	−0.020	A	1
				1 199.865	546 047.6–629 390.3	4–6	5.14+08	1.67−01	2.63+00	−0.175	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 200.024	546 058.6–629 390.3	6–6	3.68+07	7.94−03	1.88−01	−1.322	B+	1
84	$5d-8p$	^{2}D–^{2}P°		1 046.5	546 054.2–641 614	10–6	1.42+08	1.40−02	4.83−01	−0.854	B+	1
				1 046.33	546 058.6–641 631	6–4	1.29+08	1.41−02	2.90−01	−1.073	B+	1
				1 046.77	546 047.6–641 580	4–2	1.43+08	1.17−02	1.61−01	−1.330	B+	1
				1 046.21	546 047.6–641 631	4–4	1.43+07	2.34−03	3.22−02	−2.029	B+	1
85	$5d-8f$	^{2}D–^{2}F°		977.62	546 054.2–648 343.2	10–14	3.72+08	7.45−02	2.40+00	−0.128	A	1
				977.664	546 058.6–648 343.2	6–8	3.72+08	7.11−02	1.37+00	−0.370	A	1
				977.559	546 047.6–648 343.2	4–6	3.47+08	7.46−02	9.60−01	−0.525	B+	1
				977.664	546 058.6–648 343.2	6–6	2.48+07	3.55−03	6.86−02	−1.672	B+	1
86	$5d-9p$	^{2}D–^{2}P°		904.1	546 054.2–656 664	10–6	9.24+07	6.79−03	2.02−01	−1.168	B+	1
				904.03	546 058.6–656 675	6–4	8.35+07	6.82−03	1.21−01	−1.388	B+	1
				904.21	546 047.6–656 641	4–2	9.28+07	5.69−03	6.77−02	−1.643	B+	1
				903.94	546 047.6–656 675	4–4	9.28+06	1.14−03	1.35−02	−2.341	B+	1
87	$5d-9f$	^{2}D–^{2}F°		867.5	546 054.2–661 327	10–14	2.60+08	4.11−02	1.17+00	−0.386	B+	1
				867.54	546 058.6–661 327	6–8	2.60+08	3.91−02	6.70−01	−0.630	B+	1
				867.46	546 047.6–661 327	4–6	2.43+08	4.11−02	4.69−01	−0.784	B+	1
				867.54	546 058.6–661 327	6–6	1.73+07	1.96−03	3.35−02	−1.930	B+	1
88	$5d-10f$	^{2}D–^{2}F°		802.7	546 054.2–670 626	10–14	1.88+08	2.54−02	6.72−01	−0.595	B+	1
				802.78	546 058.6–670 626	6–8	1.88+08	2.43−02	3.84−01	−0.836	B+	1
				802.71	546 047.6–670 626	4–6	1.76+08	2.55−02	2.69−01	−0.991	B+	1
				802.78	546 058.6–670 626	6–6	1.26+07	1.21−03	1.92−02	−2.139	B+	1
89	$5f-6d$	^{2}F°–^{2}D	2 216.7	2 217.4	551 759.6–596 858.0	14–10	1.09+08	5.73−02	5.86+00	−0.096	A	1
			2 216.52	2 217.21	551 759.6–596 861.3	8–6	1.04+08	5.74−02	3.35+00	−0.338	A	1
			2 216.93	2 217.62	551 759.6–596 853.0	6–4	1.09+08	5.36−02	2.34+00	−0.493	A	1
			2 216.52	2 217.21	551 759.6–596 861.3	6–6	5.19+06	3.82−03	1.67−01	−1.640	B+	1
90	$5f-7d$	^{2}F°–^{2}D		1 324.0	551 759.6–627 287	14–10	5.27+07	9.90−03	6.04−01	−0.858	B+	1
				1 324.02	551 759.6–627 287	8–6	5.03+07	9.91−03	3.45−01	−1.101	B+	1
				1 324.02	551 759.6–627 287	6–4	5.28+07	9.26−03	2.42−01	−1.255	B+	1
				1 324.02	551 759.6–627 287	6–6	2.51+06	6.60−04	1.72−02	−2.402	B+	1
91	$5f-8d$	^{2}F°–^{2}D		1 050.7	551 759.6–646 931	14–10	3.03+07	3.58−03	1.73−01	−1.300	B+	1
				1 050.74	551 759.6–646 931	8–6	2.88+07	3.58−03	9.90−02	−1.543	B+	1
				1 050.74	551 759.6–646 931	6–4	3.03+07	3.34−03	6.94−02	−1.698	B+	1
				1 050.74	551 759.6–646 931	6–6	1.44+06	2.38−04	4.94−03	−2.845	B+	1
92	$5f-9d$	^{2}F°–^{2}D		921.0	551 759.6–660 341	14–10	1.92+07	1.75−03	7.41−02	−1.611	B+	1
				920.97	551 759.6–660 341	8–6	1.83+07	1.75−03	4.23−02	−1.854	B+	1
				920.97	551 759.6–660 341	6–4	1.93+07	1.63−03	2.97−02	−2.010	B+	1
				920.97	551 759.6–660 341	6–6	9.16+05	1.16−04	2.11−03	−3.157	B+	1
93	$6s-6p$	^{2}S–^{2}P°	10 103	10 106	573 737.7–583 633.2	2–6	3.46+07	1.59+00	1.06+02	0.502	A	1
			10 061.2	10 064.0	573 737.7–583 674.1	2–4	3.50+07	1.06+00	7.05+01	0.326	A	1
			10 187.1	10 189.9	573 737.7–583 551.3	2–2	3.38+07	5.26−01	3.52+01	0.022	A	1
94	$6s-7p$	^{2}S–^{2}P°	2 199.3	2 200.0	573 737.7–619 193.2	2–6	3.02+07	6.58−02	9.53−01	−0.881	B+	1
			2 198.05	2 198.73	573 737.7–619 218.4	2–4	2.97+07	4.31−02	6.23−01	−1.064	B+	1
			2 201.70	2 202.39	573 737.7–619 142.9	2–2	3.13+07	2.28−02	3.30−01	−1.341	B+	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
95	$6s$–$8p$	^{2}S–^{2}P°		*1 473.3*	*573 737.7–641 614*	2–6	3.01+07	2.94−02	2.85−01	−1.231	B+	1
				1 472.90	573 737.7–641 631	2–4	2.97+07	1.93−02	1.87−01	−1.413	B+	1
				1 474.01	573 737.7–641 580	2–2	3.09+07	1.01−02	9.78−02	−1.695	B+	1
96	$6s$–$9p$	^{2}S–^{2}P°		*1 205.9*	*573 737.7–656 664*	2–6	2.40+07	1.57−02	1.25−01	−1.503	B+	1
				1 205.73	573 737.7–656 675	2–4	2.37+07	1.04−02	8.21−02	−1.682	B+	1
				1 206.22	573 737.7–656 641	2–2	2.46+07	5.37−03	4.26−02	−1.969	B+	1
97	$6p$–$6d$	^{2}P°–^{2}D	*7 559*	*7 562*	*583 633.2–596 858.0*	6–10	1.08+08	1.54+00	2.30+02	0.966	A	1
			7 581.0	7 583.1	583 674.1–596 861.3	4–6	1.07+08	1.39+00	1.38+02	0.745	A	1
			7 515.8	7 517.8	583 551.3–596 853.0	2–4	9.15+07	1.55+00	7.67+01	0.491	A	1
			7 585.8	7 587.9	583 674.1–596 853.0	4–4	1.79+07	1.54−01	1.54+01	−0.210	A	1
98	$6p$–$7s$	^{2}P°–^{2}S	*3 381.3*	*3 382.3*	*583 633.2–613 198.8*	6–2	5.58+08	3.19−01	2.13+01	0.282	A	1
			3 386.02	3 386.99	583 674.1–613 198.8	4–2	3.74+08	3.21−01	1.43+01	0.109	A	1
			3 372.00	3 372.97	583 551.3–613 198.8	2–2	1.86+08	3.17−01	7.03+00	−0.198	A	1
99	$6p$–$7d$	^{2}P°–^{2}D	*2 290*	*2 291*	*583 633.2–627 287*	6–10	8.33+06	1.09−02	4.94−01	−1.184	B+	1
			2 292.2	2 292.9	583 674.1–627 287	4–6	8.61+06	1.02−02	3.07−01	−1.389	B+	1
			2 285.8	2 286.5	583 551.3–627 287	2–4	6.50+06	1.02−02	1.53−01	−1.690	B+	1
			2 292.2	2 292.9	583 674.1–627 287	4–4	1.45+06	1.14−03	3.44−02	−2.341	B+	1
100	$6p$–$8s$	^{2}P°–^{2}S		*1 849*	*583 633.2–637 709*	6–2	3.05+08	5.20−02	1.90+00	−0.506	A	1
				1 850.7	583 674.1–637 709	4–2	2.04+08	5.24−02	1.27+00	−0.679	A	1
				1 846.5	583 551.3–637 709	2–2	1.02+08	5.20−02	6.31−01	−0.983	B+	1
101	$6p$–$8d$	^{2}P°–^{2}D		*1 579.8*	*583 633.2–646 931*	6–10	1.78+07	1.11−02	3.47−01	−1.177	B+	1
				1 580.86	583 674.1–646 931	4–6	1.82+07	1.02−02	2.12−01	−1.389	B+	1
				1 577.79	583 551.3–646 931	2–4	1.44+07	1.07−02	1.11−01	−1.670	B+	1
				1 580.86	583 674.1–646 931	4–4	3.05+06	1.14−03	2.37−02	−2.341	B+	1
102	$6p$–$9d$	^{2}P°–^{2}D		*1 303.6*	*583 633.2–660 341*	6–10	1.81+07	7.67−03	1.97−01	−1.337	B+	1
				1 304.34	583 674.1–660 341	4–6	1.84+07	7.03−03	1.20−01	−1.551	B+	1
				1 302.26	583 551.3–660 341	2–4	1.47+07	7.47−03	6.40−02	−1.826	B+	1
				1 304.34	583 674.1–660 341	4–4	3.07+06	7.84−04	1.34−02	−2.504	B+	1
103	$6d$–$6f$	^{2}D–^{2}F°		*3 331.4* cm^{-1}	*596 858.0–600 189.4*	10–14	1.99+06	3.77−01	3.73+02	0.576	A	1
				3 328.1 cm^{-1}	596 861.3–600 189.4	6–8	1.99+06	3.60−01	2.13+02	0.334	A	1
				3 336.4 cm^{-1}	596 853.0–600 189.4	4–6	1.87+06	3.79−01	1.49+02	0.181	A	1
				3 328.1 cm^{-1}	596 861.3–600 189.4	6–6	1.33+05	1.80−02	1.06+01	−0.967	A	1
104	$6d$–$7p$	^{2}D–^{2}P°	*4 476.0*	*4 477.2*	*596 858.0–619 193.2*	10–6	2.47+08	4.46−01	6.58+01	0.649	A	1
			4 471.60	4 472.85	596 861.3–619 218.4	6–4	2.23+08	4.45−01	3.93+01	0.427	A	1
			4 485.08	4 486.34	596 853.0–619 142.9	4–2	2.48+08	3.74−01	2.21+01	0.175	A	1
			4 469.94	4 471.19	596 853.0–619 218.4	4–4	2.47+07	7.41−02	4.36+00	−0.528	A	1
105	$6d$–$7f$	^{2}D–^{2}F°	*3 073.0*	*3 073.9*	*596 858.0–629 390.3*	10–14	2.66+08	5.27−01	5.33+01	0.722	A	1
			3 073.29	3 074.18	596 861.3–629 390.3	6–8	2.66+08	5.03−01	3.05+01	0.480	A	1
			3 072.50	3 073.40	596 853.0–629 390.3	4–6	2.49+08	5.28−01	2.13+01	0.325	A	1
			3 073.29	3 074.18	596 861.3–629 390.3	6–6	1.78+07	2.52−02	1.52+00	−0.820	A	1
106	$6d$–$8p$	^{2}D–^{2}P°	*2 234*	*2 234*	*596 858.0–641 614*	10–6	1.24+08	5.55−02	4.08+00	−0.256	A	1
			2 233.0	2 233.7	596 861.3–641 631	6–4	1.11+08	5.56−02	2.45+00	−0.477	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			2 235.1	2 235.8	596 853.0–641 580	4–2	1.24+08	4.64−02	1.36+00	−0.731	A	1
			2 232.5	2 233.2	596 853.0–641 631	4–4	1.24+07	9.26−03	2.72−01	−1.431	B+	1
107	6*d*–8*f*	^{2}D–^{2}F°		*1 942.3*	*596 858.0–648 343.2*	10–14	2.03+08	1.61−01	1.03+01	0.207	A	1
				1 942.43	596 861.3–648 343.2	6–8	2.03+08	1.53−01	5.87+00	−0.037	A	1
				1 942.12	596 853.0–648 343.2	4–6	1.89+08	1.61−01	4.10+00	−0.191	A	1
				1 942.43	596 861.3–648 343.2	6–6	1.35+07	7.65−03	2.93−01	−1.338	B+	1
108	6*d*–9*p*	^{2}D–^{2}P°		*1 672.1*	*596 858.0–656 664*	10–6	7.65+07	1.92−02	1.06+00	−0.717	B+	1
				1 671.86	596 861.3–656 675	6–4	6.89+07	1.93−02	6.35−01	−0.936	B+	1
				1 672.58	596 853.0–656 641	4–2	7.66+07	1.61−02	3.53−01	−1.191	B+	1
				1 671.63	596 853.0–656 675	4–4	7.66+06	3.21−03	7.06−02	−1.891	B+	1
109	6*d*–9*f*	^{2}D–^{2}F°		*1 551.1*	*596 858.0–661 327*	10–14	1.47+08	7.40−02	3.78+00	−0.131	A	1
				1 551.21	596 861.3–661 327	6–8	1.47+08	7.07−02	2.16+00	−0.372	A	1
				1 551.01	596 853.0–661 327	4–6	1.37+08	7.42−02	1.51+00	−0.528	A	1
				1 551.21	596 861.3–661 327	6–6	9.80+06	3.53−03	1.08−01	−1.674	B+	1
110	6*d*–10*f*	^{2}D–^{2}F°		*1 355.6*	*596 858.0–670 626*	10–14	1.08+08	4.16−02	1.86+00	−0.381	A	1
				1 355.66	596 861.3–670 626	6–8	1.08+08	3.97−02	1.06+00	−0.623	A	1
				1 355.51	596 853.0–670 626	4–6	1.01+08	4.17−02	7.44−01	−0.778	B+	1
				1 355.66	596 861.3–670 626	6–6	7.21+06	1.99−03	5.32−02	−1.923	B+	1
111	6*f*–7*d*	^{2}F°–^{2}D	*3 689*	*3 690*	*600 189.4–627 287*	14–10	6.68+07	9.74−02	1.66+01	0.135	A	1
			3 689.3	3 690.4	600 189.4–627 287	8–6	6.36+07	9.75−02	9.47+00	−0.108	A	1
			3 689.3	3 690.4	600 189.4–627 287	6–4	6.69+07	9.11−02	6.63+00	−0.262	A	1
			3 689.3	3 690.4	600 189.4–627 287	6–6	3.18+06	6.49−03	4.73−01	−1.410	B+	1
112	6*f*–8*d*	^{2}F°–^{2}D	*2 139*	*2 139*	*600 189.4–646 931*	14–10	3.54+07	1.73−02	1.71+00	−0.616	B+	1
			2 138.7	2 139.4	600 189.4–646 931	8–6	3.37+07	1.73−02	9.76−01	−0.859	B+	1
			2 138.7	2 139.4	600 189.4–646 931	6–4	3.54+07	1.62−02	6.84−01	−1.012	B+	1
			2 138.7	2 139.4	600 189.4–646 931	6–6	1.68+06	1.15−03	4.88−02	−2.161	B+	1
113	6*f*–9*d*	^{2}F°–^{2}D		*1 662.5*	*600 189.4–660 341*	14–10	2.15+07	6.35−03	4.87−01	−1.051	B+	1
				1 662.47	600 189.4–660 341	8–6	2.05+07	6.36−03	2.78−01	−1.293	B+	1
				1 662.47	600 189.4–660 341	6–4	2.15+07	5.94−03	1.95−01	−1.448	B+	1
				1 662.47	600 189.4–660 341	6–6	1.02+06	4.24−04	1.39−02	−2.594	B+	1
114	7*s*–7*p*	^{2}S–^{2}P°	*16 678*	*16 682*	613 198.8–*619 193.2*	2–6	1.50+07	1.87+00	2.06+02	0.573	A	1
			16 607.9	16 612.4	613 198.8–619 218.4	2–4	1.52+07	1.26+00	1.37+02	0.401	A	1
			16 818.8	16 823.4	613 198.8–619 142.9	2–2	1.47+07	6.22−01	6.89+01	0.095	A	1
115	7*s*–8*p*	^{2}S–^{2}P°	*3 518*	*3 519*	613 198.8–*641 614*	2–6	1.19+07	6.62−02	1.53+00	−0.878	A	1
			3 516.1	3 517.1	613 198.8–641 631	2–4	1.17+07	4.33−02	1.00+00	−1.062	A	1
			3 522.5	3 523.5	613 198.8–641 580	2–2	1.24+07	2.30−02	5.34−01	−1.337	B+	1
116	7*s*–9*p*	^{2}S–^{2}P°	*2 300*	*2 301*	613 198.8–*656 664*	2–6	1.26+07	3.00−02	4.54−01	−1.222	B+	1
			2 299.4	2 300.1	613 198.8–656 675	2–4	1.24+07	1.97−02	2.98−01	−1.405	B+	1
			2 301.2	2 301.9	613 198.8–656 641	2–2	1.30+07	1.03−02	1.56−01	−1.686	B+	1
117	7*p*–7*d*	^{2}P°–^{2}D	*12 352*	*12 355*	*619 193.2–627 287*	6–10	4.73+07	1.80+00	4.41+02	1.033	A	1
			12 390	12 394	619 218.4–627 287	4–6	4.71+07	1.63+00	2.65+02	0.814	A	1
			12 275	12 279	619 142.9–627 287	2–4	4.02+07	1.82+00	1.46+02	0.561	A	1
			12 390	12 394	619 218.4–627 287	4–4	7.85+06	1.81−01	2.95+01	−0.140	A	1
118	7*p*–8*s*	^{2}P°–^{2}S	*5 399*	*5 401*	*619 193.2*–637 709	6–2	2.69+08	3.93−01	4.19+01	0.373	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			5 406.7	5 408.2	619 218.4–637 709	4–2	1.80+08	3.95−01	2.81+01	0.199	A	1
			5 384.7	5 386.2	619 142.9–637 709	2–2	8.97+07	3.90−01	1.38+01	−0.108	A	1
119	7*p*–8*d*	$^2P^{\circ}-^2D$	*3 604*	*3 605*	*619 193.2–646 931*	6–10	2.12+06	6.88−03	4.90−01	−1.384	B+	1
			3 607.4	3 608.5	619 218.4–646 931	4–6	2.21+06	6.47−03	3.07−01	−1.587	B+	1
			3 597.6	3 598.7	619 142.9–646 931	2–4	1.61+06	6.26−03	1.48−01	−1.902	B+	1
			3 607.4	3 608.5	619 218.4–646 931	4–4	3.73+05	7.28−04	3.46−02	−2.536	B+	1
120	7*p*–9*d*	$^2P^{\circ}-^2D$	*2 430*	*2 430*	*619 193.2–660 341*	6–10	5.87+06	8.66−03	4.16−01	−1.284	B+	1
			2 431.0	2 431.8	619 218.4–660 341	4–6	6.00+06	7.97−03	2.55−01	−1.496	B+	1
			2 426.6	2 427.3	619 142.9–660 341	2–4	4.69+06	8.28−03	1.32−01	−1.781	B+	1
			2 431.0	2 431.8	619 218.4–660 341	4–4	1.01+06	8.91−04	2.85−02	−2.448	B+	1
121	7*d*–7*f*	$^2D-^2F^{\circ}$		*2 103* cm^{-1}	*627 287–629 390.3*	10–14	1.01+06	4.77−01	7.47+02	0.679	A	1
				2 103 cm^{-1}	627 287–629 390.3	6–8	1.01+06	4.55−01	4.27+02	0.436	A	1
				2 103 cm^{-1}	627 287–629 390.3	4–6	9.40+05	4.78−01	2.99+02	0.281	A	1
				2 103 cm^{-1}	627 287–629 390.3	6–6	6.71+04	2.28−02	2.13+01	−0.864	A	1
122	7*d*–8*p*	$^2D-^2P^{\circ}$	*6 978*	*6 980*	*627 287–641 614*	10–6	1.29+08	5.64−01	1.29+02	0.751	A	1
			6 970	6 972	627 287–641 631	6–4	1.16+08	5.62−01	7.74+01	0.528	A	1
			6 995	6 996	627 287–641 580	4–2	1.29+08	4.73−01	4.35+01	0.277	A	1
			6 970	6 972	627 287–641 631	4–4	1.29+07	9.36−02	8.59+00	−0.427	A	1
123	7*d*–8*f*	$^2D-^2F^{\circ}$	*4 748*	*4 749*	*627 287–648 343.2*	10–14	1.07+08	5.04−01	7.88+01	0.702	A	1
			4 747.9	4 749.2	627 287–648 343.2	6–8	1.07+08	4.81−01	4.51+01	0.460	A	1
			4 747.9	4 749.2	627 287–648 343.2	4–6	9.94+07	5.04−01	3.15+01	0.304	A	1
			4 747.9	4 749.2	627 287–648 343.2	6–6	7.12+06	2.41−02	2.25+00	−0.840	A	1
124	7*d*–9*p*	$^2D-^2P^{\circ}$	*3 403*	*3 404*	*627 287–656 664*	10–6	6.75+07	7.04−02	7.89+00	−0.152	A	1
			3 401.8	3 402.7	627 287–656 675	6–4	6.09+07	7.05−02	4.73+00	−0.374	A	1
			3 405.7	3 406.7	627 287–656 641	4–2	6.76+07	5.88−02	2.63+00	−0.629	A	1
			3 401.8	3 402.7	627 287–656 675	4–4	6.76+06	1.17−02	5.26−01	−1.330	B+	1
125	7*d*–9*f*	$^2D-^2F^{\circ}$	*2 937*	*2 938*	*627 287–661 327*	10–14	8.67+07	1.57−01	1.52+01	0.196	A	1
			2 936.9	2 937.7	627 287–661 327	6–8	8.67+07	1.50−01	8.68+00	−0.046	A	1
			2 936.9	2 937.7	627 287–661 327	4–6	8.09+07	1.57−01	6.07+00	−0.202	A	1
			2 936.9	2 937.7	627 287–661 327	6–6	5.79+06	7.49−03	4.34−01	−1.347	B+	1
126	7*d*–10*f*	$^2D-^2F^{\circ}$	*2 307*	*2 307*	*627 287–670 626*	10–14	6.60+07	7.37−02	5.60+00	−0.133	A	1
			2 306.7	2 307.4	627 287–670 626	6–8	6.61+07	7.03−02	3.20+00	−0.375	A	1
			2 306.7	2 307.4	627 287–670 626	4–6	6.16+07	7.38−02	2.24+00	−0.530	A	1
			2 306.7	2 307.4	627 287–670 626	6–6	4.41+06	3.52−03	1.60−01	−1.675	B+	1
127	7*f*–8*d*	$^2F^{\circ}-^2D$	*5 699*	*5 701*	*629 390.3–646 931*	14–10	4.05+07	1.41−01	3.71+01	0.295	A	1
			5 699	5 701	629 390.3–646 931	8–6	3.87+07	1.41−01	2.12+01	0.052	A	1
			5 699	5 701	629 390.3–646 931	6–4	4.06+07	1.32−01	1.48+01	−0.101	A	1
			5 699	5 701	629 390.3–646 931	6–6	1.93+06	9.41−03	1.06+00	−1.248	A	1
128	7*f*–9*d*	$^2F^{\circ}-^2D$	*3 230*	*3 231*	*629 390.3–660 341*	14–10	2.29+07	2.56−02	3.81+00	−0.446	A	1
			3 230.0	3 230.9	629 390.3–660 341	8–6	2.19+07	2.57−02	2.18+00	−0.687	A	1
			3 230.0	3 230.9	629 390.3–660 341	6–4	2.30+07	2.40−02	1.52+00	−0.842	A	1
			3 230.0	3 230.9	629 390.3–660 341	6–6	1.09+06	1.71−03	1.09−01	−1.989	B+	1
129	8*s*–8*p*	$^2S-^2P^{\circ}$		*3 905* cm^{-1}	637 709–*641 614*	2–6	7.34+06	2.16+00	3.65+02	0.635	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				3 922 cm^{-1}	637 709–641 631	2–4	7.45+06	1.45+00	2.43+02	0.462	A	1
				3 871 cm^{-1}	637 709–641 580	2–2	7.17+06	7.18−01	1.22+02	0.157	A	1
130	8*s*–9*p*	^{2}S–^{2}P°	*5 274*	*5 276*	637 709–*656 664*	2–6	5.40+06	6.76−02	2.35+00	−0.869	A	1
			5 271.1	5 272.6	637 709–656 675	2–4	5.29+06	4.41−02	1.53+00	−1.055	A	1
			5 280.6	5 282.1	637 709–656 641	2–2	5.62+06	2.35−02	8.17−01	−1.328	B+	1
131	8*p*–8*d*	^{2}P°–^{2}D	*18 802*	*18 808*	*641 614–646 931*	6–10	2.34+07	2.07+00	7.68+02	1.094	A	1
			18 863	18 868	641 631–646 931	4–6	2.32+07	1.86+00	4.62+02	0.872	A	1
			18 683	18 688	641 580–646 931	2–4	1.99+07	2.08+00	2.55+02	0.619	A	1
			18 863	18 868	641 631–646 931	4–4	3.87+06	2.07−01	5.13+01	−0.082	A	1
132	8*p*–9*d*	^{2}P°–^{2}D	*5 338*	*5 340*	*641 614–660 341*	6–10	6.11+05	4.35−03	4.59−01	−1.583	B+	1
			5 343.2	5 344.7	641 631–660 341	4–6	6.46+05	4.15−03	2.92−01	−1.780	B+	1
			5 328.7	5 330.2	641 580–660 341	2–4	4.51+05	3.84−03	1.34−01	−2.115	B+	1
			5 343.2	5 344.7	641 631–660 341	4–4	1.09+05	4.69−04	3.30−02	−2.727	B+	1
133	8*d*–8*f*	^{2}D–^{2}F°		*1 412* cm^{-1}	*646 931–648 343.2*	10–14	5.44+05	5.73−01	1.34+03	0.758	A	1
				1 412 cm^{-1}	646 931–648 343.2	6–8	5.45+05	5.46−01	7.63+02	0.515	A	1
				1 412 cm^{-1}	646 931–648 343.2	4–6	5.08+05	5.73−01	5.34+02	0.360	A	1
				1 412 cm^{-1}	646 931–648 343.2	6–6	3.63+04	2.73−02	3.81+01	−0.786	A	1
134	8*d*–9*p*	^{2}D–^{2}P°	*10 272*	*10 274*	*646 931–656 664*	10–6	7.19+07	6.82−01	2.31+02	0.834	A	1
			10 260	10 263	646 931–656 675	6–4	6.47+07	6.81−01	1.38+02	0.611	A	1
			10 296	10 299	646 931–656 641	4–2	7.19+07	5.72−01	7.75+01	0.359	A	1
			10 260	10 263	646 931–656 675	4–4	7.18+06	1.13−01	1.53+01	−0.345	A	1
135	8*d*–9*f*	^{2}D–^{2}F°	*6 944*	*6 946*	*646 931–661 327*	10–14	4.87+07	4.93−01	1.13+02	0.693	A	1
			6 944	6 946	646 931–661 327	6–8	4.88+07	4.70−01	6.45+01	0.450	A	1
			6 944	6 946	646 931–661 327	4–6	4.55+07	4.93−01	4.51+01	0.295	A	1
			6 944	6 946	646 931–661 327	6–6	3.25+06	2.35−02	3.23+00	−0.851	A	1
136	8*d*–10*f*	^{2}D–^{2}F°	*4 219*	*4 220*	*646 931–670 626*	10–14	4.15+07	1.55−01	2.15+01	0.190	A	1
			4 219.1	4 220.3	646 931–670 626	6–8	4.16+07	1.48−01	1.23+01	−0.052	A	1
			4 219.1	4 220.3	646 931–670 626	4–6	3.88+07	1.55−01	8.63+00	−0.208	A	1
			4 219.1	4 220.3	646 931–670 626	6–6	2.78+06	7.41−03	6.17−01	−1.352	B+	1
137	8*f*–9*d*	^{2}F°–^{2}D	*8 333*	*8 335*	*648 343.2–660 341*	14–10	2.52+07	1.87−01	7.20+01	0.418	A	1
			8 333	8 335	648 343.2–660 341	8–6	2.40+07	1.88−01	4.11+01	0.177	A	1
			8 333	8 335	648 343.2–660 341	6–4	2.52+07	1.75−01	2.88+01	0.021	A	1
			8 333	8 335	648 343.2–660 341	6–6	1.20+06	1.25−02	2.05+00	−1.125	A	1
138	9*p*–9*d*	^{2}P°–^{2}D		*3 677* cm^{-1}	*656 664–660 341*	6–10	1.26+07	2.33+00	1.25+03	1.146	A	1
				3 666 cm^{-1}	656 675–660 341	4–6	1.25+07	2.09+00	7.51+02	0.922	A	1
				3 700 cm^{-1}	656 641–660 341	2–4	1.07+07	2.34+00	4.15+02	0.670	A	1
				3 666 cm^{-1}	656 675–660 341	4–4	2.08+06	2.32−01	8.34+01	−0.032	A	1
139	9*d*–9*f*	^{2}D–^{2}F°		*986* cm^{-1}	*660 341–661 327*	10–14	3.06+05	6.60−01	2.21+03	0.820	A	1
				986 cm^{-1}	660 341–661 327	6–8	3.06+05	6.29−01	1.26+03	0.577	A	1
				986 cm^{-1}	660 341–661 327	4–6	2.86+05	6.61−01	8.82+02	0.422	A	1
				986 cm^{-1}	660 341–661 327	6–6	2.04+04	3.15−02	6.30+01	−0.724	A	1
140	9*d*–10*f*	^{2}D–^{2}F°	*9 720*	*9 723*	*660 341–670 626*	10–14	2.47+07	4.91−01	1.57+02	0.691	A	1
			9 720	9 723	660 341–670 626	6–8	2.48+07	4.68−01	8.98+01	0.448	A	1

TABLE 22. Transition probabilities of allowed lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			9 720	9 723	660 341–670 626	4–6	2.31+07	4.90−01	6.28+01	0.292	A	1
			9 720	9 723	660 341–670 626	6–6	1.65+06	2.34−02	4.49+00	−0.853	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1=Froese Fischer (2002a).

References for Allowed Transitions of S VI

Froese Fischer, C., 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., 2002b, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderilt.edu/ on December 21, 2005.

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.6.2. Forbidden Transitions for S VI

Transition probabilities for the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions were selected from extensive calculations performed by Froese Fischer *et al.* (2002b) using the MCHF method with BP corrections.

The E2 $3s\ ^2S$-$3d\ ^2D$ multiplet was observed at 404.137 Å by Joelsson *et al.* (1979). the transition probability for this multiplet was taken from Godefroid *et al.* (1985) who have used the MCHF approximation. We decomposed their multiplet value into fine-structure components assuming *LS* coupling.

A wavelength finding list of forbidden lines for S VI is given in Table 23, and the transition probabilities for these lines are provided in Table 24.

TABLE 23. Wavelength finding list for forbidden lines of S VI

Wavelength (vac.) (Å)	Mult. No.
289.067	5
338.119	4
338.644	4
339.571	4
340.100	4
404.114	1
404.167	1
489.258	7
489.298	7
489.335	7
489.376	7
650.558	6
706.307	3
1974.54	8
Wave number (cm^{-1})	**Mult. No.**
1264.1	2

TABLE 24. Transition probabilities of forbidden lines for S VI

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$3s-3d$	^2S-^2D									
				404.114	0–247 455.0	2–6	E2	1.32+05	7.64+00	B+	2,LS
				404.167	0–247 422.5	2–4	E2	1.32+05	5.09+00	B+	2,LS
2	$3p-3p$	$^2P^{\circ}$-$^2P^{\circ}$									
				1264.1 cm^{-1}	105 873.6–107 137.7	2–4	M1	1.82−02	1.33+00	A	1
3	$3p-3d$	$^2P^{\circ}$-^2D									
				706.307	105 873.6–247 455.0	2–6	M2	2.77−01	1.95+01	A	1
4	$3p-4p$	$^2P^{\circ}$-$^2P^{\circ}$									
				339.571	107 137.7–401 627.1	4–4	M1	1.20−01	6.94−07	D	1
				339.571	107 137.7–401 627.1	4–4	E2	1.52+05	2.44+00	A	1
				338.644	105 873.6–401 169.2	2–2	M1	9.49−02	2.73−07	D	1

TABLE 24. Transition probabilities of forbidden lines for S VI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				340.100	107 137.7–401 169.2	4–2	M1	2.71+00	7.91−06	D+	1
				340.100	107 137.7–401 169.2	4–2	E2	3.04+05	2.47+00	A	1
				338.19	105 873.6–401 627.1	2–4	M1	8.85−01	5.07−06	D+	1
				338.119	105 873.6–401 627.1	2–4	E2	1.54+05	2.42+00	A	1
5	$3p-4d$	$^2P^{\circ}$-^2D									
				289.067	105 873.6–451 813.8	2–6	M2	8.90−01	7.22−01	B	1
6	$3d-4p$	^2D-$^2P^{\circ}$									
				650.558	247 455.0–401 169.2	6–2	M2	2.98−01	4.66+00	B+	1
7	$3d-4d$	^2D-^2D									
				489.335	247 455.0–451 813.8	6–6	E2	4.89+04	7.34+00	A	1
				489.298	247 422.5 451 796.8	4–4	E2	4.28+04	4.28+00	A	1
				489.376	247 455.0–451 796.8	6–4	E2	1.83+04	1.83+00	A	1
				489.258	247 422.5–451 813.8	4–6	E2	1.22+04	1.83+00	A	1
8	$4p-4d$	$^2P^{\circ}$-^2D									
				1974.54	401 169.2–451 813.8	2–8	M2	6.80−03	8.21+01	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1= Froese Fischer *et al.* (2006); Ref. 2=Godefroid *et al.* (1985); Ref. 3=Joelsson *et al.* (1979).

References for Forbidden Transitions of S VI

Froese Fischer, C., 2002b, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http//atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Godefroid, M., C. E. Magnusson, P. O. Zetterberg, and I. Joelsson, 1985, Phys. Scr. **32**, 125.

Joelsson, I., P. O. Zetterberg, and C. E. Magnusson, 1979, Phys. Scr. **20**, 145.

4.7. S VII

$Z=16$
Neon Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^6\ {}^1S_0$
Ionization Energy: 2 266 000 cm^{-1} (280.948 eV)

4.7.1. Allowed Transitions for S VII

We selected transition probabilities from Froese Fischer and Tachiev (2004) who have considered transition arrays to the ground state $2p^6$-$2p^5 3s, 3d$ and between low configurations $2p^5 3s$-$2p^5 3p$ and $2p^5 3p$-$3p^5 3d$. They utilized the MCHF method with BP corrections. Other relativistic corrections have bean also included. Froese Fischer (2004b) have calculated transition probabilities for the transition array $2p^5 3d$-$2p^5 4f$ with the MCDHF method. These results were included in our table.

For the $2p^6\ {}^1S_0$-$2p^5 3s\ {}^1P_1^\circ$, ${}^3P_1^\circ$ resonance lines, experimental transition rates were taken from Kirm *et al.* (1996) and Träbert (1996). The beam-foil spectroscopy technique has been used in both works.

Transition probabilities for lines from the $2p^5 ns$ ($n=4,5$) and $2p^5 nd$ ($n=4-6$) levels to the ground state $2p^6\ {}^1S_0$ are taken from work of Fawcett and Hayes (1987). They have computed with the Hartree-Fock relativistic (HFR) method using the COWAN code.

For few transitions from the high-lying $2p^5 nl$ ($n=4,5$) levels, data were adopted from Cornille *et al.* (1991) where the relativistic SUPERSTRUCTURE CI code was applied.

A wavelength finding list of allowed lines for S VII is given in Table 25, and the transition probabilities for these lines areprovided in Table 26.

TABLE 25. Wavelength finding list for allowed lines of S VII

Wavelength (vac.) (Å)	Mult. No.
47.098	15
47.307	14
48.647	13
48.874	12
50.027	11
51.807	10
52.097	9
52.334	8
54.652	7
54.938	6
60.16	5
60.805	4
61.547	3
72.03	2
72.663	1
275.575	57
289.576	58
292.619	58
296.504	59
299.481	60
301.997	59

TABLE 25. Wavelength finding list for allowed lines of S VII—Continued

Wavelength (vac.) (Å)	Mult. No.
302.396	61
303.514	59
308.279	54
311.369	55
318.152	83
320.690	83
320.728	84
320.831	83
323.608	86
323.658	86
323.763	85
325.616	86
325.628	85
325.667	86
325.773	85
328.698	65
329.055	64
329.217	85
329.257	86
329.366	85
330.146	63
330.304	64
331.407	65
331.641	65
332.023	88
332.035	87
332.076	88
332.186	87
332.880	64
333.040	64
333.724	69
333.776	69
334.775	68
335.035	67
335.860	69
335.913	69
336.683	68
336.925	68
337.189	67
338.203	66
339.571	89
339.658	91
339.700	92
339.734	69
339.816	91
340.522	68
340.769	68
341.090	90
341.103	89
341.146	90
341.262	89
341.866	89
341.910	90
342.027	89
342.077	66
342.681	73
342.736	73

TABLE 25. Wavelength finding list for allowed lines of S VII—Continued

Wavelength (vac.) (Å)	Mult. No.
343.538	72
343.789	72
344.064	71
345.120	70
350.864	80
351.611	76
351.704	79
351.968	79
352.347	77
352.406	77
353.221	77
353.253	76
353.270	74
353.363	78
353.519	76
353.544	78
353.809	75
354.073	76
354.340	76
354.927	74
355.754	74
355.938	74
360.942	62
361.149	93
373.800	56
374.799	82
376.683	81
376.889	81
562.46	29
566.57	21
574.14	35
589.28	40
601.2	44
608.4	27
611.39	40
611.95	33
613.0	50
614.42	33
616.72	33
617.63	40
619.16	34
619.22	33
623.53	28
624.04	34
624.33	33
630.69	33
633.35	28
638.00	28
638.35	34
638.65	33
646.20	32
649.01	38
651.52	32
651.78	38
657.13	39
657.15	31
657.45	38

TABLE 25. Wavelength finding list for allowed lines of S VII—Continued

Wavelength (vac.) (Å)	Mult. No.
662.65	31
663.45	42
671.9	43
671.93	31
672.27	42
677.69	31
677.93	48
678.80	31
680.65	31
680.95	48
683.57	38
685.08	38
686.8	49
687.14	48
687.67	37
692.58	39
692.94	38
693.99	30
700.12	30
712.53	30
718.18	30
720.2	47
731.24	30
733.84	46
737.44	30
742.04	36
752.33	46
755.99	36
760.97	41
775.65	41
778.20	18
780.08	45
782.63	41
785.64	20
787.56	36
792.76	36
795.51	45
803.30	36
805.94	18
806.03	19
810.79	36
813.93	20
816.83	18
828.42	18
835.83	19
844.02	18
859.93	18
860.33	17
876.85	19
887.75	17
893.28	24
894.36	17
897.82	17
903.1	26
906.68	24
913.4	53
924.04	17

TABLE 25. Wavelength finding list for allowed lines of S VII—Continued

Wavelength (vac.) (Å)	Mult. No.
930.1	25
941.50	17
960.09	24
1 003.21	23
1 040.70	23
1 051.54	16
1 088.23	52
1 102.83	16
1 175.39	16
1 273.17	22
1 387.62	51

TABLE 26. Transition probabilities of allowed lines for S VII

No.	Transition Array	Mult.	λ_{air}(Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2p^6-2p^53s$	^{1}S–^{3}P°										
				72.663	0–1 376 207	1–3	1.92+10	4.56−02	1.09−02	−1.341	B+	4
2		^{1}S–^{1}P°		72.03	0–1 388 339	1–3	8.39+10	1.96−01	4.64−02	−0.708	B+	3
3	$2p^6-2p^53d$	^{1}S–^{3}P°										
				61.547	0–1 624 773	1–3	2.17+09	3.70−03	7.50−04	−2.432	B	1
4		^{1}S–^{3}D°										
				60.805	0–1 644 599	1–3	6.18+10	1.03−01	2.05−02	−0.987	B	1
5		^{1}S–^{1}P°		60.16	0–1 662 194	1–3	9.40+11	1.53+00	3.03−01	−0.185	B+	1
6	$2p^6-2p^5(^2P^{\circ}_{3/2})4s$	^{1}S–^{2}[3/2]°										
				54.938	0–1 820 230	1–3	1.51+10	2.04−02	3.69−03	−1.690	D+	1
7	$2p^6-2p^5(^2P^{\circ}_{1/2})4s$	^{1}S–^{2}[1/2]°										
				54.652	0–1 829 760	1–3	1.86+10	2.50−02	4.49−03	−1.602	D	5
8	$2p^6-2p^5(^2P^{\circ}_{3/2})4d$	^{1}S–^{2}[1/2]°										
				52.334	0–1 910 800	1–3	2.44+09	3.00−03	5.16−04	−2.523	D	5
9		^{1}S–^{2}[3/2]°										
				52.097	0–1 919 500	1–3	9.99+10	1.22−01	2.09−02	−0.914	D	5
10	$2p^6-2p^5(^2P^{\circ}_{1/2})4d$	^{1}S–^{2}[3/2]°										
				51.807	0–1 930 240	1–3	5.15+11	6.22−01	1.06−01	−0.206	D	5
11	$2p^6-2p^5(^2P^{\circ}_{3/2})5s$	^{1}S–^{2}[3/2]°										
				50.027	0–1 998 920	1–3	1.07+10	1.20−02	1.97−03	−1.921	D	5
12	$2p^6-2p^5(^2P^{\circ}_{3/2})5d$	^{1}S–^{2}[3/2]°										
				48.874	0–2 046 080	1–3	7.63+10	8.20−02	1.31−02	−1.086	D	5
13	$2p^6-2p^5(^2P^{\circ}_{1/2})5d$	^{1}S–^{2}[3/2]°										
				48.647	0–2 055 630	1–3	1.95+11	2.08−01	3.33−02	−0.682	D	5
14	$2p^6-2p^5(^2P^{\circ}_{3/2})6d$	^{1}S–^{2}[3/2]°										
				47.307	0–2 113 850	1–3	1.04+11	1.05−01	1.63−02	−0.979	D	5
15	$2p^6-2p^5(^2P^{\circ}_{1/2})6d$	^{1}S–^{2}[3/2]°										
				47.098	0–2 123 230	1–3	1.36+11	1.36−01	2.10−02	−0.866	D	5

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
16	$2p^53s$–$2p^53p$	$^3P^\circ$–^3S		*1 081.0*	*1 374 372*–1 466 883	9–3	8.22+08	4.80−02	1.54+00	−0.365	B+	1
				1 051.54	1 371 784–1 466 883	5–3	6.28+08	6.25−02	1.08+00	−0.505	B+	1
				1 102.83	1 376 207–1 466 883	3–3	1.80+08	3.27−02	3.56−01	−1.008	B+	1
				1 175.39	1 381 805–1 466 883	1–3	4.20+07	2.61−02	1.01−01	−1.583	B+	1
17		$^3P^\circ$–^3D		*907.6*	*1 374 372–1 484 557*	9–15	1.50+09	3.09−01	8.30+00	0.44	B+	1
				897.82	1 371 784–1 483 165	5–7	1.56+09	2.63−01	3.89+00	0.119	B+	1
				924.04	1 376 207–1 484 428	3–5	8.52+08	1.82−01	1.65+00	−0.263	B+	1
				941.50	1 381 805–1 488 019	1–3	2.55+08	1.02−01	3.15−01	−0.991	B+	1
				887.75	1 371 784–1 484 428	5–5	6.42+08	7.59−02	1.10+00	−0.421	B+	1
				894.36	1 376 207–1 488 019	3–3	1.10+09	1.31−01	1.16+00	−0.406	B+	1
				860.33	1 371 784–1 488 019	5–3	2.00+08	1.33−02	1.88−01	−1.177	B+	1
18		$^3P^\circ$–^3P		*823.7*	*1 374 372–1 495 774*	9–9	1.46+09	1.49−01	3.62+00	0.127	B+	1
				828.42	1 371 784–1 492 496	5–5	1.00+09	1.03−01	1.40+00	−0.288	B+	1
				805.94	1 376 207–1 500 286	3–3	7.55+07	7.35−03	5.85−02	−1.657	B+	1
				778.20	1 371 784–1 500 286	5–3	4.25+08	2.31−02	2.96−01	−0.937	B+	1
				816.83	1 376 207–1 498 631	3–1	1.83+09	6.10−02	4.92−01	−0.738	B+	1
				859.93	1 376 207–1 492 496	3–5	5.09+08	9.41−02	7.99−01	−0.549	B+	1
				844.02	1 381 805–1 500 286	1–3	6.51+08	2.09−01	5.79−01	−0.680	B+	1
19		$^3P^\circ$–^1P										
				835.83	1 376 207–1 495 849	3–3	8.51+07	8.91−03	7.35−02	−1.573	B	1
				806.03	1 371 784–1 495 849	5–3	7.12+07	4.16−03	3.52−02	−1.682	B	1
				876.85	1 381 805–1 495 849	1–3	6.67+08	2.31−01	6.66−01	−0.636	B	1
20		$^3P^\circ$–^1D										
				813.93	1 376 207–1 499 068	3–5	2.55+08	4.22−02	3.39−01	−0.898	B	1
				785.64	1 371 784–1 499 068	5–5	2.43+08	2.25−02	2.91−01	−0.949	B	1
21		$^3P^\circ$–^1S										
				566.57	1 376 207–1 552 707	3–1	9.34+08	1.50−02	8.38−02	−1.347	B	1
22		$^1P^\circ$–^3S										
				1273.17	1 388 339–1 466 883	3–3	1.16+07	2.82−03	3.54−02	−2.073	B	1
23		$^1P^\circ$–^3D										
				1040.70	1 388 339–1 484 428	3–5	6.95+06	1.88−03	1.93−02	−2.249	B	1
				1003.21	1 388 339–1 488 019	3–3	4.15+06	6.26−04	6.20−03	−2.726	C+	1
24		$^1P^\circ$–^3P										
				893.28	1 388 339–1 500 286	3–3	7.10+08	8.49−02	7.49−01	−0.594	B	1
				906.68	1 388 339–1 498 631	3–1	1.92+08	7.87−03	7.05−02	−1.627	B	1
				960.09	1 388 339–1 492 496	3–5	2.88+08	6.64−02	6.29−01	−0.701	B	1
25		$^1P^\circ$–^1P		930.1	1 388 339–1 495 849	3–3	7.39+08	9.59−02	8.81−01	−0.541	B+	1
26		$^1P^\circ$–^1D		903.1	1 388 339–1 499 068	3–5	1.20+09	2.46−01	2.19+00	−0.132	B+	1
27		$^1P^\circ$–^1S		608.4	1 388 339–1 552 707	3–1	4.98+09	9.22−02	5.54−01	−0.558	B+	1
28	$2p^53p$–$2p^53d$	^3S–$^3P^\circ$		*628.4*	*1 466 883–1 626 027*	3–9	2.76+09	4.90−01	3.04+00	0.167	B+	1
				623.53	1 466 883–1 627 260	3–5	2.49+09	2.41−01	1.48+00	−0.141	B+	1
				633.35	1 466 883–1 624 773	3–3	3.04+09	1.83−01	1.14+00	−0.260	B+	1
				638.00	1 466 883–1 623 623	3–1	3.31+09	6.73−02	4.24−01	−0.695	B+	1

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
29		^{3}S–^{1}D°										
				562.46	1 466 883–1 644 674	3–5	4.81+06	3.81−04	2.11−03	−2.942	C	1
30		^{3}D–^{3}P°		*706.9*	*1 484 557–1 626 027*	15–9	2.49+08	1.12−02	3.91−01	−0.775	C+	1
				693.99	1 483 165–1 627 260	7–5	8.66+07	4.46−03	7.14−02	−1.506	C+	1
				712.53	1 484 428–1 624 773	5–3	1.69+08	7.71−03	9.04−02	−1.414	C+	1
				737.44	1 488 019–1 623 623	3–1	3.01+08	8.19−03	5.96−02	−1.610	C+	1
				700.12	1 484 428–1 627 260	5–5	7.66+07	5.63−03	6.48−02	−1.551	C+	1
				731.24	1 488 019–1 624 773	3–3	3.40+07	2.72−03	1.96−02	−2.088	C+	1
				718.18	1 488 019–1 627 260	3–5	9.27+07	1.19−02	8.47−02	−1.447	C+	1
31		^{3}D–^{3}F°		*678.4*	*1 484 557–1 631 969*	15–21	4.31+09	4.17−01	1.40+01	0.796	B+	1
				680.65	1 483 165–1 630 083	7–9	4.28+09	3.82−01	5.99+00	0.427	B+	1
				677.69	1 484 428–1 631 989	5–7	3.72+09	3.59−01	4.00+00	0.254	B+	1
				678.80	1 488 019–1 635 337	3–5	3.03+09	3.49−01	2.34+00	0.020	B+	1
				671.93	1 483 165–1 631 989	7–7	5.94+08	4.02−02	6.22−01	−0.551	B+	1
				662.65	1 484 428–1 635 337	5–5	1.34+09	8.79−02	9.59−01	−0.357	B+	1
				657.15	1 483 165–1 635 337	7–5	7.13+07	3.30−03	4.99−02	−1.636	B+	1
32		^{3}D–^{1}F°										
				651.52	1 484 428–1 637 915	5–7	1.10+07	9.78−04	1.04−02	−2.311	C+	1
				646.20	1 483 165–1 637 915	7–7	7.54+08	4.72−02	7.02−01	−0.481	B	1
33		^{3}D–^{3}D°		*619.9*	*1 484 557–1 645 875*	15–15	8.29+08	4.78−02	1.46+00	−0.144	B+	1
				614.42	1 483 165–1 645 921	7–7	3.35+08	1.90−02	2.68−01	−0.876	B+	1
				616.72	1 484 428–1 646 576	5–5	3.27+08	1.86−02	1.89−01	−1.032	B+	1
				638.65	1 488 019–1 644 599	3–3	1.91+09	1.17−01	7.37−01	−0.455	B+	1
				611.95	1 483 165–1 646 576	7–5	1.00+08	4.03−03	5.68−02	−1.550	B	1
				624.33	1 484 428–1 644 599	5–3	3.15+08	1.11−02	1.13−01	−1.256	B+	1
				619.22	1 484 428–1 645 921	5–7	4.91+07	3.95−03	4.02−02	−1.704	B	1
				630.69	1 488 019–1 646 576	3–5	9.32+07	9.26−03	5.77−02	−1.556	B	1
34		^{3}D–^{1}D°										
				624.04	1 484 428–1 644 674	5–5	1.72+08	1.01−02	1.03−01	−1.297	B	1
				619.16	1 483 165–1 644 674	7–5	1.84+07	7.57−04	1.08−02	−2.276	C+	1
				638.35	1 488 019–1 644 674	3–5	6.19+07	6.30−03	3.97−02	−1.724	C+	1
35		^{3}D–^{1}P°										
				574.14	1 488 019–1 662 194	3–3	1.47+08	7.27−03	4.12−02	−1.661	C+	1
36		^{3}P–^{3}P°		*767.7*	*1 495 774–1 626 027*	9–9	8.63+08	7.63−02	1.74+00	−0.163	B+	1
				742.04	1 492 496–1 627 260	5–5	9.85+08	8.13−02	9.92−01	−0.391	B+	1
				803.30	1 500 286–1 624 773	3–3	1.59+08	1.53−02	1.21−01	−1.338	B+	1
				755.99	1 492 496–1 624 773	5–3	3.84+08	1.98−02	2.45−01	−1.004	B+	1
				810.79	1 500 286–1 623 623	3–1	4.82+08	1.58−02	1.26−01	−1.324	B+	1
				787.56	1 500 286–1 627 260	3–5	6.57+07	1.02−02	7.92−02	1.514	B	1
				792.76	1 498 631–1 624 773	1–3	2.34+08	6.62−02	1.72−01	−1.179	B+	1
37		^{3}P–^{1}F°										
				687.67	1 492 496–1 637 915	5–7	3.46+09	3.43−01	3.38+00	0.234	B+	1
38		^{3}P–^{3}D°		*666.2*	*1 495 774–1 645 875*	9–15	1.93+09	2.14−01	4.22+00	0.285	B+	1
				651.78	1 492 496–1 645 021	5–7	7.34+07	6.54−03	7.01−02	−1.485	C+	1
				683.57	1 500 286–1 646 676	3–5	3.24+09	3.78−01	2.55+00	0.055	B+	1

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				685.08	1 498 631–1 644 599	1–3	1.99+09	4.21−01	9.48−01	−0.376	B	1
				649.01	1 492 496–1 646 576	5–5	6.50+08	4.11−02	4.38−01	−0.687	B	1
				692.94	1 500 286–1 644 599	3–3	4.02+08	2.89−02	1.97−01	−1.062	B	1
				657.45	1 492 496–1 644 599	5–3	2.86+07	1.11−03	1.20−02	−2.256	C+	1
39		^{3}P–^{1}D°										
				692.58	1 500 286–1 644 674	3–5	5.00+06	5.99−04	4.09−03	−2.745	C	1
				657.13	1 492 496–1 644 674	5–5	3.51+07	2.27−03	2.45−02	−1.945	C+	1
40		^{3}P–^{1}P°										
				617.63	1 500 286–1 662 194	3–3	1.15+09	6.56−02	4.00−01	−0.706	B	1
				589.28	1 492 496–1 662 194	5–3	3.96+07	1.24−03	1.19−02	−2.208	C+	1
				611.39	1 498 631–1 662 194	1–3	1.03+08	1.74−02	3.49−02	−1.759	C+	1
41		^{1}P–^{3}P°										
				775.65	1 495 849–1 624 773	3–3	5.69+07	5.13−03	3.93−02	−1.813	C+	1
				782.63	1 495 849–1 623 623	3–1	1.27+08	3.88−03	3.00−02	−1.934	C+	1
				760.97	1 495 849–1 627 260	3–5	8.88+07	1.29−02	9.66−02	−1.412	C+	1
42		^{1}P–^{3}D°										
				663.45	1 495 849–1 646 676	3–5	2.83+07	3.11−03	2.04−02	−2.030	C+	1
				672.27	1 495 849–1 644 599	3–3	6.44+07	4.36−03	2.89−02	−1.883	C+	1
43		^{1}P–^{1}D°		671.9	1 495 849–1 644 674	3–5	3.66+09	4.13−01	2.74+00	0.093	B+	1
44		^{1}P–^{1}P°		601.2	1 495 849–1 662 194	3–3	1.63+09	8.84−02	5.25−01	−0.576	B+	1
45		^{1}D–^{3}P°										
				795.51	1 499 068–1 624 773	5–3	1.22+08	6.95−03	9.09−02	−1.459	C+	1
				780.08	1 499 068–1 627 260	5–5	2.99+08	2.72−02	3.49−01	−0.866	B	1
46		^{1}D–^{3}F°										
				752.33	1 499 068–1 631 989	5–7	1.45+06	1.73−04	2.13−03	−3.063	C	1
				733.84	1 499 068–1 635 337	5–5	1.35+06	1.09−04	1.32−03	−3.264	C	1
47		^{1}D–^{1}F°		720.2	1 499 068–1 637 915	5–7	1.50+08	1.63−02	1.93−01	−1.089	C+	1
48		^{1}D–^{3}D°										
				677.93	1 499 068–1 646 576	5–5	1.52+08	1.04−02	1.16−01	−1.284	B	1
				687.14	1 499 068–1 644 599	5–3	3.13+06	1.33−04	1.50−03	−3.177	C	1
				680.95	1 499 068–1 645 921	5–7	4.05+09	3.94−01	4.41−00	0.294	B+	1
49		^{1}D–^{1}D°		686.8	1 499 068–1 644 674	5–5	6.22+08	4.40−02	4.97−01	−0.658	B+	1
50		^{1}D–^{1}P°		613.0	1 499 068–1 662 194	5–3	4.78+07	1.62−03	1.63−02	−2.092	C+	1
51		^{1}S–^{3}P°										
				1 387.62	1 552 707–1 624 773	1–3	1.09+05	9.43−05	4.30−04	−4.025	D	1
52		^{1}S–^{3}D°										
				1 088.23	1 552 707–1 644 599	1–3	2.09+07	1.11−02	3.98−02	−1.955	C+	1
53		^{1}S–^{1}P°		913.4	1 552 707–1 662 194	1–3	1.01+09	3.79−01	1.14+00	−0.421	B+	1
54	$2p^53p$–$2p^5(^2P^{\circ}_{3/2})4s$	^{1}P–$^2[3/2]^{\circ}$										
				308.279	1 495 849–1 820 230	3–3	9.48+08	1.35−02	4.11−02	−1.393	C	1

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
55		^{1}D–^{2}[3/2]°										
				311.369	1 499 068–1 820 230	5–3	2.37+07	2.07−04	1.05−03	−2.985	D+	1
56		^{1}S–^{2}[3/2]°										
				373.800	1 552 707–1 820 230	1–3	1.16+09	7.30−02	8.98−02	−1.137	C	1
57	$2p^53p–2p^5(^2P^\circ_{1/2})4s$	^{3}S–^{2}[1/2]°										
				275.575	1 466 883–1 829 760	3–3	7.95+08	9.05−03	2.46−02	−1.566	C	1
58		^{3}D–^{2}[1/2]°										
				292.619	1 488 019–1 829 760	3–3	4.01+08	5.14−03	1.48−02	−1.812	C	1
				289.576	1 484 428–1 829 760	5–3	4.38+08	3.30−03	1.57−02	−1.783	C	1
59		^{3}P–^{2}[1/2]°										
				301.997	1 498 631–1 829 760	1–3	7.90+08	3.24−02	3.22−02	−1.489	C	1
				303.514	1 500 286–1 829 760	3–3	2.90+09	4.00−02	1.20−01	−0.921	C+	1
				296.504	1 492 496–1 829 760	5–3	9.84+08	7.78−03	3.79−02	−1.410	C	1
60		^{1}P–^{2}[1/2]°										
				299.481	1 495 849–1 829 760	3–3	3.40+09	4.57−02	1.35−01	−0.863	D	6
61		^{1}D–^{2}[1/2]°										
				302.396	1 499 068–1 829 760	5–3	1.01+10	8.31−02	4.13−01	−0.381	D	6
62		^{1}S–^{2}[1/2]°										
				360.942	1 552 707–1 829 760	1–3	1.16+09	6.79−02	8.07−02	−1.168	D	6
63	$2p^53d–2p^5(^2P^\circ_{3/2})4f$	^{3}P°–^{2}[3/2]										
				330.146	1 624 773–1 927 669	3–5	1.72+10	4.67−01	1.52+00	0.146	B	2
64		^{3}P°–^{2}[3/2]		*331.68*	*1 626 027–1 927 524*	9–3	4.63+10	2.54−01	2.50−00	0.359	C	2
				329.055	1 623 623–1 927 524	1–3	1.73+10	8.42−01	9.11−01	−0.075	C	2
				332.880	1 627 260–1 927 669	5–5	8.15+09	1.35−01	7.41−01	−0.171	C	2
				330.304	1 624 773–1 927 524	3–3	1.46+10	2.39−01	7.79−01	−0.144	C	2
				333.040	1 627 260–1 927 524	5–3	1.27−09	1.27−02	6.97−02	−1.197	C	2
65		^{3}P°–^{2}[5/2]										
				331.641	1 627 260–1 928 791	5–7	2.41+01	5.57−01	3.04+00	0.445	B	2
				328.698	1 624 773–1 929 004	3–5	3.54+09	9.55−02	3.10−01	−0.543	C	2
				331.407	1 627 260–1 929 004	5–5	1.18+09	1.94−02	1.05−01	−1.013	C	2
66		^{3}F°–^{2}[3/2]										
				342.077	1 635 837–1 927 669	5–5	3.50+07	6.13−04	3.45−03	−2.514	D	2
				338.203	1 631 989–1 927 669	7–5	9.46−07	1.16−03	9.03−03	−2.090	D	2
67		^{3}F°–^{2}[9/2]										
				337.189	1 631 989–1 928 559	7–9	3.03+10	6.64−01	5.15+00	0.667	B	2
				335.035	1 630 083–1 928 559	9–9	1.13−09	1.90−02	1.89−01	−0.767	C	2
68		^{3}F°–^{2}[5/2]										
				340.769	1 635 337–1 928 791	5–7	3.01+08	7.33−03	4.10−02	−1.436	D	2
				336.925	1 631 989–1 928 791	7–7	5.47+08	9.31−03	7.22−02	−1.186	D	2
				340.522	1 635 337–1 929 004	5–5	5.63+09	9.79−02	5.49−01	−0.310	C	2
				334.775	1 630 083–1 928 791	9–7	2.44+08	3.19−03	3.16−02	−1.542	D	2

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				336.683	1 631 989–1 929 004	7–5	4.19+08	5.08−03	3.94−02	−1.449	D	2
69		$^3F^\circ-^2[7/2]$										
				335.860	1 631 989–1 929 732	7–9	1.78+09	3.87−02	2.99−01	−0.567	C	2
				339.734	1 635 337–1 929 685	5–7	2.40+10	5.83−01	3.25+00	0.465	B	2
				333.724	1 630 083–1 929 732	9–9	5.07+09	8.47−02	8.37−01	−0.118	C	2
				335.913	1 631 989–1 929 685	7–7	6.09+09	1.03−01	7.97−01	−0.142	C	2
				333.776	1 630 083–1 929 685	9–7	1.91+08	2.48−03	2.45−02	−1.651	D	2
70		$^1F^\circ-^2[3/2]$										
				345.120	1 637 915–1 927 669	7–5	4.74+08	6.04−03	4.80−02	−1.374	D	2
71		$^1F^\circ-^2[9/2]$										
				344.064	1 637 915–1 928 559	7–9	4.36+09	9.95−02	7.88−01	−0.157	C	2
72		$^1F^\circ-^2[5/2]$										
				343.789	1 637 915–1 928 791	7–7	6.00+09	1.06−01	8.42−01	−0.130	C	2
				343.538	1 637 915–1 929 004	7–5	1.19+08	1.51−03	1.19−02	−1.976	D	2
73		$^1F^\circ-^2[7/2]$										
				342.681	1 637 915–1 929 732	7–9	2.65+10	6.00−01	4.73+00	0.623	B	2
				342.736	1 637 915–1 929 685	7–7	6.12+07	1.08−03	8.50−03	−2.121	D	2
74		$^3D^\circ-^2[3/2]$										
				353.270	1 644 599–1 927 669	3–5	1.85+09	5.77−02	2.01−01	−0.762	C	2
				355.754	1 646 576–1 927 669	5–5	2.08+09	3.95−02	2.31−01	−0.704	C	2
				354.927	1 645 921–1 927 669	7–5	1.66+08	2.24−03	1.83−02	−1.805	D	2
				355.938	1 646 576–1 927 524	5–3	4.30+08	4.90−03	2.86−02	−1.611	D	2
75		$^3D^\circ-^2[9/2]$										
				353.809	1 645 921–1 928 559	7–9	5.63+08	1.36−02	1.01−01	−1.021	C	2
76		$^3D^\circ-^2[5/2]$										
				354.340	1 646 576–1 928 791	5–7	3.10+09	8.16−02	4.76−01	−0.389	C	2
				351.611	1 644 599–1 929 004	3–5	1.28+10	3.97−01	1.37+00	0.076	B	2
				353.519	1 645 921–1 928 791	7–7	1.38+09	2.58−02	2.10−01	−0.743	C	2
				354.073	1 646 576–1 929 004	5–5	3.57+08	6.70−03	3.90−02	−1.475	D	2
				353.253	1 645 921–1 929 004	7–5	9.71+07	1.30−03	1.05−02	−2.041	D	2
77		$^3D^\circ-^2[7/2]$										
				352.347	1 645 921–1 929 732	7–9	2.55+09	6.11−02	4.96−01	−0.369	C	2
				353.221	1 646 576–1 929 685	5–7	1.31+08	3.43−03	1.99−02	−1.766	D	2
				352.406	1 645 921–1 929 685	7–7	4.10+08	7.63−03	6.19−02	−1.272	D	2
78		$^1D^\circ-^2[3/2]$										
				353.363	1 644 674–1 927 669	5–5	3.44+06	6.44−05	3.74−04	−3.492	E	2
				353.544	1 644 674–1 927 524	5–3	1.34+08	1.51−03	8.77−03	−2.122	D	2
79		$^1D^\circ-^2[5/2]$										
				351.968	1 644 674–1 928 791	5–7	3.31+08	8.60−03	4.98−02	−1.367	D	2
				351.704	1 644 674–1 929 004	5–5	2.02+09	3.74−02	2.16−01	−0.728	C	2
80		$^1D^\circ-^2[7/2]$										
				350.864	1 644 674–1 929 685	5–7	5.02+09	1.30−01	7.49−01	−0.187	C	2

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
81		$^1P^\circ-^2[3/2]$										
				376.683	1 662 194–1 927 669	3–5	5.21+09	1.85−01	6.87−01	−0.256	C	2
				376.889	1 662 194–1 927 524	3–3	3.06+07	6.51−04	2.42−03	−2.709	D	2
82		$^1P^\circ-^2[5/2]$										
				374.799	1 662 194–1 929 004	3–5	7.98+09	2.80−01	1.03+00	−0.076	B	2
83	$2p^53d-2p^5(^2P^\circ_{1/2})4f$	$^3P^\circ-^2[5/2]$										
				320.831	1 627 260–1 938 951	5–7	5.21+09	1.13−01	5.94−01	−0.248	C	2
				318.152	1 624 773–1 939 088	3–5	1.63+09	4.12−02	1.29−01	−0.908	C	2
				320.690	1 627 260–1 939 088	5–5	4.97+08	7.66−03	4.04−02	−1.417	D	2
84		$^3P^\circ-^2[7/2]$										
				[320.728]	1 627 260–1 939 051	5–7	2.78+07	6.00−04	3.16−03	−2.523	D	2
85		$^3F^\circ-^2[5/2]$										
				329.366	1 635 337–1 938 951	5–7	1.96+07	4.46−04	2.41−03	−2.652	D	2
				325.773	1 631 989–1 938 951	7–7	2.47+08	3.93−03	2.95−02	−1.561	D	2
				329.217	1 635 337–1 939 088	5–5	1.09+09	1.77−02	9.57−02	−1.053	D	2
				323.763	1 630 083–1 938 951	9–7	2.51+07	3.07−04	2.94−03	−2.559	D	2
				325.628	1 631 989–1 939 088	7–5	7.56+07	8.58−04	6.44−03	−2.221	D	2
86		$^3F^\circ-^2[7/2]$										
				325.616	1 631 989–1 939 099	7–9	2.08+09	4.25−02	3.18−01	−0.527	C	2
				[329.257]	1 635 337–1 939 051	5–7	6.95+09	1.58−01	8.57−01	−0.102	C	2
				323.608	1 630 083–1 939 099	9–9	3.51+07	5.52−04	5.28−03	−2.304	D	2
				[325.667]	1 631 989–1 939 051	7–7	1.16+07	1.84−04	1.38−03	−2.890	D	2
				[323.658]	1 630 083–1 939 051	9–7	2.22+06	2.71−05	2.59−04	−3.613	E	2
87		$^1F^\circ-^2[5/2]$										
				332.186	1 637 915–1 938 951	7–7	7.69+08	1.27−02	9.74−02	−1.051	D	2
				332.035	1 637 915–1 939 088	7–5	2.86+07	3.38−04	2.58−03	−2.626	D	2
88		$^1F^\circ-^2[7/2]$										
				332.023	1 637 915–1 939 099	7–9	2.34+09	4.97−02	3.79−01	−0.459	C	2
				[332.076]	1 637 915–1 939 051	7–7	1.17+08	1.93−03	1.47−02	−1.869	D	2
89		$^3D^\circ-^2[5/2]$										
				342.027	1 646 576–1 938 951	5–7	2.73+10	6.70−01	3.77+00	0.525	B	2
				339.571	1 644 599–1 939 088	3–5	1.33+10	3.84−01	1.28+00	0.061	B	2
				341.262	1 645 921–1 938 951	7–7	1.63+09	2.85−02	2.24−01	−0.700	C	2
				341.866	1 646 576–1 939 088	5–5	2.39+09	4.19−02	2.35−01	−0.679	C	2
				341.103	1 645 921–1 939 088	7–5	8.90+07	1.11−03	8.71−03	−2.110	D	2
90		$^3D^\circ-^2[7/2]$										
				341.090	1 645 921–1 939 099	7–9	3.17+10	7.12−01	5.59+00	0.698	B	2
				[341.910]	1 646 576–1 939 051	5–7	1.10+09	2.69−02	1.51−01	−0.871	C	2
				[341.146]	1 645 921–1 939 051	7–7	1.36+09	2.38−02	1.86−01	−0.778	C	2
91		$^1D^\circ-^2[5/2]$										
				339.816	1 644 674–1 938 951	5–7	7.26+08	1.76−02	9.83−02	−1.056	D	2
				339.658	1 644 674–1 939 088	5–5	1.73+09	2.99−02	1.67−01	−0.825	C	2
92		$^1D^\circ-^2[7/2]$										

TABLE 26. Transition probabilities of allowed lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[339.700]	1 644 674–1 939 051	5–7	2.68+10	6.48−01	3.62+00	0.511	B	2
93		$^1P^\circ - ^2[5/2]$										
				361.149	1 662 194–1 939 088	3–5	1.41+10	4.59−01	1.63+00	0.139	B	2

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer and Tachiev (2004); Ref. 2 = Froese Fischer (2004b); Ref. 3 = Kirm *et al.* (1996); Ref. 4 = Trabert (1996); Ref. 5 = Fawcett and Hayes (1987); Ref. 6 = Cornille *et al.* (1991).

References for Allowed Transitions of S VII

Cornille, M., T. Ludac, D. Hitz, S. Bliman, G. A. Heckman, and E. J. Knystautas, 1991, Phys. Rev. A **43**, 115.

Fawcett, B. C. and R. W. Hayes, 1987, Phys. Scr. **36**, 80.

Froese Fischer, C., 2004b. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C. and G. Tachiev, 2004, At. Data Nucl. Data Tables **87**, 1. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Kirm, M., P. Bengtsson, and L. Engström, 1996, Phys. Scr. **54**, 167.

Träbert, E., 1996, Phys. Scr. **53**, 167.

4.7.2. Forbidden Transitions for S VII

Tachiev and Froese Fischer (2002a) performed extensive calculations using the MCHF method with BP corrections. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to $2p^54s$.

A wavelength finding list of forbidden lines for S VII is given in Table 27, and the transition probabilities for the lines are provided in Table 28.

TABLE 27. Wavelength finding list for forbidden lines of S VII

Wavelength (vac.) (Å)	Mult. No.
60.732	7
60.802	8
61.149	6
61.453	5
66.708	4
67.002	3
67.366	2
72.898	1
288.521	35
296.679	34
552.721	11
666.35	33
667.13	30
675.93	32
686.55	29
726.81	31
1 165.18	16
1 545.88	21
1 758.77	28
1 907.6	25
Wavelength (air) (Å)	**Mult. No.**
2 992.9	13
3 106.1	15
3 148.9	13
3 451.3	14
3 903.2	13
5 698	12
6 039	10
6 286	20
6 304	18
8 150	18
8 240	10
8 753	19
9 048	20
9 421	18
10 714	18
12 391	18
12 768	19
12 833	22
15 212	24
15 300	10
17 859	9
Wave number (cm^{-1})	**Mult. No.**
4 477	18
4 437	26
4 423	9
3 591	17
3 353	23
3 219	27
2 782	26
1 655	22

TABLE 27. Wavelength finding list for forbidden lines of S VII—Continued

Wave number (cm^{-1})	Mult. No.
1 263	17

TABLE 28. Transition probabilities of forbidden lines for S VII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2p^6$–$2p^5 3s$	^1S–$^3P^\circ$									
				72.898	0–1 371 784	1–5	M2	7.61+02	5.25−01	B+	1
2	$2p^6$–$2p^5 3p$	^1S–^3D									
				67.366	0–1 484 428	1–5	E2	2.95+06	1.82−02	B	1
3		^1S–^3P									
				67.002	0–1 492 496	1–5	E2	7.97−06	4.80−02	B	1
4		^1S–^1D									
				66.708	0–1 499 068	1–5	E2	8.02+06	4.76−02	B	1
5	$2p^6$–$2p^5 3d$	^1S–$^3P^\circ$									
				61.453	0–1 627 260	1–5	M2	1.72+04	5.04+00	A	1
6		^1S–$^3F^\circ$									
				61.149	0–1 635 337	1–5	M2	9.07+02	2.60−01	B+	1
7		^1S–$^3D^\circ$									
				60.732	0–1 646 576	1–5	M2	2.85+01	7.88−03	C+	1
8		^1S–$^1D^\circ$									
				60.802	0–1 644 674	1–5	M2	2.57+03	7.16−01	B+	1
9	$2p^5 3s$–$2p^5 3s$	$^3P^\circ$–$^3P^\circ$									
				4 423 cm^{-1}	1 371 784–1 376 207	5–3	M1	1.59+00	2.04+00	A	1
			17 859	17 864	1 376 207–1 381 805	3–1	M1	7.75+00	1.63+00	A	1
10		$^3P^\circ$–$^1P^\circ$									
			8 240	8 243	1 376 207–1 388 339	3–3	M1	3.58+00	2.22−01	B+	1
			6 039	6 040	1 371 784–1 388 339	5–3	M1	1.85+01	4.53−01	B+	1
			15 300	15 305	1 381 805–1 388 339	1–3	M1	9.10−01	3.62−01	B+	1
11	$2p^5 3s$–$2p^5 3p$	$^3P^\circ$–^1S									
				552.721	1 371 784–1 552 707	5–1	M2	1.70+00	5.89+00	A	1
12	$2p^5 3p$–$2p^5 3p$	^3S–^3D									
			5 698	5 700	1 466 883–1 484 428	3–5	M1	1.09−01	3.72−03	C+	1
13		^3S–^3P									
			3 003.2	3 904.3	1 466 883–1 492 496	3–5	M1	2.49+00	2.74−02	B	1
			2 992.9	2 993.7	1 466 883–1 500 286	3–3	M1	1.65+01	4.93−02	B	1
			3 148.9	3 149.8	1 466 883–1 498 631	3–1	M1	3.26+01	3.77−02	B	1
14		^3S–^1P									

TABLE 28. Transition probabilities of forbidden lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
			3 451.3	3 452.3	1 466 883–1 495 849	3–3	M1	8.40−01	3.84−03	C+	1
15		^{3}S–^{1}D									
			3 106.1	3 107.0	1 466 883–1 499 .068	3–5	M1	2.98+00	1.65−02	B	1
16		^{3}S–^{1}S									
				1 165.18	1 466 883–1 552 707	3–1	M1	3.51+00	2.05−04	C	1
17		^{3}D–^{3}D									
				1 263 cm^{-1}	1 483 165–1 484 428	7–5	M1	4.03−02	3.70+00	A	1
				3 591 cm^{-1}	1 484 428–1 488 019	5–3	M1	1.23+00	2.96+00	A	1
18		^{3}D–^{3}P									
			10 714	10 717	1 483 165–1 492 496	7–5	M1	2.51−01	5.72−02	B	1
			6 304	6 306	1 484 428–1 500 286	5–3	M1	7.09−01	1.97−02	B	1
			9 421	9 423	1 488 019–1 498 631	3–1	M1	6.92+0	2.14−01	B+	1
			12 391	12 395	1 484 428–1 492 496	5–5	M1	7.99−01	2.82−01	B+	1
			8 150	8 152	1 488 019–1 500 286	3–3	M1	2.98+00	1.79−01	B+	1
				4 447 cm^{-1}	1 488 019–1 492 496	3–5	M1	1.69−01	3.48−01	B+	1
19		^{3}D–^{1}P									
			8 753	8 756	1 484 428–1 495 849	5–3	M1	9.44+00	7.04−01	B+	1
			12 768	12 771	1 488 019–1 495 849	3–3	M1	2.18+00	5.05−01	B+	1
20		^{3}D–^{1}D									
			6 286	6 288	1 483 165–1 499 068	7–5	M1	1.96+01	9.02−01	B+	1
			9 048	9 051	1 488 019–1 499 068	3–5	M1	1.61+00	2.21−01	B+	1
21		^{3}D–^{1}S									
				1 545.88	1 488 019–1 552 707	3–1	M1	8.53+00	1.16−03	C+	1
22		^{3}P–^{3}P									
			12 833	12 837	1 492 496–1 500 286	5–3	M1	4.04+00	9.49−01	B+	1
				1 655 cm^{-1}	1 498 631–1 500 286	1–3	M1	5.65−02	1.38+00	A	1
23		^{3}P–^{1}P									
				3 353 cm^{-1}	1 492 496–1 495 849	5–3	M1	4.82−02	1.42−01	B+	1
24		^{3}P–^{1}D									
			15 212	15 216	1 492 496–1 499 068	5–5	M1	2.35+00	1.53+00	A	1
25		^{3}P–^{1}S									
				1 907.6	1 500 286–1 552 707	3–1	M1	2.93+01	7.53−03	C+	1
26		^{1}P–^{3}P									
				4 437 cm^{-1}	1 495 849–1 500 286	3–3	M1	1.16−01	1.47−01	B+	1
				2 782 cm^{-1}	1 495 849–1 498 531	3–1	M1	2.04−01	3.50−01	B+	1
27		^{1}P–^{1}D									
				3 219 cm^{-1}	1 495 849–1 499 068	3–5	M1	1.45−01	8.06−01	B+	1
28		^{1}P–^{1}S									
				1 758.77	1 495 849–1 552 707	3–1	M1	9.46+00	1.90−03	C+	1

TABLE 28. Transition probabilities of forbidden lines for S VII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
29	$2p^53p-2p^53d$	$^3D-^3F^\circ$									
				686.55	1 484 428–1 630 083	5–9	M2	2.55−01	2.34+01	A	1
30		$^3D-^1F^\circ$									
				667.13	1 488 019–1 637 915	3–7	M2	5.11−01	3.16+01	A	1
31		$^3P-^3F^\circ$									
				726.81	1 492 496–1 630 083	5–9	M2	2.77−01	3.39+01	A	1
32		$^3P-^3D^\circ$									
				675.93	1 498 631–1 646 576	1–5	M2	1.97−01	9.33+00	A	1
33		$^1P-^3D^\circ$									
				666.35	1 495 849–1 645 921	3–7	M2	3.80−01	2.34+01	A	1
34	$2p^53p-2p^5(^2P^\circ_{3/2})4s$	$^3D-^2[3/2]^\circ$									
				296.679	1 483 165–1 820 230	7–3	M2	1.06+01	4.88+00	A	1
35	$2p^53p-2p^5(^2P^\circ_{1/2})4s$	$^3D-^2[1/2]^\circ$									
				288.521	1 483 165–1 829 760	7–3	M2	4.86−01	1.95−01	B+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer and Tachiev (2004).

References for Forbidden Transitions of S VII

Froese Fischer, C. and G. Tachiev, 2004, At. Data Nucl. Data Tables **87**, 1. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.8. S VIII

$Z = 16$
Fluorine Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^5\ ^2P_{3/2}^{\circ}$
Ionization Energy: 2 651 500 cm^{-1} (328.74 eV)

4.8.1. Allowed Transitions for S VIII

We tabulated the results of Tachiev and Froese Fischer (2002a) who calculated transition probabilities for the $2s^22p^5-2s2p^6$, $2s^22p^5$-$2s^22p^43s$, $2s^22p^5$-$2s^22p^43d$, and $2s2p^6$-$2s^22p^43p$ transition arrays using the MCHF method with BP corrections.

For several transitions, data were taken from the work of Fawcett and Hayes (1987). They have computed with the HFR method using the COWAN code.

Oscillator strengths from the R-matrix calculations of the OP (Butler and Zeippen, unpublished) were taken for strong transitions from upper states ($n \geqslant 5$) when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming LS coupling.

A wavelength finding list of allowed lines for S VIII is given in Table 29, and the transition probabilities for these lines are provided in Table 30.

TABLE 29. Wavelength finding list for allowed lines of S VIII

Wavelength (vac.) (Å)	Mult. No.
45.292	15
47.519	14
47.748	14
51.204	13
51.227	13
51.470	13
52.681	12
52.703	11
52.756	12
52.790	11
52.955	10
52.962	12
52.984	11
53.072	11
53.239	10
54.088	9
54.118	8
54.267	8
54.385	9
54.424	7
54.501	7
54.565	8
54.604	6
54.802	7
59.236	5
59.592	5
61.593	4
61.600	4
61.978	4
63.028	3
63.304	3
63.431	3
63.711	3
63.740	2
63.887	2
64.129	2
64.152	2
64.302	2
64.874	17
65.149	17
84.670	16
84.776	16
192.622	61
195.423	61
198.553	1
202.610	1
214.864	26
217.908	26
218.107	26
221.244	26
237.231	29
240.574	60
240.842	29
240.946	29
244.959	60
378.484	59
379.720	59
389.452	59
390.761	59
458.184	52
463.923	52
465.110	52
465.151	50
466.542	51
466.803	51
468.331	52
471.025	52
471.647	50
473.725	51
477.067	51
477.391	55
478.989	50
483.624	55
486.471	54
492.024	53
494.974	55
496.892	54
500.343	58
501.678	55
502.303	57
504.742	54
507.195	58
510.326	57
510.723	53
526.169	56
539.674	34

TABLE 29. Wavelength finding list for allowed lines of S VIII—Continued

Wavelength (vac.) (Å)	Mult. No.
542.661	33
557.983	33
568.88	31
575.09	32
583.78	32
585.47	39
585.49	31
590.63	66
592.20	40
595.79	39
603.82	40
607.56	39
609.26	40
614.31	39
616.10	37
623.39	38
624.68	46
626.83	39
627.55	37
628.69	45
632.70	39
635.11	38
635.63	37
638.24	63
640.62	37
645.73	38
647.82	36
647.82	37
648.50	38
649.34	45
655.13	46
659.54	45
659.57	38
660.49	36
662.08	36
663.22	64
664.15	43
664.57	49
665.87	63
666.07	38
669.11	48
671.81	30
672.62	44
674.98	36
675.32	36
676.30	36
677.28	64
680.87	65
682.31	45
684.55	44
686.90	43
692.55	48

TABLE 29. Wavelength finding list for allowed lines of S VIII—Continued

Wavelength (vac.) (Å)	Mult. No.
693.10	64
698.68	43
698.96	65
701.15	42
708.06	44
708.47	64
712.40	65
717.89	42
719.10	47
719.36	21
721.29	44
730.76	20
732.75	47
738.67	35
739.75	42
751.30	21
755.19	35
763.74	20
772.29	21
772.78	20
785.44	20
807.28	19
808.83	41
809.76	20
829.04	19
837.23	19
842.62	25
847.72	19
849.90	19
858.30	24
863.38	19
871.74	19
874.55	19
894.80	25
912.50	24
916.86	24
952.24	23
959.80	18
965.84	23
997.14	23
1 017.51	18
1 019.41	23
1 035.01	23
1 192.56	22
1 333.74	28
1 336.95	28
1 373.46	27
1 376.86	27
1 529.80	27
1 534.02	27

TABLE 30. Transition probabilities of allowed lines for S VIII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^22p^5$–$2sp^6$	$^2P^\circ$–^2S		*199.89*	*3 362–503 644*	6–2	3.61+10	7.21−02	2.85−01	−0.364	A	1
				198.553	0–503 644	4–2	2.46+10	7.28−02	1.90−01	−0.536	A	1
				202.610	10 085–503 644	2–2	1.15+10	7.09−02	9.46−02	−0.848	A	1
2	$2s^22p^5$–$2s^22p^4(^3P)3s$	$^2P^\circ$–^4P										
				63.887	0–1 565 254	4–4	7.76+09	4.75−03	3.99−03	−1.721	C+	1
				64.152	10 085–1 568 872	2–2	1.25+09	7.74−04	3.26−04	−2.810	C+	1
				63.740	0–1 568 872	4–2	1.48+07	4.50−06	3.77−06	−4.745	D	1
				64.129	0–1 569 345	4–6	4.32+08	4.00−04	3.37−04	−2.796	C+	1
				64.302	10 085–1 565 254	2–4	6.02+08	7.47−04	3.16−04	−2.826	C+	1
3		$^2P^\circ$–^2P		*63.35*	*3 362–1 581 980*	6–6	1.84+11	1.11−01	1.38−01	−0.177	A	1
				63.304	0–1 579 680	4–4	1.59+11	9.53−02	7.94−02	−0.419	A	1
				63.431	10 085–1 586 600	2–2	1.20+11	7.24−02	3.02−02	−0.839	A	1
				63.028	0–1 586 600	4–2	7.00+10	2.08−02	1.72−02	−1.080	A	1
				63.711	10 085–1 579 680	2–4	2.28+10	2.78−02	1.16−02	−1.255	A	1
4	$2s^22p^5$–$2s^22p^4(^1D)3s$	$^2P^\circ$–^2D		*61.73*	*3 362–1 623 450*	6–10	7.36+10	7.01−02	8.54−02	−0.376	B+	1
				61.600	0–1 623 380	4–6	7.31+10	6.24−02	5.06−02	−0.603	B+	1
				61.978	10 085–1 623 560	2–4	6.94+10	7.799−02	3.26−02	−0.796	B+	1
				61.593	0–1 623 560	4–4	4.86+09	2.77−03	2.24−03	−1.955	B+	1
5	$2s^22p^5$–$2s^22p^4(^1S)3s$	$^2P^\circ$–^2S		*59.35*	*3 362–1 688 150*	6–2	7.48+10	1.32−02	1.54−02	−1.101	B	1
				59.236	0–1 688 150	4–2	4.32+10	1.14−02	8.85−03	−1.341	B	1
				59.592	10 085–1 688 150	2–2	3.16+10	1.68−02	6.59−03	−1.474	B+	1
6	$2s^22p^5$–$2s^22p^4(^3P)3d$	$^2P^\circ$–^4F										
				54.604	0–1 831 370	4–6	1.48+10	9.91−03	7.12−03	−1.402	D+	1
7		$^2P^\circ$–^4P										
				54.501	0–1 834 830	4–4	9.12+09	4.06−03	2.91−03	−1.789	D	1
				[54.424]	0–1 837 420	4–6	5.03+10	3.35−02	2.40−02	−0.873	D+	1
				54.802	10 085–1 834 830	2–4	8.12+08	7.32−04	2.64−04	−2.834	D	1
8		$^2P^\circ$–^2D		*54.28*	*3 362–1 845 780*	6–10	4.98+11	3.66−01	3.93−01	0.342	B+	1
				54.118	0–1 847 810	4–6	5.66+11	3.73−01	2.65−01	0.174	B+	1
				54.565	10 085–1 842 750	2–4	1.73+11	1.54−01	5.54−02	−0.511	C+	1
				54.267	0–1 842 750	4–4	2.30+11	1.01−01	7.25−02	−0.394	B+	1
9		$^2P^\circ$–^2P				6–6						1
				[54.088]	0–1 848 830	4–4	1.60+10	7.02−03	5.00−03	−1.552	C	1
				[54.385]	10 085–1 848 830	2–4	2.32+11	2.05−01	7.35−02	−0.387	B	1
10	$2s^22p^5$–$2s^22p^4(^1D)3d$	$^2P^\circ$–^2S		*53.05*	*3 362*–1 888 410	6–2	1.01+12	1.42−01	1.49−01	−0.070	B	1
				52.955	0–1 888 410	4–2	7.89+11	1.66−01	1.15−01	−0.178	B	1
				53.239	10 085–1 888 410	2–2	2.26+11	9.60−02	3.36−02	−0.717	C+	1
11		$^2P^\circ$–^2P		*52.85*	*3 362–1 895 350*	6–6	1.09+12	4.55−01	4.75−01	0.436	B	1
				52.790	0–1 894 310	4–4	9.25+11	3.87−01	2.68−01	0.190	B	1
				52.984	10 085–1 897 440	2–2	8.77+11	3.69−01	1.28−01	−0.132	B	1
				52.703	0–1 897 440	4–2	2.44+11	5.08−02	3.52−02	−0.692	C+	1
				53.072	10 085–1 894 310	2–4	1.48+11	1.25−01	4.36−02	−0.602	B	1
12		$^2P^\circ$–^2D		*52.82*	*3 362–1 896 600*	6–10	7.37+11	5.14−01	5.30−01	0.489	C+	1

TABLE 30. Transition probabilities of allowed lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				52.756	0–1 895 520	4–6	6.84+11	4.28−01	2.97−01	0.234	C+	1
				52.962	10 085–1 898 220	2–4	7.27+11	6.09−01	2.12−01	0.086	C+	1
				52.681	0–1 898 220	4–4	9.44+10	3.93−02	2.72−02	−0.804	C	1
13	$2s^22p^5–2s^22p^4(^1S)3d$	$^2P^\circ–^2D$		*51.31*	*3 362–1 952 440*	6–10	1.82+11	8.88−02	5.99−02	−0.450	B+	1
				51.227	0–1 952 100	4–6	1.50+11	8.88−02	5.59−02	−0.450	B+	1
				51.470	10 085–1 952 960	2–4	2.07+11	1.64−01	5.57−02	−0.484	B+	1
				51.204	0–1 952 960	4–4	2.10+10	8.24−03	5.65−03	−1.482	B	1
14	$2s^22p^5–2s^22p^4(^3P^\circ)4s$	$^2P^\circ–^2P$				6–6						2
				[47.519]	0–2 104 420	4–4	3.03+10	1.03−02	6.41−03	−1.385	D+	2
				[47.748]	10 085–2 104 420	2–4	1.92+10	1.30−02	4.08−03	−1.585	D+	2
15	$2s^22p^5–2s^22p^4(^3P^\circ)4d$	$^2P^\circ–^2D$				6–10						3
				[45.292]	0–2 207 900	4–6	3.51+11	1.62−01	9.66−02	−0.188	D	3,LS
16	$2s^22p^6–2s^22p^4(^3P)3p$	$^2S–^4D^\circ$										
				84.776	503 644–1 683 217	2–4	2.44+06	5.25−06	2.92−06	−4.979	D	1
				84.670	503 644–1 684 696	2–2	7.21+06	7.75−06	4.32−06	−4.810	D	1
17	$2s2p^6–2s2p^5(^3P^\circ)3s$	$^2S–^2P^\circ$		*65.06*	503 644–*2 040 750*	2–6	1.25+11	2.39−01	1.02−01	−0.321	C	2
				65.149	503 644–2 038 590	2–4	1.23+11	1.56−01	6.69−02	−0.506	C	2
				64.874	503 644–2 045 090	2–2	1.32+11	8.30−02	3.54−02	−0.780	C	2
18	$2s^22p^4(^3P)3s–2s^22p^4(^3P)3p$	$^4P–^4P^\circ$				12–12						1
				959.80	1 559 345–1 663 533	6–6	8.85+08	1.22−01	2.31+00	−0.135	B	1
				1 017.51	1 565 254–1 663 533	4–6	1.17+08	2.72−02	3.64−01	−0.963	B	1
19		$^4P–^4D^\circ$		*854.7*	*1 562 902–1 679 906*	12–20	1.49+09	2.73−01	9.21+00	0.515	B	1
				849.90	1 559 345–1 677 006	6–8	1.56+09	2.25−01	3.77+00	0.130	B	1
				871.74	1 565 254–1 679 967	4–6	1.18+09	2.01−01	2.30+00	−0.095	B	1
				874.55	1 568 872–1 683 217	2–4	7.30+08	1.68−01	9.64−01	−0.474	B	1
				829.04	1 559 345–1 679 967	6–6	2.08+08	2.15−02	3.51−01	−0.889	B	1
				847.72	1 565 254–1 683 217	4–4	7.27+08	7.83−02	8.74−01	−0.504	B	1
				863.38	1 568 872–1 684 696	2–2	1.32+09	1.47−01	8.36−01	−0.532	B	1
				807.28	1 559 345–1 683 217	6–4	1.46+07	9.48−04	1.51−02	−2.245	B	1
				837.23	1 565 254–1 684 696	4–2	1.71+08	8.98−03	9.90−02	−1.445	B	1
20		$^4P–^2D^\circ$										
				809.76	1 565 254–1 688 748	4–6	7.31+07	1.08−02	1.15−01	−1.365	D	1
				785.44	1 568 872–1 696 189	2–4	6.07+07	1.12−02	5.81−02	−1.650	D	1
				772.78	1 559 345–1 688 748	6–6	4.23+07	3.78−03	5.77−02	−1.644	D	1
				763.74	1 565 254–1 696 189	4–4	6.85+06	5.99−04	6.02−03	−2.621	D	1
				730.76	1 559 345–1 696 189	6–4	3.48+07	1.86−03	2.68−02	−1.952	D	1
21		$^4P–^4S^\circ$		*738.3*	*1 562 902*–1 698 357	12–4	2.33+09	6.34−02	1.85+00	−0.119	B	1
				719.36	1 559 345–1 698 357	6–4	9.54+08	4.93−02	7.01−01	−0.529	B	1
				751.30	1 565 254–1 698 357	4–4	8.50+08	7.19−02	7.11−01	−0.541	B	1
				772.29	1 568 872–1 698 357	2–4	4.82+08	8.61−02	4.38−01	−0.764	C+	1
22		$^2P–^4P^\circ$										
				1 192.56	1 579 680–1 663 533	4–6	1.50+06	4.79−04	7.52−03	−2.718	D	1
23		$^2P–^4D^\circ$										

TABLE 30. Transition probabilities of allowed lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				997.14	1 579 680–1 679 967	4–6	5.89+07	1.32−02	1.73−01	−1.277	D	1
				1 035.01	1 586 600–1 683 217	2–4	1.23+07	3.94−03	2.68−02	−2.103	D	1
				965.84	1 579 680–1 683 217	4–4	5.74+05	8.03−05	1.02−03	−3.493	D	1
				1 019.41	1 586 600–1 684 696	2–2	3.42+06	5.33−04	3.57−03	−2.972	D	1
				952.24	1 579 680–1 684 696	4–2	1.64+06	1.12−04	1.40−03	−3.349	D	1
24		^{2}P–^{2}D$^\circ$		*911.2*	*1 581 980–1 691 724*	6–10	1.13+09	2.34−01	4.21+00	0.147	D+	1
				916.86	1 579 680–1 688 748	4–6	1.18+09	2.24−01	2.70+00	−0.048	C	1
				912.50	1 586 600–1 696 189	2–4	9.83+08	2.45−01	1.47+00	−0.310	D	1
				858.30	1 579 680–1 696 189	4–4	3.58+07	3.95−03	4.46−02	−1.801	E	1
25		^{2}P–^{4}S$^\circ$										
				842.62	1 579 680–1 698 357	4–4	3.96+06	4.22−04	4.68−03	−2.773	D	1
				894.80	1 586 600–1 698 357	2–4	4.05+07	9.72−03	5.72−02	−1.711	D	1
26	$2s^22p^4(^3P)3s–2s2p^5(^3P^\circ)3s$	^{2}P–^{2}P$^\circ$		*217.97*	*1 581 980–2 040 750*	6–6	1.39+10	9.91−02	4.27−01	−0.480	D	3,LS
				217.908	1 579 680–2 038 590	4–4	1.16+10	8.27−02	2.37−01	−0.480	D	3,LS
				218.107	1 586 600–2 045 090	2–2	9.27+09	6.61−02	9.49−02	−0.879	D	3,LS
				214.864	1 579 680–2 045 090	4–2	4.85+09	1.68−02	4.75−02	−1.173	D	3,LS
				221.244	1 586 600–2 038 590	2–4	2.22+09	3.26−02	4.74−02	−1.186	D	3,LS
27	$2s^22p^4(^1D)3s–2s^22p^4(^3P)3p$	^{2}D–^{2}D$^\circ$		*1 464.7*	*1 523 450–1 691 724*	10–10	1.73+07	5.57−03	2.69−01	−1.254	C	1
				1 529.80	1 623 380–1 688 748	6–6	4.77+05	1.67−04	5.05−03	−2.999	D	1
				1 376.86	1 696 560–1 696 189	4–4	1.67+06	4.76−04	8.62−03	−2.720	E	1
				1 373.46	1 623 380–1 696 189	6–4	5.00+07	9.42−03	2.55−01	−1.248	C	1
				1 534.02	1 623 560–1 688 748	4–6	4.61+03	2.44−06	4.93−05	−5.011	E	1
28		^{2}D–^{4}S$^\circ$										
				1 333.74	1 623 380–1 698 357	6–4	4.40+06	7.82−04	2.06−02	−2.329	D	1
				1 396.95	1 623 560–1 698 357	4–4	1.80+05	4.83−05	8.51−04	−3.714	E+	1
29	$2s^22p^4(^1D)3s–2s2p^5(^3P^\circ)3s$	^{2}D–^{2}P$^\circ$		*239.64*	*1 623 450–2 040 750*	10–6	8.12+08	4.20−03	3.31−02	−1.377	D	3
				240.842	1 623 380–2 038 590	6–4	7.23+08	4.19−03	1.99−02	−1.600	D	3,LS
				237.231	1 623 560–2 045 090	4–2	8.41+08	3.55−03	1.10−02	−1.848	D	3,LS
				240.946	1 623 560–2 038 590	4–4	8.03+07	6.99−04	2.21−03	−2.553	E	3,LS
30	$2s^22p^4(^3P)3p–2s^22p^4(^3P)3d$	^{4}P$^\circ$–^{4}D				12–20						1
				671.81	1 663 533–1 812 384	6–8	2.30+09	2.08−01	2.75+00	−0.096	B	1
31		^{4}P$^\circ$–^{2}F										
				585.49	1 663 533–1 834 330	6–8	1.31+06	8.95−05	1.03−03	−3.270	D	1
				568.88	1 663 533–1 839 316	6–6	2.10+08	1.02−02	1.14−01	−1.213	D	1
32		^{4}P$^\circ$–^{4}P				12–12						1
				[575.09]	1 663 533–1 837 420	6–6	7.32+08	3.63−02	4.12−01	−0.662	C+	1
				583.78	1 663 533–1 834 830	6–7	7.96+08	2.71−02	3.12−01	−0.789	C+	1
33		^{4}P$^\circ$–^{2}D										
				542.661	1 663 533–1 847 810	6–6	4.82+06	2.13−04	2.27−03	−2.893	D	1
				557.983	1 663 533–1 842 750	6–4	1.63+06	5.09−05	5.60−04	−3.515	E+	1
34		^{4}P$^\circ$–^{2}P										
				[539.674]	1 663 533–1 848 830	6–4	3.46+06	1.01−04	1.07−03	−3.218	D	1

TABLE 30. Transition probabilities of allowed lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
35		$^4D^{\circ}-^4D$				20–20						1
				738.67	1 677 006–1 812 384	8–8	6.68+08	5.46−02	1.06+00	−0.360	B	1
				755.19	1 679 967–1 812 384	6–8	7.64+07	8.71−03	1.30−01	−1.282	C+	1
36		$^4D^{\circ}-^4F$				20–28						1
				676.30	1 677 006–1 824 869	8–10	3.45+09	2.96−01	5.26+00	0.374	B	1
				675.32	1 679 967–1 828 045	6–8	3.18+09	2.90−01	3.87+00	0.241	B	1
				674.98	1 683 217–1 831 370	4–6	2.69+09	2.75−01	2.44+00	0.041	B	1
				662.08	1 677 006–1 828 045	8–8	2.75+08	1.81−02	3.15−01	−0.839	B	1
				660.49	1 679 967–1 831 370	6–6	7.44+08	4.86−02	6.34−01	−0.535	B	1
				647.82	1 677 000–1 831 370	8–6	8.07+06	3.81−04	6.49−03	−2.516	C+	1
37		$^4D^{\circ}-^2F$										
				647.82	1 679 967–1 834 330	6–8	7.54+06	6.33−04	8.09−03	−2.420	D	1
				640.62	1 683 217–1 839 316	4–6	3.27+06	3.01−04	2.54−03	−2.919	D	1
				635.63	1 677 006–1 834 330	8–8	4.73+07	2.86−03	4.79−02	−1.641	D	1
				627.55	1 679 967–1 839 316	6–6	1.55+07	9.18−04	1.13−02	−2.259	D	1
				616.10	1 677 006–1 839 816	8–6	1.88+07	8.01−04	1.29−02	−2.193	D	1
38		$^4D^{\circ}-^4P$				20–12						1
				[623.39]	1 677 006–1 837 420	8–6	9.91+07	4.33−03	7.11−02	−1.460	C	1
				645.73	1 679 967–1 834 830	6–4	1.34+07	5.58−04	7.12−03	−2.475	D	1
				[635.11]	1 679 967–1 837 420	6–6	1.39+08	8.42−03	1.05−01	−1.297	C	1
				659.57	1 683 217–1 834 830	4–4	3.71+07	2.42−03	2.10−02	−2.014	D	1
				[648.50]	1 683 217–1 837 420	4–6	1.36+08	1.29−02	1.09−01	−1.287	B	1
				666.07	1 684 696–1 834 830	2–4	3.66+08	4.87−02	2.13−01	−1.011	D	1
39		$^4D^{\circ}-^2D$										
				595.79	1 679 967–1 847 810	6–6	3.63+07	1.93−03	2.27−02	−1.936	D	1
				626.83	1 683 217–1 842 750	4–4	1.41+05	8.33−06	6.87−05	−4.477	E	1
				585.47	1 677 006–1 847 810	8–6	8.35+05	3.22−05	4.96−04	−3.589	E+	1
				614.31	1 879 967–1 842 750	6–4	2.26+07	8.51−04	1.03−02	−2.292	D	1
				607.56	1 683 217–1 847 810	4–6	8.66+06	7.19−04	5.75−03	−2.541	D	1
				632.70	1 584 696–1 842 750	2–4	4.88+06	5.85−04	2.43−03	−2.932	D	1
40		$^4D^{\circ}-^2P$										
				[592.20]	1 679 967–1 848 830	6–4	3.85+06	1.35−04	1.57−03	−3.092	D	1
				[603.82]	1 683 217–1 848 830	4–4	3.18+06	1.74−04	1.38−03	−3.157	D	1
				[609.26]	1 684 696–1 848 830	2–4	3.16+06	3.51−04	1.41−03	−3.154	D	1
41		$^2D^{\circ}-^4D$										
				808.83	1 688 748–1 812 384	6–8	9.32+05	1.22−04	1.94−03	−3.135	D	1
42		$^2D^{\circ}-^4F$										
				717.89	1 688 748–1 828 045	6–8	1.84+07	1.89−03	2.68−02	−1.945	D	1
				739.75	1 696 189–1 831 870	4–6	2.38+06	2.93−04	2.85−03	−2.931	D	1
				701.15	1 688 748–1 831 370	6–6	1.71+07	1.26−03	1.74−02	−2.121	D	1
43		$^2D^{\circ}-^2F$		*690.9*	*1 691 727–1 836 467*	10–14	3.46+09	3.46−01	7.88+00	0.539	D	3
				686.90	1 688 748–1 834 830	4–6	3.52+09	3.32−01	4.50+00	0.299	D	3,LS
				698.68	1 696 189–1 839 816	4–6	3.12+09	3.43−01	3.15+00	0.137	D	3,LS
				664.15	1 688 748–1 839 316	6–6	2.60+08	1.72−02	2.25−01	−0.986	D	3,LS
44		$^2D^{\circ}-^4P$										

TABLE 30. Transition probabilities of allowed lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				684.55	1 688 748–1 834 830	6–4	6.81+06	3.19−04	4.31−03	−2.718	D	1
				[672.62]	1 688 748–1 837 420	6–6	8.01+07	5.43−03	7.21−02	−1.487	D	1
				721.29	1 696 189–1 834 830	4–4	6.12+07	4.77−03	4.53−02	−1.719	D	1
				[708.06]	1 696 189–1 837 420	4–6	3.59+08	4.04−02	3.770.1	−0.792	D	1
45		^{2}D°–^{2}D		*649.1*	*1 691 727–1 845 780*	10–10	1.76+09	1.11−01	2.38+00	0.045	D	1
				628.69	1 688 748–1 847 810	6–6	4.43+08	2.62−02	3.25−01	−0.804	C	1
				682.31	1 696 189–1 842 750	4–4	7.58+07	5.29−03	4.75−02	−1.674	D	1
				649.34	1 688 748–1 842 750	6–4	1.81+08	7.64−03	9.79−02	−1.339	D+	1
				659.54	1 896 189–1 847 810	4–6	2.25+09	2.20−01	1.91+00	−0.056	D	1
46		^{2}D°–^{2}P				10–6						1
				[624.68]	1 688 748–1 848 830	6–4	1.87+07	7.29−04	8.99−03	−2.359	D	1
				[655.13]	1 696 189–1 848 830	4–4	6.14+08	3.95−02	3.40−01	−0.801	C	1
47		^{4}S°–^{4}P				4–12						1
				[719.10]	1 598 357–1 837 420	4–6	1.21+09	1.41−01	1.33+00	−0.249	C	1
				732.75	1 398 357–1 834 830	4–4	1.30+09	1.04−01	1.00+00	−0.381	C	1
48		^{4}S°–^{2}D										
				669.11	1 698 357–1 847 810	4–6	2.19+07	2.21−03	1.94−02	−2.054	D	1
				692.55	1 598 357–1 842 750	4–4	1.57+06	1.13−04	1.02−03	−3.345	D	1
49		^{4}S°–^{2}P										
				[664.57]	1 698 357–1 848 830	4–4	6.01+07	3.98−03	3.48−02	−1.798	D	1
50	$2s^22p^4(^3P)3p–2s^22p^4(^1D)3d$	^{4}D°–^{2}F										
				478.989	1 683 217–1 891 990	4–6	3.15+05	1.63−05	1.02−04	−4.186	E+	1
				471.647	1 679 967–1 891 990	6–6	1.25+07	4.18−04	3.89−03	−2.601	D	1
				465.151	1 677 006–1 891 990	8–6	1.27+05	3.09−06	3.78−05	−4.607	E	1
51		^{4}D°–^{2}P										
				466.542	1 679 967–1 894 310	6–4	3.25+07	7.06−04	6.50−03	−2.373	D	1
				466.803	1 683 217–1 897 440	4–2	4.74+06	7.74−05	4.75−04	−3.509	E+	1
				473.725	1 683 217–1 894 310	4–4	5.02+06	1.69−04	1.05−03	−3.170	D	1
				477.067	1 684 696–1 894 310	2–4	1.10+06	7.49−05	2.35−04	−3.824	E+	1
52		^{4}D°–^{2}D										
				463.923	1 679 967–1 895 520	6–6	4.52+07	1.46−03	1.33−02	−2.057	D	1
				465.110	1 683 217–1 898 220	4–4	9.42+06	3.06−04	1.87−03	−2.912	D	1
				458.184	1 679 967–1 898 220	6–4	4.31+06	9.05−05	8.18−04	−3.265	E+	1
				471.025	1 683 217–1 895 520	4–6	2.43+06	1.21−04	7.51−04	−3.315	E+	1
				468.331	1 684 696–1 898 220	2–4	4.58+05	3.01−05	9.29−05	−4.220	E	1
53		^{2}D°–^{2}F				10–14						1
				510.723	1 696 189–1 891 990	4–6	1.06+06	6.19−05	4.16−04	−3.606	E	1
				492.024	1 688 748–1 891 990	6–6	5.01+07	1.82−03	1.76−02	−1.962	C	1
54		^{2}D°–^{2}P		*491.10*	*1 691 724–1 895 350*	10–6	3.16+08	6.86−03	1.11−01	−1.164	C	1
				486.471	1 688 748–1 894 310	6–4	1.46+08	3.45−03	3.31−02	−1.684	C	1
				496.892	1 696 189–1 897 440	4–2	2.76+08	5.11−03	3.34−02	−1.690	C	1
				504.742	1 696 189–1 894 310	4–4	1.75+08	6.69−03	4.44−02	−1.573	C	1
55		^{2}D°–^{2}D		*488.10*	*1 691 724–1 896 600*	10–10	3.06+08	1.09−02	1.76−01	−0.963	C+	1

TABLE 30. Transition probabilities of allowed lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				483.624	1 688 748–1 895 520	6–6	3.02+08	1.06−02	1.01−01	−1.197	C+	1
				494.974	1 696 189–1 898 220	4–4	2.87+08	1.05−02	6.86−02	−1.377	C	1
				477.391	1 688 748–1 898 220	6–4	2.73+07	6.22−04	5.86−03	−2.428	D+	1
				501.678	1 696 189–1 895 520	4–6	5.04+05	2.85−05	1.88−04	−3.943	E	1
56		^{4}S°–^{2}S										
				526.169	1 698 357–1 888 410	4–2	6.97+07	1.45−03	1.00−02	−2.237	D	1
57		^{4}S°–^{2}P										
				510.326	1 698 357–1 894 810	4–4	1.94+07	7.56−04	5.08−03	−2.519	D	1
				502.303	1 698 357–1 897 440	4–2	1.83+07	3.46−04	2.29−03	−2.859	D	1
58		^{4}S°–^{2}D										
				507.195	1 698 357–1 895 520	4–6	8.08+05	4.68−05	3.12−04	−3.728	E+	1
				500.343	1 698 357–1 898 220	4–4	1.58+07	5.95−04	3.91−03	−2.623	D	1
59	$2s^22p^4(^3P)3p–2s^22p^4(^1S)3d$	^{2}D°–^{2}D		*383.56*	*1 691 724–1 952 440*	10–10	1.53+07	3.38−04	4.27−03	−2.471	D	1
				379.720	1 688 748–1 952 100	6–6	1.52+07	3.28−04	2.46−03	−2.706	D	1
				389.452	1 696 189–1 952 960	4–4	1.30+07	2.96−04	1.52−03	−2.927	D	1
				378.484	1 688 748–1 952 960	6–4	2.05+06	2.94−05	2.19−04	−3.754	E	1
				390.761	1 696 189–1 952 100	4–6	3.81+05	1.31−05	6.73−05	−4.281	E	1
60	$2s^22p^4(^3P)3p–2s^22p^4(^3P^\circ)4s$	^{2}D°–^{2}P				10–6						3
				[240.574]	1 688 748–2 104 420	6–4	1.51+10	8.72−02	4.14−01	−0.281	D	3,LS
				[244.959]	1 696 189–2 104 420	4–4	1.59+09	1.43−02	4.61−02	−1.243	D	3,LS
61	$2s^22p^4(^3P)3p–2s^22p^4(^3P^\circ)4d$	^{2}D°–^{2}D				10–10						3
				[192.622]	1 688 748–2 207 900	6–6	2.37+09	1.32−02	5.02−02	−1.101	D	3,LS
				[195.423]	1 696 189–2 207 900	4–6	1.63+08	1.40−03	3.60−03	−2.252	E	3,LS
62	$2s^22p^4(^1S)3s–2s^22p^4(^3P)3p$	^{2}S–^{4}S°										
			9795	9797	1 688 150–1 698 357	2–4	6.88+02	1.98−05	1.27−03	−4.402	D	1
63	$2s^22p^4(^1D)3d–2s2p^5(^3P^\circ)3s$	^{2}S–^{2}P°		*656.4*	1 888 410–*2 040 750*	2–6	2.05+07	3.97−03	1.71−02	−2.100	E+	3
				665.87	1 888 410–2 038 590	2–4	1.97+07	2.62−03	1.14−02	−2.281	D	3,LS
				638.24	1 888 410–2 045 090	2–2	2.24+07	1.37−03	5.75−03	−2.562	E	3,LS
64		^{2}P–^{2}P°		*687.8*	*1 895 350–2 040 750*	6–6	4.17+07	2.96−03	4.02−02	−1.751	E+	3
				693.10	1 894 310–2 038 590	4–4	3.40+07	2.45−03	2.23−02	−2.000	D	3,LS
				677.28	1 897 440–2 045 090	2–2	2.92+07	2.01−03	8.96−03	−2.396	E	3,LS
				663.22	1 894 310–2 045 090	4–2	1.55+07	5.12−04	4.47−03	−2.689	E	3,LS
				708.47	1 897 440–2 038 590	2–4	6.37+06	9.58−04	4.46−03	−2.718	E	3,LS
65		^{2}D–^{2}P°		*693.7*	*1 896 600–2 040 750*	10–6	4.76+07	2.06−03	4.70−02	−1.628	D	3
				698.96	1 895 520–2 038 590	6–4	4.20+07	2.05−03	2.83−02	−1.910	D	3,LS
				680.87	1 898 220–2 045 090	4–2	5.04+07	1.75−03	1.56−02	−2.155	D	3LS
				712.40	1 898 220–2 038 590	4–4	4.40+06	3.35−04	3.14−03	−2.873	E	3,LS
66	$2s2p^5(^3P^\circ)3s–2s^22p^4(^3P^\circ)4d$	^{2}P°–^{2}D				6–10						3
				[590.63]	2 038 590–2 207 900	4–6	1.07+08	8.36−03	0.50−02	−1.476	D	3,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002a); Ref. 2 = Fawcett and Hayes (1987); Ref. 3 = Butler and Zeippen (unpublished).

References for Allowed Transitions of S VIII

Butler, K. and C. J. Zeippen (unpublished). Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Fawcett, B. C. and R. W. Hayes, 1987, Phys. Scr. **36**, 80.

Tachiev G. and C. Froese Fischer, 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.8.2. Forbidden Transitions for S VIII

Tachiev and Froese Fischer (2002a) performed extensive calculations using the MCHF method with BP corrections. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to $2p^43p$.

A wavelength finding list of forbidden lines for S VII is given in Table 31, and the transition probabilities for the lines are provided in Table 32.

TABLE 31. Wavelength finding list for forbidden lines of S VIII

Wavelength (vac.) (Å)	Mult. No.
58.880	7
59.215	6
59.232	7
59.358	5
59.525	5
59.715	5
59.768	5
60.113	4
61.985	3
64.547	2
84.381	13
85.011	12
86.215	11
89.292	10
89.307	10
92.934	9
94.197	8
94.724	8
776.37	23
813.70	23
834.20	20
838.38	23
894.84	19

TABLE 31. Wavelength finding list for forbidden lines of S VIII—Continued

Wavelength (vac.) (Å)	Mult. No.
921.91	24
978.97	22
984.74	24
1 027.47	21
1 543.92	25
1 548.23	25
1 557.27	17
1 561.65	17
1 715.09	17
1 720.40	17
1 828.6	17
Wavelength (air) (Å)	**Mult. No.**
2 278.2	18
2 287.6	18
2 704.8	18
2 870.7	28
3 061.3	27
3 964.8	27
4 683.4	15
4 916.3	15
5 078.9	26
5 436.2	31
5 639	15
6 083	26
6 163	30
6 603	31
6 930	15
7 420	26
7 707	30
8 514	30
8 699	30
9 250	15
9 913	1
11 385	30
13 435	32
14 447	16
16 919	14
18 075	30
Wave number (cm^{-1})	**Mult. No.**
3 618	14
3 250	29
2 961	29

TABLE 32. Transition probabilities of forbidden lines for S VIII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^22p^5-2s^22p^5$	$^2P^\circ-^2P^\circ$									
			9 913	9 916	0–10 085	4–2	M1	1.84+01	1.33+00	A	1
			9 913	9 916	0–10 085	4–2	E2	2.17−04	3.71−02	B	1

TABLE 32. Transition probabilities of forbidden lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
2	$2s^22p^5$–$2s^22p^4(^3P)3s$	$^2P°$–^4P									
				64.547	10 085–1 559 345	2–6	M2	3.22+02	1.45−01	B	1
3	$2s^22p^5$–$2s^22p^4(^1D)3s$	$^2P°$–^2D									
				61.985	10 085–1 623 380	2–6	M2	1.02+03	3.73−01	B	1
4	$2s^22p^5$–$2s^22p^4(^3P)3p$	$^2P°$–$^4P°$									
				60.113	0–1 663 533	4–6	M1	3.66+01	1.76−06	D	1
5		$^2P°$–$^4D°$									
				59.525	0–1 679 967	4–6	M1	3.04+02	1.42−05	D+	1
				59.768	10 085–1 683 217	2–4	M1	1.62+02	5.11−06	D	1
				59.715	10 085–1 684 696	2–2	M1	8.58+01	1.35−06	D	1
				59.358	0–1 684 696	4–2	M1	9.71+01	1.50−06	D	1
6		$^2P°$–$^2D°$									
				59.215	0–1 688 748	4–6	M1	2.26+01	1.04−06	D	1
7		$^2P°$–$^4S°$									
				58.880	0–1 698 357	4–4	M1	4.03+02	1.21−05	D+	1
				59.232	10 085–1 698 357	2–4	M1	7.06+01	2.17−06	D	1
8	$2s2p^6$–$2s^22p^4(^3P)3s$	^2S–^4P									
				94.724	503 644–1 559 345	2–6	E2	1.71+02	6.98−06	D	1
				94.197	503 644–1 565 254	2–4	E2	7.23+01	1.91−06	D	1
9		^2S–^2P									
				92.934	503 644–1 579 680	2–4	E2	2.37+02	5.88−06	D	1
10	$2s2p^6$–$2s^22p^4(^1D)3s$	^2S–^2D									
				89.307	503 644–1 623 380	2–6	E2	3.44+04	1.04−03	C	1
				89.292	503 644–1 623 560	2–4	E2	3.48+04	7.05−04	D+	1
11	$2s2p^6$–$2s^22p^4(^3P)3p$	^2S–$^4P°$									
				86.215	503 644–1 663 533	2–6	M2	4.02−01	7.71−04	D+	1
12		^2S–$^4D°$									
				85.011	503 644–1 679 967	2–6	M2	7.15−02	1.27−04	D+	1
13		^2S–$^2D°$									
				84.381	503 644–1 688 748	2–6	M2	1.15+00	1.98−03	C	1
14	$2s^22p^4(^3P)3s$–$2s^22p^4(^3P)3s$	^4P–^4P									
			16 919	16 923	1 559 345–1 565 254	6–4	M1	4.78+00	3.43+00	B+	1
				3 618 cm^{-1}	1 565 254–1 568 872	4–2	M1	2.05+00	3.21+00	B+	1
15		^4P–^2P									
			6 930	6 932	1 565 254–1 579 680	4–4	M1	2.20+00	1.08−01	B	1
			5 639	5 641	1 568 872–1 586 600	2–2	M1	2.19+00	2.92−02	C+	1
			4 916.3	4 917.6	1 559 345–1 579 680	6–4	M1	8.57+00	1.51−01	B	1
			4 683.4	4 684.7	1 565 254–1 586 600	4–2	M1	1.83+00	1.39−02	C+	1
			9 250	9 252	1 568 872–1 579 680	2–4	M1	7.85−01	9.22−02	C+	1

TABLE 32. Transition probabilities of forbidden lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
16		^{2}P–^{2}P									
			14 447	14 451	1 579 680–1 586 600	4–2	M1	5.86+00	1.31+00	B+	1
17	$2s^22p^4(^3P)3s$–$2s^22p^4(^1D)3s$	^{4}P–^{2}D									
				1 720.40	1 565 254–1 623 380	4–6	M1	3.80+00	4.30−03	C	1
				1 828.6	1 568 872–1 623 560	2–4	M1	4.43+00	4.01−03	C	1
				1 561.65	1 559 345–1 623 380	6–6	M1	5.94+01	5.02−02	C+	1
				1 715.09	1 565 254–1 623 560	4–4	M1	3.01+01	2.24−02	C+	1
				1 557.27	1 559 345–1 623 560	6–4	M1	6.90+00	3.86−03	C	1
18		^{2}P–^{2}D									
			2 287.6	2 288.3	1 579 680–1 623 380	4–6	M1	1.11+01	2.97−02	C+	1
			2 704.8	2 705.6	1 586 600–1 623 560	2–4	M1	4.22+00	1.23−02	C+	1
			2 278.2	2 278.9	1 579 680–1 623 560	4–4	M1	1.80+01	3.16−02	C+	1
19	$2s^22p^4(^3P)3s$–$2s^22p^4(^3P)3p$	^{4}P–^{4}D°									
				894.84	1 565 254–1 677 006	4–8	M2	4.54−02	1.39+01	B+	1
20		^{4}P–^{2}D°									
				834.20	1 568 872–1 688 748	2–6	M2	3.32−02	5.40+00	B+	1
21		^{2}P–^{4}D°									
				1 027.47	1 579 680–1 677 006	4–8	M2	4.15−02	2.55+01	B+	1
22		^{2}P–^{2}D°									
				978.97	1 586 600–1 688 748	2–6	M2	2.15−02	7.77+00	B+	1
23	$2s^22p^4(^3P)3s$–$2s^22p^4(^1S)3s$	^{4}P–^{2}S									
				776.37	1 559 345–1 688 150	6–2	E2	5.12−02	2.58−05	D+	1
				813.70	1 565 254–1 688 150	4–2	M1	3.01+02	1.20−02	C+	1
				838.38	1 568 872–1 688 150	2–2	M1	9.08+01	3.96−03	C	1
24		^{2}P–^{2}S									
				921.91	1 579 680–1 688 150	4–2	M1	1.44+02	8.39−03	C	1
				984.74	1 586 600–1 688 150	2–2	M1	1.15+02	8.12−03	C	1
25	$2s^22p^4(^1D)3s$–$2s^22p^4(^1S)3s$	^{2}D–^{2}S									
				1 543.92	1 623 380–1 688 150	6–2	E2	2.11+00	3.29−02	C+	1
				1 548.23	1 623 560–1 688 150	4–2	E2	1.36+00	2.16−02	C+	1
26	$2s^22p^4(^3P)3p$–$2s^22p^4(^3P)3p$	^{4}P°–^{4}D°									
			7 420	7 422	1 663 533–1 677 006	6–8	M1	2.09+00	2.53−01	B	1
			6 083	6 085	1 663 533–1 679 967	6–6	M1	1.29+00	6.44−02	C+	1
			5 078.9	5 080.3	1 663 533–1 683 217	6–4	M1	3.11+00	6.03−02	C+	1
27		^{4}P°–^{2}D°									
			3 964.8	3 965.9	1 663 533–1 688 748	6–6	M1	3.10+00	4.29−02	C+	1
			3 061.3	3 062.2	1 663 533–1 696 189	6–4	M1	4.79+00	2.04−02	C+	1
28		^{4}P°–^{4}S°									
			2 870.7	2 871.6	1 663 533–1 698 357	6–4	M1	1.45+01	5.09−02	C+	1
29		^{4}D°–^{4}D°									

TABLE 32. Transition probabilities of forbidden lines for S VIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				2 961 cm^{-1}	1 677 006–1 679 967	8–6	M1	6.33−01	5.42+00	B+	1
				3 250 cm^{-1}	1 679 967–1 683 217	6–4	M1	1.64+00	7.09+00	B+	1
30		$^4D°-^2D°$									
			11 385	11 388	1 679 967–1 688 748	6–6	M1	8.24−01	2.70−01	B	1
			7 707	7 709	1 683 217–1 696 189	4–4	M1	9.61−01	6.52−02	C+	1
			8 514	8 516	1 677 006–1 688 748	8–6	M1	8.30+00	1.14+00	B+	1
			6 163	6 164	1 679 967–1 696 189	6–4	M1	6.44−01	2.23−02	C+	1
			18 075	18 080	1 683 217–1 688 748	4–6	M1	6.30−01	8.28−01	B	1
			8 699	8 701	1 684 696–1 696 189	2–4	M1	1.00+00	9.79−02	C+	1
31		$^4D°-^4S°$									
			5 436.2	5 437.7	1 679 967–1 698 357	6–4	M1	5.88−01	1.40−02	C+	1
			6 603	6 605	1 683 217–1 698 357	4–4	M1	3.67−01	1.56−02	C+	1
32		$^2D°-^2D°$									
			13 435	13 439	1 688 748–1 696 189	6–4	M1	3.89+00	1.40+00	B+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002a).

References for Forbidden Transitions of S VIII

Tachiev G. and C. Froese Fischer, 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.9. S IX

$Z = 16$
Oxygen Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^4\ ^3P_2$
Ionization Energy: 3 061 300 cm^{-1} (379.553 eV)

4.9.1. Allowed Transitions for S IX

We tabulated the results of Tachiev and Froese Fischer (2002b) who calculated transition probabilities for the $2s^2 2p^4$–$2s2p^5$, $2s^2 2p^4$–$2s^2 2p^3 3s$, $2s^2 2p^4$–$2s^2 2p^3 3d$, and $2s2p^5$–$2p^6$ transition arrays using the MCHF method with BP corrections.

Oscillator strengths from the R-matrix calculations of the OP (Butler and Zeippen, unpublished) were taken for several transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S IX is given in Table 33, and the transition probabilities for these lines are provided in Table 34.

TABLE 33. Wavelength finding list for allowed lines of S IX

Wavelength (vac.) (Å)	Mult. No.
38.882	52
38.966	51
40.171	50
45.825	41
45.881	41
46.157	40
46.237	39
46.373	38
46.377	38
46.409	39
46.413	38
46.549	38
46.585	37
46.585	38
46.607	38
46.624	37
46.759	37
46.799	37
46.843	37
46.845	26
46.857	37
46.91	46
47.047	25
47.185	23
47.224	25
47.227	24
47.249	23
47.284	25
47.363	23
47.406	24
47.418	22
47.423	23
47.428	23
47.43	45
47.433	21
47.436	21
47.498	21
47.52	44
47.598	22
47.616	21
47.659	22
47.661	43
47.665	43
47.679	21
47.703	43
47.740	21
47.886	42
47.927	42
48.16	32
48.37	49
48.374	31
48.519	29
48.56	30
48.587	29
48.77	28
48.782	27
48.785	27
48.851	27
49.119	19
49.132	19
49.134	19
49.175	48
49.325	19
49.328	19
49.390	19
49.454	47
49.929	36
50.084	35
50.35	34
50.438	33
50.567	20
50.58	20
50.583	20
52.513	15
52.734	15
52.808	15
52.859	14
53.083	14
53.798	10
54.030	10
54.17	17
54.175	9
54.196	9
54.201	9
54.431	9
54.437	9
54.516	9
54.539	16
55.54	12

TABLE 33. Wavelength finding list for allowed lines of S IX—Continued

Wavelength (vac.) (Å)	Mult. No.
55.942	11
55.964	11
55.970	11
56.081	7
56.13	18
56.333	7
56.417	7
57.976	8
58.063	13
93.799	55
162.318	2
164.450	2
165.173	2
170.293	53

TABLE 33. Wavelength finding list for allowed lines of S IX—Continued

Wavelength (vac.) (Å)	Mult. No.
179.28	4
202.69	6
221.241	1
223.262	1
224.726	1
225.220	1
226.579	1
228.832	1
236.33	54
254.000	3
258.603	3
303.679	5

TABLE 34. Transition probabilities of allowed lines for S IX

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^22p^4-2s2p^5$	$^3P-^3P^°$		*224.88*	*3 845–448 534*	9–9	1.65+10	1.25−01	8.33−01	0.051	A	1
				224.726	0.0–444–987	5–5	1.24+10	9.37−02	3.46−01	−0.329	A	1
				225.220	7 985–451–995	3–3	4.12+09	3.13−02	6.96−02	−1.027	A	1
				221.241	0.0–451 995	5–3	7.30+09	3.21−02	1.17−01	−0.795	A	1
				223.262	7 985–455 890	3–1	1.70+10	4.23−02	9.31−02	−0.897	A	1
				228.832	7 985–444 987	3–5	3.92+09	5.13−02	1.15−01	−0.813	A	1
				226.579	10 648–451 995	1–3	5.37+09	1.24−01	9.24−02	−0.907	A	1
2		$^3P-^1P^°$										
				164.450	7 985–616 073	3–3	1.04+07	4.22−05	6.84−05	−3.898	C	1
				162.318	0.0–616 073	5–3	4.05+08	9.59−04	2.56−03	−2.319	B	1
				165.173	10 648–616 073	1–3	2.18+07	2.68−04	1.45−04	−3.572	C+	1
3		$^1D-^3P^°$										
				254.000	58 293.9–451 995	5–3	3.13+06	1.82−05	7.60−05	−4.041	C	1
				258.603	58 293.9–444.987	5–5	5.93+07	5.95−04	2.53−03	−2.527	B	1
4		$^1D-^1P^°$		179.28	58 293.9–616 073	5–3	5.67+10	1.64−01	4.84−01	−0.086	A	1
5		$^1S-^1P^°$										
				303.679	122 700–451 995	1–3	1.04+07	4.29−04	4.29−04	−3.368	C+	1
6		$^1S-^1P^°$		202.69	122 700–616 073	1–3	3.91+09	7.22−02	4.82−02	−1.141	A	1
7	$2s^22p^4-2s^22p^3(^4S^°)3s$	$^3P-^3S^°$		*56.20*	*3 845*–1 783 150	9–3	2.93+11	4.62−02	7.70−02	−0.381	B+	1
				56.081	0.0–1 783 150	5–3	1.69+11	4.79−02	4.42−02	−0.621	B+	1
				56.333	7 985–1 783 150	3–3	9.28+10	4.41−02	2.45−02	−0.878	B+	1
				56.417	10 648–1 783 150	1–3	3.13+10	4.47−02	8.31−03	−1.350	B+	1
8		$^1D-^3S^°$										
				57.976	58 293.9–1 783 150	5–3	3.31+08	1.00−04	9.55−05	−3.301	C	1
9	$2s^22p^4-2s^22p^3(^2D^°)3s$	$^3P-^3D^°$		*54.30*	*3 845–1 845 450*	9–15	9.31+10	6.86−02	1.10−01	−0.209	B	1
				54.175	0.0–1 845 870	5–7	9.36+10	5.77−02	5.14−02	−0.540	B	1
				54.431	7 985–1 845 170	3–5	5.73+10	4.24−02	2.28−02	−0.896	B	1

TABLE 34. Transition probabilities of allowed lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				54.516	10 648–1 844 970	1–3	4.20+10	5.62−02	1.00−02	−1.250	B	1
				54.196	0.0–1 845 170	5–5	3.61+10	1.59−02	1.41−02	−1.100	B	1
				54.437	7 985–1 844 970	3–3	4.67+10	2.08−02	1.11−02	−1.205	B	1
				54.201	0.0–1 844 970	5–3	4.19+09	1.11−03	9.86−04	−2.256	C	1
10		^{3}P–^{1}D°										
				54.030	7 985–1 858 800	3–5	1.60+09	1.17−03	6.22−04	−2.455	C+	1
				53.798	0.0–1 858 800	5–5	5.36+09	2.33−03	2.06−03	−1.934	B	1
11		^{1}D–^{3}D°										
				55.964	58 293.9–1 845 170	5–5	1.78+07	8.35−06	7.69−06	−4.379	D	1
				55.970	58 293.9–1 844 970	5–3	1.05+09	2.95−04	2.71−04	−2.831	C+	1
				55.942	58 293.9–1 845 870	5–7	7.28+08	4.78−04	4.40−04	−2.622	C+	1
12		^{1}D–^{1}D°		55.54	58 293.9–1 858 800	5–5	2.29+11	1.06−01	9.69−02	−0.276	B	1
13		^{1}S–^{3}D°										
				58.063	122 700–1 844 970	1–3	4.10+08	6.22−04	1.18−04	−3.206	C+	1
14	$2s^22p^4$–$2s^22p^3(^2$P°$)3s$	^{3}P–^{3}P°				9–9						1
				52.859	0.0–1 891 830	5–5	5.22+10	2.19−02	1.90−02	−0.961	B	1
				53.083	7 985–1 891 830	3–5	355+10	2.50−02	1.31−02	−1.125	B	1
15		^{3}P–^{1}P°										
				52.734	7 985–1 904 300	3–3	6.16+05	2.57−07	1.33−07	−6.113	E	1
				52.513	0.0–1 904 300	5–3	1.36+08	3.36−05	2.90−05	−3.775	C	1
				52.808	10 648–1 904 300	1–3	2.65+08	3.32−04	5.77−05	−3.479	C	1
16		^{1}D–^{3}P°										
				54.539	58 293.9–1 891 830	5–5	1.07+10	4.76−03	4.26−03	−1.623	B	1
17		^{1}D–^{1}P°		54.17	58 293.9–1 904 300	5–3	1.18+11	3.12−02	2.78−02	−0.807	B	1
18		^{1}S–^{1}P°		56.13	122 700–1 904 300	1–3	1.10+11	1.56−01	2.89−02	−0.807	B	1
19	$2s^22p^4$–$2s^22p^3(^4$S°$)3d$	^{3}P–^{3}D°		*49.22*	*3 845–2 035 550*	9–15	4.51+11	2.73−01	3.98−01	0.390	B	1
				49.119	0.0–2 0.35 870	5–7	4.62+11	2.34−01	1.89−01	0.068	B	1
				49.328	7 985–2 035 230	3–5	3.17+11	1.92−01	9.37−02	−0.240	B	1
				49.390	10 648–2 035 350	1–3	2.43+11	2.67−01	4.34−02	−0.573	B	1
				49.134	0.0–2 035 230	5–5	1.23+11	4.45−02	3.60−02	−0.653	B	1
				49.325	7.985–2 035 350	3–3	1.88+11	6.85−02	3.33−02	−0.687	B	1
				49.132	0.0–2 035 350	5–3	1.42+10	3.08−03	2.49−03	−1.812	C	1
20		^{1}D–^{3}D°										
				50.583	58 293.9–2 035 230	5–5	6.26+08	2.40−04	1.99−04	−2.921	C+	1
				50.580	58 293.9–2 035 350	5–3	2.50+08	5.76−05	4.79−05	−3.451	C	1
				50.567	58 293.9–2 035 870	5–7	9.35+08	5.02−04	4.14−04	−2.600	C+	1
21	$2s^22p^4$–$2s^22p^3(^2$D°$)3d$	^{3}P–^{3}D°		*[47.53]*	*3 845–2 107 610*	9–15	7.27+11	4.10−01	5.78−01	0.567	B	1
				[47.433]	0.0–2 108 240	5–7	8.92+11	4.21−01	3.28−01	0.323	B	1
				47.616	7 985–2 108 120	3–5	6.28+11	3.56−01	1.67−01	0.029	B	1
				47.740	10 648–2 105 330	1–3	1.34+11	1.37−01	2.16−02	−0.863	B	1
				47.436	0.0–2 108 120	5–5	9.19+10	3.10−02	2.42−02	−0.810	B	1
				47.679	7 985–2 105 330	3–3	1.89+11	6.45−02	3.03−02	−0.713	B	1
				47.498	0.0–2 105 330	5–3	4.26+10	8.66−03	6.76−03	−1.364	C+	1

TABLE 34. Transition probabilities of allowed lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
22		^{3}P–^{1}P°										
				47.598	7 985–2 108 900	3–3	4.68+10	1.59−02	7.47−03	−1.321	B	1
				47.418	0.0–2 108 900	5–3	7.42+09	1.50−03	1.17−03	−2.125	B	1
				47.659	10 648–2 108 900	1–3	2.36+11	2.41−01	3.78−02	−0.618	B+	1
23		^{3}P–^{3}P°				9–9						
				47.249	0.0–2 116 450	5–5	1.15+12	3.86−01	3.00−01	0.286	B	1
				47.363	7 985–2 119 330	3–3	2.69+11	9.04−02	4.23−02	−0.567	B	1
				47.185	0.0–2 119 330	5–3	5.69+11	1.14−01	8.84−02	−0.244	B	1
				47.428	7 985–2 116 450	3–5	2.07+11	1.16−01	5.43−02	−0.458	B	1
				47.423	10 648–2 119 330	1–3	2.87+11	2.91−01	4.53−02	−0.536	B	1
24		^{3}P–^{1}D°										
				47.406	7 985–2 117 430	3–5	9.28+08	5.21−04	2.44−04	−2.806	C	1
				47.227	0.0–2 117 430	5–5	1.16+10	3.87−03	3.01−03	−1.713	C+	1
25		^{3}P–^{3}S°		47.13	3 845–2 125 530	9–3	1.25+12	1.38−01	1.93−01	0.094	B	1
				47.047	0.0–2 125 530	5–3	7.32+11	1.46−01	1.12−01	−0.137	B	1
				47.224	7 985–2 125 530	3–3	3.95+11	1.32−03	6.16−02	−0.402	B	1
				47.284	10 648–2 125 530	1–3	1.25+11	1.26−01	1.96−02	−0.900	B	1
26		^{3}P–^{1}F°										
				46.845	0.0–2 124 710	5–7	5.86+10	2.70−02	2.08−02	−0.870	B+	1
27		^{1}D–^{3}D°										
				48.785	58 293.9–2 108 120	5–5	2.57+08	9.19−05	7.37−05	−3.338	C	1
				48.851	58 293.9–2 105 330	5–3	2.70+11	5.80−02	4.66−02	−0.538	B+	1
				[48.782]	58 293.9–2 108 240	5–7	1.87+09	9.36−04	7.51−04	−2.330	C+	1
28		^{1}D–^{1}P°		48.77	58 293.9–2 108 900	5–3	2.87+11	6.14−02	4.93−02	−0.513	B	1
29		^{1}D–^{3}P°										
				48.519	58 293.9–2 119 330	5–3	3.35+10	7.09−03	5.65−03	−1.450	B	1
				48.587	58 293.9–2 116 450	5–5	2.78+09	9.83−04	7.86−04	−2.308	C	1
30		^{1}D–^{1}D°		58.56	58 293.9–2 117 430	5–5	4.60+11	1.63−01	1.30−01	−0.089	B	1
31		^{1}D–^{3}S°										
				48.374	58 293.9–2 125 530	5–3	4.43+09	9.32−04	7.42−04	−2.332	C+	1
32		^{1}D–^{1}F°		48.16	58 293.9–2 134 710	5–7	8.08+11	3.94−01	3.12−01	0.294	B	1
33		^{1}S–^{3}D°										
				50.438	122 700–2 105 330	1–3	4.27+10	4.88−02	8.11−03	−1.312	B	1
34		^{1}S–^{1}P°		50.35	122 700–2 108 900	1–3	6.51+10	7.42−02	1.23−02	−1.130	B	1
35		^{1}S–^{3}P°										
				50.084	122 700–2 119 330	1–3	5.22+08	5.89−04	9.70−05	−3.230	C	1
36		^{1}S–^{3}S°										
				49.929	122 700–2 125 530	1–3	1.74+09	1.95−03	3.21−04	−2.700	C+	1
37	$2s^22p^4-2s^22p^3(^2P^\circ)3d$	^{3}P–^{3}P°		*46.69*	*3 845–2 145 570*	9–9	2.00+11	6.54−02	9.04−02	−0.230	B	1
				46.585	0.0–2 146 600	5–5	4.98+10	1.62−02	1.24−02	−1.092	B	1

TABLE 34. Transition probabilities of allowed lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				46.799	7 985–2 144 800	3–3	1.63+11	5.37−02	2.48−02	−0.793	B	1
				46.624	0.0–2 144 800	5–3	1.78+10	3.48−03	2.66−03	−1.759	C+	1
				46.843	7 985–2 142 780	3–1	4.32+11	4.74−02	2.19−02	−0.847	B	1
				46.759	7 985–2 146 600	3–5	2.22+10	1.21−02	5.59−03	−1.440	C+	1
				46.857	10 648–2 144 800	1–3	1.52+11	1.50−01	2.31−02	−0.824	B	1
38		^{3}P–^{3}D°		*46.47*	*3 845–2 155 770*	9–15	6.53+11	3.52−01	4.85−01	0.501	B	1
				46.373	0.0–2 156 430	5–7	5.09+11	2.30−01	1.75−01	0.061	B	1
				46.585	7 985–2 154 580	3–5	5.53+11	3.00−01	1.38−01	−0.046	B	1
				46.607	10 648–2 156 260	1–3	5.46+11	5.33−01	8.17−02	−0.273	B	1
				46.413	0.0–2 154 580	5–5	1.29+11	4.16−02	3.17−02	−1.682	B	1
				46.549	7 985–2 156 260	3–3	3.78+11	1.23−01	5.64−02	−0.433	B	1
				46.377	0.0–2 156 260	5–3	1.68+10	3.24−03	2.47−03	−1.790	C+	1
39		^{3}P–^{1}D°										
				46.409	7 985–2 162 760	3–5	988+10	5.32−02	2.43−02	−0.797	B+	1
				46.237	0.0–2 162 760	5–5	2.21+10	7.07−03	5.38−03	−1.452	B	1
40		^{3}P–^{1}F°										
				46.157	0.0–2 166 530	5–7	5.58+09	2.50−03	1.89−03	−1.903	B	1
41		^{3}P–^{1}P°										
				[45.825]	7 985–2 190 220	3–3	7.79+08	2.45−04	1.11−04	−3.134	C+	1
				[45.881]	10 648–2 190 220	1–3	1.22+09	1.15−03	1.73−04	−2.939	C+	1
42		^{1}D–^{3}P°										
				47.927	58 293.9–2 144 800	5–3	9.64+09	1.99−03	1.57−03	−2.002	B	1
				47.886	58 293.9–2 146 600	5–5	1.68+09	5.79−04	4.56−04	−2.538	C+	1
43		^{1}D–^{3}D°										
				47.703	58 293.9–2 154 580	5–5	1.34+11	4.56−02	3.58−02	−0.642	B+	1
				47.665	58 293.9–2 156 260	5–3	8.33+08	1.70−04	1.33−04	−3.071	C+	1
				47.661	58 293.9–2 156 430	5–7	1.78+10	8.47−03	6.64−03	−1.373	B	1
44		^{1}D–^{1}D°		47.52	58 293.9–2 162 760	5–5	8.84+11	2.99−01	2.34−01	−0.175	B	1
45		^{1}D–^{1}F°		47.43	58 293.9–2 166 530	5–7	1.31+12	6.20−01	4.84−01	−0.491	B	1
46		^{1}D–^{1}P°		[46.91]	58 293.9–2 190 220	5–3	8.25+10	1.63−02	1.26−02	−1.089	B	1
47		^{1}S–^{3}P°										
				49.454	122 700–2 144 800	1–3	8.09+09	8.90−03	1.44−03	−2.051	B	1
48		^{1}S–^{3}D°										
				49.175	122 700–2 156 260	1–3	1.16+09	1.26−03	2.03−04	−2.900	C+	1
49		^{1}S–^{1}P°		[48.37]	122 700–2 190 220	1–3	1.55+12	1.63+00	2.59−01	−0.212	B	1
50	$2s^22p^4$–$2s^22p^3(^4S^\circ)4d$	^{3}P–^{3}D°				9–15						2
				[40.171]	0.0–2 489 360	5–7	3.16+11	1.07−01	7.07−02	−0.272	D	2,LS
51	$2s^22p^4$–$2s^22p^3(^2D^\circ)4d$	^{3}P–^{3}D°				9–15						2
				[38.966]	0.0–2 566 340	5–7	2.00+11	6.36−02	4.07−02	−0.498	D	2,LS
52		^{3}P–^{3}P°				9–9						2
				[38.882]	0.0–2 571 880	5–5	2.94+11	6.66−02	4.26−02	−0.478	C	2,LS

TABLE 34. Transition probabilities of allowed lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[39.003]	7 985–2 571 880	3–5	9.70+10	3.69−02	1.42−02	−0.956	D	2,LS
53	$22p^5-2p^6$	$^3P^\circ-{}^1S$										
				170.293	451 995–1 039 219	3–1	1.24+08	1.79−04	3.01−04	−3.270	C	1
54		$^1P^\circ-{}^1S$		236.33	616 073–1 039 219	3–1	4.82+10	1.35−01	3.14−01	−0.393	B	1
55	$2p^6-2s^22p^3(^2D^\circ)3d$	$^1S-{}^3D^\circ$										
				93.799	1 039 219–2 105 330	1–3	3.42+06	1.35−05	4.17−06	−4.870	D	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002b); Ref. 2 = Butler and Zeippen (unpublished).

References for Allowed Transitions of S IX

Butler, K. and C. J. Zeippen (unpublished). Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Tachiev G. and C. Froese Fischer, 2002b, Astron. Astrophys. **385**, 716. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.9.2. Forbidden Transitions for S IX

Tachiev and Froese Fischer (2002b) performed extensive calculations using the MCHF method with BP corrections. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to $2p^33s$.

For the E2 $2s^22p^4\ ^3P_0$-$2s^22p^4\ ^1D_2^\circ$ transition, the transition rate was taken from work of Galavis *et al.* (1997). They used the atomic structure code SUPERSTRUCTURE, which allows for CI, relativistic effects, and semiempirical term energy corrections.

A wavelength finding list of forbidden lines for S IX is given in Table 35, and the transition probabilities for the lines are provided in Table 36.

TABLE 35. Wavelength finding list for forbidden lines of S IX

Wavelength (vac.) (Å)	Mult. No.
53.158	14
54.108	11
54.410	10
54.510	10
56.525	15
57.600	13
58.056	12
68.856	23
69.116	22
69.452	22
69.641	22
71.083	19
71.280	19
71.384	18
71.419	18
71.429	18
71.742	18
71.778	18
71.789	18
71.980	18
77.626	25
78.385	24
80.468	21
81.361	20
81.374	20
85.684	17
96.226	8
101.945	9
168.284	16
219.351	5
230.235	5
251.512	6
310.282	7
815.00	3
825.42	28
871.73	3
920.13	27
1 552.65	4
1 612.38	26
1 617.60	26
1 685.49	31
1 691.19	31
1 715.445	2
1 987.7	2
Wavelength (air) (Å)	**Mult. No.**
2 098.2	2
2 133.3	30
2 142.5	30
2 175.1	30

TABLE 35. Wavelength finding list for forbidden lines of S IX—Continued

Wavelength (air) (Å)	Mult. No.
2 197.1	33
3 026.7	32
7 229	29
7 732	29
8 017	34
9 389	1
12 520	1

Wave number (cm^{-1})	Mult. No.
2 663	1

TABLE 36. Transition probabilities of forbidden lines for S IX

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^22p^4-2s^22p^4$	$^3P-^3P$									
			9 389	9 391	0.0–10 648	5–1	E2	2.53−04	1.65−02	A	1
			12 520	12 523	0.0–7 985	5–3	M1	1.14+01	2.48+00	A	1
			12 520	12 523	0.0–7 985	5–3	E2	4.39−05	3.62−02	A	1
				2 663 cm^{-1}	7 985–10 648	3–1	M1	1.01+00	1.98+00	A	1
2		$^3P-^1D$									
			2 098.2	2 098.8	10 648–58 293.9	1–5	E2	6.58−04	1.19−04	B+	2
				1 987.7	7 985–58 293.9	3–5	M1	1.28+01	1.86−02	A	1
				1 987.7	7 985–58 293.9	3–5	E2	1.99−03	2.76−04	B+	1
				1 715.445	0.0–58 293.9	5–5	M1	5.95+01	5.56−02	A	1
				1 715.445	0.0–58 293.9	5–5	E2	2.75−02	1.82−03	B+	1
3		$^3P-^1S$									
				815.00	0.0–122 700	5–1	E2	3.17−01	1.01−04	B+	1
				871.73	7 985–122 700	3–1	M1	6.73+02	1.65−02	A	1
4		$^1D-^1S$									
				1 552.65	58 293.9–122 700	5–1	E2	7.44+00	5.99−02	A	1
5	$2s^22p^4-2s2p^5$	$^3P-^3P^{\circ}$									
				219.351	0.0–455 890	5–1	M2	1.54+01	5.24−01	B	1
				230.235	10 648–444 987	1–5	M2	4.16+00	9.03−01	B	1
6		$^1D-^3P^{\circ}$									
				251.512	58 293.9–455 890	5–1	M2	2.09+01	1.41+00	B	1
7		$^1S-^3P^{\circ}$									
				310.282	122 700–444 987	1–5	M2	1.99+00	1.92+00	B	1
8	$2s^22p^4-2p^6$	$^3P-^1S$									
				96.226	0.0–1 039 219	5–1	E2	3.41+03	2.51−05	D	1
9		$^1D-^1S$									
				101.945	58 293.9–1 039 219	5–1	E2	3.46+05	3.40−03	D+	1
10	$2s^22p^4-2s^22p^3(^2D^{\circ})3s$	$^3P-^3D^{\circ}$									
				54.410	7 985–1 845 870	3–7	M2	5.37+02	1.20−01	B	1
				54.510	10 648–1 845 170	1–5	M2	4.43+02	7.14−02	C+	1
11		$^3P-^1D^{\circ}$									

TABLE 36. Transition probabilities of forbidden lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				54.108	10 648–1 858 800	1–5	M2	1.62+02	2.51−02	C	1
12		^{1}S–^{3}D°									
				58.056	122 700–1 845 170	1–5	M2	8.35+00	1.84−03	D+	1
13		^{1}S–^{1}D°									
				57.600	122 700–1 858 800	1–5	M2	2.96+00	6.30−04	D	1
14	$2s^22p^4$–$2s^22p^3$(^{2}P°)$3s$	^{3}P–^{3}P°									
				53.158	10 648–1 891 830	1–5	M2	4.89+02	6.96−02	C+	1
15		^{1}S–^{3}P°									
				56.525	122 700–1 891 830	1–5	M2	1.14+03	2.20−01	C+	1
16	$2s2p^5$–$2p^6$	^{3}P°–^{1}S									
				168.284	444 987–1 039 219	5–1	M2	3.66+02	3.31+00	B	1
17	$2s2p^5$–$2s^22p^3$(^{4}S°)$3s$	^{1}P°–^{3}S°									
				85.684	616 073–1 783 150	3–3	E2	9.59+01	1.18−06	D	1
18	$2s2p^5$–$2s^22p^3$(^{2}D°)$3s$	^{3}P°–^{3}D°									
				71.742	451 995–1 845 870	3–7	E2	4.42+04	5.25−04	D+	1
				71.980	455 890–1 845 170	1–5	E2	3.48+04	3.00−04	D+	1
				71.384	444 987–1 845 870	5–7	E2	9.00+04	1.04−03	C	1
				71.778	451 995–1 845 170	3–5	E2	5.22+03	4.44−05	D	1
				71.419	444 987–1 845 170	5–5	E2	9.38+04	7.77−04	D+	1
				71.789	451 995–1 844 970	3–3	E2	8.82+04	4.50−04	D+	1
				71.429	444 987–1 844 970	5–3	E2	4.50+04	2.23−04	D+	1
19		^{3}P°–^{1}D°									
				71.280	455 890–1 858 800	1–5	E2	1.31+03	1.07−05	D	1
				71.083	451 995–1 858 800	3–5	E2	2.53+03	2.04−05	D	1
20		^{1}P°–^{3}D°									
				81.361	616 073–1 845 170	3–5	E2	1.56+02	2.48−06	D	1
				81.374	616 073–1 844 970	3–3	E2	2.74+02	2.61−06	D	1
21		^{1}P°–^{1}D°									
				80.468	616 073–1 858 800	3–5	E2	7.62+04	1.14−03	C	1
22	$2s2p^5$–$2s^22p^3$(^{2}P°)$3s$	^{3}P°–^{3}P°									
				69.116	444 987–1 891 830	5–5	E2	2.19+04	1.54−04	D+	1
				69.452	451 995–1 891 830	3–5	E2	5.17+04	3.73−04	D+	1
				69.641	455 890–1 891 830	1–5	E2	2.99+04	2.19−04	D+	1
23		^{3}P°–^{1}P°									
				68.856	451 995–1 904 300	3–3	E2	1.93+03	7.98−06	D	1
24		^{1}P°–^{3}P°									
				78.385	616 073–1 891 830	3–5	E2	2.95+03	3.90−05	D	1
25		^{1}P°–^{1}P°									
				77.626	616 073–1 904 300	3–3	E2	4.92+04	3.71−04	D+	1

TABLE 36. Transition probabilities of forbidden lines for S IX—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
26	$2s^22p^3(^4S^\circ)3s$–$2s^22p^3(^2D^\circ)3s$	$^3S^\circ$–$^3D^\circ$									
				1 612.38	1 783 150–1 845 170	3–5	M1	1.26+00	9.78−04	D	1
				1 617.60	1 783 150–1 844 970	3–3	M1	6.98+00	3.28−03	D	1
27	$2s^22p^3(^4S^\circ)3s$–$2s^22p^3(^2P^\circ)3s$	$^3S^\circ$–$P^\circ3$									
				920.13	1 783 150–1 891 830	3–5	M1	2.59+01	3.74−03	D	1
28		$^3S^\circ$–$^1P^\circ$									
				825.42	1 783 150–1 904 300	3–3	M1	2.48+02	1.55−02	D	1
29	$2s^22p^3(^2D^\circ)3s$–$2s^22p^3(^2D^\circ)3s$	$^3D^\circ$–$^1D^\circ$									
			7 732	7 734	1 845 870–1 858 800	7–5	M1	2.36−01	2.02−02	C	1
			7 229	7 231	1 844 970–1 858 800	3–5	M1	1.75−01	1.22−02	C	1
30	$2s^22p^3(^2D^\circ)3s$–$2s^22p^3(^2P^\circ)3s$	$^3D^\circ$–$^3P^\circ$									
			2 175.1	2 175.8	1 845 870–1 891 830	7–5	M1	5.00+01	9.54−02	C+	1
			2 142.5	2 143.2	1 845 170–1 891 830	5–5	M1	4.26+01	7.78−02	C+	1
			2 133.3	2 134.0	1 844 970–1 891 830	3–5	M1	9.86+00	1.77−02	C+	1
31		$^3D^\circ$–$^1P^\circ$									
				1 691.19	1 845 170–1 904 300	5–3	M1	1.13+02	6.07−02	C	1
				1 685.49	1 844 970–1 904 300	3–3	M1	4.68+01	2.49−02	C	1
32		$^1D^\circ$–$^3P^\circ$									
			3 026.7	3 027.6	1 858 800–1 891 830	5–5	M1	3.70+01	1.90−01	B	1
33		$^1D^\circ$–$^1P^\circ$									
			2 197.1	2 197.8	1 858 800–1 904 300	5–3	M1	7.20−01	8.49−04	D	1
34	$2s^22p^3(^2P^\circ)3s$–$2s^22p^3(^2P^\circ)3s$	$^3P^\circ$–$^1P^\circ$									
			8 017	8 019	1 891 830–1 904 300	5–3	M1	2.13−01	1.22−02	C+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002b); Ref. 2 = Galavis *et al.* (1997).

References for Forbidden Transitions of S IX

Galavis, M. E., C. Mendoza, and C. J. Zeippen, 1997, Astron. Astrophys., Suppl. Ser. **123**, 159.

Tachiev G. and C. Froese Fischer, 2002b, Astron. Astrophys. **385**, 716. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.10. S X

Z=16
Nitrogen Isoelectronic Sequence
Ground State: $1s^2 2s^2 2p^3\ {}^4S^{\circ}_{3/2}$
Ionization Energy: 3 609 000 cm^{-1} (447.46 eV)

4.10.1. Allowed Transitions for S X

Transition probabilities for the $2s^22p^3$–$2s^22p^23s$, $2s^22p^3$–$2s^22p^23d$, $2s2p^4$–$2s2p^3(^5S^{\circ})3s$, $2p^5$–$2s^22p^23s$, and $2p^5$–$2s^22p^23d$ transition arrays are taken from work of Tachiev and Froese Fischer (2002b). They performed very accurate calculations with the MCHF approach including the BP corrections.

Oscillator strengths from the R-matrix calculations of the OP (Burke and Lennon, unpublished) were taken for the $2s2p^33d$ and $2s^22p^24d$ transition arrays when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S X is given in Table 37, and the transition probabilities for these lines are provided in Table 38.

TABLE 37. Wavelength finding list for allowed lines of S X

Wavelength (vac.) (Å)	Mult. No.
34.310	39
41.357	37
41.509	33
41.534	33
42.005	46
42.019	25
42.040	25
42.485	24
42.495	24
42.543	24
42.681	23
42.713	22
42.897	22
42.916	35
42.938	35
42.980	34
43.001	34
43.002	35
43.007	34
43.028	34
43.263	45
43.526	29
43.548	29
43.549	29
43.571	29
43.684	38
43.847	36
43.854	36
43.882	36
44.027	28
44.038	28

TABLE 37. Wavelength finding list for allowed lines of S X—Continued

Wavelength (vac.) (Å)	Mult. No.
44.060	28
44.089	28
44.094	27
44.112	28
44.237	27
44.260	27
44.272	26
44.410	32
44.423	32
44.446	32
44.470	26
44.493	26
44.908	31
44.919	31
44.945	31
44.956	31
45.009	31
45.163	30
45.200	30
45.368	30
45.406	30
45.997	44
46.151	44
46.206	44
46.293	19
46.298	44
46.312	19
46.354	44
46.430	44
47.159	14
47.324	14
47.654	13
47.792	13
47.905	13
48.130	20
48.150	20
48.157	20
48.177	20
49.066	16
49.094	16
49.205	21
49.229	21
49.245	16
49.250	21
49.603	15
49.632	15
49.752	15
49.781	15
49.875	15
50.162	18
50.208	18
50.349	18
50.396	18
50.771	17
50.880	17
50.927	17
51.008	17

TABLE 37. Wavelength finding list for allowed lines of S X—Continued

Wavelength (vac.) (Å)	Mult. No.
51.055	17
72.012	47
72.075	47
72.657	47
151.357	49
154.880	4
157.011	4
162.072	40
163.002	40
163.188	40
164.262	3
165.047	40
166.012	40
177.551	8
180.357	8
180.733	8
189.991	7
191.989	2
192.041	2
192.795	12
193.477	12
196.108	12
196.814	12
207.551	11
207.620	41
208.342	11
212.528	41
212.592	41
219.684	48
220.230	48
220.809	48
222.094	48
223.794	48
225.114	48
228.091	6
228.164	6
228.692	6
228.766	6
244.756	52
253.970	10
254.073	42
255.063	10
255.155	10
257.147	1
259.496	1
261.462	42
264.230	1
273.617	43
280.338	43
282.206	43
289.361	43
294.690	51
326.327	5
330.120	5
331.381	5
337.820	5
339.140	5
367.742	54
381.813	9
384.499	9
387.016	9
389.775	9
400.554	9
495.172	50
513.558	50
520.562	50
520.671	50
527.872	50
529.409	50
643.21	55
743.27	53
785.48	53
801.99	53

TABLE 38. Transition probabilities of allowed lines for S X

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^22p^3-2s2p^4$	$^4S^\circ-^4P$		*261.44*	*0–382 497*	4–12	5.14+09	1.58−01	5.44−01	−0.199	A	1
				264.230	0–378 458	4–6	4.98+09	7.82−02	2.72−01	−0.505	A	1
				259.496	0–385 362	4–4	5.27+09	5.32−02	1.81−01	−0.672	A	1
				257.147	0–388 883	4–2	5.44+09	2.70−02	9.13−02	−0.967	A	1
2		$^4S^\circ-^2D$										
				191.989	0–520 864	4–6	1.82+05	1.51−06	3.81−06	−5.219	C	1
				192.041	0–520 723	4–4	9.30+05	5.14−06	1.30−05	−4.687	C+	1
3		$^4S^\circ-^2S$										
				164.262	0–608 784	4–2	2.40+07	4.86−05	1.05−04	−3.711	B+	1
4		$^4S^\circ-^2P$										

TABLE 38. Transition probabilities of allowed lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				157.011	0–636 898	4–4	6.23+07	2.30−04	4.75−04	−3.036	B+	1
				154.880	0–645 660	4–2	1.64+07	2.95−05	6.00−05	−3.928	B	1
5		$^2D^\circ-^4P$										
				331.381	83 594.9–385 362	6–4	3.05+05	3.34−06	2.18−05	−4.698	C	1
				326.327	82 442.3–388 883	4–2	8.28+05	6.61−06	2.84−05	−4.578	C	1
				339.140	83 594.9–378 458	6–6	4.41+06	7.60−05	5.09−04	−3.341	C+	1
				330.120	82 442.3–385 362	4–4	2.00+05	3.27−06	1.42−054	−4.883	C	1
				337.820	82 442.3–378 458	4–6	1.62+06	4.15−05	1.84−04	−3.780	C+	1
6		$^2D^\circ-^2D$		*228.48*	*83 133.9–520 808*	10–10	1.17+10	9.16−02	6.89−01	−0.038	A	1
				228.692	83 594.9–520 864	6–6	1.10+10	8.59−02	3.87−01	−0.288	A	1
				228.164	82 442.3–520 723	4–4	1.16+10	9.05−02	2.71−01	−0.441	A	1
				228.766	83 594.9–520 723	6–4	8.25+08	4.32−03	1.95−02	−1.586	A	1
				228.091	82 442.3–520 864	4–6	3.21+08	3.76−03	1.12−02	−1.823	A	1
7		$^2D^\circ-^2S$										
				189.991	82 442.3–608 784	4–2	3.26+09	8.83−03	2.20−02	−1.452	B+	1
8		$^2D^\circ-^2P$		*179.63*	*83 133.9–639 819*	10–6	4.11+10	1.19−01	7.05−01	0.076	A	1
				180.733	83 594.9–636 898	6–4	3.83+10	1.25−01	4.46−01	−0.125	A	1
				177.551	82 442.3–645 660	4–2	3.38+10	7.98−02	1.86−01	−0.496	A	1
				180.357	82 442.3–636 898	4–4	6.33+09	3.09−02	7.32−02	−0.908	A	1
9		$^2P^\circ-^4P$										
				389.775	128 804–385 362	4–4	3.64+06	8.30−05	4.25−04	−3.479	B+	1
				381.813	126 975–388 883	2–2	1.48+06	3.23−05	8.13−05	−4.190	C	1
				384.499	128 804–388 883	4–2	3.28+04	3.64−07	1.84−06	−5.837	D	1
				400.554	128 804–378 458	4–6	1.77+06	6.40−05	3.37−04	−3.592	B+	1
				387.016	126 975–385 362	2–4	2.41+04	1.08−06	2.76−06	−5.666	D	1
10		$^2P^\circ-^2D$		*254.70*	*128 194–520 808*	6–10	1.81+09	2.93−02	1.47−01	−0.755	A	1
				255.063	128 804–520 864	4–6	2.09+09	3.06−02	1.02−01	−0.912	A	1
				253.970	126 975–520 723	2–4	1.40+09	2.70−02	4.52−02	−1.268	A	1
				255.155	128 804–520 723	4–4	7.10+06	6.93−05	2.33−04	−3.557	A	1
11		$^2P^\circ-^2S$		*208.08*	*128 194–608 784*	6–2	2.26+10	4.90−02	2.01−01	−0.532	A	1
				208.342	128 804–608 784	4–2	1.20+10	3.90−02	1.06−01	−0.807	A	1
				207.551	126 975–608 784	2–2	1.08+10	6.97−02	9.52−02	−0.856	A	1
12		$^2P^\circ-^2P$		*195.46*	*128 194–639 819*	6–6	1.32+10	7.59−02	2.93−01	−0.342	A	1
				196.814	128 804–636 898	4–4	7.64+09	4.44−02	1.15−01	−0.751	A	1
				192.795	126 975–645 660	2–2	5.53+09	3.08−02	3.91−02	−1.210	A	1
				193.477	128 804–645 660	4–2	1.48+10	4.14−02	1.05−01	−0.781	A	1
				196.108	126 975–636 898	2–4	2.27+09	2.62−02	3.38−02	−1.281	A	1
13	$2s^22p^3-2s^22p^2(^3P)3s$	$^4S^\circ-^4P$		*47.74*	*0–2 094 590*	4–12	1.10+11	1.13−01	7.11−02	−0.345	B	1
				47.654	0–2 098 440	4–6	1.12+11	5.70−02	3.58−02	−0.642	B	1
				47.792	0–2 092 400	4–4	1.10+11	3.76−02	2.36−024	−0.823	B	1
				47.905	0–2 087 460	4–2	1.08+11	1.87−02	1.17−02	−1.126	B	1
14		$^4S^\circ-^2P$										
				47.159	0–2 120 500	4–4	1.17+08	3.89−05	2.41−05	−3.808	D	1
				47.324	0–2 113 100	4–2	2.30+08	3.86−05	2.40−05	−3.811	D	1

TABLE 38. Transition probabilities of allowed lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
15		^{2}D°–^{4}P										
				49.781	83 594.9–2 092 400	6–4	1.36+09	3.36−04	3.30−04	−2.696	D+	1
				49.875	82 442.3–2 087 460	4–2	1.89+09	3.53−04	2.31−04	−2.850	D+	1
				49.632	83 594.9–2 098 440	6–6	1.08+09	3.97−04	3.89−04	−2.623	D+	1
				49.752	82 442.3–2 092 400	4–4	4.49+08	1.67−04	1.09−04	−3.175	D+	1
				49.603	82 442.3–2 098 440	4–6	4.23+07	2.34−05	1.53−05	−4.029	D	1
16		^{2}D°–^{2}P		*49.14*	*83 133.9–2 118 030*	10–6	2.01+11	4.37−02	7.06−02	−0.360	B	1
				49.094	83 594.9–2 120 500	6–4	1.86+11	4.49−02	4.35−02	−0.570	B	1
				49.245	82 442.3–2 113 100	4–2	2.29+11	4.17−02	2.70−02	−0.778	B	1
				49.066	82 442.3–2 120 500	4–4	5.79+08	2.09−04	1.35−04	−3.078	C	1
17		^{2}P°–^{4}P										
				50.927	128 804–2 092 400	4–4	4.22+08	1.64−04	1.10−04	−3.183	D+	1
				51.008	126 975–2 087 460	2–2	1.78+08	6.94−05	2.33−05	−3.858	D	1
				51.055	128 804–2 087 460	4–2	2.70+08	5.27−05	3.54−05	−3.676	D	1
				50.771	128 804–2 098 440	4–6	6.58+05	3.82−07	2.55−07	−5.816	E	1
				50.880	126 975–2 092 400	2–4	8.25+07	6.40−05	2.14−05	−3.893	D	1
18		^{2}P°–^{2}P		*50.26*	*128 194–2 118 030*	6–6	1.37+11	5.18−02	5.15−02	−0.508	B	1
				50.208	128 804–2 120 500	4–4	1.17+11	4.44−02	2.93−02	−0.751	B	1
				50.349	126 975–2 113 100	2–2	8.86+10	3.37−02	1.11−02	−1.171	B	1
				50.396	128 804–2 113 100	4–2	2.21+10	4.21−03	2.79−03	−1.774	C+	1
				50.162	126 975–2 120 500	2–4	3.32+10	2.51−02	8.28−03	−1.299	C+	1
19	$2s^22p^3$–$2s^22p^2$(^{1}D)$3s$	^{4}S°–^{2}D										
				46.293	0–2 160 140	4–6	3.07+08	1.48−04	9.01−05	−3.228	D	1
				[46.312]	0–2 159 280	4–4	6.02+07	1.93−05	1.18−05	−4.112	D	1
20		^{2}D°–^{2}D		[*48.15*]	*83 133.9–2 159 790*	10–10	1.48+11	5.13−02	8.14−02	−0.290	B	1
				48.157	83 594.9–2 160 140	6–6	1.42+11	4.93−02	4.68−02	−0.529	B	1
				[48.150]	82 442.3–2 159 280	4–4	1.22+11	4.25−02	2.69−02	−0.770	B	1
				[48.177]	83 594.9–2 159 280	6–4	4.08+09	9.47−04	9.01−04	−2.245	C	1
				48.130	82 442.3–2 160 140	4–6	2.05+10	1.07−02	6.75−03	−1.369	C+	1
21		^{2}P°–^{2}D		[*49.22*]	*128 194–2 159 790*	6–10	5.96+10	3.61−02	3.51−02	−0.664	B	1
				49.229	128 804–2 160 140	4–6	4.51+10	2.46−02	1.59−02	−1.007	B	1
				[49.205]	126 975–2 159 280	2–4	3.66+10	2.66−02	8.60−03	−1.274	C+	1
				[49.250]	128 804–2 159 280	4–4	4.52+10	1.65−02	1.06−02	−1.180	B	1
22	$2s^22p^3$–$2s^22p^2$(^{3}P)$3d$	^{4}S°–^{2}P										
				42.897	0–2 331 160	4–4	4.06+10	1.12−02	6.32−03	−1.349	C	1
				[42.713]	0–2 341 200	4–2	3.92+08	5.36−05	3.01−05	−3.669	D	1
23		^{4}S°–^{2}F										
				42.681	0–2 342 990	4–6	1.86+10	7.61−03	4.27−03	−1.517	C	1
24		^{4}S°–^{4}P		*42.52*	*0–2 351 980*	4–12	1.83+12	1.49+00	8.34−01	0.775	B+	1
				42.543	0–2 350 560	4–6	1.77+12	7.22−01	4.04−01	0.461	B+	1
				42.495	0–2 353 220	4–4	1.88+12	5.08−01	2.84−01	0.308	B+	1
				42.485	0–2 353 770	4–2	1.93+12	2.62−01	1.46−01	0.020	B+	1
25		^{4}S°–^{2}D										
				[42.019]	0–2 379 900	4–6	1.16+09	4.61−04	2.54−04	−2.734	D+	1

TABLE 38. Transition probabilities of allowed lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[42.040]	0–2 378 700	4–4	3.19+08	8.45−05	4.67−05	−3.471	D	1
26		^{2}D°–^{2}P		*[44.42]*	*83 133.9–2 334 500*	10–6	1.10+11	1.96−02	2.86−02	−0.708	C+	1
				44.493	83 594.9–2 331 160	6–4	7.88+10	1.56−02	1.37−02	−1.029	B	1
				[44.272]	82 442.3–2 341 200	4–2	6.09+10	8.94−03	5.21−03	−1.447	C+	1
				44.470	82 442.3–2 331 160	4–4	5.60+10	1.66−02	9.72−03	−1.178	C+	1
27		^{2}D°–^{2}F		*44.16*	*83 133.9–2 347 840*	10–14	3.17+11	1.30−01	1.88−01	0.114	B+	1
				44.094	83 594.9–2 351 480	6–8	3.20+11	1.24−01	1.08−01	−0.128	B+	1
				44.237	82 442.3–2 342 990	4–6	2.85+11	1.25−01	7.29−02	−0.301	B	1
				44.260	83 594.9–2 342 990	6–6	2.90+10	8.52−03	7.45−03	−1.291	C+	1
28		^{2}D°–^{4}P										
				44.060	83 594.9–2 353 220	6–4	2.89+09	5.60−04	4.87−04	−2.474	D+	1
				44.027	82 442.3–2 353 770	4–2	3.07+08	4.46−05	2.58−05	−3.749	D	1
				44.112	83 594.9–2 350 560	6–6	3.88+09	1.13−03	9.86−04	−2.169	D+	1
				44.038	82 442.3–2 353 220	4–4	1.60+05	4.64−08	2.69−08	−6.731	E	1
				44.089	82 442.3–2 350 560	4–6	4.49+08	1.96−04	1.14−04	−3.106	D+	1
29		^{2}D°–^{2}D		*[43.55]*	*83 133.9–2 379 420*	10–10	7.28+11	2.07−01	2.97−01	0.316	B	1
				[43.548]	83 594.9–2 379 900	6–6	5.99+11	1.70−01	1.46−01	0.009	B+	1
				[43.549]	82 442.3–2 378 700	4–4	3.32+11	9.45−02	5.42−02	−0.423	B	1
				[43.571]	83 594.9–2 378 700	6–4	9.09+10	1.72−02	1.48−02	−0.986	B	1
				[43.526]	82 442.3–2 379 900	4–6	3.34+11	1.42−01	8.16−02	−0.246	B	1
30		^{2}P°–^{2}P		*[45.32]*	*128 194–2 334 500*	6–6	3.17+11	9.76−02	8.74−02	−0.232	B	1
				45.406	128 804–2 331 160	4–4	1.85+11	5.73−02	3.42−02	−0.640	B	1
				[45.163]	126 975–2 341 200	2–2	3.11+11	9.51−02	2.82−02	−0.721	B	1
				[45.200]	128 804–2 341 200	4–2	1.68+11	2.57−02	1.53−02	−0.988	B	1
				45.368	126 975–2 331 160	2–4	5.24+10	3.23−02	9.66−03	−1.190	C+	1
31		^{2}P°–^{4}P										
				44.956	128 804–2 353 220	4–4	1.48+08	4.50−05	2.66−05	−3.745	D	1
				44.908	126 975–2 353 770	2–2	5.18+06	1.57−06	4.63−07	−5.503	E	1
				44.945	128 804–2 353 770	4–2	2.40+08	3.63−05	2.14−05	−3.838	D	1
				45.009	128 804–2 350 560	4–6	7.69+08	3.50−04	2.07−04	−2.854	D+	1
				44.919	126 975–2 353 220	2–4	3.37+08	2.04−04	6.03−05	−3.389	D	1
32		^{2}P°–^{2}D		*[44.42]*	*128 194–2 379 420*	6–10	5.20+11	2.57−01	2.25−01	0.188	B	1
				[44.423]	128 804–2 379 900	4–6	3.94+11	1.75−01	1.02−01	−0.155	B+	1
				[44.410]	126 975–2 378 700	2–4	5.18+11	3.06−01	8.95−02	−0.213	B	1
				[44.446]	128 804–2 378 700	4–4	1.94+11	5.76−02	3.36−02	−0.638	B	1
33	$2s^22p^3$–$2s^22p^2(^1D)3d$	^{4}S°–^{2}D?										
				[41.509]	0–2 409 100	4–6	1.46+09	5.66−04	3.09−04	−2.645	D+	1
				[41.534]	0–2 407 650	4–4	5.59+08	1.45−04	7.91−05	−3.237	D	1
34		^{2}D°–^{2}D?		*[43.00]*	*83 133.9–2 408 520*	10–10	1.35+12	3.73−01	5.29−01	0.572	B+	1
				[43.001]	83 594.9–2 409 100	6–6	8.22+11	2.28−01	1.93−01	0.136	B+	1
				[43.007]	82 442.3–2 407 650	4–4	8.38+11	2.32−01	1.31−01	−0.032	B+	1
				[43.028]	83 594.9–2 407 650	6–4	1.06+11	1.95−02	1.66−02	−0.932	B	1
				[42.980]	82 442.3–2 409 100	4–6	8.02+11	3.33−01	1.88−01	0.125	B+	1
35		^{2}D°–^{2}F		*42.97*	*83 133.9–2 410 560*	10–14	1.72+12	6.68−01	9.45−01	0.825	B+	1
				43.002	83 594.9–2 409 070	6–8	2.20+12	8.13−01	6.90−01	0.688	B+	1

TABLE 38. Transition probabilities of allowed lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				42.916	82 442.3–2 412 550	4–6	1.07+12	4.42−01	2.50−01	0.247	B+	1
				42.938	83 594.9–2 412 550	6–6	2.14+10	5.91−03	5.01−03	−1.450	C+	1
36		$^2P^\circ-^2D$?		[*43.85*]	*128 194–2 408 520*	6–10	3.77+11	1.81−01	1.57−01	0.036	B	1
				[43.854]	128 804–2 409 100	4–6	2.43+11	1.05−01	6.07−02	−0.377	B	1
				[43.847]	126 975–2 407 650	2–4	5.51+11	3.18−01	9.17−02	−0.197	B	1
				[43.882]	128 804–2 407 650	4–4	2.64+10	7.63−03	4.40−03	−1.515	C+	1
37	$2s^22p^3-2s2p^3(^5S^\circ)3p$	$^4S^\circ-^4P$				4–12						1
				[41.357]	0–2 417 970	4–6	3.17+11	1.22−01	6.63−02	−0.312	B	1
38		$^2P^\circ-^4P$										
				[43.684]	128 804–2 417 970	4–6	1.40+09	6.01−04	3.46−04	−2.619	D+	1
39	$2s^22p^3-2s^22p^2(^3P)4d$	$^4S^\circ-^4P$				4–12						2
				[34.310]	0–2 914 600	4–6	7.14+11	1.89−01	8.53−02	−0.121	D+	2,LS
40	$2s2p^4-2p^5$	$^4P-^2P^\circ$										
				165.047	385 362–991 249	4–4	1.64+07	6.68−05	1.45−04	−3.573	C+	1
				163.002	388 883–1 002 372	2–2	1.82+07	7.26−05	7.79−05	−3.838	C	1
				163.188	378 458–991 249	6–4	5.50+07	1.46−04	4.71−04	−3.057	C+	1
				162.072	385 362–1 002 372	4–2	2.85+06	5.61−06	1.19−05	−4.649	C	1
				166.012	388 883–991 249	2–4	4.79+06	3.96−05	4.32−05	−4.101	C	1
41		$^2D-^2P^\circ$		*210.90*	*520 808–994 957*	10–6	1.98+10	7.91−02	5.49−01	−0.102	A	1
				212.592	520 864–991 249	6–4	1.74+10	7.84−02	3.29−01	−0.328	A	1
				207.620	520 723–1 002 372	4–2	1.94+10	6.28−02	1.71−01	−0.600	A	1
				212.528	520 723–991 249	4–4	2.59+09	1.75−02	4.91−02	−1.155	B+	1
42		$^2S-^2P^\circ$		*258.95*	608 784–*994 957*	2–6	1.25+09	3.77−02	6.42−02	−1.123	B+	1
				261.462	608 784–991 249	2–4	1.73+09	3.54−02	6.09−02	−1.150	B+	1
				254.073	608 784–1 002 372	2–2	2.06+08	2.00−03	3.33−03	−2.398	B	1
43		$^2P-^2P^\circ$		*281.58*	*639 819–994 957*	6–6	1.42+10	1.69−01	9.41−01	0.006	A	1
				282.206	636 898–991 249	4–4	1.16+10	1.39−01	5.15−01	−0.255	A	1
				280.338	645 660–1 002 372	2–2	1.04+10	1.23−01	2.26−01	−0.609	A	1
				273.617	636 898–1 002 372	4–2	5.81+09	3.26−02	1.17−01	−0.885	A	1
				289.361	645 660–991 249	2–4	1.73+09	4.35−02	8.28−02	−1.060	B+	1
44	$2s2p^4-2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				45.997	378 458–2 552 510	6–8	7.31+11	3.09−01	2.80−01	0.268	C	2,LS
				46.298	385 362–2 545 280	4–6	5.02+11	2.42−01	1.47−01	−0.014	C	2,LS
				46.430	388 883–2 542 660	2–4	2.97+11	1.92−01	5.87−02	−0.416	D+	2,LS
				46.151	378 458–2 545 280	6–6	2.17+11	6.94−02	6.32−02	−0.380	D+	2,LS
				46.354	385 362–2 542 660	4–4	3.82+11	1.23−01	7.50−02	−0.308	D+	2,LS
				46.206	378 458–2 542 660	6–4	3.61+10	7.70−03	7.02−03	−1.335	D	2,LS
45	$2s2p^4-2s2p^3(^3D^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[43.263]	378 458–2 689 900	6–8	9.01+11	3.37−01	2.88−01	0.306	C	2,LS
46	$2s2p^4-2s2p^3(^3P^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[42.005]	378 458–2 759 130	6–8	9.05+11	3.19−01	2.64−01	0.282	C	2,LS
47	$2p^5-2s^22p^2(^3P)3d$	$^2P^\circ-^2D$		[*72.23*]	*994 957–2 379 420*	6–10	1.20+07	1.57−05	2.24−05	−4.026	D	1

TABLE 38. Transition probabilities of allowed lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[72.012]	991 249–2 379 900	4–6	1.23+07	1.44−05	1.36−05	−4.240	D	1
				[72.657]	1 002 372–2 378 700	2–4	1.08+07	1.71−05	8.19−06	−4.466	E+	1
				[72.075]	991 249–2 378 700	4–4	8.14+05	6.34−07	6.01−07	−5.596	E	1
48	$2s^22p^2(^3P)3s-2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				220.230	2 098 440–2 552 510	6–8	1.04+08	1.01−03	4.39−03	−2.218	D	2,LS
				220.809	2 092 400–2 545 280	4–6	7.24+07	7.94−04	2.30−03	−2.498	D	2,LS
				219.684	2 087 460–2 542 660	2–4	4.37+07	6.33−04	9.15−04	−2.898	E+	2,LS
				223.794	2 098 440–2 545 280	6–6	2.98+07	2.24−04	9.90−04	−2.872	E+	2,LS
				222.094	2 092 400–2 542 660	4–4	5.42+07	4.01−04	1.17−03	−2.795	D	2,LS
				225.114	2 098 440–2 542 660	6–4	4.88+06	2.47−05	1.09−04	−3.829	E+	2,LS
49	$2s^22p^2(^3P)3s-2s2p^3(^3P^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[151.357]	2 098 440–2 759 130	6–8	1.33+08	6.07−04	1.81−03	−2.439	D	2,LS
50	$2s^22p^2(^3P)3d-2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				495.172	2 350 560–2 552 510	6–8	4.69+06	2.30−04	2.25−03	−2.860	D	2,LS
				520.671	2 353 220–2 545 280	4–6	2.82+06	1.72−04	1.17−03	−3.162	D	2,LS
				529.409	2 353 770–2 542 660	2–4	1.59+06	1.34−04	4.67−04	−3.572	E+	2,LS
				513.558	2 350 560–2 545 280	6–6	1.26+06	4.98−05	5.05−04	−3.525	E+	2,LS
				527.872	2 353 220–2 542 660	4–4	2.06+06	8.62−05	5.99−04	−3.462	E+	2,LS
				520.562	2 350 560–2 542 660	6–4	2.02+05	5.46−06	5.61−05	−4.485	E	2,LS
51	$2s^22p^2(^3P)3d-2s2p^3(^3D^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[294.690]	2 350 560–2 689 900	6–8	1.01+09	1.75−02	1.01−01	−0.979	C	2,LS
52	$2s^22p^2(^3P)3d-2s2p^3(^3P^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[244.756]	2 350 560–2 759 130	6–8	1.03+09	1.23−02	5.94−02	−1.132	D+	2,LS
53	$2s2p^3(^5S^\circ)3p-2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[743.27]	2 417 970–2 552 510	6–8	1.95+09	2.15−01	3.15+00	0.111	C+	2,LS
				[785.48]	2 417 970–2 545 280	6–6	4.94+08	4.57−02	7.09−01	−0.562	C	2,LS
				[801.99]	2 417 970–2 542 660	6–4	7.73+07	4.97−03	7.87−02	−1.525	D+	2,LS
54	$2s2p^3(^5S^\circ)3p-2s2p^3(^3D^\circ)3d$	$^4P-^4D^\circ$				12–20						2
				[367.742]	2 417 970–2 689 900	6–8	4.55+07	1.23−03	8.93−03	−2.132	D	2,LS
55	$2s2p^3(^3P^\circ)3d-2s^22p^2(^3P)4d$	$^4D^\circ-^4P$				20–12						2
				[643.21]	2 759 130–2 914 600	8–6	3.63+07	1.69−03	2.86−02	−1.869	D+	2,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002b); Ref. 2 = Burke and Lennon (unpublished).

References for Allowed Transitions of S X

Burke, V. M. and D. L. Lennon (unpublished). Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Tachiev G. and C. Froese Fischer, 2002b, Astron. Astrophys. **385**, 716. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.10.2. Forbidden Transitions for S X

Tachiev and Froese Fischer (2002b) performed extensive calculations using the MCHF method with BP corrections. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to $2p^23s$. In our table, we included the M1 and E2 transitions. The M2 transitions were excluded lest the number of forbidden lines become disproportionately large.

For the M1 and E2 transitions between the levels of the $2s^22p^3$ and $2p^5$ configurations, transition rates were taken from Merkelis *et al.* (1999) who calculated using the second-order many-body perturbation theory (MBPT). Relativistic corrections were included in the BP approximation.

A wavelength finding list of forbidden lines for S X is given in Table 39, and the transition probabilities for the lines are provided in Table 40.

TABLE 39. Wavelength finding list for forbidden lines of S X

Wavelength (vac.) (Å)	Mult. No.
56.345	24
56.372	24
56.457	24
57.404	18
57.632	18
57.649	18
58.140	17
58.345	17
58.374	17
58.495	17
58.514	17
58.581	17
58.702	17
58.751	17
60.997	25
61.003	25
61.029	25
61.035	25
62.509	20
62.514	20
62.799	20
63.383	19
63.388	19
63.827	19
64.460	26
64.495	26
65.649	27
65.687	27
66.029	27
66.067	27
66.150	21
67.404	23
67.741	23
67.804	23
68.705	22
68.939	22
69.121	22
99.763	6
100.883	6
108.704	7
108.840	7
110.034	7
110.174	7
114.473	8
115.704	8
115.949	8
384.175	12
386.937	12
389.443	12
397.557	12
403.201	12
434.167	11
447.583	11
454.750	11
702.22	10
702.91	10
738.00	10
738.77	10
757.68	10
758.50	10
776.37	2
787.56	2
800.40	14
801.31	14
860.77	14
861.82	14
1 135.58	13
1 137.40	13
1 196.25	1
1 212.97	1
1 392.37	32
1 476.23	32
1 495.22	32
1 620.75	32
1 643.66	32
Wavelength (air) (Å)	**Mult. No.**
2 156.3	4
2 164.8	33
2 211.3	4
2 244.8	4
2 304.5	4
2 521.9	33
2 577.9	33
2 711.0	15
3 025.8	30
3 555.9	15
3 557.7	30
3 899.1	30
4 531.8	30
4 829.6	30
8 988	28
11 410	16
13 510	30
14 480	9
16 552	29
Wave number (cm^{-1})	**Mult. No.**
4 940	29
3 521	9
1 829	5
1 152.6	3

TABLE 40. Transition probabilities of forbidden lines for S X

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^22p^3-2s^22p^3$	$^4S°-^2D°$									
				1 196.25	0–83 594.9	4–6	M1	3.39−01	1.29−04	B+	1
				1 196.25	0–83 594.9	4–6	E2	3.12−02	4.08−04	B+	1
				1 212.97	0–82 442.3	4–4	M1	1.53+01	4.05−03	B+	1
				1 212.97	0–82 442.3	4–4	E2	1.89−02	1.77−04	B+	1
2		$^4S°-^2P°$									
				776.37	0–128 804	4–4	M1	3.18+02	2.20−02	A	1
				776.37	0–128 804	4–4	E2	1.31−03	1.32−06	C+	1
				787.56	0–126 975	4–2	M1	1.39+02	5.01−03	B+	1
				787.56	0–126 975	4–2	E2	5.96−03	3.22−06	C+	1
3		$^2D°-^2D°$									
				1 152.6 cm^{-1}	82 442.3–83 594.9	4–6	M1	1.59−02	2.31+00	A	1
				1 152.6 cm^{-1}	82 442.3–83 594.9	4–6	E2	1.48−10	3.89−03	A	1
4		$^2D°-^2P°$									
			2 304.5	2 305.2	83 594.9–126 975	6–2	E2	2.76−01	3.20−02	A	1
			2 211.3	2 211.9	83 594.9–128 804	6–4	M1	5.48+01	8.79−02	A	1
			2 211.3	2 211.9	83 594.9–128 804	6–4	E2	5.69−01	1.07−01	A	1
			2 244.8	2 245.5	82 442.3–126 975	4–2	M1	5.77+01	4.84−02	A	1
			2 244.8	2 245.5	82 442.3–126 975	4–2	E2	4.61−01	4.69−02	A	1
			2 156.3	2 157.0	82 442.3–128 804	4–4	M1	1.03+02	1.52−01	A	1
			2 156.3	2 157.0	82 442.3–128 804	4–4	E2	2.43−01	4.05−02	A	1
5		$^2P°-^2P°$									
				1 829 cm^{-1}	126 975–128 804	2–4	M1	5.28−02	1.28+00	A	1
				1 829 cm^{-1}	126 975–128 804	2–4	E2	7.16−10	1.24−03	B+	1
6	$2s^22p^3-2p^5$	$^4S°-^2P°$									
				100.883	0–991 249	4–4	M1	4.91+01	7.48−06	D	2
				100.883	0–991 249	4–4	E2	1.30+02	4.86−06	D	2
				99.763	0–1002 372	4–2	M1	1.71+01	1.25−06	D	2
				99.763	0–1002 372	4–2	E2	1.40+02	2.46−06	D	2
7		$^2D°-^2P°$									
				108.840	83 594.9–1 002 372	6–2	E2	5.10+04	1.39−03	C	2
				110.174	83 594.9–991 249	6–4	M1	2.06+01	4.08−06	D	2
				110.174	83 594.9–991 249	6–4	E2	8.55+04	4.95−03	C	2
				108.704	82 442.3–1 002 372	4–2	M1	1.23+01	1.17−06	D	2
				108.704	82 442.3–1 002 372	4–2	E2	5.52+04	1.49−03	C	2
				110.034	82 442.3–991 249	4–4	M1	3.69+01	7.28−06	D	2
				110.034	82 442.3–991 249	4–4	E2	4.58+04	2.63−03	C	2
8		$^2P°-^2P°$									
				115.949	128 804–991 249	4–4	E2	8.02+03	6.00−04	C	2
				114.473	128 804–1 002 372	4–2	M1	1.79+01	1.99−06	D	2
				114.473	128 804–1 002 372	4–2	E2	1.66+04	5.81−04	C	2
				115.704	126 975–991 249	2–4	M1	4.66+01	1.07−05	D+	2
				115.704	126 975–991 249	2–4	E2	4.78+04	3.53−03	C	2
9	$2s2p^4-2s2p^4$	$^4P-^4P$									
			14 480	14 484	378 458–385 362	6–4	M1	7.98+00	3.59+00	A	1
				3 521 cm^{-1}	385 362–388 883	4–2	M1	1.96+00	3.32+00	A	1

TABLE 40. Transition probabilities of forbidden lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
10		^{4}P–^{2}D									
				757.68	388 883–520 864	2–6	E2	1.33−02	1.78−05	C+	1
				738.00	385 362–520 864	4–6	M1	2.21+01	1.97−03	B+	1
				738.00	385 362–520 864	4–6	E2	8.01−02	9.39−05	C+	1
				758.50	388 883–520 723	2–4	M1	1.54+01	9.98−04	B	1
				758.50	388 883–520 723	2–4	E2	6.13−02	5.49−05	C+	1
				702.22	378 458–520 864	6–6	M1	1.51+02	1.16−02	A	1
				702.22	378 458–520 864	6–6	E2	3.03−01	2.77−04	B	1
				738.77	385 362–520 723	4–4	M1	6.46+01	3.86−03	B+	1
				702.91	378 458–520 723	6–4	M1	1.17+01	6.03−04	B	1
				702.91	378 458–520 723	6–4	E2	1.26−01	7.69−05	C+	1
11		^{4}P–^{2}S									
				434.167	378 458–608 784	6–2	E2	6.01−01	1.65−05	C	1
				447.583	385 362–608 784	4–2	M1	7.86+02	5.22−03	B+	1
				447.583	385 362–608 784	4–2	E2	1.26−01	4.04−06	C	1
				454.750	388 883–608 784	2–2	M1	1.26+02	8.77−04	B	1
12		^{4}P–^{2}P									
				397.557	385 362–636 898	4–4	M1	2.67+01	2.48−04	B	1
				397.557	385 362–636 898	4–4	E2	4.24−01	1.50−05	C+	1
				389.443	388 883–645 660	2–2	M1	9.00+01	3.94−04	B	1
				386.937	378 458–636 898	6–4	M1	6.43+01	5.52−04	B	1
				386.937	378 458–636 898	6–4	E2	2.13−01	6.58−06	C	1
				384.175	385 362–645 660	4–2	M1	2.16+01	9.10−05	B	1
				384.175	385 362–645 660	4–2	E2	2.24−01	3.34−06	C	1
				403.201	388 883–636 898	2–4	M1	1.86+01	1.80−04	B	1
				403.201	388 883–636 898	2–4	E2	9.82−02	3.73−06	C	1
13		^{2}D–^{2}S									
				1 137.40	520 864–608 784	6–2	E2	1.94+01	6.58−02	A	1
				1 135.58	520 723–608 784	4–2	M1	4.38−01	4.75−05	B	1
				1 135.58	520 723–608 784	4–2	E2	1.28+01	4.31−02	A	1
14		^{2}D–^{2}P									
				801.31	520 864–645 660	6–2	E2	2.17+00	1.28−03	B+	1
				861.82	520 864–636 898	6–4	M1	4.29+01	4.07−03	B+	1
				861.82	520 864–636 898	6–4	E2	4.46−02	7.57−05	C+	1
				800.40	520 723–645 660	4–2	M1	5.97+01	2.27−03	B+	1
				800.40	520 723–645 660	4–2	E2	2.51+00	1.47−03	B+	1
				860.77	520 723–636 898	4–4	M1	7.89+01	7.46−03	B+	1
				860.77	520 723–636 898	4–4	E2	4.37−01	7.37−04	B	1
15		^{2}S–^{2}P									
			3 555.9	3 556.9	608 784–636 898	2–4	M1	5.67+00	3.78−02	A	1
			2 711.0	2 711.8	608 784–645 660	2–2	M1	5.04+01	7.44−02	A	1
16		^{2}P–^{2}P									
			11 410	11 413	636 898–645 660	4–2	M1	1.17+01	1.29+00	A	1
17	$2s2p^4$–$2s^22p^2(^1P)3s$	^{4}P–^{4}P									
				58.140	378 458–2 098 440	6–6	E2	1.09+05	3.88−04	C	1
				58.581	385 362–2 092 400	4–4	E2	1.19+05	2.92−04	C	1
				58.514	378 458–2 087 460	6–2	E2	3.36+05	4.11−04	C	1
				58.345	378 458–2 092 400	6–4	E2	2.38+05	5.75−04	C	1

TABLE 40. Transition probabilities of forbidden lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				58.751	385 362–2 087 460	4–2	E2	3.68+04	4.60−05	D+	1
				58.374	385 362–2 098 440	4–6	E2	1.59+05	5.76−04	C	1
				58.702	388 883–2 092 400	2–4	E2	1.84+04	4.58−05	D+	1
				58.495	388 883–2 098 440	2–6	E2	1.12+05	4.12−04	C	1
18		^{4}P–^{2}P									
				57.632	385 362–2 120 500	4–4	E2	9.89+02	2.24−06	D	1
				57.649	378 458–2 113 100	6–2	E2	4.04+03	4.59−06	D	1
				57.404	378 458–2 120 500	6–4	E2	2.95+03	6.56−06	D	1
19		^{2}D–^{4}P									
				63.827	520 723–2 087 460	4–2	E2	5.49+02	1.03−06	D	1
				63.388	520 864–2 098 440	6–6	E2	1.40+03	7.69−06	D	1
				63.383	520 723–2 098 440	4–6	E2	3.18+02	1.74−06	D	1
20		^{2}D–^{2}P									
				62.514	520 864–2 120 500	6–4	E2	3.05+03	1.03−05	D+	1
				62.799	520 723–2 113 100	4–2	E2	2.55+03	4.45−06	D	1
				62.509	520 723–2 120 500	4–4	E2	5.06+03	1.72−05	D+	1
21		^{2}S–^{2}P									
				66.150	608 784–2 120 500	2–4	E2	5.24+03	2.37−05	D+	1
22		^{2}P–^{4}P									
				68.705	636 898–2 092 400	4–4	E2	5.00+02	2.73−06	D	1
				68.939	636 898–2 087 460	4–2	E2	1.10+03	3.06−06	D	1
				69.121	645 660–2 092 400	2–4	E2	5.86+02	3.30−06	D	1
23		^{2}P–^{2}P									
				67.404	636 898–2 120 500	4–4	M1	2.46+01	1.11−06	D	1
				67.404	636 898–2 120 500	4–4	E2	7.66+04	3.80−04	C	1
				67.741	636 898–2 113 100	4–2	E2	1.53+05	3.89−04	C	1
				67.804	645 660–2 120 500	2–4	E2	7.11+04	3.63−04	C	1
24	$2s2p^4$–$2s^22p^2(^1D)3s$	^{4}P–^{2}D									
				56.457	388 883–2 160 140	2–6	E2	6.35+02	1.95−06	D	1
				56.345	385 362–2 160 140	4–6	E2	1.24+03	3.77−06	D	1
				[56.372]	385 362–2 159 280	4–4	E2	6.30+02	1.28−06	D	1
25		^{2}D–^{2}D									
				61.003	520 864–2 160 140	6–6	M1	2.04+01	1.02−06	D	1
				61.003	520 864–2 160 140	6–6	E2	3.02+05	1.36−03	C	1
				[61.029]	520 723–2 159 280	4–4	E2	2.60+05	7.86−04	C	1
				[61.035]	520 864–2 159 280	6–4	E2	1.12+05	3.39−04	C	1
				60.997	520 723–2 160 140	4–6	E2	7.47+04	3.37−04	C	1
26		^{2}S–^{2}D									
				64.460	608 784–2 160 140	2–6	E2	3.15+04	1.87−04	C	1
				[64.495]	608 784–2 159 280	2–4	E2	2.86+04	1.14−04	C	1
27		^{2}P–^{2}D									
				66.029	645 660–2 160 140	2–6	E2	6.27+02	4.21−06	D	1
				65.649	636 898–2 160 140	4–6	E2	3.54+02	2.31−06	D	1
				[66.067]	645 660–2 159 280	2–4	E2	5.54+03	2.49−05	D+	1

TABLE 40. Transition probabilities of forbidden lines for S X—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				[65.687]	636 898–2 159 280	4–4	E2	2.45+03	1.06−05	D+	1
28	$2p^5$–$2p^5$	^{2}P°–^{2}P°									
			8 988	8 990	991 249–1 002 372	4–2	M1	2.47+01	1.33+00	B+	2
29	$2s^22p^2(^3$P$)3s$–$2s^22p^2(^3$P$)3s$	^{4}P–^{4}P									
			16 552	16 556	2 092 400–2 098 440	4–6	M1	3.51+00	3.54+00	B+	1
				4 940 cm^{-1}	2 087 460–2 092 400	2–4	M1	2.68+00	3.29+00	B+	1
30		^{4}P–^{2}P									
			3 557.7	3 558.7	2 092 400–2 120 500	4–4	M1	2.66+00	1.77−02	C+	1
			3 899.1	3 900.2	2 087 460–2 113 100	2–2	M1	1.26+01	5.55−02	C+	1
			4 531.8	4 533.1	2 098 440–2 120 500	6–4	M1	2.68+00	3.70−02	C+	1
			4 829.6	4 830.9	2 092 400–2 113 100	4–2	M1	5.95−01	4.97−03	C	1
			3 025.8	3 026.6	2 087 460–2 120 500	2–4	M1	7.85−01	3.22−03	C	1
31		^{2}P–^{2}P									
			13 510	13 514	2 113 100–2 120 500	2–4	M1	3.60+00	1.31+00	B+	1
32	$2s^22p^2(^3$P$)3s$–$2s^22p^2(^1$D$)3s$	^{4}P–^{2}D									
				1 476.23	2 092 400–2 160 140	4–6	M1	2.56+01	1.83−02	C+	1
				[1 392.37]	2 087 460–2 159 280	2–4	M1	8.15+00	3.26−03	C	1
				1 620.75	2 098 440–2 160 140	6–6	M1	7.71+01	7.30−02	C+	1
				[1 495.22]	2 092 400–2 159 280	4–4	M1	2.72+01	1.34−02	C+	1
				[1 643.66]	2 098 440–2 159 280	6–4	M1	7.19+00	4.73−03	C	1
33		^{2}P–^{2}D									
			2 521.9	2 522.7	2 120 500–2 160 140	4–6	M1	1.06+01	3.77−02	C+	1
			[2 164.8]	[2 165.4]	2 113 100–2 159 280	2–4	M1	1.71+01	2.56−02	C+	1
			[2 577.9]	[2 578.6]	2 120 500–2 159 280	4–4	M1	3.19+01	8.11−02	C+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev and Froese Fischer (2002b); Ref. 2 = Merkelis *et al.* (1999).

References for Forbidden Transitions of S X

Merkelis, G., I. Martinson, R. Kisielius, and M. J. Vilkas, 1999, Phys. Scr. **59**, 122.

Tachiev G. and C. Froese Fischer, 2002b, Astron. Astrophys. **385**, 716. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.11. S XI

$Z=16$
Carbon Isoelectronic Sequence
Ground State: $1s^22s^22p^2\ ^3P_0$
Ionization Energy: 4 071 300 cm^{-1} (504.78 eV)

4.11.1. Allowed Transitions for S XI

Transition probabilities for the $2s^22p^2$-$2s^22p3s$, $2s^22p^2$-$2s^22p3d$, $2p^4$-$2s^22p3s$, and $2p^4$-$2s^22p3d$ arrays are selected from the work of Tachiev (2004). He used the MCHF approach including the BP corrections.

For the $2s^22p^2$-$2s^22p4d$, $2s2p^3$-$2s2p^23s$, and $2s2p^3$-$2s2p^23d$ transition arrays, data are taken from Fawcett and Hayes (1987) and Fawcett (1987). In these works, the computation was made with the HFR method using the COWAN code.

Oscillator strengths from the R-matrix calculations of the OP (Luo and Pradhan, 1989) were taken for strong transitions from high-lying states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S XI is given in Table 41, and the transition probabilities for these lines are provided in Table 42.

TABLE 41. Wavelength finding list for allowed lines of S XI

Wavelength (vac.) (Å)	Mult. No.
31.054	39
31.48	40
36.66	38
36.73	37
37.065	67
37.069	67
37.773	36
37.935	69
37.942	69
38.617	27
38.695	27
38.803	27
38.806	26
38.966	64
39.030	25
39.049	64
39.110	25
39.130	25
39.220	25
39.240	24
39.240	25
39.300	24
39.320	24
39.323	24
39.411	24
39.432	24
39.572	23
39.572	71

TABLE 41. Wavelength finding list for allowed lines of S XI—Continued

Wavelength (vac.) (Å)	Mult. No.
39.65	31
39.65	32
39.685	23
39.717	70
40.081	30
40.102	30
40.188	29
40.280	29
40.302	29
40.57	28
40.71	35
40.904	66
40.909	66
41.166	34
41.386	65
41.399	33
41.474	65
41.479	65
41.538	65
41.543	65
41.83	73
41.975	68
42.34	72
42.643	18
42.738	18
42.751	56
42.823	62
42.828	62
42.865	56
42.869	18
42.95	74
42.990	17
43.099	17
43.123	17
43.196	17
43.330	17
43.90	20
43.998	63
44.166	19
44.383	19
44.728	58
44.734	58
45.21	22
45.718	21
46.002	60
46.011	60
46.076	57
46.082	57
46.209	57
46.215	57
47.439	59
47.570	59
47.580	59
48.648	61
57.130	76
57.172	76
57.419	76

TABLE 41. Wavelength finding list for allowed lines of S XI—Continued

Wavelength (vac.) (Å)	Mult. No.
57.462	76
57.522	76
60.10	77
62.39	78
65.805	75
66.190	75
66.288	75
66.679	75
66.817	75
155.809	83
157.659	41
158.385	44
159.885	41
168.782	6
170.279	6
172.386	6
175.516	47
186.839	5
188.675	5
190.36	12
190.487	4
191.266	5
193.129	4
194.785	43
194.889	43
194.895	43
198.165	86
198.685	86
200.957	86
203.153	87
203.687	87
213.547	42
213.642	11
214.844	42
214.977	42
215.97	10
217.60	16
218.998	42
219.129	42
219.136	42
221.476	52
221.496	46
221.708	46
239.816	3
242.594	3
242.849	3
242.872	3
245.906	45
246.895	3
247.159	3
247.780	45
247.804	45
248.070	45
248.576	15
253.347	45
253.625	45
253.64	55

TABLE 41. Wavelength finding list for allowed lines of S XI—Continued

Wavelength (vac.) (Å)	Mult. No.
257.34	89
278.06	88
278.621	81
281.402	2
285.492	9
285.587	2
285.822	2
285.845	9
291.566	2
291.578	2
291.811	2
295.61	49
300.082	51
301.80	92
305.838	90
330.51	91
344.407	48
346.711	50
346.960	8
346.977	8
347.307	8
350.495	50
352.042	14
355.208	48
361.687	50
362.34	54
369.645	80
385.431	80
432.591	53
438.498	53
449.236	96
449.570	13
456.159	53
502.765	79
515.358	79
532.425	79
552.355	1
556.948	101
575.17	1
714.29	95
761.3	98
794.6	100
839.60	7
894.45	94
939.85	94
973.71	94
976.6	97
1 032.0	99
1 449.07	82
Wavelength (air) (Å)	**Mult. No.**
2 359.4	84
2 435.3	84
2 827.2	84
3 283.1	93

TABLE 41. Wavelength finding list for allowed lines of S XI—Continued

Wavelength (air) (Å)	Mult. No.
3 334.6	85
3 484.5	85

TABLE 42. Transition probabilities of allowed lines for S XI

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^22p^2$–$2s2p^3$	^{3}P–^{5}S$^\circ$										
				[575.17]	12 388.1–186 251	5–5	4.91+05	2.44−05	2.30−04	−3.914	B+	1
				[552.355]	5 208.0–186 251	3–5	2.33+05	1.78−05	9.70−05	−4.272	B	1
2		^{3}P–^{3}D$^\circ$		*288.48*	8 618–355 261	9–15	2.96+09	6.15−02	5.26−01	−0.257	A	1
				291.578	12 388.1–355 350	5–7	2.84+09	5.06−02	2.42−01	−0.597	A	1
				285.822	5 208.0–355 076	3–5	2.67+09	5.44−02	1.53−01	−0.787	A	1
				281.402	0–355 364	1–3	2.10+09	7.49−02	6.94−02	−1.126	A	1
				291.811	12 388.1–355 076	5–5	3.91+08	4.99−03	2.39−02	−1.603	A	1
				285.587	5 208.0–355 364	3–3	1.05+09	1.29−02	3.62−02	−1.412	A	1
				291.566	12 388.1–355 364	5–3	3.27+07	2.50−04	1.20−03	−2.903	B+	1
3		^{3}P–^{3}P$^\circ$		*244.74*	*8 618–417 222*	9–9	7.55+09	6.78−02	4.92−01	−0.215	A	1
				246.895	12 388.1–417 419	5–5	6.10+09	5.58−02	2.26−01	−0.554	A	1
				242.849	5 208.0–416 986	3–3	2.62+09	2.32−02	5.56−02	−1.157	A	1
				247.159	12 388.1–416 986	5–3	2.68+09	1.47−02	5.99−02	−1.134	A	1
				242.872	5 208.0–416 947	3–1	7.77+09	2.29−02	5.49−02	−1.163	A	1
				242.594	5 208.0–417 419	3–5	1.34+09	1.96−02	4.70−02	−1.231	A	1
				239.816	0–416 986	1–3	2.36+09	6.11−02	4.82−02	−1.214	A	1
4		^{3}P–^{1}D$^\circ$										
				190.487	5 208.0–530 177	3–5	9.56+06	8.66−05	1.63−04	−3.585	C+	1
				193.129	12 388.1–530 177	5–5	1.90+08	1.06−03	3.36−03	−2.276	B	1
5		^{3}P–^{3}S$^\circ$		189.90	8 618–535 220	9–3	4.47+10	8.05−02	4.53−01	−0.140	A	1
				191.266	12 388.1–535 220	5–3	2.53+10	8.34−02	2.62−01	−0.380	A	1
				188.675	5 208.0–535 220	3–3	1.45+10	7.75−02	1.44−01	−0.634	A	1
				186.839	0–535 220	1–3	4.86+09	7.62−02	4.68−02	−1.118	A	1
6		^{3}P–^{1}P$^\circ$										
				170.279	5 208.0–592 480	3–3	2.09+08	9.07−04	1.52−03	−2.565	B	1
				172.386	12 388.1–592 480	5–3	4.24+06	1.13−05	3.21−05	−4.248	C	1
				168.782	0–592 480	1–3	9.07+05	1.16−05	6.45−06	−4.936	C	1
7		^{1}D–^{5}S$^\circ$										
				[839.60]	67 146.3–186 251	5–5	1.01+03	1.07−07	1.47−06	−6.272	C	1
8		^{1}D–^{3}D$^\circ$										
				347.307	67 146.3–355 076	5–5	3.25+06	5.88−05	3.36−04	−3.532	C+	1
				346.960	67 146.3–355 364	5–3	2.74+06	2.97−05	1.69−04	−3.828	C+	1
				346.977	67 146.3–355 350	5–7	1.91+07	4.82−04	2.75−03	−2.618	B	1
9		^{1}D–^{3}P$^\circ$										
				285.845	67 146.3–416 986	5–3	1.88+07	1.38−04	6.50−04	−3.161	C+	1
				285.492	67 146.3–417 419	5–5	3.45+06	4.22−05	1.98−04	−3.676	C+	1
10		^{1}D–^{1}D$^\circ$		215.97	67 146.3–530 177	5–5	2.20+10	1.54−01	5.47−01	−0.114	A	1

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
11		^{1}D–^{3}S°										
				213.642	67 146.3–535 220	5–3	6.21+06	2.55−05	8.96−05	−3.894	C	1
12		^{1}D–^{1}P°		190.36	67 146.3–592 480	5–3	2.80+10	9.13−02	2.86−01	−0.341	A	1
13		^{1}S–^{3}D°										
				449.570	132 929–355 364	1–3	1.33+06	1.21−04	1.78−04	−3.917	C+	1
14		^{1}S–^{3}P°										
				352.042	132 929–416 986	1–3	6.09+06	3.40−04	3.93−04	−3.469	C+	1
15		^{1}S–^{3}S°										
				248.576	132 929–535 220	1–3	1.75+07	4.87−04	3.98−04	−3.312	C+	1
16		^{1}S–^{1}P°		217.60	132 929–592 480	1–3	7.28+09	1.55−01	1.11−01	−0.810	A	1
17	$2s^22p^2$–$2s^22p3s$	^{3}P–^{3}P°				9–9						1
				43.123	12 388.1–2 331 340	5–5	1.71+11	4.76−02	3.37−02	−0.623	A	1
				43.196	5 208.0–2 320 260	3–3	5.20+10	1.46−02	6.21−03	−1.359	B+	1
				43.330	12 388.1–2 320 260	5–3	9.55+10	1.61−02	1.15−02	−1.094	A	1
				42.990	5 208.0–2 331 340	3–5	5.84+10	2.70−02	1.14−02	−1.092	A	1
				43.099	0–2 320 260	1–3	7.37+10	6.16−02	8.73−03	−1.210	B+	1
18		^{3}P–^{1}P°										
				42.738	5 208.0–2 345 060	3–3	3.94+09	1.08−03	4.55−04	−2.489	C	1
				42.869	12 388.1–2 345 060	5–3	5.85+08	9.67−05	6.82−05	−3.316	D+	1
				42.643	0–2 345 060	1–3	2.03+09	1.66−03	2.33−04	−2.780	C	1
19		^{1}D–^{3}P°										
				44.383	67 146.3–2 320 260	5–3	1.10+10	1.94−03	1.41−03	−2.013	C+	1
				44.166	67 146.3–2 331 340	5–5	1.94+09	5.68−04	4.12−04	−2.547	C	1
20		^{1}D–^{1}P°		43.90	67 146.3–2 345 060	5–3	2.78+11	4.82−02	3.48−02	−0.618	A	1
21		^{1}S–^{3}P°										
				45.718	132 929–2 320 260	1–3	2.61+09	2.45−03	3.69−04	−2.611	C	1
22		^{1}S–^{1}P°		45.21	132 929–2 345 060	1–3	8.33+10	7.66−02	1.14−02	−1.116	A	1
23	$2s^22p^2$–$2s^22p3d$	^{3}P–^{1}D°										
				39.572	5 208.0–2 532 260	3–5	1.13+11	4.41−02	1.72−02	−0.878	C+	1
				39.685	12 388.1–2 532 260	5–5	1.45+10	3.42−03	2.23−03	−1.767	C+	1
24		^{3}P–^{3}D°		*39.32*	*8 618–2 552 130*	9–15	2.07+12	7.99−01	9.31−01	0.857	B+	1
				39.323	12 388.1–2 555 430	5–7	2.19+12	7.11−01	4.60−01	0.551	B+	1
				39.300	5 208.0–2 549 740	3–5	1.84+12	7.09−01	2.75−01	0.328	B+	1
				39.240	0–2 548 420	1–3	1.61+12	1.12+00	1.44−01	0.049	B+	1
				39.411	12 388.1–2 549 740	5–5	2.69+10	6.28−03	4.07−03	−1.503	D+	1
				39.320	5 208.0–2 548 420	3–3	5.29+11	1.23−01	4.75−02	−0.433	B	1
				39.432	12 388.1–2 548 420	5–3	2.94+06	4.12−07	2.67−07	−5.686	E	1
25		^{3}P–^{3}P°				9–9						1
				39.240	12 388.1–2 560 810	5–5	1.43+12	3.31−01	2.13−01	0.219	B+	1
				39.110	5 208.0–2 562 100	3–3	7.32+11	1.68−01	6.48−02	−0.298	B	1
				39.220	12 388.1–2 562 100	5–3	5.81+11	8.05−02	5.19−02	−0.395	B	1
				39.130	5 208.0–2 560 810	3–5	4.57+10	1.75−02	6.76−03	−1.280	C+	1

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				39.030	0–2 562 100	1–3	5.76+10	3.95−02	5.07−03	−1.403	C+	1
26		^{3}P–^{1}F$^\circ$										
				38.806	12 388.1–2 589 340	5–7	1.17+09	3.71−04	2.36−04	−2.732	D+	1
27		^{3}P–^{1}P$^\circ$										
				[38.695]	5 208.0–2 589 510	3–3	5.18+09	1.16−03	4.44−04	−2.458	C	1
				[38.803]	12 388.1–2 589 510	5–3	1.09+08	1.48−05	9.47−06	−4.131	D	1
				[38.617]	0–2 589 510	1–3	8.40+09	5.64−03	7.16−04	−2.249	C	1
28		^{1}D–^{1}D$^\circ$		40.57	67 146.3–2 532 260	5–5	5.57+11	1.37−01	9.17−02	−0.164	B	1
29		^{1}D–^{3}D$^\circ$										
				40.280	67 146.3–2 549 740	5–5	2.93+10	7.14−03	4.73−03	−1.447	C+	1
				40.302	67 146.3–2 548 420	5–3	1.67+09	2.44−04	1.61−04	−2.914	C	1
				40.188	67 146.3–2 555 430	5–7	2.55+08	8.63−05	5.71−05	−3.365	D+	1
30		^{1}D–^{3}P$^\circ$										
				40.081	67 146.3–2 562 100	5–3	4.46+09	6.44−04	4.24−04	−2.492	C	1
				40.102	67 146.3–2 560 810	5–5	4.50+10	1.08−02	7.16−03	−1.268	C+	1
31		^{1}D–^{1}F$^\circ$		39.65	67 146.3–2 589 340	5–7	2.76+12	9.12−01	5.95−01	0.659	B+	1
32		^{1}D–^{1}P$^\circ$		[39.65]	67 146.3–2 589 510	5–3	6.70+10	9.47−03	6.18−03	−1.325	C+	1
33		^{1}S–^{3}D$^\circ$										
				41.399	132 929–2 548 420	1–3	7.89+09	6.08−03	8.28−04	−2.216	C	1
34		^{1}S–^{3}P$^\circ$										
				41.166	132 929–2 562 100	1–3	2.11+09	1.61−03	2.17−04	−2.793	C	1
35		^{1}S–^{1}P$^\circ$		[40.71]	132 929–2 589 510	1–3	1.62+12	1.21+00	1.62−01	0.083	B+	1
36	$2s^22p^2$–$2s2p^2(^4P)3p$	^{3}P–^{3}D$^\circ$				9–15						4
				37.773	12 388.1–2 659 800	5–7	5.38+11	1.61−01	1.00−01	−0.094	C	4
37	$2s^22p^2$–$2s2p^2(^2D)3p$	^{1}D–^{1}D$^\circ$		[36.73]	67 146.3–2 789 500	5–5	5.22+11	1.06−01	6.38−02	−0.276	D+	4
38		^{1}D–^{1}F$^\circ$		[36.66]	67 146.3–2 795 000	5–7	6.46+11	1.82−01	1.10−01	−0.041	C	4
39	$2s^22p^2$–$2s^22p4d$	^{3}P–^{3}D$^\circ$				9–15						3
				[31.054]	12 388.1–3 232 600	5–7	6.88+11	1.39−01	7.11−02	−0.158	D+	3
40		^{1}D–^{1}F$^\circ$		[31.48]	67 146.3–3 243 450	5–7	1.00+12	2.08−01	1.08−01	0.017	C	3
41	$2s2p^3$–$2p^4$	^{5}S$^\circ$–^{3}P										
				[159.885]	186 251–811 702	5–5	1.93+07	7.38−05	1.94−04	−3.433	C+	1
				[157.659]	186 251–820 531	5–3	7.69+06	1.72−05	4.46−05	−4.066	C	1
42		^{3}D$^\circ$–^{3}P		217.06	355 261–815 972	15–9	1.84+10	7.79−02	8.34−01	0.068	A	1
				219.129	355 350–811 702	7–5	1.50+10	7.71−02	3.89−01	−0.268	A	1
				214.844	355 076–820 531	5–3	1.26+10	5.25−02	1.85−01	−0.581	A	1
				213.547	355 364–823 645	3–1	1.74+10	3.96−02	8.35−02	−0.925	B+	1
				218.998	355 076–811 702	5–5	3.58+09	2.57−02	9.27−02	−0.891	B+	1
				214.977	355 364–820 531	3–3	5.19+09	3.59−02	7.62−02	−0.968	B+	1
				219.136	355 364–811 702	3–5	3.11+08	3.73−03	8.07−03	−1.951	B	1

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
43		$^{3}\mathrm{D}^{\circ}$–$^{1}\mathrm{D}$										
				194.785	355 076–868 462	5–5	4.03+07	2.29−04	7.34−04	−2.941	C+	1
				194.889	355 350–868 462	7–5	2.06+08	8.36−04	3.75−03	−2.233	B	1
				194.895	355 364–868 462	3–5	1.21+06	1.15−05	2.20−05	−4.462	C	1
44		$^{3}\mathrm{D}^{\circ}$–$^{1}\mathrm{S}$										
				158.385	355 364–986 736	3–1	1.01+07	1.27−05	1.98−05	−4.419	C	1
45		$^{3}\mathrm{P}^{\circ}$–$^{3}\mathrm{P}$		*250.78*	*417 222–815 972*	9–9	4.65+09	4.38−02	3.26−01	−0.404	B+	1
				253.625	417 419–811 702	5–5	2.80+09	2.70−02	1.12−01	−0.870	A	1
				247.804	416 986–820 531	3–3	6.60+08	6.08−03	1.48−02	−1.739	B+	1
				248.070	417 419–820 531	5–3	3.07+09	1.70−02	6.93−02	−1.071	B+	1
				245.906	416 986–823 645	3–1	5.70+09	1.72−02	4.18−02	−1.287	B+	1
				253.347	416 986–811 702	3–5	1.29+09	2.07−02	5.17−02	−1.207	B+	1
				247.780	416 947–820 531	1–3	1.60+09	4.41−02	3.59−02	−1.356	B+	1
46		$^{3}\mathrm{P}^{\circ}$–$^{1}\mathrm{D}$										
				221.496	416 986–868 462	3–5	2.06+07	2.53−04	5.53−04	−3.120	C+	1
				221.708	417 419–868 462	5–5	6.63+06	4.89−05	1.78−04	−3.612	C+	1
47		$^{3}\mathrm{P}^{\circ}$–$^{1}\mathrm{S}$										
				175.516	416 986–986 736	3–1	6.99+07	1.08−04	1.86−04	−3.489	C+	1
48		$^{1}\mathrm{D}^{\circ}$–$^{3}\mathrm{P}$										
				344.407	530 177–820 531	5–3	2.46+06	2.63−05	1.49−04	−3.881	C+	1
				355.208	530 177–811 702	5–5	4.49+07	8.49−04	4.96−03	−2.372	B	1
49		$^{1}\mathrm{D}^{\circ}$–$^{1}\mathrm{D}$		295.61	530 177–868 462	5–5	1.25+10	1.64−01	8.00−01	−0.086	A	1
50		$^{3}\mathrm{S}^{\circ}$–$^{3}\mathrm{P}$		*356.19*	535 220–*815 972*	3–9	3.14+09	1.79−01	6.30−01	−0.270	A	1
				361.687	535 220–811 702	3–5	2.92+09	9.54−02	3.40−01	−0.543	A	1
				350.495	535 220–820 531	3–3	3.38+09	6.23−02	2.15−01	−0.728	A	1
				346.711	535 220–823 645	3–1	3.64+09	2.18−02	7.48−02	−1.184	B+	1
51		$^{3}\mathrm{S}^{\circ}$–$^{1}\mathrm{D}$										
				300.082	535 220–868 462	3–5	7.62+05	1.71−05	5.07−05	−4.290	D+	1
52		$^{3}\mathrm{S}^{\circ}$–$^{1}\mathrm{S}$										
				221.476	535 220–986 736	3–1	3.01+08	7.38−04	1.61−03	−2.655	B	1
53		$^{1}\mathrm{P}^{\circ}$–$^{3}\mathrm{P}$										
				438.498	592 480–820 531	3–3	1.77+07	5.09−04	2.20−03	−2.816	B	1
				432.591	592 480–823 645	3–1	1.09+06	1.02−05	4.35−05	−4.514	C	1
				456.159	592 480–811 702	3–5	4.36+06	2.27−04	1.02−03	−3.167	B	1
54		$^{1}\mathrm{P}^{\circ}$–$^{1}\mathrm{D}$		362.34	592 480–868 462	3–5	1.47+09	4.83−02	1.73−01	−0.839	A	1
55		$^{1}\mathrm{P}^{\circ}$–$^{1}\mathrm{S}$		253.64	592 480–986 736	3–1	3.09+10	9.94−02	2.49−01	−0.525	A	1
56	$2s2p^{3}$–$2s2p^{2}(^{4}\mathrm{P})3s$	$^{5}\mathrm{S}^{\circ}$–$^{5}\mathrm{P}$				5–15						1
				42.751	186 251–2 525 380	5–7	1.80+11	6.92−02	4.87−02	−0.461	B	1
				42.865	186 251–2 519 160	5–5	1.76+11	4.85−02	3.42−02	−0.615	B	1
57		$^{3}\mathrm{D}^{\circ}$–$^{5}\mathrm{P}$										
				[46.215]	355 350–2 519 160	7–5	8.69+07	1.99−05	2.11−05	−3.856	D	1

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[46.082]	355 350–2 525 380	7–7	2.36+08	7.51−05	7.97−05	−3.279	D	1
				[46.209]	355 076–2 519 160	5–5	1.39+08	4.45−05	3.38−05	−3.653	D	1
				[46.076]	355 076–2 525 380	5–7	1.84+07	8.22−06	6.23−06	−4.386	D	1
				[46.215]	355 364–2 519 160	3–5	1.51+07	8.05−06	3.67−06	−4.617	D	1
58		^{3}D°–^{3}P				15–9						4
				[44.734]	355 350–2 590 790	7–5	1.23+11	2.63−02	2.71−02	−0.735	D+	4
				[44.728]	355 076–2 590 790	5–5	1.00+10	3.00−03	2.20−03	−1.824	D	4
59		^{3}P°–^{5}P										
				[47.580]	417 419–2 519 160	5–5	4.65+06	1.58−06	1.23−06	−5.102	D	1
				[47.439]	417 419–2 525 380	5–7	3.20+06	1.51−06	1.17−06	−5.122	D	1
				[47.570]	416 986–2 519 160	3–5	4.95+06	2.80−06	1.31−06	−5.076	D	1
60		^{3}P°–^{3}P				9–9						4
				[46.011]	417 419–2 590 790	5–5	8.95+10	2.84−02	2.15−02	−0.848	D+	4
				[46.002]	416 986–2 590 790	3–5	2.96+10	1.57−02	7.11−03	−1.327	D	4
61		^{3}S°–^{3}P				3–9						4
				[48.648]	535 220–2 590 790	3–5	3.95+09	2.33−03	1.12−03	−2.156	D	4
62	$2s2p^3$–$2s2p^2(^2D)3s$	^{3}D°–^{3}D				15–15						4
				[42.828]	355 350–2 690 250	7–7	2.15+11	5.91−02	5.83−02	−0.383	D+	4
				[42.823]	355 076–2 690 250	5–7	4.16+10	1.60−02	1.12−02	−1.097	D+	4
63		^{3}P°–^{3}D				9–15						4
				[43.998]	417 419–2 690 250	5–7	7.88+10	3.20−02	2.31−02	−0.796	D+	4
64	$2s2p^3$–$2s2p^2(^4P)3d$	^{5}S°–^{5}P		*39.01*	*186 251–2 750 000*	5–15	2.30+12	1.57+00	1.01+00	0.895	C	4
				39.049	186 251–2 747 150	5–7	2.36+12	7.57−01	4.86−01	0.578	C	4
				38.966	186 251–2 752 600	5–5	2.10+12	4.79−01	3.07−01	0.379	C	4
				38.966	186 251–2 752 600	5–3	2.49+12	3.40−01	2.17−01	0.230	C	4
65		^{3}D°–^{3}F		*41.45*	*355 261–2 767 600*	15–21	9.09+11	3.28−01	6.71−01	0.692	C	4
				41.386	355 350–2 771 600	7–9	9.17+11	3.03−01	2.88−01	0.327	C	4
				41.474	355 076–2 766 200	5–7	8.29+11	2.99−01	2.04−01	0.175	C	4
				41.543	355 364–2 762 500	3–5	7.70+11	3.32−01	1.36−01	−0.002	C	4
				41.479	355 350–2 766 200	7–7	8.14+10	2.10−02	2.00−02	−0.833	D+	4
				41.538	355 076–2 762 500	5–5	1.29+11	3.34−02	2.28−02	−0.777	D+	4
				41.543	355 350–2 762 500	7–5	1.55+09	2.86−04	2.73−04	−2.699	E	4
66	$2s2p^3$–$2s2p^2(^2P)3d$	^{3}D°–^{3}D				15–15						4
				40.909	355 350–2 799 800	7–7	4.79+11	1.20−01	1.13−01	−0.076	C	4
				40.904	355 076–2 799 800	5–7	1.24+11	4.36−02	2.93−02	−0.662	D+	4
67		^{3}D°–^{3}P				15–9						4
				37.069	355 350–3 053 050	7–5	1.26+10	1.86−03	1.58−03	−1.885	D	4
				37.065	355 076–3 053 050	5–5	3.88+09	8.00−04	4.88−04	−2.398	E	4
68		^{3}P°–^{3}D				9–15						4
				41.975	417 419–2 799 800	5–7	8.44+11	3.12−01	2.15−01	0.193	C	4
69		^{3}P°–^{3}P				9–9						2
				37.942	417 419–3 053 050	5–5	1.12+11	2.42−02	1.51−02	−0.917	D	2,LS

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				37.935	416 986–3 053 050	3–5	3.73+10	1.34−02	5.02−03	−1.396	E	2,LS
70		$^3S^\circ$–^3P				3–9						4
				39.717	535 220–3 053 050	3–5	2.45+12	9.65−01	3.78−01	0.462	C	4
71	$2s2p^3$–$2s2p^2(^2D)3d$	$^3D^\circ$–^3F				15–21						4
				39.572	355 350–2 882 400	7–9	2.39+12	7.23−01	6.59−01	0.704	C	4
72		$^1D^\circ$–^1F		42.34	530 177–2 891 900	5–7	6.48+11	2.44−01	1.70−01	0.086	C	4
73		$^1D^\circ$–^1D		41.83	530 177–2 920 850	5–5	1.41+12	3.69−01	2.54−01	0.266	C	4
74		$^1P^\circ$–^1D		42.95	592 480–2 920 850	3–5	3.62+11	1.67−01	7.08−02	−0.300	D+	4
75	$2p^4$–$2s^22p3s$	^3P–$^3P^\circ$				9–9						1
				65.805	811 702–2 331 340	5–5	5.89+06	3.82−06	4.14−06	−4.719	D+	1
				66.679	820 531–2 320 260	3–3	1.47+06	9.77−07	6.43−07	−5.533	D	1
				66.288	811 702–2 320 260	5–3	2.42+06	9.58−07	1.04−06	−5.320	D+	1
				66.190	820 531–2 331 340	3–5	1.51+06	1.66−06	1.08−06	−5.303	C	1
				66.817	823 645–2 320 260	1–3	1.69+06	3.40−06	7.47−07	−5.469	D+	1
76	$2p^4$–$2s^22p3d$	^3P–$^3P^\circ$				9–9						1
				57.172	811 702–2 560 810	5–5	4.21+07	2.06−05	1.94−05	−3.987	D	1
				57.419	820 531–2 562 100	3–3	1.68+07	8.29−06	4.70−06	−4.604	E+	1
				57.130	811 702–2 562 100	5–3	2.11+07	6.20−06	5.82−06	−4.509	E+	1
				57.462	820 531–2 560 810	3–5	1.86+07	1.54−05	8.71−06	−4.335	E+	1
				57.522	823 645–2 562 100	1–3	2.59+07	3.85−05	7.29−06	−4.415	E+	1
77		^1D–$^1D^\circ$		60.10	868 462–2 532 260	5–5	5.30+07	2.87−05	2.84−05	−3.843	D	1
78		^1S–$^1P^\circ$		[62.39]	986 736–2 589 510	1–3	4.81+07	8.42−05	1.73−05	−4.075	D	1
79	$2s^22p3s$–$2s2p^2(^4P)3s$	$^3P^\circ$–^5P										
				[532.425]	2 331 340–2 519 160	5–5	2.72+06	1.15−04	1.01−03	−3.240	D+	1
				[515.358]	2 331 340–2 525 380	5–7	2.02+06	1.13−04	9.55−04	−3.248	D	1
				[502.765]	2 320 260–2 519 160	3–5	4.97+04	3.14−06	1.55−05	−5.026	E+	1
80		$^3P^\circ$–^3P				9–9						2
				[385.431]	2 331 340–2 590 790	5–5	7.09+08	1.58−02	1.00−01	−1.102	D+	2,LS
				[369.645]	2 320 260–2 590 790	3–5	2.67+08	9.12−03	3.32−02	−1.563	D	2,LS
81	$2s^22p3s$–$2s2p^2(^2D)3s$	$^3P^\circ$–^3D				9–15						2
				[278.621]	2 331 340–2 690 250	5–7	4.36+09	7.10−02	3.25−01	−0.450	D+	2,LS
82	$2s2p^2(^4P)3s$–$2s2p^2(^4P)3p$	^3P–$^3D^\circ$				9–15						2
				[1 449.07]	2 590 790–2 659 800	5–7	1.85+08	8.14−02	1.94+00	−0.390	C	2,LS
83	$2s2p^2(^4P)3s$–$2s^22p4d$	^3P–$^3D^\circ$				9–15						2
				[155.809]	2 590 790–3 232 600	5–7	6.71+09	3.42−02	8.77−02	−0.767	D	2,LS
84	$2s^22p3d$–$2s2p^2(^4P)3s$	$^3D^\circ$–^3P				15–9						2
			[2 827.2]	[2 828.1]	2 555 430–2 590 790	7–5	2.76+06	2.36−03	1.53−01	−1.782	D+	2,LS
			[2 435.3]	[2 436.1]	2 549 740–2 590 790	5–5	7.70+05	6.85−04	2.74−02	−2.465	D	2,LS
			[2 359.4]	[2 360.2]	2 548 420–2 590 790	3–5	5.64+04	7.85−05	1.83−03	−3.628	E	2,LS
85		$^3P^\circ$–^3P				9–9						2

TABLE 42. Transition probabilities of allowed lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			[3 334.6]	[3 335.6]	2 560 810–2 590 790	5–5	4.65+05	7.75−04	4.25−02	−2.412	D	2,LS
			[3 484.5]	[3 485.5]	2 562 100–2 590 790	3–5	1.36+05	4.12−04	1.41−02	−2.908	D	2,LS
86	$2s^22p3d$–$2s2p^2(^2P)3d$	$^3D^\circ$–^3P				15–9						2
				200.957	2 555 430–3 053 050	7–5	1.98+10	8.55−02	3.96−01	−0.223	D+	2,LS
				198.685	2 549 740–3 053 050	5–5	3.65+09	2.16−02	7.06−02	−0.967	D	2,LS
				198.165	2 548 420–3 053 050	3–5	2.46+08	2.41−03	4.71−03	−2.141	E	2,LS
87		$^3P^\circ$–^3P				9–9						2
				203.153	2 560 810–3 053 050	5–5	4.56+09	2.82−02	9.43−02	−0.851	D	2,LS
				203.687	2 562 100–3 053 050	3–5	1.50+09	1.56−02	3.13−02	−1.330	D	2,LS
88	$2s^22p3d$–$2s2p^2(^2D)3d$	$^1D^\circ$–^1F		278.06	2 532 260–2 891 900	5–7	1.66+09	2.69−02	1.23−01	−0.871	D+	2
89		$^1D^\circ$–^1D		257.34	2 532 260–2 920 850	5–5	4.21+09	4.18−02	1.77−01	−0.680	D+	2
90		$^3D^\circ$–^3F				15–21						2
				305.838	2 555 430–2 882 400	7–9	7.93+08	1.43−02	1.00−01	−1.000	D+	2,LS
91		$^1F^\circ$–^1F		330.51	2 589 340–2 891 900	7–7	2.41+08	3.94−03	3.00−02	−1.559	D	2
92		$^1P^\circ$–^1D		[301.80]	2 589 510–2 920 850	3–5	5.84+08	1.33−02	3.96−02	−1.399	D	2
93	$2s2p^2(^4P)3p$–$2s2p^2(^2D)3s$	$^3D^\circ$–^3D				15–15						2
			[3 283.1]	[3 284.1]	2 659 800–2 690 250	7–7	5.26+05	8.50−04	6.43−02	−2.225	D	2,LS
94	$2s2p^2(^4P)3p$–$2s2p^2(^4P)3d$	$^3D^\circ$–^3F				15–21						2
				894.45	2 659 800–2 771 600	7–9	8.62+08	1.33−01	2.74+00	−0.031	C	2,LS
				939.85	2 659 800–2 766 200	7–7	8.30+07	1.10−02	2.38−01	−1.114	D+	2,LS
				973.71	2 659 800–2 762 500	7–5	2.94+06	2.99−04	6.70−03	−2.679	E	2,LS
95	$2s2p^2(^4P)3p$–$2s2p^2(^2P)3d$	$^3D^\circ$–^3D				15–15						2
				714.29	2 659 800–2 799 800	7–7	4.16+08	3.18−02	5.23−01	−0.652	D+	2,LS
96	$2s2p^2(^4P)3p$–$2s2p^2(^2D)3d$	$^3D^\circ$–^3F				15–21						2
				449.236	2 659 800–2 882 400	7–9	7.84+07	3.05−03	3.15−02	−1.671	D	2,LS
97	$2s2p^2(^2D)3p$–$2s2p^2(^2D)3d$	$^1D^\circ$–^1F		[976.6]	2 789 500–2 891 900	5–7	4.32+08	8.65−02	1.39+00	−0.364	C	2
98		$^1D^\circ$–^1D		[761.3]	2 789 500–2 920 850	5–5	5.99+08	5.20−02	6.52−01	−0.585	D+	2
99		$^1F^\circ$–^1F		[1 032.0]	2 795 000–2 891 900	7–7	1.43+08	2.29−02	5.44−01	−0.795	D+	2
100		$^1F^\circ$–^1D		[794.6]	2 795 000–2 920 850	7–5	1.50+08	1.02−02	1.86−01	−1.146	D+	2
101	$2s2p^2(^2P)3d$–$2s^22p4d$	^3P–$^3D^\circ$				9–15						2
				[556.948]	3 053 050–3 232 600	5–7	3.67+07	2.39−03	2.19−02	−1.923	D	2,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev (2004); Ref. 2 = Luo and Pradhan (1989); Ref. 3 = Fawcett and Hayes (1987); Ref. 4 = Fawcett (1987).

References for Allowed Transitions of S XI

Fawcett, B. C., 1987, At. Data Nucl. Data Tables **37**, 367.

Fawcett, B. C. and R. W. Hayes, 1987, Phys. Scr. **36**, 80.

Luo D. and A. K. Pradhan, 1989, J. Phys. B **22**, 3377. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Tachiev G. 2004, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.11.2. Forbidden Transitions for S XI

Tachiev (2004) performed extensive calculations using the MCHF method with BP corrections. The calculations cover the magnetic dipole (M1) and electric quadrupole (E2) transition probabilities in the ground $2s^22p^2$ state and in the first excited $2s2p^3$ state. The magnetic quadrupole (M2) transition rates were computed for the $2s^22p^2$-$2s2p^3$ transition array.

The $2s^22p^2$-$2p^4$ transitions rates were taken from the work of Vilkas *et al.* (1996). They used the stationary second-order MBPT including BP corrections.

A wavelength finding list of forbidden lines for S XI is given in Table 43, and the transition probabilities for the lines are provided in Table 44.

TABLE 43. Wavelength finding list for forbidden lines of S XI

Wavelength (vac.) (Å)	Mult. No.
101.882	12
102.633	12
108.744	14
115.146	11
115.841	11
121.872	10
122.184	10
123.198	10
123.266	10
123.740	10
123.993	10
132.188	13
132.734	13
145.433	15
188.616	7
239.567	6
247.183	6
281.630	5
285.598	5
285.877	8
286.558	19
290.760	18
351.506	9
421.223	23
421.735	23

TABLE 43. Wavelength finding list for forbidden lines of S XI—Continued

Wavelength (vac.) (Å)	Mult. No.
432.586	17
433.398	17
555.111	22
555.957	22
556.000	22
569.69	26
569.82	26
571.10	21
571.23	26
571.99	21
572.04	21
591.32	16
591.37	16
592.33	16
782.96	3
829.59	3
845.50	25
845.78	25
848.89	25
883.46	24
886.86	24
1 489.29	2
1 520.16	4
1 604.03	20
1 605.06	27
1 611.11	20
1 611.47	20
1 614.510	2
1 615.25	20
1 616.27	20
1 622.43	20
1 622.80	20
1 623.82	20
1 746.42	28
1 826.21	2
Wavelength (air) (Å)	**Mult. No.**
8 070	1
13 923.6	1
19 196	1

TABLE 44. Transition probabilities of forbidden lines for S XI

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^22p2-2s^22p^2$	^{3}P–^{3}P									
			13 923.6	13 927.4	5 208.0–12 388.1	3–5	M1	4.93+00	2.47+00	A	1
			13 923.6	13 927.4	5 208.0–12 388.1	3–5	E2	1.05−05	2.45−02	A	1
			19 196	19 201	0–5 208.0	1–3	M1	2.52+00	1.98+00	A	1
			8 070	8 072	0–12 388.1	1–5	E2	7.34−05	1.12−02	A	1
2		^{3}P–^{1}D									
				1 489.29	0–67 146.3	1–5	E2	1.93−03	6.32−05	B	1
				1 614.510	5 208.0–67 146.3	3–5	M1	3.74+01	2.91−02	A	1

TABLE 44. Transition probabilities of forbidden lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				1 614.510	5 208.0–67 146.3	3–5	E2	5.94−03	2.90−04	B+	1
				1 826.21	12 388.1–67 146.3	5–5	M1	7.66+01	8.64−02	A	1
				1 826.21	12 388.1–67 146.3	5–5	E2	2.23−02	2.01−03	A	1
3		^{3}P–^{1}S									
				829.59	12 388.1–132 929	5–1	E2	5.33−01	1.87−04	B+	1
				782.96	5 208.0–132 929	3–1	M1	9.12+02	1.62−02	B+	1
4		^{1}D–^{1}S									
				1 520.16	67 146.3–132 929	5–1	E2	6.51+00	4.72−02	A	1
5	$2s^22p^2$–$2s2p^3$	^{3}P–^{3}D°									
				285.598	5 208.0–355 350	3–7	M2	1.62+00	1.44+00	B	1
				281.630	0–355 076	1–5	M2	1.93+00	1.14+00	B	1
6		^{3}P–^{3}P°									
				247.183	12 388.1–416 947	5–1	M2	4.32+00	2.67−01	B	1
				239.567	0–417 419	1–5	M2	8.90−01	2.35−01	B	1
7		^{3}P–^{1}D°									
				188.616	0–530 177	1–5	M2	7.63+00	6.11−01	B	1
8		^{1}D–^{3}P°									
				285.877	67 146.3–416 947	5–1	M2	2.66+00	3.40−01	B	1
9		^{1}S–^{3}P°									
				351.506	132 929–417 419	1–5	M2	1.63+00	2.93+00	B	1
10	$2s^22p^2$–$2p^4$	^{3}P–^{3}P									
				123.266	12 388.1–823 645	5–1	E2	4.56+04	1.15−03	C	2
				123.740	12 388.1–820 531	5–3	M1	4.51+01	9.51−06	D	2
				122.184	5 208.0–823 645	3–1	M1	3.92+01	2.65−06	D	2
				123.993	5 208.0–811 702	3–5	M1	3.64+01	1.28−05	D+	2
				123.993	5 208.0–811 702	3–5	E2	1.99+04	2.60−03	C	2
				121.872	0–820 531	1–3	M1	8.52+00	1.71−06	D	2
				123.198	0–811 702	1–5	E2	9.12+03	1.15−03	C	2
11		^{3}P–^{1}D									
				115.146	0–868 462	1–5	E2	2.85+02	2.57−05	D+	2
				115.841	5 208.0–868 462	3–5	M1	1.28+01	3.67−06	D	2
				115.841	5 208.0–868 462	3–5	E2	2.44+02	2.26−05	D+	2
12		^{3}P–^{1}S									
				102.633	12 388.1–986 736	5–1	E2	1.64+02	1.67−06	D	2
				101.882	5 208.0–986 736	3–1	M1	7.22+01	2.83−06	D	2
13		^{1}D–^{3}P									
				132.188	67 146.3–823 645	5–1	E2	4.47+01	1.61−06	D	2
				132.734	67 146.3–820 531	5–3	M1	3.31+01	8.60−06	D	2
				132.734	67 146.3–820 531	5–3	E2	3.00+02	3.30−05	D+	2
14		^{1}D–^{1}S									
				108.744	67 146.3–986 736	5–1	E2	7.63+04	1.03−03	C	2

TABLE 44. Transition probabilities of forbidden lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
15		^{1}S–^{3}P									
				145.433	132 929–820 531	1–3	M1	1.55+01	5.31−06	D	2
16	$2s2p^3$–$2s2p^3$	^{5}S°–^{3}D°									
				[591.37]	186 251–355 350	5–7	M1	4.48−01	2.40−05	D+	1
				[591.37]	186 251–355 350	5–7	E2	2.80−01	1.26−04	C	1
				[592.33]	186 251–355 076	5–5	M1	1.22+01	4.71−04	C	1
				[592.33]	186 251–355 076	5–5	E2	2.44−01	7.95−05	D+	1
				[591.32]	186 251–355 364	5–3	M1	4.15+00	9.53−05	D+	1
				[591.32]	186 251–355 364	5–3	E2	1.04−01	2.02−05	D+	1
17		^{5}S°–^{3}P°									
				[432.586]	186 251–417 419	5–5	M1	6.23+02	9.34−03	C	1
				[433.398]	186 251–416 986	5–3	M1	3.49+02	3.16−03	C	1
18		^{5}S°–^{1}D°									
				[290.760]	186 251–530 177	5–5	M1	5.36−01	2.44−06	D	1
19		^{5}S°–^{3}S°									
				[286.558]	186 251–535 220	5–3	M1	2.00+00	5.24−06	D	1
20		^{3}D°–^{3}P°									
				1 622.43	355 350–416 986	7–3	E2	1.71+00	5.14−02	C+	1
				1 616.27	355 076–416 947	5–1	E2	3.69+00	3.63−02	C+	1
				1 611.11	355 350–417 419	7–5	M1	8.11+01	6.28−02	C+	1
				1 611.11	355 350–417 419	7–5	E2	2.09+00	1.01−01	B	1
				1 615.25	355 076–416 986	5–3	M1	6.94−03	3.25−06	D	1
				1 615.25	355 076–416 986	5–3	E2	3.06−01	9.01−03	C	1
				1 623.82	355 364–416 947	3–1	M1	9.61+01	1.52−02	C+	1
				1 604.03	355 076–417 419	5–5	M1	5.80+01	4.43−02	C+	1
				1 604.03	355 076–417 419	5–5	E2	1.29+00	6.13−02	C+	1
				1 622.80	355 364–416 986	3–3	M1	9.59+01	4.55−02	C+	1
				1 622.80	355 364–416 986	3–3	E2	1.60+00	4.81−02	C+	1
				1 611.47	355 364–417 419	3–5	M1	1.51+01	1.17−02	C+	1
				1 611.47	355 364–417 419	3–5	E2	3.46−01	1.67−02	C+	1
21		^{3}D°–^{1}D°									
				571.10	355 076–530 177	5–5	M1	5.60+00	1.93−04	C	1
				571.10	355 076–530 177	5–5	E2	5.98−01	1.62−04	C	1
				571.99	355 350–530 177	7–5	M1	1.08+00	3.73−05	D+	1
				571.99	355 350–530 177	7–5	E2	1.05+00	2.86−04	C	1
				572.04	355 364–530 177	3–5	M1	3.99−02	1.38−06	D	1
				572.04	355 364–530 177	3–5	E2	5.32−02	1.45−05	D+	1
22		^{3}D°–^{3}S°									
				555.957	355 350–535 220	7–3	E2	1.75−01	2.48−05	D+	1
				555.111	355 076–535 220	5–3	M1	1.37+01	2.61−04	C	1
				555.111	355 076–535 220	5–3	E2	1.76+00	2.48−04	C	1
				556.000	355 364–535 220	3–3	M1	5.52+00	1.05−04	C	1
				556.000	355 364–535 220	3–3	E2	2.33+00	3.31−04	C	1
23		^{3}D°–^{1}P°									
				421.223	355 076–592 480	5–3	M1	5.34+02	4.44−03	C	1
				421.735	355 364–592 480	3–3	M1	1.76+02	1.47−03	C	1

TABLE 44. Transition probabilities of forbidden lines for S XI—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				421.735	355 364–592 480	3–3	E2	3.02−02	1.08−06	D	1
24		$^3P^\circ - ^1D^\circ$									
				883.46	416 986–530 177	3–5	M1	5.26+01	6.72−03	C	1
				886.86	417 419–530 177	5–5	M1	1.54+02	1.98−02	C+	1
				886.86	417 419–530 177	5–5	E2	5.18−03	1.26−05	D+	1
25		$^3P^\circ - ^3S^\circ$									
				848.89	417 419–535 220	5–3	M1	5.56+01	3.78−03	C	1
				845.78	416 986–535 220	3–3	M1	3.42+01	2.30−03	C	1
				845.50	416 947–535 220	1–3	M1	4.74+01	3.18−03	C	1
26		$^3P^\circ - ^1P^\circ$									
				569.82	416 986–592 480	3–3	M1	4.69+00	9.64−05	D+	1
				569.82	416 986–592 480	3–3	E2	3.25−01	5.23−05	D+	1
				571.23	417 419–592 480	5–3	M1	1.03+01	2.13−04	C	1
				571.23	417 419–592 480	5–3	E2	1.06+00	1.73−04	C	1
				569.69	416 947–592 480	1–3	M1	1.79+00	3.68−05	D+	1
27		$^1D^\circ - ^1P^\circ$									
				1 605.06	530 177–592 480	5–3	E2	3.78+00	1.08−01	B	1
28		$^3S^\circ - ^1P^\circ$									
				1 746.42	535 220–592 480	3–3	M1	1.41+02	8.36−02	C+	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Tachiev (2004); Ref. 2 = Vilkas *et al.* (1996).

References for Forbidden Transitions of S XI

Tachiev G. 2004, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Vilkas, M. J., I. Martinson, G. Merkelis, G. Gaigalas, and R. Kisielius, 1996, Phys. Scr. **54**, 281.

4.12. S XII

$Z=16$
Boron Isoelectronic Sequence
Ground State: $1s^22s^22p\ ^2P_{1/2}^{\circ}$
Ionization Energy: 4 552 500 cm^{-1} (564.44 eV)

4.12.1. Allowed Transitions for S XII

Froese Fischer (2004b) performed extensive calculations for transitions between levels of low configurations with the MCDHF method. Galavís *et al.* (1998) applied the SUPERSTRUCTURE code with CI, relativistic effects, and semiempirical energy corrections. Merkelis *et al.* (1995) used the second-order MBPT, including BP corrections for some of the lowest transitions. Mean values of the above results were adopted in our table.

For the $2s^22p$–$2s^24d$, $2s2p^2$–$2s2pnd$ ($n=3,4$), and $2s^22p$–$2s2p3p$ transition arrays, transition probabilities were added from calculations of Fawcett and Hayes (1987) with the HFR method using the COWAN code.

Oscillator strengths from the R-matrix calculations of the OP (Fernley *et al.*, 1999) were taken for strong transitions from upper states when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S XII is given in Table 45, and the transition probabilities for these lines are provided in Table 46.

TABLE 45. Wavelength finding list for allowed lines of S XII

Wavelength (vac.) (Å)	Mult. No.
23.726	14
24.421	13
25.569	12
25.655	12
26.890	11
27.884	41
27.886	41
28.180	39
28.222	10
28.327	10
29.200	40
29.240	40
29.242	40
32.669	9
32.810	9
33.827	46
34.132	8
34.286	8
34.533	7
34.586	7
34.690	7
35.112	6
35.203	6
35.275	6

TABLE 45. Wavelength finding list for allowed lines of S XII—Continued

Wavelength (vac.) (Å)	Mult. No.
35.366	6
35.791	37
35.795	37
35.952	36
35.956	36
36.062	29
36.124	29
36.165	29
36.213	29
36.253	28
36.253	29
36.316	28
36.335	28
36.336	28
36.398	5
36.405	28
36.425	28
36.564	5
36.573	5
37.463	38
37.473	32
37.526	32
37.531	32
37.603	31
37.715	31
37.719	31
38.316	30
38.320	30
38.819	27
38.824	33
38.881	33
38.921	27
39.207	35
39.266	35
39.310	35
39.369	35
40.239	34
45.155	43
45.167	43
45.333	43
45.345	43
46.337	42
46.350	42
46.387	45
46.425	45
46.495	42
46.977	44
47.130	44
47.170	44
84.345	51
84.395	51
96.413	62
97.229	62
114.679	72
114.824	61
115.314	61
115.982	61

TABLE 45. Wavelength finding list for allowed lines of S XII—Continued

Wavelength (vac.) (Å)	Mult. No.
128.966	66
136.277	67
137.817	67
138.793	68
140.706	71
141.703	71
169.119	74
171.844	17
172.373	17
173.271	17
173.809	17
175.322	17
201.602	16
203.333	16
203.569	16
206.162	16
206.405	16
212.121	4
215.167	4
218.200	4
221.425	4
227.490	3
233.043	20
233.209	20
234.017	20
234.497	3
240.273	15
240.906	73
243.072	15
247.127	15
254.259	50
254.712	50
256.608	76
262.605	49
263.089	49
288.434	2
290.884	19
291.142	19
291.367	19
291.626	19
297.420	23
299.007	23
299.518	2
299.792	2
321.492	26
323.347	26
328.542	26
330.480	26
338.983	81
341.647	58
379.687	18
380.127	18
387.147	48
398.724	48
399.473	22
399.840	48
408.330	60
423.370	60
430.293	59
437.828	75
444.138	25
447.027	59
447.628	75
456.517	25
457.708	25
478.011	47
479.616	47
497.512	78
503.335	1
515.778	1
520.049	1
538.968	1
553.260	1
571.43	80
572.74	53
585.48	53
586.53	21
597.73	53
611.62	53
688.14	24
721.27	24
836.82	56
864.30	56
920.81	52
934.58	56
957.85	63
976.56	55
981.35	55
1 067.24	55
1 169.59	57
1 223.99	57
1 254.71	70
1 488.10	69
1 592.36	64
1 644.74	54
1 831.5	64
1 919.4	54
Wavelength (air) (Å)	**Mult. No.**
2 019.6	65
2 187.5	65
2 518.1	77
2 881.0	77
4 544.2	79

TABLE 46. Transition probabilities of allowed lines for S XII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^22p$–$2s2p^2$	^{2}P°–^{4}P										
				[538.968]	13 135.3–198 675	4–4	2.11+05	9.19−06	6.52−05	−4.435	C+	1,2.3
				[515.778]	0–193 882	2–2	1.08+06	4.32−05	1.46−04	−4.063	B	1,2.3
				[553.260]	13 135.3–193 882	4–2	7.20+05	1.65−05	1.20−04	−4.180	B	1,2.3
				[520.049]	13 135.3–205 425	4–6	8.54+05	5.20−05	3.55−04	−3.682	B	1,2.3
				[503.335]	0–198 675	2–4	2.58+04	1.96−06	6.49−06	−5.407	C	1,2.3
2		^{2}P°–^{2}D		*295.75*	*8 757–346 880*	6–10	2.62+09	5.72−02	3.34−01	−0.464	A	1,2,3
				299.518	13 135.3–347 005	4–6	2.50+09	5.05−02	1.99−01	−0.695	A	1,2,3
				288.434	0.0–346 700	2–4	2.54+09	6.32−02	1.20−01	−0.898	A	1,2,3
				299.792	13 135.3–346 700	4–4	2.82+08	3.80−03	1.50−02	−1.818	B+	1,2,3
3		^{2}P°–^{2}S		*232.11*	*8 757–439 580*	6–2	1.14+10	3.08−02	1.41−01	−0.733	B+	1,2,3
				234.497	13 135.3–439 580	4–2	3.43+09	1.41−02	4.36−02	−1.249	B+	1,2,3
				227.490	0.0–439 580	2–2	8.39+09	6.51−02	9.74−02	−0.885	B+	1,2,3
4		^{2}P°–^{2}P		*217.18*	*8 757–469 200*	6–6	2.04+10	1.45−01	6.20−01	−0.060	A	1,2,3
				218.200	13 135.3–471 430	4–4	1.74+10	1.24−01	3.56−01	−0.305	A	1,2,3
				215.167	0.0–464 755	2–2	8.95+09	6.21−02	8.80−02	−0.906	B+	1,2,3
				221.425	13 135.3–464 755	4–2	1.07+10	3.94−02	1.14−01	−0.802	A	1,2,3
				212.121	0.0–471 430	2–4	3.30+09	4.45−02	6.22−02	−1.051	B+	1,2,3
5	$2s^22p$–$2s^23d$	^{2}P°–^{2}D		*36.51*	*8 757–2 747 800*	6–10	1.99+12	6.63−01	4.78−01	0.600	B+	1
				36.564	13 135.3–2 748 100	4–6	1.99+12	5.98−01	2.87−01	0.379	B+	1
				36.398	0.0–2 747 400	2–4	1.69+12	6.71−01	1.60−01	0.128	B+	1
				36.573	13 135.3–2 747 400	4–4	3.19+11	6.40−02	3.08−02	−0.592	B	1
6	$2s^22p$–$2s2p(^3$P°$)3p$	^{2}P°–^{2}P		*35.25*	*8 757–2 845 500*	6–6	6.01+11	1.12−01	7.80−02	−0.173	C	4,5
				35.275	13 135.3–2 848 000	4–4	4.42+11	8.25−02	3.83−02	−0.481	C	4
				35.203	0.0–2 840 700	2–2	4.22+11	7.85−02	1.81−02	−0.804	C	4
				35.366	13 135.3–2 840 700	4–2	2.47+11	2.32−02	1.08−02	−1.032	D+	5
				35.112	0.0–2 848 000	2–4	1.26+11	4.67−02	1.08−02	−1.030	D+	5
7		^{2}P°–^{2}D		*34.58*	*8 757–2 001 000*	6–10	6.80+11	2.03−01	1.39−01	0.086	C+	4,5
				34.586	13 135.3–2 904 500	4–6	8.99+11	2.42−01	1.10−01	−0.014	C+	4
				34.533	0.0–2 895 800	2–4	2.08+11	7.45−02	1.69−02	−0.827	C	4
				34.690	13 135.3–2 895 800	4–4	1.44+11	2.59−02	1.18−02	−0.985	D+	5
8		^{2}P°–^{2}S		*[34.23]*	*8 757–2 929 800*	6–2	8.69+11	5.09−02	3.44−02	−0.515	D+	4,5
				[34.286]	13 135.3–2 929 800	4–2	5.99+11	5.28−02	2.38−02	−0.675	D+	5
				[34.132]	0.0–2 929 800	2–2	2.72+11	4.75−02	1.06−02	−1.022	C	4
9	$2s^22p$–$2s2p(^1$P°$)3p$	^{2}P°–^{2}D		*32.76*	*8 757–3 061 000*	6–10	7.92+10	2.13−02	1.38−02	−0.893	D+	4,5
				32.810	13 135.3–3 061 000	4–6	7.23+10	1.75−02	7.56−03	−1.155	D+	4
				32.669	0.0–3 061 000	2–4	7.81+10	2.50−02	5.37−03	−1.301	D+	4
				32.810	13 135.3–3 061 000	4–4	1.18+10	1.91−03	8.25−04	−2.117	E+	5
10	$2s^22p$–$2s^24d$	^{2}P°–^{2}D		*28.29*	*8 757–3 543 300*	6–10	6.34+11	1.27−01	7.09−02	−0.118	C	4,5
				28.327	13 135.3–3 543 300	4–6	6.33+11	1.14−01	4.26−02	−0.341	C	4
				28.222	0.0–3 543 300	2–4	5.34+11	1.27−01	2.36−02	−0.595	C	4
				28.327	13 135.3–3 543 300	4–4	1.04+11	1.25−02	4.66−03	−1.301	D	5
11	$2s^22p$–$2s2p(^3$P°$)4p$	^{2}P°–^{2}D				6–10						4
				[26.890]	13 135.3–3 732 000	4–6	3.50+11	5.70−02	2.01−02	−0.642	C	4

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
12	$2s^22p-2s^25d$	$^2P^\circ-^2D$		*25.63*	*8 757–3 911 000*	6–10	2.55+11	4.18−02	2.12−02	−0.601	D+	5
				25.655	13 135.3–3 911 000	4–6	2.55+11	3.77−02	1.27−02	−0.822	D+	5
				25.569	0.0–3 911 000	2–4	2.14+11	4.20−02	7.07−03	−1.076	D	5
				25.655	13 135.3–3 911 000	4–4	4.25+10	4.19−03	1.41−03	−1.776	D	5
13	$2s^22p-2s^26d$	$^2P^\circ-^2D$				6–10						5
				[24.421]	13 135.3–4 108 000	4–6	1.63+11	2.18−02	7.01−03	−1.059	D	5
14	$2s^22p-2s^27d$	$^2P^\circ-^2D$				6–10						5
				[23.726]	13 135.3–4 228 000	4–6	1.03+11	1.31−02	4.09−03	−1.281	D	5
15	$2s2p^2-2p^3$	$^4P-^4S^\circ$		*244.60*	*201 251–610 075*	12–4	1.92+10	5.73−02	5.54−01	−0.163	A	1,2,3
				247.127	205 425–610 075	6–4	9.30+09	5.67−02	2.77−01	−0.468	A	1,2,3
				243.072	198 675–610 075	4–4	6.52+09	5.77−02	1.84−01	−0.637	A	1,2,3
				240.273	193 882–610 075	2–4	3.38+09	5.85−02	9.26−02	−0.932	B+	1,2,3
16		$^4P-^2D^\circ$										
				[203.333]	198 675–690 480	4–6	8.10+05	7.53−06	2.01−05	−4.521	C	1,2.3
				[201.602]	193 882–689 910	2–4	2.11+05	2.57−06	3.41−06	−5.289	D+	1,2.3
				[206.162]	205 425–690 480	6–6	2.99+07	1.90−04	7.74−04	−2.943	B	1,2.3
				[203.569]	198 675–689 910	4–4	1.35+07	8.40−05	2.25−04	−3.474	B	1,2.3
				[206.405]	205 425–689 910	6–4	4.73+05	2.02−06	8.21−06	−4.916	D+	1,2.3
17		$^4P-^2P^\circ$										
				[173.271]	198 675–775 805	4–4	1.44+07	6.47−05	1.47−04	−3.587	B	1,2.3
				[172.373]	193 882–774 020	2–2	6.73+06	3.00−05	3.40−05	−4.222	C	1,2.3
				[175.322]	205 425–775 805	6–4	6.01+06	1.85−05	6.39−05	−3.955	C	1,2.3
				[173.809]	198 675–774 020	4–2	1.30+06	2.94−06	6.73−06	−4.930	D+	1,2.3
				[171.844]	193 882–775 805	2–4	1.84+05	1.63−06	1.84−06	−5.487	D	1,2.3
18		$^2D-^4S^\circ$										
				[380.127]	347 005–610 075	6–4	5.79+04	8.36−07	6.27−06	−5.300	D+	1,2.3
				[379.687]	346 700–610 075	4–4	1.14+05	2.46−06	1.23−05	−5.007	C	1,2.3
19		$^2D-^2D^\circ$		*291.23*	*346 880–690 250*	10–10	5.55+09	7.05−02	6.76−01	−0.152	A	1,2,3
				291.142	347 005–690 480	6–6	5.17+09	6.57−02	3.77−01	−0.404	A	1,2,3
				291.367	346 700–689 910	4–4	4.43+09	5.64−02	2.16−01	−0.647	A	1,2,3
				291.626	347 005–689 910	6–4	9.41+08	8.00−03	4.60−02	−1.319	B+	1,2,3
				290.884	346 700–690 480	4–6	5.14+08	9.78−03	3.74−02	−1.408	B+	1,2,3
20		$^2D-^2P^\circ$		*233.46*	*346 880–775 210*	10–6	8.90+09	4.36−02	3.35−01	−0.361	A	1,2,3
				233.209	347 005–775 805	6–4	7.36+09	4.00−02	1.84−01	−0.620	A	1,2,3
				234.017	346 700–774 020	4–2	9.49+09	3.90−02	1.20−01	−0.807	A	1,2,3
				233.043	346 700–775 805	4–4	1.25+09	1.02−02	3.12−02	−1.389	B+	1,2,3
21		$^2S-^4S^\circ$										
				[586.53]	439 580–610 075	2–4	1.15+05	1.18−05	4.57−05	−4.627	C	1,2.3
22		$^2S-^2D^\circ$										
				399.473	439 580–689 910	2–4	2.50+08	1.20−02	3.14−02	−1.620	B+	1,2.3
23		$^2S-^2P^\circ$		*297.95*	439 580–*775 210*	2–6	1.61+09	6.44−02	1.26−01	−0.890	A	1,2,3
				297.420	439 580–775 805	2–4	2.27+09	6.02−02	1.17−01	−0.919	A	1,2,3

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				299.007	439 580–774 020	2–2	3.54+08	4.74−03	9.33−03	−2.023	B	1,2,3
24		^{2}P–^{4}S°										
				[721.27]	471 430–610 075	4–4	9.17+05	7.15−05	6.79−04	−3.544	C+	1,2.3
				[688.14]	464 755–610 075	2–4	3.00+05	4.26−05	1.93−04	−4.070	C+	1,2.3
25		^{2}P–^{2}D°		*452.39*	*469 200–690 250*	6–10	1.36+09	6.96−02	6.22−01	−0.379	A	1,2,3
				456.517	471 430–690 480	4–6	1.36+09	6.37−02	3.82−01	−0.594	A	1,2,3
				444.138	464 755–689 910	2–4	1.23+09	7.30−02	2.13−01	−0.836	A	1,2,3
				457.708	471 430–689 910	4–4	1.42+08	4.46−03	2.68−02	−1.749	B+	1,2,3
26		^{2}P–^{2}P°		*326.79*	*469 200–775 210*	6–6	5.77+09	9.24−02	5.97−01	−0.256	A	1,2,3
				328.542	471 430–775 805	4–4	5.17+09	8.37−02	3.62−01	−0.475	A	1,2,3
				323.347	464 755–774 020	2–2	4.99+09	7.83−02	1.66−01	−0.805	A	1,2,3
				330.480	471 430–774 020	4–2	1.62+09	1.32−02	5.76−02	−1.277	B+	1,2,3
				321.492	464 755–775 805	2–4	1.70+08	5.28−03	1.11−02	−1.976	B+	1,2,3
27	$2s2p^2$–$2s2p(^3P°)3s$	^{4}P–^{4}P°				12–12						1
				38.921	205 425–2 774 700	6–6	2.12+11	4.82−02	3.70−02	−0.539	B	1
				38.819	198 675–2 774 700	4–6	1.12+11	3.81−02	1.94−02	−0.817	B	1
28	$2s2p^2$–$2s2p(^3P°)3d$	^{4}P–^{4}D°				12–20						4,5
				36.335	205 425–2 957 600	6–8	2.80+12	7.38−01	5.29−01	0.646	C+	4
				36.336	198 675–2 950 800	4–6	2.07+12	6.14−01	2.93−01	0.390	C+	4
				36.253	193 882–2 952 300	2–4	1.65+12	6.49−01	1.54−01	0.113	C+	4
				36.425	205 425–2 950 800	6–6	8.90+11	1.77−01	1.27−01	0.026	C	5
				36.316	198 675–2 952 300	4–4	1.59+12	3.15−01	1.50−01	0.100	C	5
				36.405	205 425–2 952 300	6–4	1.49+11	1.97−02	1.41−02	−0.927	D+	5
29		^{4}P–^{4}P°				12–12						4,5
				36.253	205 425–2 963 800	6–6	1.15+12	2.27−01	1.62−01	0.134	C+	4
				36.124	198 675–2 966 900	4–4	7.05+11	1.38−01	6.56−02	−0.258	C	4
				36.213	205 425–2 966 900	6–4	7.14+11	9.36−02	6.69−02	−0.251	D+	5
				36.165	198 675–2 963 800	4–6	4.79+11	1.41−01	6.71−02	−0.249	D+	5
				36.062	193 882–2 966 900	2–4	6.69+11	2.61−01	6.19−02	−0.282	D+	5
30		^{2}D–^{2}D°				10–10						4,5
				38.320	347 005–2 956 600	6–6	3.64+11	8.02−02	6.06−02	−0.318	C	4
				38.316	346 700–2 956 600	4–6	5.33+10	1.76−02	8.88−03	−1.152	D	5
31		^{2}D–^{2}F°		*37.65*	*346 880–3 002 800*	10–14	2.15+12	6.41−01	7.95−01	0.807	C+	4,5
				37.603	347 005–3 006 400	6–8	2.26+12	6.39−01	4.74−01	0.584	C+	4
				37.715	346 700–2 998 200	4–6	1.89+12	6.05−01	3.00−01	0.384	C+	4
				37.719	347 005–2 998 200	6–6	1.30+11	2.78−02	2.07−02	−0.778	D+	5
32		^{2}D–^{2}P°		*37.51*	*346 880–3 012 700*	10–6	3.50+10	4.43−03	5.47−03	−1.354	D	5
				37.531	347 005–3 011 500	6–4	3.15+10	4.44−03	3.29−03	−1.574	D	5
				37.473	346 700–3 015 300	4–2	3.52+10	3.70−03	1.82−03	−1.830	D	5
				37.526	346 700–3 011 500	4–4	3.50+09	7.39−04	3.65−04	−2.529	E+	5
33		^{2}S–^{2}P°		*38.86*	439 580–*3 012 700*	2–6	1.18+12	8.03−01	2.05−01	0.206	C+	4
				38.881	439 580–3 011 500	2–4	1.25+12	5.67−01	1.45−01	0.055	C+	4
				38.824	439 580–3 015 300	2–2	1.05+12	2.37−01	6.04−02	−0.324	C	4
34		^{2}P–^{2}D°				6–10						5

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				40.239	471 430–2 956 600	4–6	2.28+11	8.30−02	4.39−02	−0.479	D+	5
35		^{2}P–^{2}P°		*39.32*	*469 200–3 012 700*	6–6	2.01+11	4.67−02	3.62−02	−0.553	D+	5
				39.369	471 430–3 011 500	4–4	1.67+11	3.89−02	2.01−02	−0.808	D+	5
				39.207	464 755–3 015 300	2–2	1.36+11	3.13−02	8.08−03	−1.203	D	5
				39.310	471 430–3 015 300	4–2	6.73+10	7.79−03	4.03−03	−1.506	D	5
				39.266	464 755–3 011 500	2–4	3.37+10	1.56−02	4.03−03	−1.506	D	5
36	$2s2p^2$–$2s2p$(^{1}P°)$3d$	^{2}D–^{2}F°		*35.95*	*346 880–3 128 200*	10–14	1.45+12	3.94−01	4.66−01	0.595	C	4,5
				35.956	347 005–3 128 200	6–8	1.33+12	3.44−01	2.44−01	0.315	C+	4
				35.952	346 700–3 128 200	4–6	1.51+12	4.39−01	2.07−01	0.245	C	5
				35.956	347 005–3 128 200	6–6	1.08+11	2.09−02	1.48−02	−0.902	D+	5
37		^{2}D–^{2}D°				10–10						5
				35.795	347 005–3 140 700	6–6	2.06+11	3.96−02	2.80−02	−0.624	D+	5
				35.791	346 700–3 140 700	4–6	1.47+10	4.24−03	1.99−03	−1.771	D	5
38		^{2}P–^{2}D°				6–10						4
				37.463	471 430–3 140 700	4–6	2.37+12	7.49−01	3.69−01	0.477	C+	4
39	$2s2p^2$–$2s2p$(^{3}P°)$4d$	^{4}P–^{4}D°				12–20						4
				28.180	205 425–3 754 000	6–8	8.58+11	1.36−01	7.58−02	−0.088	C	4
40		^{2}D–^{2}F°		*29.22*	*346 880–3 769 500*	10–14	7.54+11	1.35−01	1.30−01	0.130	C	4,5
				29.200	347 005–3 771 700	6–8	8.41+11	1.43−01	8.26−02	−0.067	C	4
				29.240	346 700–3 766 700	4–6	5.82+11	1.12−01	4.31−02	−0.349	C	4
				29.242	347 005–3 766 700	6–6	5.66+10	7.25−03	4.18−03	−1.362	D	5
41	$2s2p^2$–$2s2p$(^{1}P°)$4d$	^{2}D–^{2}F°		*[27.89]*	*346 880–3 933 000*	10–14	3.23+11	5.27−02	4.84−02	−0.278	C	4,5
				[27.886]	347 005–3 933 000	6–8	3.56+11	5.53−02	3.04−02	−0.479	C	4
				[27.884]	346 700–3 933 000	4–6	2.63+11	4.60−02	1.68−02	−0.735	D+	5
				[27.886]	347 005–3 933 000	6–6	1.88+10	2.19−03	1.20−03	−1.881	D	5
42	$2p^3$–$2s2p$(^{3}P°)$3p$	^{2}D°–^{2}P		*46.40*	*690 250–2 845 500*	10–6	1.25+10	2.42−03	3.70−03	−1.616	D	5
				46.350	690 480–2 848 000	6–4	1.13+10	2.43−03	2.22−03	−1.836	D	5,LS
				46.495	689 910–2 840 700	4–2	1.25+10	2.02−03	1.23−03	−2.093	D	5,LS
				46.337	689 910–2 848 000	4–4	1.26+09	4.05−04	2.47−04	−2.790	E+	5,LS
43		^{2}D°–^{2}D		*45.23*	*690 250–2 901 000*	10–10	8.83+09	2.71−03	4.03−03	−1.567	D	5
				45.167	690 480–2 904 500	6–6	8.30+09	2.54−03	2.26−03	−1.817	D	5,LS
				45.333	689 910–2 895 800	4–4	7.92+09	2.44−03	1.45−03	−2.011	D	5,LS
				45.345	690 480–2 895 800	6–4	8.81+08	1.81−04	1.62−04	−2.964	E+	5,LS
				45.155	689 910–2 904 500	4–6	5.95+08	2.73−04	1.62−04	−2.962	E+	5,LS
44		^{2}P°–^{2}D		*47.04*	*775 210–2 901 000*	6–10	4.74+09	2.62−03	2.43−03	−1.804	D	5
				46.977	775 805–2 904 500	4–6	4.78+09	2.37−03	1.46−03	−2.023	D	5,LS
				47.130	774 020–2 895 800	2–4	3.93+09	2.62−03	8.13−04	−2.281	E+	5,LS
				47.170	775 805–2 895 800	4–4	7.85+08	2.62−04	1.62−04	−2.980	E+	5,LS
45		^{2}P°–^{2}S		*[46.41]*	*775 210–2 929 800*	6–2	4.15+10	4.47−03	4.10−03	−1.572	D	5
				[46.425]	775 805–2 929 800	4–2	2.77+10	4.48−03	2.73−03	−1.747	D	5,LS
				[46.387]	774 020–2 929 800	2–2	1.39+10	4.49−03	1.37−03	−2.047	D	5,LS
46	$2p^3$–$2s2p$(^{3}P°)$4p$	^{2}P°–^{2}D				6–10						5

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				[33.827]	775 805–3 732 000	4–6	1.57+10	4.04−03	1.80−03	−1.792	D	5,LS
47	$2s^23d$–$2s2p(^3P^\circ)3d$	^2D–$^2D^\circ$				10–10						5
				479.616	2 748 100–2 956 600	6–6	1.65+07	5.70−04	5.40−03	−2.466	D	5,LS
				478.011	2 747 400–2 956 600	4–6	1.19+06	6.13−05	3.85−04	−3.610	E+	5,LS
48		^2D–$^2F^\circ$		*392.16*	*2 747 800–3 002 800*	10–14	1.03+07	3.31−04	4.27−03	−2.480	D	5
				387.147	2 748 100–3 006 400	6–8	1.07+07	3.20−04	2.44−03	−2.717	D	5,LS
				398.724	2 747 400–2 998 200	4–6	9.12+06	3.26−04	1.71−03	−2.885	D	5,LS
				399.840	2 748 100–2 998 200	6–6	6.47+05	1.55−05	1.22−04	−4.032	E+	5,LS
49	$2s^23d$–$2s2p(^1P^\circ)3d$	^2D–$^2F^\circ$		*262.88*	*2 747 800–3 128 200*	10–14	3.09+09	4.48−02	3.88−01	−0.349	C	5
				263.089	2 748 100–3 128 200	6–8	3.09+09	4.28−02	2.22−01	−0.590	C	5,LS
				262.605	2 747 400–3 128 200	4–6	2.90+09	4.50−02	1.55−01	−0.745	C	5,LS
				263.089	2 748 100–3 128 200	6–6	2.06+08	2.14−03	1.11−02	−1.891	D+	5,LS
50		^2D–$^2D^\circ$				10–10						5
				254.712	2 748 100–3 140 700	6–6	8.11+09	7.89−02	3.97−01	−0.325	C	5,LS
				254.259	2 747 400–3 140 700	4–6	5.83+08	8.47−03	2.83−02	−1.470	D+	5,LS
51	$2s^23d$–$2s2p(^1P^\circ)4d$	^2D–$^2F^\circ$		*[84.37]*	*2 747 800–3 393 300*	10–14	4.23+10	6.32−02	1.76−01	−0.199	C	5,LS
				[84.395]	2 748 100–3 933 000	6–8	4.24+10	6.04−02	1.00−01	−0.441	C	5,LS
				[84.345]	2 747 400–3 933 000	4–6	3.97+10	6.35−02	7.05−02	−0.595	D+	5,LS
				[84.395]	2 748 100–3 933 000	6–6	2.73+09	3.02−03	5.03−03	−1.742	D	5,LS
52	$2s2p(^3P^\circ)3p$– $2s2p(^3P^\circ)3d$	^2P–$^2D^\circ$				6–10						5
				920.81	2 848 000–2 956 600	4–6	4.65+08	8.87−02	1.07+00	−0.450	C+	5,LS
53		^2P–$^2P^\circ$		*598.1*	*2 845 500–3 012 700*	6–6	1.02+09	5.44−02	6.43−01	−0.486	C	5
				611.62	2 848 000–3 011 500	4–4	7.92+08	4.44−02	3.57−01	−0.751	C	5,LS
				572.74	2 840 700–3 015 300	2–2	7.73+08	3.80−02	1.43−01	−1.119	C	5,LS
				597.73	2 848 000–3 015 300	4–2	3.39+08	9.09−03	7.15−02	−1.439	D+	5,LS
				585.48	2 840 700–3 011 500	2–4	1.81+08	1.86−02	7.17−02	−1.429	D+	5,LS
54		^2D–$^2D^\circ$				10 –10						5
				1919.4	2 904 500–2 956 600	6–6	1.27+07	7.01−03	2.65−01	−1.376	C	5,LS
				1644.74	2 895 800–2 956 600	4–6	1.44+06	8.76−04	1.89−02	−2.455	D+	5,LS
55		^2D–$^2F^\circ$		*982.3*	*2 901 000–3 002 800*	10–14	5.78+08	1.17−01	3.79+00	0.068	C+	5
				981.35	2 904 500–3 006 400	6–8	5.82+08	1.12−01	2.17+00	−0.173	C+	5,LS
				976.56	2 895 800–2 998 200	4–6	5.50+08	1.18−01	1.51+00	−0.326	C+	5,LS
				1067.24	2 904 500–2 998 200	6–6	3.00+07	5.13−03	1.08−01	−1.512	C	5,LS
56		^2D–$^2P^\circ$		*895.3*	*2 901 000–3 012 700*	10–6	5.99+07	4.32−03	2.17+01	−1.365	D+	5
				934.58	2 904 500–3 011 500	6–4	4.74+07	4.14−03	7.64−02	−1.605	D+	5,LS
				836.82	2 895 800–3 015 300	4–2	7.34+07	3.85−03	4.24−02	−1.812	D+	5,LS
				864.30	2 895 800–3 011 500	4–4	6.66+06	7.46−04	8.49−03	−2.525	D+	5,LS
57		^2S–$^2P^\circ$		*[1206.3]*	*2 929 800–3 012 700*	2–6	1.73+08	1.13−01	8.98−01	−0.646	C	5,LS
				[1223.99]	2 929 800–3 011 500	2–4	1.66+08	7.44−02	5.99−01	−0.827	C	5,LS
				[1169.59]	2 929 800–3 015 300	2–2	1.90+08	3.89−02	2.99−01	−1.109	C	5,LS
58	$2s2p(^3P^\circ)3p$–$2s2p(^1P^\circ)3d$	^2P–$^2D^\circ$				6–10						5
				341.647	2 848 000–3 140 700	4–6	5.90+07	1.55−03	6.97−03	−2.208	D	5,LS

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
59		^{2}D–^{2}F$^\circ$		*440.14*	*2 901 000–3 128 200*	10–14	3.72+06	1.51+04	2.19−03	−2.821	D	5
				447.027	2 904 500–3 128 200	6–8	3.56+06	1.42−04	1.25−03	−3.070	D	5,LS
				430.293	2 895 800–3 128 200	4–6	3.72+06	1.55−04	8.78−04	−3.208	E+	5,LS
				447.027	2 904 500–3 128 200	6–6	2.37+05	7.10−06	6.26−05	−4.371	E	5,LS
60		^{2}D–^{2}D$^\circ$				10– 10						5
				423.370	2 904 500–3 140 700	6–6	1.53+08	4.12−03	3.44−02	−1.607	D+	5,LS
				408.330	2 895 800–3 140 700	4–6	1.22+07	4.58−04	2.46−03	−2.737	D	5,LS
61	$2s2p(^3P^\circ)3p$–$2s2p(^3P^\circ)4d$	^{2}D–^{2}F$^\circ$		*115.14*	*2 901 000–3 769 500*	10–14	1.33+11	3.69−01	1.40+00	0.567	C	5
				115.314	2 904 500–3 771 700	6–8	1.32+11	3.51−01	7.99−01	0.323	C	5,LS
				114.824	2 895 800–3 766 700	4–6	1.25+11	3.70−01	5.59−01	0.170	C	5,LS
				115.982	2 904 500–3 766 700	6–6	8.63+09	1.74−02	3.98−02	−0.981	D+	5,LS
62	$2s2p(^3P^\circ)3p$–$2s2p(^1P^\circ)4d$	^{2}D–^{2}F$^\circ$		*[96.90]*	*2 901 000–3 933 000*	10–14	1.37+09	2.70−03	8.63−03	−1.569	D	5
				[97.229]	2 904 500–3 933 000	6–8	1.36+09	2.57−03	4.93−03	−1.812	D	5,LS
				[96.413]	2 895 800–3 933 000	4–6	1.30+09	2.72−03	3.45−03	−1.963	D	5,LS
				[97.229]	2 904 500–3 933 000	6–6	9.03+07	1.28−04	2.45−04	−3.115	E+	5,LS
63	$2s2p(^3P^\circ)3d$–$2s2p(^1P^\circ)3p$	^{2}D$^\circ$–^{2}D				10–10						5
				957.85	2 956 600–3 061 000	6–6	1.04+07	1.43−03	2.70−02	−2.067	D+	5,LS
				957.85	2 956 000–3 061 000	6–4	1.11+06	1.02−04	1.93−03	−3.213	D	5,LS
64		^{2}F$^\circ$–^{2}D		*1718.2*	*3 002 800–3 061 000*	14–10	6.31+05	1.90−04	1.58−02	−2.555	D	5
				1831.5	3 006 400–3 061 000	8–6	4.96+05	1.87−04	9.02−03	−2.825	D	5,LS
				1592.36	2 098 200–3 061 000	6–4	7.93+05	2.01−04	6.32−03	−2.919	D	5,LS
				1592.36	2 998 200–3 061 000	6–6	3.76+04	1.43−05	4.49−04	−4.067	E+	5,LS
65		^{2}P$^\circ$–^{2}D	*2070*	*2070*	*3 012 700–3 061 000*	6–10	8.17+05	8.75−04	3.58−02	−2.280	D+	5
			2019.6	2020.2	3 011 500–3 061 000	4–6	8.84+05	8.11−04	2.15−02	−2.489	D+	5,LS
			2187.5	2188.2	3 015 300–3 061 000	2–4	5.80+05	8.32−04	1.19−02	−2.779	D+	5,LS
			2019.6	2020.2	3 011 500–3 061 000	4–4	1.47+05	9.01−05	2.39−03	−3.443	D	5,LS
66	$2s2p(^3P^\circ)3d$–$2s2p(^3P^\circ)4p$	^{2}D$^\circ$–^{2}D				10–10						5
				[128.966]	2 956 600–3 732 000	6–6	1.16+09	2.90−03	7.38−03	−1.759	D	5,LS
67		^{2}F$^\circ$–^{2}D				14– 10						5
				[137.817]	3 006 400–3 732 000	8–6	1.05+10	2.25−02	8.16−02	−0.745	D+	5,LS
				[136.277]	2 998 200–3 732 000	6–6	5.42+08	1.51−03	4.06−03	−2.043	D	5,LS
68		^{2}P$^\circ$–^{2}D				6– 10						5
				[138.793]	3 011 500–3 732 000	4–6	1.26+09	5.45−03	9.96−03	−1.662	D	5,LS
69	$2s2p(^1P^\circ)3p$–$2s2p(^1P^\circ)3d$	^{2}D–^{2}F$^\circ$		*1488.1*	*3 061 000–3 128 200*	10–14	1.23+08	5.74−02	2.81+00	−0.241	C+	5
				1488.10	3 061 000–3 128 200	6–8	1.24+08	5.48−02	1.61+00	−0.483	C+	5,LS
				1488.10	3 061 000–3 128 200	4–6	1.16+08	5.76−02	1.12+00	−0.638	C+	5,LS
				1488.10	3 061 000–3 128 200	6–6	8.25+06	2.74−03	8.05−02	−1.784	D+	5,LS
70		^{2}D–^{2}D$^\circ$				10 –10						5
				1254.71	3 061 000–3 140 700	6–6	5.59+07	1.32−02	3.27−01	−1.101	C	5,LS
				1254.71	3 061 000–3 140 700	4–6	4.01+06	1.42−03	2.34−02	−2.246	D+	5,LS
71	$2s2p(^1P^\circ)3p$–$2s2p(^3P^\circ)4d$	^{2}D–^{2}F$^\circ$		*141.14*	*3 061 000–3 769 500*	10–14	1.75+09	7.33−03	3.71−02	−1.135	D+	5

TABLE 46. Transition probabilities of allowed lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				140.706	3 061 000–3 771 700	6–8	1.78+09	7.04−03	1.95−02	−1.374	D+	5,LS
				141.703	3 061 000–3 766 700	4–6	1.62+09	7.33−03	1.36−02	−1.533	D+	5,LS
				141.703	3 061 000–3 766 700	6–6	1.16+08	3.49−04	9.76−04	−2.679	E+	5,LS
72	$2s2p(^1P^\circ)3p-2s2p(^1P^\circ)4d$	$^2D-^2F^\circ$		*[114.68]*	*3 061 000–3 933 000*	10–14	8.50+10	2.35−01	8.86−01	0.371	C	5
				[114.679]	3 061 000–3 933 000	6–8	8.52+10	2.24−01	5.07−01	0.128	C	5,LS
				[114.679]	3 061 000–3 933 000	4–6	7.95+10	2.35−01	3.54−01	−0.027	C	5,LS
				[114.679]	3 061 000–3 933 000	6–6	5.68+09	1.12−02	2.53−02	−1.173	D+	5,LS
73	$2s2p(^1P^\circ)3d-2s^24d$	$^2F^\circ-^2D$		*240.91*	*3 128 200–3 542 300*	14–10	9.14+07	5.68−04	6.31−03	−2.100	D	5
				240.906	3 128 200–3 543 300	8–6	8.72+07	5.69−04	3.61−03	−2.342	D	5,LS
				240.906	3 128 200–3 543 300	6–4	9.16+07	5.31−04	2.52−03	−2.497	D	5,LS
				240.906	3 128 200–3 543 300	6–6	4.35+06	3.79−05	1.80−04	−3.643	E+	5,LS
74	$2s2p(^1P^\circ)3d-2s2p(^3P^\circ)4p$	$^2D^\circ-^2D$				10–10						5
				[169.119]	3 140 700–3 732 000	6–6	1.50+08	6.42−04	2.14−03	−2.414	D	5,LS
75	$2s^24d-2s2p(^3P^\circ)4d$	$^2D-^2F^\circ$		*442.09*	*3 543 300–3 769 500*	10–14	2.90+07	1.19−03	1.73−02	−1.924	D	5
				437.828	3 543 300–3 771 700	6–8	2.98+07	1.14−03	9.85−03	−2.165	D	5,LS
				447.628	3 543 300–3 766 700	4–6	2.62+07	1.18−03	6.95−03	−2.326	D	5,LS
				447.628	3 543 300–3 766 700	6–6	1.86+06	5.60−05	4.95−04	−3.474	E+	5,LS
76	$2s^24d-2s2p(^1P^\circ)4d$	$^2D-^2F^\circ$		*[256.61]*	*3 543 300–3 933 000*	10–14	3.94+10	5.45−01	4.60+00	0.736	C+	5,LS
				[256.608]	3 543 300–3 933 000	6–8	3.94+10	5.19−01	2.63+00	0.493	C+	5,LS
				[256.608]	3 543 300–3 933 000	4–6	3.68+10	5.45−01	1.84+00	0.338	C+	5,LS
				[256.608]	3 543 300–3 933 000	6–6	2.62+09	2.59−02	1.31−01	−0.809	C	5,LS
77	$2s2p(^3P^\circ)4p-2s2p(^3P^\circ)4d$	$^2D-^2F^\circ$				10–14						5
			[2518.1]	[2518.9]	3 732 000–3 771 700	6–8	1.51+08	1.92−01	9.55+00	0.061	C+	5,LS
			[2881.0]	[2881.8]	3 732 000–3 766 700	6–6	6.73+06	8.38−03	4.77−01	−1.299	C	5,LS
78	$2s2p(^3P^\circ)4p-2s2p(^1P^\circ)4d$	$^2D-^2F^\circ$				10–14						5
				[497.512]	3 732 000–3 933 000	6–8	4.55+06	2.25−04	2.21−03	−2.870	D	5,LS
				[497.512]	3 732 000–3 933 000	6–6	3.02+05	1.12−05	1.10−04	−1.173	E+	5,LS
79	$2s^25d-2s2p(^1P^\circ)4d$	$^2D-^2F^\circ$	*[4544]*	*[4545]*	*3 911 000–3 033 000*	10–14	1.68+07	7.28−02	1.09+01	−1.138	C+	5
			[4544.2]	[4545.5]	3 911 000–3 933 000	6–8	1.68+07	6.94−02	6.23+00	−0.380	C+	5,LS
			[4544.2]	[4545.5]	3 911 000–3 933 000	4–6	1.57+07	7.28−02	4.35+00	−0.536	C+	5,LS
			[4544.2]	[4545.5]	3 911 000–3 933 000	6–6	1.12+06	3.47−03	3.11−01	−1.682	C	5,LS
80	$2s2p(^1P^\circ)4d-2s^26d$	$^2F^\circ-^2D$				14–10						5
				[571.43]	3 933 000–4 108 000	8–6	4.93+08	1.81−02	2.72−01	−0.839	C	5,LS
				[571.43]	3 933 000–4 108 000	6–6	2.47+07	1.21−03	1.36−02	−2.139	D+	5,LS
81	$2s2p(^1P^\circ)4d-2s^27d$	$^2F^\circ-^2D$				14–10						5
				[388.983]	3 933 000–4 228 000	8–6	3.37+08	4.36−03	3.89−02	−1.457	D+	5,LS
				[338.983]	3 933 000–4 228 000	6–6	1.69+07	2.91−04	1.94−03	−2.758	D	5,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2004b); Ref. 2 = Galavís *et al.* (1998); Ref. 3 = Merkelis *et al.* (1995); Ref. 4 = Fawcett and Hayes (1987); Ref. 5 = Fernley *et al.* (1999).

References for Allowed Transitions of S XII

Fawcett, B. C. and R. W. Hayes, 1987, Phys. Scr. **36**, 80.
Fernley, J. A., A. Hibbert, A. E. Kingston, and M. J. Seaton, 1999, J. Phys. B **32**, 5507. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).
Froese Fischer, C., 2004b, Downloaded from C. Froese Fis-

cher and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.
Galavís, M. E., C. Mendoza, and C. J. Zeippen, 1998, Astron. Astrophys. Suppl. Ser. **131**, 499.
Merkelis, G., J. J. Vilkas, G. Gaigalas, and R. Kisielius, 1995, Phys. Scr. **51**, 233.

4.12.2. Forbidden Transitions for S XII

Froese Fischer (2004b) performed calculations using the MCDHF method. The calculations cover the magnetic dipole (M1) and electric quadrupole (E2) transitions from levels up to the $2p^3$ state. In the present table, line strengths were determined from calculated transition probabilities and wavelengths.

A wavelength finding list of forbidden lines for S XII is given in Table 47, and the transition probabilities for the lines are provided in Table 48.

TABLE 47. Wavelength finding list for forbidden lines of S XII

Wavelength (vac.) (Å)	Mult. No.
128.898	4
131.118	4
131.426	4
144.827	3
144.946	3
147.635	3
147.760	3
163.914	2
167.521	2
360.298	8
366.629	8
369.177	8
375.827	8
375.933	8
385.609	8
407.004	7
415.101	7
427.068	7
603.39	14
609.96	14
653.07	6
654.37	6
674.17	6
675.56	6
706.31	6
707.84	6
801.73	10
803.70	10
847.06	10
849.26	10
1 076.66	9
1 080.21	9
1 164.21	15
1 171.99	15
1 188.92	15
1 197.03	15
1 243.70	13
1 252.58	13
Wavelength (air) (Å)	**Mult. No.**
3 138.8	11
3 971.1	11
7 611	1
14 811	5
14 977	12
Wave number (cm^{-1})	**Mult. No.**
4 793	5
1 785	16

TABLE 48. Transition probabilities of forbidden lines for S XII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^22p-2s^22p$	$^2P^\circ-^2P^\circ$									
			7 611	7 613	0–13 135.3	2–4	M1	2.03+01	1.33+00	A	1
			7 611	7 613	0–13 135.3	2–4	E2	2.11−04	1.92−02	A	1
2	$2s^22p-2p^3$	$^2P^\circ-^4S^\circ$									
				[167.521]	13 135.3–610 075	4–4	M1	5.59+01	3.89−05	C+	1
				[167.521]	13 135.3–610 075	4–4	E2	5.51+00	2.59−06	C	1
				[163.914]	0–610 075	2–4	M1	1.38+01	8.98−06	C	1
				[163.914]	0–610 075	2–4	E2	1.16+01	4.89−06	C	1
3		$^2P^\circ-^2D^\circ$									
				144.827	0–690 480	2–6	E2	3.91+03	1.33−03	B+	1
				147.635	13 135.3–690 480	4–6	M1	1.90+01	1.35−05	C+	1

TABLE 48. Transition probabilities of forbidden lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				147.635	13 135.3–690 480	4–6	E2	1.27+04	4.75−03	B+	1
				144.946	0–689 910	2–4	M1	2.09+01	9.41−06	C	1
				144.946	0–689 910	2–4	E2	1.02+04	2.33−03	B+	1
				147.760	13 135.3–689 910	4–4	M1	5.13+01	2.45−05	C+	1
				147.760	13 135.3–689 910	4–4	E2	6.73+03	1.69−03	B+	1
4		$^2P^\circ-^2P^\circ$									
				131.118	13 135.3–775 805	4–4	E2	9.83+03	1.36−03	B+	1
				131.426	13 135.3–774 020	4–2	M1	7.01+01	1.18−05	C+	1
				131.426	13 135.3–774 020	4–2	E2	1.51+04	1.05−03	B+	1
				128.898	0–775 805	2–4	M1	2.72+01	8.64−06	C	1
				128.898	0–775 805	2–4	E2	5.85+03	7.42−04	B	1
5	$2s2p^2-2s2p^2$	$^4P-^4P$									
			14 811	14 815	198 675–205 425	4–6	M1	4.97+00	3.59+00	A	1
				4 793 cm^{-1}	193 882–198 675	2–4	M1	2.47+00	3.32+00	A	1
6		$^4P-^2D$									
				[653.07]	193 882–347 005	2–6	E2	1.49−02	9.50−06	C	1
				[674.17]	198 675–347 005	4–6	M1	5.01+01	3.41−03	B+	1
				[674.17]	198 675–347 005	4–6	E2	1.18−01	8.82−05	C+	1
				[654.37]	193 882–346 700	2–4	M1	2.00+01	8.31−04	B	1
				[654.37]	193 882–346 700	2–4	E2	1.05−01	4.51−05	C+	1
				[706.31]	205 425–347 005	6–6	M1	2.14+02	1.68−02	A	1
				[706.31]	205 425–347 005	6–6	E2	3.63−01	3.41−04	B	1
				[675.56]	198 675–346 700	4–4	M1	7.36+01	3.36−03	B+	1
				[675.56]	198 675–346 700	4–4	E2	7.17−03	3.60−06	C	1
				[707.84]	205 425–346 700	6–4	M1	2.93+01	1.53−03	B+	1
				[707.84]	205 425–346 700	6–4	E2	1.24−01	7.87−05	C+	1
7		$^4P-^2S$									
				[427.068]	205 425–439 580	6–2	E2	4.63−01	1.17−05	C+	1
				[415.101]	198 675–439 580	4–2	M1	9.98+02	5.29−03	B+	1
				[407.004]	193 882–439 580	2–2	M1	2.99+02	1.49−03	B+	1
8		$^4P-^2P$									
				[366.629]	198 675–471 430	4–4	M1	5.70+01	4.16−04	B	1
				[366.629]	198 675–471 430	4–4	E2	3.29−01	7.77−06	C	1
				[369.177]	193 882–464 755	2–2	M1	2.82+01	1.05−04	B	1
				[385.609]	205 425–464 755	6–2	E2	2.51−01	3.81−06	C	1
				[375.933]	205 425–471 430	6–4	M1	5.00+01	3.93−04	B	1
				[375.933]	205 425–471 430	6–4	E2	8.83−02	2.36−06	C	1
				[375.827]	198 675–464 755	4–2	M1	1.05+02	4.13−04	B	1
				[375.827]	198 675–464 755	4–2	E2	4.58−01	6.13−06	C	1
				[360.298]	193 882–471 430	2–4	M1	2.29+01	1.58−04	B	1
				[360.298]	193 882–471 430	2–4	E2	1.02−01	2.21−06	C	1
9		$^2D-^2S$									
				1 080.21	347 005–439 580	6–2	E2	1.84+01	4.82−02	A	1
				1 076.66	346 700–439 580	4–2	M1	2.53+00	2.34−04	B	1
				1 076.66	346 700–439 580	4–2	E2	1.20+01	3.11−02	A	1
10		$^2D-^2P$									
				849.26	347 005–464 755	6–2	E2	4.84+00	3.81−03	B+	1
				803.70	347 005–471 430	6–4	M1	7.02+01	5.40−03	B+	1

TABLE 48. Transition probabilities of forbidden lines for S XII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				803.70	347 005–471 430	6–4	E2	6.05−02	7.24−05	C+	1
				847.06	346 700–464 755	4–2	M1	6.05+01	2.72−03	B+	1
				847.06	346 700–464 755	4–2	E2	4.48+00	3.49−03	B+	1
				801.73	346 700–471 430	4–4	M1	1.19+02	9.11−03	B+	1
				801.73	346 700–471 430	4–4	E2	5.50−01	6.50−04	B	1
11		^{2}S–^{2}P									
			3 138.8	3 139.7	439 580–471 430	2–4	M1	2.66+01	1.22−01	A	1
			3 971.1	3 972.2	439 580–464 755	2–2	M1	4.75+01	2.20−01	A	1
12		^{2}P–^{2}P									
			14 977	14 981	464 755–471 430	2–4	M1	2.42+00	1.20+00	A	1
13	$2p^3$–$2p^3$	^{4}S°–^{2}D°									
				[1 243.70]	610 075–690 480	4–6	M1	1.91−01	8.19−05	C+	1
				[1 243.70]	610 075–690 480	4–6	E2	1.45−02	2.31−04	B	1
				[1 252.58]	610 075–689 910	4–4	M1	6.80+00	1.98−03	B+	1
				[1 252.58]	610 075–689 910	4–4	E2	9.42−03	1.03−04	B	1
14		^{4}S°–^{2}P°									
				[603.39]	610 075–775 805	4–4	M1	5.14+02	1.67−02	A	1
				[609.96]	610 075–774 020	4–2	M1	2.12+02	3.57−03	B+	1
15		^{2}D°–^{2}P°									
				1 197.03	690 480–774 020	6–2	E2	1.98+01	8.68−02	A	1
				1 171.99	690 480–775 805	6–4	M1	1.23+02	2.94−02	A	1
				1 171.99	690 480–775 805	6–4	E2	3.22+00	2.54−02	A	1
				1 188.92	689 910–774 020	4–2	M1	1.30+02	1.62−02	A	1
				1 188.92	689 910–774 020	4–2	E2	8.76+00	3.71−02	A	1
				1 164.21	689 910–775 805	4–4	M1	2.24+02	5.23−02	A	1
16		^{2}P°–^{2}P°									
				1 785 cm^{-1}	774 020–775 805	2–4	M1	5.03−02	1.31+00	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2004b).

References for Forbidden Transitions of S XII

Froese Fischer, C., 2004b, Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.13. S XIII

$Z=16$
Beryllium Isoelectronic Sequence
Ground State: $1s^2 2s^2\ ^1S_0$
Ionization Energy: 5 260 000 cm^{-1} (652.2 eV)

4.13.1. Allowed Transitions for S XIII

Froese Fischer (2004b) performed extensive calculations for transitions between levels of low configurations with the MCDHF method. Results of this work were selected for the $2s2p$-$2s3s$, $2s2p$-$2s3d$, $2p^2$-$2s3p$, $2s3s$-$2s3p$, and $2s3p$-$2s3d$ transitions.

Kingston and Hibbert (2000) computed data with the CIV3. Their results were taken for the $2s^2$-$2s2p$ transitions.

Lifetime measurements have been carried out for some low-lying ($n=2$) levels using the beam-foil technique by Bhattacharya *et al.* (1998). An accurate oscillator strength for the $2s^2\ ^1S$-$2s2p\ ^1P°$ resonance line has been determined by the inclusion of prominent cascades in the analysis. This result differs by less than 1% from theoretical values produced with the MCDF (Froese Fischer, 2004) and CIV3 (Kingston and Hibbert, 2000) methods.

For the $2s2p$-$2p3p$, $2p^2$-$2p3d$, and $2p^2$-$2s3p$ transition arrays, transition probabilities were added from work of Safronova *et al.* (1999). They used the second-order MBPT, including BP corrections.

Oscillator strengths from the R-matrix calculations of the OP were taken for strong transitions from upper states ($n \geqslant 4$) when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

A wavelength finding list of allowed lines for S XIII is given in Table 49, and the transition probabilities for these lines are provided in Table 50.

TABLE 49. Wavelength finding list for allowed lines of S XIII

Wavelength (vac.) (Å)	Mult. No.
23.238	33
24.421	32
24.59	6
25.760	30
25.824	30
26.139	29
26.168	29
26.235	29
26.342	47
26.356	47
26.398	47
26.71	48
26.99	31
28.93	5
30.914	24
31.321	23
31.417	23
31.555	22
31.581	22
31.624	22
31.652	22
31.676	21
31.720	21
31.722	22
31.818	21
31.944	20
32.049	19
32.093	19
32.191	4
32.24	3
32.80	28
33.26	27
33.447	16
33.524	26
33.556	16
33.602	26
33.710	25
33.806	15
33.852	15
33.856	15
33.951	15
33.964	15
33.967	15
34.085	42
34.132	24
34.149	42
34.535	41
34.632	41
34.694	40
34.748	40
34.792	40
34.87	45
35.274	44
35.395	43
35.440	43
35.558	13
35.612	13
35.67	18
35.736	13
36.128	17
36.132	17
36.56	46
38.140	14
38.711	35
38.786	34
38.794	35
38.870	34
38.916	35
38.992	34
39.729	37
39.81	36
41.934	39
42.02	38
85.215	67
85.295	67

TABLE 49. Wavelength finding list for allowed lines of S XIII—Continued

Wavelength (vac.) (Å)	Mult. No.
85.631	67
85.653	67
85.734	67
87.70	68
91.567	85
100.65	61
101.286	78
101.906	78
102.145	62
104.232	79
104.330	79
104.987	79
106.69	80
108.885	60
111.495	83
111.944	83
113.173	84
114.50	66
149.14	76
151.263	81
156.76	82
159.13	77
192.919	9
242.189	51
256.68	2
259.084	8
265.769	8
296.91	57
299.956	7
300.99	12
303.384	7
307.388	7
308.953	7
312.732	7
316.843	7
339.33	56
374.251	64
374.672	64
375.940	59
376.223	64
379.08	65

TABLE 49. Wavelength finding list for allowed lines of S XIII—Continued

Wavelength (vac.) (Å)	Mult. No.
385.951	59
388.802	63
390.472	63
393.856	63
394.322	63
396.040	63
400.641	58
407.332	87
417.537	87
419.29	88
491.463	1
500.34	11
679.01	10
718.32	10
748.20	10
1 052.63	50
1 089.3	53
1 111.11	49
1 152.07	55
1 239.16	70
1 408.45	69
1 464.13	71
1 483.68	69
1 642.0	74
1 700.68	73
1 785.7	52
1 795.3	52
1 926.8	73
1 960.8	54
1 972.4	54
Wavelength (air) (Å)	**Mult. No.**
2 197.1	72
2 368.9	72
2 589.9	72
3 533	86
4 346.6	89
5 318	75
5 881	89

TABLE 50. Transition probabilities of allowed lines for S XIII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$2s^2-2s2p$	$^1S-^3P^\circ$										
				491.463	0–203 474	1–3	1.08+06	1.17−04	1.89−04	−3.932	B+	1
2		$^1S-^1P^\circ$		256.68	0–389 583	1–3	7.71+09	2.28−01	1.93−01	−0.642	A	1,2,3
3	$2s^2-2s3p$	$^1S-^1P^\circ$		32.24	0–3 101 500	1–3	1.05+12	4.92−01	5.22−02	−0.308	A	1
4		$^1S-^3P^\circ$										
				32.191	0–3 106 500	1–3	2.49+11	1.16−01	1.23−02	−0.936	B+	1

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
5	$2s^2-2p3d$	$^1S-^1P^\circ$		28.93	0–3 457 100	1–3	7.90+10	2.97−02	2.83−03	−1.527	C+	4
6	$2s^2-2s4p$	$^1S-^1P^\circ$		24.59	0–4 066 700	1–3	5.90+11	1.61−01	1.30−02	−0.793	C	5
7	$2s2p-2p^2$	$^3P^\circ-^3P$		*308.39*	*208 390–532 656*	9–9	6.14+09	8.75−02	8.00−01	−0.104	A	1
				308.953	213 182–536 856	5–5	4.55+09	6.50−02	3.30−01	−0.488	A	1
				307.388	203 474–528 796	3–3	1.56+09	2.21−02	6.72−02	−1.178	A	1
				316.843	213 182–528 796	5–3	2.37+09	2.14−02	1.11−01	−0.971	A	1
				312.732	203 474–523 237	3–1	5.94+09	2.90−02	8.96−02	−1.060	A	1
				299.956	203 474–536 856	3–5	1.69+09	3.80−02	1.12−01	−0.943	A	1
				303.384	199 181–528 796	1–3	2.17+09	9.00−02	8.98−02	−1.046	A	1
8		$^3P^\circ-^1D$										
				259.084	203 474–589 449	3–5	7.71+06	1.29−04	3.31−04	−3.412	B	1
				265.769	213 182–589 449	5–5	1.19+08	1.26−03	5.50−03	−2.201	B+	1
9		$^3P^\circ-^1S$										
				192.919	203 474–721 825	3–1	7.94+06	1.48−05	2.81−05	−4.353	C+	1
10		$^1P^\circ-^3P$										
				718.32	389 583–528 796	3–3	1.50+05	1.16−05	8.20−05	−4.458	B	1
				748.20	389 583–523 237	3–1	1.45+06	4.05−05	2.99−04	−3.915	B	1
				679.01	389 583–536 856	3–5	6.51+06	7.50−04	5.02−03	−2.648	B+	1
11		$^1P^\circ-^1D$		500.34	389 583–589 449	3–5	1.38+09	8.64−02	4.27−01	−0.586	A	1
12		$^1P^\circ-^1S$		300.99	389 583–721 825	3–1	1.19+10	5.38−02	1.60−01	−0.792	A	1
13	$2s2p-2s3s$	$^3P^\circ-^3S$		*35.67*	*208 390–3011 500*	9–3	4.83+11	3.07−02	3.25−02	−0.559	B+	1
				35.736	213 182–3 011 500	5–3	2.69+11	3.09−02	1.82−02	−0.811	B+	1
				35.612	203 474–3 011 500	3–3	1.61+11	3.06−02	1.07−02	−1.037	B+	1
				35.558	199 181–3 011 500	1–3	5.35+10	3.04−02	3.56−03	−1.517	B+	1
14		$^1P^\circ-^3S$										
				38.140	389 583–3 011 500	3–3	1.88+08	4.10−05	1.54−05	−3.910	C+	1
15	$2s2p-2s3d$	$^3P^\circ-^3D$		*33.90*	*208 390–3 157 900*	9–15	2.53+12	7.26−01	7.29−01	0.815	B+	1
				33.951	213 182–3 158 600	5–7	2.52+12	6.09−01	3.40−01	0.484	B+	1
				33.852	203 474–3 157 500	3–5	1.91+12	5.46−01	1.82−01	0.214	B+	1
				33.806	199 181–3 157 200	1–3	1.42+12	7.30−01	8.12−02	−0.137	B+	1
				33.964	213 182–3 157 500	5–5	6.31+11	1.09−01	6.10−02	−0.264	B+	1
				33.856	203 474–3 157 200	3–3	1.06+12	1.82−01	6.09−02	−0.263	B+	1
				33.967	213 182–3 157 200	5–3	7.03+10	7.30−03	4.08−03	−1.438	B	1
16		$^3P^\circ-^1D$										
				33.447	203 474–3 193 300	3–5	6.13+08	1.71−04	5.66−05	−3.290	C+	1
				33.556	213 182–3 193 300	5–5	9.59+07	1.62−05	8.94−06	−4.092	D+	1
17		$^1P^\circ-^3D$										
				36.128	389 583–3 157 500	3–5	7.17+08	2.34−04	8.33−05	−3.154	C+	1
				36.132	389 583–3 157 200	3–3	1.06+09	2.07−04	7.37−05	−3.207	C+	1
18		$^1P^\circ-^1D$		35.67	389 583–3 193 300	3–5	1.66+12	5.28−01	1.86−01	0.200	B+	1
19	$2s2p-2p3p$	$^3P^\circ-^1P$										
				32.093	203 474–3 319 400	3–3	8.01+10	1.24−02	3.92−03	−1.429	C	4

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				32.049	199 181–3 319 400	1–3	3.59+10	1.66−02	1.75−03	−1.780	C	4
20		$^3P^\circ-^3D$				9–15						4
				31.944	213 182–3 343 700	5–7	3.79+11	8.11−02	4.26−02	−0.392	C+	4
21		$^3P^\circ-^3S$		*31.77*	*208 390–3 356 100*	9–3	5.65+11	2.85−02	2.68−02	−0.591	C+	4
				31.818	213 182–3 356 100	5–3	1.30+11	1.18−02	6.18−03	−1.229	C	4
				31.720	203 474–3 356 100	3–3	3.10+11	4.68−02	1.46−02	−0.853	C+	4
				31.676	199 181–3 356 100	1–3	1.29+11	5.82−02	6.06−03	−1.235	C	4
22		$^3P^\circ-^3P$				9–9						4
				31.652	213 182–3 372 500	5–5	5.22+11	7.83−02	4.08−02	−0.407	C+	4
				[31.624]	203 474–3 365 600	3–3	6.64+10	9.96−03	3.11−03	−1.525	C	4
				[31.722]	213 182–3 365 600	5–3	4.74+11	4.29−02	2.24−02	−0.669	C+	4
				31.555	203 474–3 372 500	3–5	1.24+11	3.08−02	9.59−03	−1.034	C	4
				[31.581]	199 181–3 365 600	1–3	1.09+11	4.87−02	5.06−03	−1.312	C	4
23		$^3P^\circ-^1D$										
				31.321	203 474–3 396 200	3–5	3.07+09	7.53−04	2.33−04	−2.646	D+	4
				31.417	213 182–3 396 200	5–5	5.63+09	8.33−04	4.31−04	−2.380	D+	4
24		$^3P^\circ-^1S$										
				30.914	203 474–3 438 300	3–1	2.21+09	1.05−04	3.22−05	−3.502	D	4
				34.132	389 583–3 319 400	3–3	5.06+11	8.84−02	2.98−02	−0.576	C+	4
25		$^1P^\circ-^3S$										
				33.710	389 583–3 356 100	3–3	2.54+10	4.33−03	1.44−03	−1.886	C	4
26		$^1P^\circ-^3P$										
				[33.602]	389 583–3 365 600	3–3	8.54+08	1.45−04	4.80−05	−3.362	D	4
				33.524	389 583–3 372 500	3–5	1.67+10	4.68−03	1.55−03	−1.853	C	4
27		$^1P^\circ-^1D$		33.26	389 583–3 396 200	3–5	1.01+12	2.80−01	9.20−02	−0.076	C+	4
28		$^1P^\circ-^1S$		32.80	389 583–3 438 300	3–1	5.97+11	3.21−02	1.04−02	−1.016	C+	4
29	$2s2p-2s4s$	$^3P^\circ-^3S$		*26.20*	*208 390–4024 900*	9–3	1.47+11	5.03−03	3.91−03	−1.344	D	5
				26.235	213 182–4024 900	5–3	8.14+10	5.04−03	2.17−03	−1.599	D	5,LS
				26.168	203 474–4024 900	3–3	4.92+10	5.05−03	1.30−03	−1.820	D	5,LS
				26.139	199 181–4024 900	1–3	1.65+10	5.06−03	4.35−04	−2.296	E+	5,LS
30	$2s2p-2s4d$	$^3P^\circ-^3D$				9–15						4
				25.824	213 182–4 085 500	5–7	7.93+11	1.11−01	4.71−02	−0.256	D+	5,LS
				25.760	203 474–4 085 500	3–5	6.00+11	9.95−02	2.53−02	−0.525	D+	5,LS
				25.824	213 182–4 085 500	5–5	1.98+11	1.98−02	8.41−03	−1.004	D	5,LS
31		$^1P^\circ-^1D$		26.99	389 583–4 095 000	3–5	6.31+11	1.15−01	3.06−02	−0.462	D+	5
32	$2s2p-2p4p$	$^3P^\circ-^3D$				9–15						4
				[24.421]	213 182–4 308 000	5–7	2.48+11	3.10−02	1.24−02	−0.810	D+	5,LS
33	$2s2p-2s5d$	$^3P^\circ-^3D$				9–15						4
				[23.238]	213 182–4516 500	5–7	3.57+11	4.05−02	1.54−02	−0.694	D+	5,LS
34	$2p^2-2s3p$	$^3P-^1P^\circ$										
				38.870	528 796–3 101 500	3–3	3.72+08	8.43−05	3.23−05	−3.597	D+	1

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				38.992	536 856–3 101 500	5–3	2.51+09	3.43−04	2.19−04	−2.766	C	1
				38.786	523 237–3 101 500	1–3	3.90+08	2.64−04	3.37−05	−3.578	D+	1
35		$^3P-^3P^{\circ}$				9–9						4
				38.794	528 796–3 106 500	3–3	1.12+09	2.53−04	9.70−05	−3.120	C	1
				38.916	536 856–3 106 500	5–3	9.89+08	1.35−04	8.63−05	−3.171	C	1
				38.711	523 237–3 106 500	1–3	1.87+09	1.26−03	1.60−04	−2.900	C+	1
36		$^1D-^1P^{\circ}$		39.81	589 449–3 101 500	5–3	3.23+10	4.61−03	3.02−03	−1.637	B	1
37		$^1D-^3P^{\circ}$										
				39.729	589 449–3 106 500	5–3	9.74+09	1.38−03	9.04−04	−2.161	C	1
38		$^1S-^1P^{\circ}$		42.02	721 825–3 101 500	1–3	9.47+08	7.52−04	1.04−04	−3.124	C+	1
39		$^1S-^3P^{\circ}$										
				41.934	721 825–3 106 500	1–3	1.34+08	1.06−04	1.46−05	−3.975	D+	1
40	$2p^2-2p3d$	$^3P-^3D^{\circ}$				9–15						4
				34.748	536 856–3 414 700	5–7	3.11+12	7.88−01	4.50−01	0.595	B+	4
				34.694	528 796–3 411 100	3–5	2.70+12	8.13−01	2.78−01	0.387	B+	4
				34.792	536 856–3 411 100	5–5	1.34+11	2.44−02	1.39−02	−0.914	B	4
41		$^3P-^3P^{\circ}$				9–9						4
				34.632	536 856–3 424 400	5–5	1.85+12	3.32−01	1.89−01	0.220	B+	4
				34.535	528 796–3 424 400	3–5	3.51+09	1.05−03	3.56−04	−2.502	D+	4
42		$^3P-^1P^{\circ}$										
				34.149	528 796–3 457 100	3–3	4.12+09	7.20−04	2.43−04	−2.666	D+	4
				34.085	523 237–3 457 100	1–3	1.12+10	5.86−03	6.57−04	−2.232	D+	4
43		$^1D-^3D^{\circ}$										
				35.440	589 449–3 411 100	5–5	8.74+09	1.65−03	9.60−04	−2.084	D	4
				35.395	589 449–3 414 700	5–7	3.54+09	9.32−04	5.43−04	−2.332	D	4
44		$^1D-^3P^{\circ}$										
				35.274	589 449–3 424 400	5–5	5.41+10	1.01−02	5.86−03	−1.297	C	4
45		$^1D-^1P^{\circ}$		34.87	589 449–3 457 100	5–3	1.13+11	1.24−02	7.12−03	−1.208	C	4
46		$^1S-^1P^{\circ}$		36.56	721 825–3 457 100	1–3	2.07+12	1.25+00	1.50−01	0.097	B+	4
47	$2p^2-2p4d$	$^3P-^3D^{\circ}$				9–15						5
				26.356	536 856–4 331 000	5–7	1.09+12	1.59−01	6.89−02	−0.100	D+	5,LS
				26.342	528 796–4 325 000	3–5	8.19+11	1.42−01	3.69−02	−0.371	D+	5,LS
				26.398	536 856–4 325 000	5–5	2.72+11	2.84−02	1.23−02	−0.848	D+	5,LS
48		$^1D-^1F^{\circ}$		[26.71]	589 449–4 333 500	5–7	1.40+12	2.10−01	9.23−02	0.021	D+	5
49	$2s3s-2s3p$	$^3S-^1P^{\circ}$										
				1 111.11	3 011 500–3 101 500	3–3	7.39+07	1.37−02	1.50−01	−1.386	C+	1
50		$^3S-^3P^{\circ}$				3–9						1
				1 052.63	3 011 500–3 106 500	3–3	3.53+08	5.87−02	6.10−01	−0.754	B	1
51	$2s3s-2p3d$	$^3S-^3P^{\circ}$				3–9						5,LS

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				242.189	3 011 500–3 424 400	3–5	9.62+07	1.41−03	3.37−03	−2.374	D	5,LS
52	$2s3p-2s3d$	$^1P^\circ-^3D$										
				1 785.7	3 101 500–3 157 500	3–5	1.06+07	8.45−03	1.49−01	−1.596	C+	1
				1 795.3	3 101 500–3 157 200	3–3	5.30+06	2.56−03	4.54−02	−2.115	C	1
53		$^1P^\circ-^1D$		1 089.3	3 101 500–3 193 300	3–5	2.45+08	7.27−02	7.82−01	−0.661	B	1
54		$^3P^\circ-^3D$				9–15						1
				1 960.8	3 106 500–3 157 500	3–5	3.06+07	2.94−02	5.69−01	−1.055	B	1
				1 972.4	3 106 500–3 157 200	3–3	1.70+07	9.90−03	1.92−01	−1.527	B	1
55		$^3P^\circ-^1D$										
				1 152.07	3 106 500–3 193 300	3–5	5.33+07	1.77−02	2.01−01	−1.275	C+	1
56	$2s3p-2p3p$	$^1P^\circ-^1D$		339.33	3 101 500–3 396 200	3–5	3.36+08	9.67−03	3.24−02	−1.537	D+	5
57		$^1P^\circ-^1S$		296.91	3 101 500–3 438 300	3–1	1.29+09	5.69−03	1.67−02	−1.768	D+	5
58		$^3P^\circ-^3S$				9–3						5
				400.641	3 106 500–3 356 100	3–3	6.48+08	1.56−02	6.17−02	−1.330	D+	5,LS
59		$^3P^\circ-^3P$				9–9						5
				[385.951]	3 106 500–3 365 600	3–3	3.94+08	8.79−03	3.35−02	−1.579	D+	5,LS
				375.940	3 106 500–3 372 500	3–5	4.25+08	1.50−02	5.56−02	−1.347	D+	5,LS
60	$2s3p-2s4s$	$^3P^\circ-^3S$				9–3						5
				108.885	3 106 500–4024 900	3–3	2.80+10	4.97−02	5.34−02	−0.827	D+	5,LS
61	$2s3p-2s4d$	$^1P^\circ-^1D$		100.65	3 101 500–4 095 000	3–5	1.79+11	4.54−01	4.51−01	0.134	C	5
62		$^3P^\circ-^3D$				9–15						5
				102.145	3 106 500–4 085 500	3–5	1.55+11	4.04−01	4.07−01	0.084	C	5,LS
63	$2s3d-2p3d$	$^3D-^3D^\circ$				15–15						5
				390.472	3 158 600–3 414 700	7–7	1.68+09	3.84−02	3.45−01	−0.571	C	5,LS
				394.322	3 157 500–3 411 100	5–5	1.28+09	2.98−02	1.93−01	−0.827	C	5,LS
				396.040	3 158 600–3 411 100	7–5	2.82+08	4.74−03	4.32−02	−1.479	D+	5,LS
				388.802	3 157 500–3 414 700	5–7	2.13+08	6.77−03	4.33−02	−1.470	D+	5,LS
				393.856	3 157 200–3 411 100	3–5	2.76+08	1.07−02	4.16−02	−1.493	D+	5,LS
64		$^3D-^3P^\circ$				15–9						5
				376.223	3 158 600–3 424 400	7–5	1.81+09	2.75−02	2.38−01	−0.716	C	5,LS
				374.672	3 157 500–3 424 400	5–5	3.27+08	6.89−03	4.24−02	−1.463	D+	5,LS
				374.251	3 157 200–3 424 400	3–5	2.19+07	7.67−04	2.83−03	−2.638	D	5,LS
65		$^1D-^1P^\circ$		379.08	3 193 300–3 457 100	5–3	2.13+09	2.76−02	1.72−01	−0.860	C	5
66	$2s3d-2s4p$	$^1D-^1P^\circ$		114.50	3 193 300–4 066 700	5–3	1.71+10	2.02−02	3.80−02	−0.996	D+	5
67	$2s3d-2p4d$	$^3D-^3D^\circ$				15–15						5
				85.295	3 158 600–4 331 000	7–7	5.21+08	5.69−04	1.11−03	−2.400	D	5,LS
				85.653	3 157 500–4 325 000	5–5	4.04+08	4.44−04	6.26−04	−2.654	E+	5,LS
				85.734	3 158 600–4 325 000	7–5	9.02+07	7.10−05	1.40−04	−3.304	E+	5,LS
				85.215	3 157 500–4 331 000	5–7	6.56+07	1.00−04	1.40−04	−3.301	E+	5,LS
				85.631	3 157 200–4 325 000	3–5	8.73+07	1.60−04	1.35−04	−3.319	E+	5,LS

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
68		^{1}D–^{1}F°		[87.70]	3 193 300–4 333 500	5–7	2.64+09	4.26−03	6.15−03	−1.672	D	5
69	2p3p–2p3d	^{3}D–^{3}D°				15–15						5
				1 408.45	3 343 700–3 414 700	7–7	3.04+07	9.04−03	2.93−01	−1.199	C	5,LS
				1 483.68	3 343 700–3 411 100	7–5	4.58+06	1.08−03	3.69−02	−2.121	D+	5,LS
70		^{3}D–^{3}P°				15–9						5
				1 239.16	3 343 700–3 424 400	7–5	4.24+07	6.97−03	1.99−01	−1.312	C	5,LS
71		^{3}S–^{3}P°				3–9						5
				1 464.13	3 356 100–3 424 400	3–5	1.13+08	6.06−02	8.76−01	−0.740	C	5,LS
72		^{3}P–^{3}D°				9–15						5
			2 368.9	2 369.7	3 372 500–3 414 700	5–7	2.69+07	3.17−02	1.23+00	−0.800	C+	5,LS
			[2 197.1]	[2 197.8]	3 365 600–3 411 100	3–5	2.54+07	3.06−02	6.64−01	−1.037	C	5,LS
			2 589.9	2 590.7	3 372 500–3 411 100	5–5	5.16+06	5.19−03	2.21−01	−1.586	C	5,LS
73		^{3}P–^{3}P°				9–9						5
				1 926.8	3 372 500–3 424 400	5–5	1.56+07	8.66−03	2.74−01	−1.364	C	5,LS
				[1 700.68]	3 365 600–3 424 400	3–5	7.54+06	5.45−03	9.15−02	−1.786	D+	5,LS
74		^{1}D–^{1}P°		1 642.0	3 396 200–3 457 100	5–3	6.10+06	1.48−03	4.00−02	−2.131	D+	5
75		^{1}S–^{1}P°	5 318	5 319	3 438 300–3 457 100	1–3	1.88+06	2.40−02	4.20−01	−1.620	C	5
76	2p3p–2s4p	^{1}D–^{1}P°		149.14	3 396 200–4 066 700	5–3	5.44+08	1.09−03	2.67−03	−2.264	D	5
77		^{1}S–^{1}P°		159.13	3 438 300–4 066 700	1–3	8.48+08	9.66−03	5.06−03	−2.015	D	5
78	2p3p–2p4d	^{3}D–^{3}D°				15–15						5
				101.286	3 343 700–4 331 000	7–7	4.44+10	6.83−02	1.59−01	−0.320	C	5,LS
				101.906	3 343 700–4 325 000	7–5	7.65+09	8.51−03	1.99−02	−1.225	D+	5,LS
79		^{3}P–^{3}D°				9–15						5
				104.330	3 372 500–4 331 000	5–7	1.52+11	3.48−01	5.97−01	0.241	C	5,LS
				[104.232]	3 365 600–4 325 000	3–5	1.15+11	3.11−01	3.20−01	−0.030	C	5,LS
				104.987	3 372 500–4 325 000	5–5	3.74+10	6.18−02	1.06−01	−0.510	C	5,LS
80		^{1}D–^{1}F°		[106.69]	3 396 200–4 333 500	5–7	1.79+11	4.28−01	7.51−01	0.330	C	5
81	2p3d–2s4d	^{3}P°–^{3}D				9–15						5
				151.263	3 424 400–4 085 500	5–7	1.33+09	6.39−03	1.59−02	−1.496	D+	5,LS
				151.263	3 424 400–4 085 500	5–5	3.32+08	1.14−03	2.83−03	−2.244	D	5,LS
82		^{1}P°–^{1}D		156.76	3 457 100–4 095 000	3–5	1.55+09	9.49−03	1.47−02	−1.546	D+	5
83	2p3d–2p4p	^{3}D°–^{3}D				15–15						5
				[111.944]	3 414 700–4 308 000	7–7	1.94+09	3.65−03	9.41−03	−1.593	D	5,LS
				[111.495]	3 411 100–4 308 000	5–7	2.47+08	6.44−04	1.18−03	−2.492	D	5,LS
84		^{3}P°–^{3}D				9–15						5
				[113.173]	3 424 400–4 308 000	5–7	4.46+09	1.20−02	2.23−02	−1.222	D+	5,LS
85	2p3d–2s5d	^{3}P°–^{3}D				9–15						5
				[91.567]	3 424 400–4 516 500	5–7	1.10+09	1.93−03	2.90−03	−2.015	D	5,LS
86	2s4p–2s4d	^{1}P°–^{1}D	3 533	3 534	4 066 700–4 095 000	3–5	4.48+07	1.40−01	4.88+00	−0.377	C+	5

TABLE 50. Transition probabilities of allowed lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
87	$2s4d-2p4d$	^{3}D$-^3$D$^\circ$				15–15						5
				407.332	4 085 500–4 331 000	7–7	1.32+09	3.29−02	3.08−01	−0.638	C	5,LS
				417.537	4 085 500–4 325 000	5–5	9.60+08	2.51−02	1.72−01	−0.901	C	5,LS
				417.537	4 085 500–4 325 000	7–5	2.15+08	4.02−03	3.86−02	−1.551	D+	5,LS
				407.332	4 085 500–4 331 000	5–7	1.66+08	5.77−03	3.86−02	−1.540	D+	5,LS
88		^{1}D$-^1$F$^\circ$		[419.29]	4 095 000–4 333 500	5–7	3.09+08	1.14−02	7.86−02	−1.244	D+	5
89	$2p4p-2p4d$	^{3}D$-^3$D$^\circ$				15–15						5
			[4 346.6]	[4 347.8]	4 308 000–4 331 000	7–7	5.26+06	1.49−02	1.49+00	−0.982	C+	5,LS
			[5881]	[5882]	4 308 000–4 325 000	7–5	3.72+05	1.38−03	1.87−01	−2.015	C	5,LS

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2004b); Ref. 2 = Kingston and Hibbert (2000); Ref. 3 = Bhattacharya *et al.* (1998); Ref. 4 = Safronova *et al.* (1999); Ref. 5 = Tully *et al.* (1990).

References for Allowed Transitions of S XIII

Bhattacharya, N., B. Bapat, S. A. Rangwala, S. V. K. Kumar, and E. Krishnakumar, 1998, Eur. Phys. J. D. **2**, 125.

Froese Fischer, C., 2004b, Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Kingston, A. E. and A. Hibbert, 2000, J. Phys. B **33**, 693.

Safronova, U I., A. Derevianko, M. S. Safronova, and W. R. Johnson, 1999, J. Phys. B **32**, 3527. Complete data listing from private communication (2000).

Tully, J. A., M. J. Seaton, and K. A. Berrington, 1990, J. Phys. B **23**, 3811. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

4.13.2. Forbidden Transitions for S XIII

Froese Fischer (2004b) performed calculations using the MCDHF method with BP corrections. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to the $2p^2$ levels. In the present table, line strengths were determined from calculated transition probabilities and wavelengths.

A wavelength finding list of forbidden lines for S XIII is given in Table 51, and the transition probabilities for the lines are provided in Table 52.

TABLE 51. Wavelength finding list for forbidden lines of S XIII

Wavelength (vac.) (Å)	Mult. No.
169.650	3
186.270	2
189.109	2
196.602	8
256.234	7
296.143	6
322.523	6
469.083	1
518.057	11
525.205	5
537.320	5
540.631	11
566.89	5
755.42	12
1 648.72	10
1 901.4	10
Wavelength (air) (Å)	**Mult. No.**
10 298	4
12 404	9
17 984	9
Wave number (cm^{-1})	**Mult. No.**
4 293	4

TABLE 52. Transition probabilities of forbidden lines for S XIII

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$2s^2-2s2p$	^{1}S$-^3$P$^\circ$									
				469.083	0–213 182	1–5	M2	4.46−01	3.39+00	A	1
2	$2s^2-2p^2$	^{1}S$-^3$P									

TABLE 52. Transition probabilities of forbidden lines for S XIII—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
				186.270	0–536 856	1–5	E2	5.58+01	5.59−05	C+	1
				189.109	0–528 796	1–3	M1	8.42+01	6.33−05	C+	1
3		^{1}S−^{1}D									
				169.650	0–589 449	1–5	E2	4.81+03	3.01−03	C+	1
4	2*s*2*p*−2*s*2*p*	^{3}P°−^{3}P°									
			10 298	10 301	203 474–213 182	3–5	M1	1.23+01	2.49+00	A	1
				4 293 cm^{-1}	199 181–203 474	1–3	M1	1.42+00	1.99+00	A	1
5		^{3}P°−^{1}P°									
				537.320	203 474–389 583	3–3	M1	1.17+02	2.01−03	A	1
				537.320	203 474–389 583	3–3	E2	6.27−01	7.51−05	C+	1
				566.89	213 182–389 583	5–3	M1	1.63+02	3.30−03	A	1
				566.89	213 182–389 583	5–3	E2	2.16−01	3.38−05	C+	1
				525.205	199 181–389 583	1–3	M1	1.61+02	2.60−03	A	1
6	2*s*2*p*−2*p*^{2}	^{3}P°−^{3}P									
				322.523	213 182–523 237	5–1	M2	1.82+00	4.27−01	A	1
				296.143	199 181–536 856	1–5	M2	8.41−01	6.42−01	A	1
7		^{3}P°−^{1}D									
				256.234	199 181–589 449	1–5	M2	2.17+00	8.05−01	A	1
8		^{3}P°−^{1}S									
				196.602	213 182–721 825	5–1	M2	1.90+01	3.74−01	A	1
9	2*p*^{2}−2*p*^{2}	^{3}P−^{3}P									
			12 404	12 407	528 796–536 856	3–5	M1	6.95+00	2.45+00	A	1
			17 984	17 989	523 237–528 796	1–3	M1	3.07+00	1.98+00	A	1
10		^{3}P−^{1}D									
				1 648.72	528 796–589 449	3–5	M1	4.79+01	3.97−02	A	1
				1 648.72	528 796–589 449	3–5	E2	6.27−03	3.41−04	B	1
				1 901.4	536 856–589 449	5–5	M1	9.32+01	1.18−01	A	1
				1 901.4	536 856–589 449	5–5	E2	2.21−02	2.44−03	B+	1
11		^{3}P−^{1}S									
				540.631	536 856–721 825	5–1	E2	7.27+00	3.00−04	B	1
				518.057	528 796–721 825	3–1	M1	1.63+03	8.40−03	A	1
12		^{1}D−^{1}S									
				755.42	589 449–721 825	5–1	E2	1.62+02	3.56−02	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2004b).

References for Forbidden Transitions of S XIII

Froese Fischer, C., 2004b, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

4.14. S XIV

$Z=16$
Lithium Isoelectronic Sequence
Ground State: $1s^2 2s\ ^2S_{1/2}$
Ionization Energy: 5 702 400 cm^{-1} (707.01 eV)

4.14.1. Allowed Transitions for S XIV

Froese Fischer (2004a, 2002b) performed extensive calculations for transitions between levels of low configurations. She used both the fully relativistic MCDHF and the MCHF including the BP corrections methods. Mean values of the MCHF and MCDHF results were adopted for the present table.

For transitions from upper configurations ($n=4,5$), the transition rates were selected from Nahar (2002) who computed with the BP R-matrix method and Guennou and Sureau (1987) who used a self-consistent field method.

Oscillator strengths from the R-matrix calculations of the OP (Peach *et al.*, 1988) were taken for several lines from higher levels when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

The transition probabilities of allowed lines for S XIV are given in Table 53, and a wavelength finding list for these lines is provided in Table 54.

TABLE 53. Wavelength finding list for allowed lines of S XIV

Wavelength (vac.) (Å)	Mult. No.
21.660	9
21.730	9
21.731	9
21.748	8
21.819	8
23.005	3
23.015	3
24.200	7
24.285	7
24.289	7
24.418	6
24.508	6
30.427	2
30.469	2
32.416	5
32.560	5
32.575	5
33.381	4
33.549	4
64.140	16
64.314	16
64.326	16
64.913	15
65.104	15
88.750	11
88.898	11
93.062	14
93.400	14
93.456	14
96.369	13
96.376	17
96.508	17
96.551	17
96.791	13
201.556	21
202.200	21
202.323	21
206.118	22
206.326	22
206.390	22
206.701	23
206.830	23
209.393	20
210.221	20
417.660	1
445.700	1
1 504.89	10
1 614.99	10
Wavelength (air) (Å)	**Mult. No.**
3 670.0	12
3 680.8	18
3 954.6	18
4 143.1	12
4 402.1	12
8 626	19
9 659	19
10 296	19

TABLE 54. Transition probabilities of allowed lines for S XIV

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$1s^2 2s-1s^2 2p$	$^2S-^2P^\circ$		*426.61*	*0–234 408*	2–6	1.13+09	9.29−02	2.61−01	−0.731	A+	1
				417.660	0–239 429	2–4	1.21+09	6.35−02	1.74−01	−0.896	A+	1
				445.700	0–224 366	2–2	9.95+08	2.96−02	8.69−02	−1.228	A+	1
2	$1s^2 2s-1s^2 3p$	$^2S-^2P^\circ$		*30.44*	*0–3 285 040*	2–6	8.44+11	3.52−01	7.05−02	−0.152	A	1
				30.427	0–3 286 550	2–4	8.42+11	2.34−01	4.68−02	−0.330	A	1

TABLE 54. Transition probabilities of allowed lines for S XIV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				30.469	0–3 282 020	2–2	8.51+11	1.18−01	2.37−02	−0.627	A	1
3	$1s^22s-1s^24p$	^{2}S–^{2}P°		*23.01*	0–*4 346 230*	2–6	3.57+11	8.50−02	1.29−02	−0.770	B+	2
				23.005	0–4 346 860	2–4	3.56+11	5.65−02	8.55−03	−0.947	B+	2
				23.015	0–4 344 980	2–2	3.59+11	2.85−02	4.32−03	−1.244	B+	2
4	$1s^22p-1s^23s$	^{2}P°–^{2}S		*33.49*	*234 408*–3 220 100	6–2	3.60+11	2.02−02	1.33−02	−0.916	A	1
				33.549	2 394 29–3 220 100	4–2	2.41+11	2.03−02	8.96−03	−1.090	A	1
				33.381	224 366–3 220 100	2–2	1.20+11	2.00−02	4.39−03	−1.398	A	1
5	$1s^22p-1s^23d$	^{2}P°–^{2}D		*32.51*	*234 408–3 310 110*	6–10	2.54+12	6.71−01	4.31−01	0.605	A	1
				32.560	239 429–3 310 680	4–6	2.54+12	6.06−01	2.59−01	0.385	A	1
				32.416	224 366–3 309 260	2–4	2.13+12	6.72−01	1.43−01	0.128	A	1
				32.575	239 429–3 309 260	4–4	4.23+11	6.73−02	2.88−02	−0.570	A	1
6	$1s^22p-1s^24s$	^{2}P°–^{2}S		*24.48*	*234 408*–4 319 700	6–2	1.41+11	4.23−03	2.04−03	−1.596	A	1
				24.508	239 429–4 319 700	4–2	9.47+10	4.26−03	1.37−03	−1.769	A	1
				24.418	224 366–4 319 700	2–2	4.69+10	4.19−03	6.74−04	−2.077	A	1
7	$1s^22p-1s^24d$	^{2}P°–^{2}D		*24.26*	*234 408–4 356 950*	6–10	8.23+11	1.21−01	5.80−02	−0.139	A	2
				24.285	239 429–4 357 210	4–6	8.22+11	1.09−01	3.48−02	−0.361	A	2
				24.200	224 366–4 356 570	2–4	6.91+11	1.21−01	1.93−02	−0.616	A	2
				24.289	239 429–4 356 570	4–4	1.37+11	1.21−02	3.86−03	−1.315	B+	2
8	$1s^22p-1s^25s$	^{2}P°–^{2}S		*21.80*	*234 408*–4 822 550	6–2	7.25+10	1.72−03	7.41−04	−1.986	B+	2
				21.819	239 429–4 822 550	4–2	4.87+10	1.74−03	4.99−04	−2.157	B+	2
				21.748	224 366–4 822 550	2–2	2.39+10	1.69−03	2.42−04	−2.471	B+	2
9	$1s^22p-1s^25d$	^{2}P°–^{2}D		*21.71*	*234 408–4 841 300*	6–10	3.80+11	4.47−02	1.92−02	−0.572	A	2
				21.730	239 429–4 841 420	4–6	3.81+11	4.05−02	1.15−02	−0.790	A	2
				21.660	224 366–4 841 120	2–4	3.19+11	4.48−02	6.39−03	−1.048	B+	2
				21.731	239 429–4 841 120	4–4	6.36+10	4.50−03	1.28−03	−1.745	B+	2
10	$1s^23s-1s^23p$	^{2}S–^{2}P°		*1 539.9*	3 220 100–*3 285 040*	2–6	1.48+08	1.58−01	1.60+00	−0.500	A	1
				1 504.89	3 220 100–3 286 550	2–4	1.59+08	1.08−01	1.07+00	−0.666	A	1
				1 614.99	3 220 100–3 282 020	2–2	1.28+08	5.02−02	5.33−01	−0.998	A	1
11	$1s^23s-1s^24p$	^{2}S–^{2}P°		*88.80*	*3 220 100–4 346 230*	2–6	1.04+11	3.68−01	2.15−01	−0.133	A	2
				88.750	3 220 100–4 346 860	2–4	1.03+11	2.44−01	1.42−01	−0.312	A	2
				88.898	3 220 100–4 344 980	2–2	1.05+11	1.25−01	7.30−02	−0.602	A	2
12	$1s^23p-1s^23d$	^{2}P°–^{2}D	*3 988*	*3 989*	*3 285 040–3 310 110*	6–10	6.61+06	2.63−02	2.07+00	−0.802	A	1
			4 143.1	4 144.2	3 286 550–3 310 680	4–6	5.92+06	2.29−02	1.24+00	−1.038	A	1
			3 670.0	3 671.1	3 282 020–3 309 260	2–4	7.10+06	2.87−02	6.93−01	−1.241	A	1
			4 402.1	4 403.3	3 286 550–3 309 260	4–4	8.21+05	2.39−03	1.38−01	−2.020	A	1
13	$1s^23p-1s^24s$	^{2}P°–^{2}S		*96.65*	*3 285 040*–4 319 700	6–2	9.85+10	4.60−02	8.78−02	−0.559	A	1
				96.791	3 286 550–4 319 700	4–2	6.58+10	4.62−02	5.89−02	−0.733	A	1
				96.369	3 282 020–4 319 700	2–2	3.28+10	4.57−02	2.89−02	−1.039	A	1
14	$1s^23p-1s^24d$	^{2}P°–^{2}D		*93.29*	*3 285 040–4 356 950*	6–10	2.67+11	5.81−01	1.07+00	0.542	A	2
				93.400	3 286 550–4 357 210	4–6	2.67+11	5.25−01	6.45−01	0.322	A	2
				93.062	3 282 020–4 356 570	2–4	2.23+11	5.79−01	3.54−01	0.064	A	2
				93.456	3 286 550–4 356 570	4–4	4.47+10	5.85−02	7.19−02	−0.631	B+	2

TABLE 54. Transition probabilities of allowed lines for S XIV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
15	$1s^23p$–$1s^25s$	^{2}P°–^{2}S		*65.04*	*3 285 040*–4 822 550	6–2	4.69+10	9.91−03	1.27−02	−1.226	B+	2
				65.104	3 286 550–4 822 550	4–2	3.14+10	9.99−03	8.56−03	−1.398	B+	2
				64.913	3 282 020–4 822 550	2–2	1.55+10	9.77−03	4.17−03	−1.709	B+	2
16	$1s^23p$–$1s^25d$	^{2}P°–^{2}D		*64.26*	*3 285 040–4 841 300*	6–10	1.31+11	1.35−01	1.72−01	−0.092	A	2
				64.314	3 286 550–4 841 420	4–6	1.32+11	1.22−01	1.03−01	−0.312	A	2
				64.140	3 282 020–4 841 120	2–4	1.10+11	1.36−01	5.72−02	−0.565	B+	2
				64.326	3 286 550–4 841 120	4–4	2.20+10	1.36−02	1.15−02	−1.264	B+	2
17	$1s^23d$–$1s^24p$	^{2}D–^{2}P°		*96.51*	*3 310 110–4 346 230*	10–6	1.60+10	1.34−02	4.25−02	−0.873	B+	2
				96.508	3 310 680–4 346 860	6–4	1.43+10	1.33−02	2.53−02	−1.098	B+	2
				96.551	3 309 260–4 344 980	4–2	1.63+10	1.14−02	1.44−02	−1.341	B+	2
				96.376	3 309 260–4 346 860	4–4	1.57+09	2.19−03	2.78−03	−2.057	B+	2
18	$1s^24s$–$1s^24p$	^{2}S–^{2}P°	*3 768*	*3 769*	4 319 700–*4 346 230*	2–6	3.39+07	2.16−01	5.37+00	−0.365	B+	4
			3 680.8	3 681.9	4 319 700–4 346 860	2–4	3.64+07	1.48−01	3.58+00	−0.529	B+	4,LS
			3 954.6	3 955.7	4 319 700–4 344 980	2–2	2.94+07	6.90−02	1.79+00	−0.860	B+	4,LS
19	$1s^24p$–$1s^24d$	^{2}P°–^{2}D	*9 326*	*9 328*	*4 346 230–4 356 950*	6–10	2.20+06	4.79−02	8.83+00	−0.542	B+	4
			9 659	9 662	4 346 860–4 357 210	4–6	1.99+06	4.17−02	5.30+00	−0.778	B+	4,LS
			8 626	8 628	4 344 980–4 356 570	2–4	2.32+06	5.19−0.2	2.94+00	−0.984	B+	4,LS
			10 296	10 299	4 346 860–4 356 570	4–4	2.74+05	4.35−03	5.89−01	−1.759	B	4,LS
20	$1s^24p$–$1s^25s$	^{2}P°–^{2}S		*209.94*	*4 346 230*–4 822 550	6–2	3.63+10	8.01−02	3.32−01	−0.318	B+	2
				210.221	4 346 860–4 822 550	4–2	2.45+10	8.10−02	2.24−01	−0.489	B+	2
				209.393	4 344 980–4 822 550	2–2	1.20+10	7.90−02	1.08−01	−0.801	B+	2
21	$1s^24p$–$1s^25d$	^{2}P°–^{2}D		*201.99*	*4 346 230–4 841 300*	6–10	5.60+10	5.70−01	2.28+00	0.534	A	3
				202.200	4 346 860–4 841 420	4–6	5.62+10	5.16−01	1.37+00	0.315	A	3
				201.556	4 344 980–4 841 120	2–4	4.66+10	5.68−01	7.53−01	0.055	B+	3
				202.323	4 346 860–4 841 120	4–4	9.39+09	5.76−02	1.53−01	−0.638	B+	3
22	$1s^24d$–$1s^25f$	^{2}D–^{2}F°		*206.24*	*4 356 954–4 841 816*	10–14	9.95+10	8.88−01	6.03+00	0.948	A	3
				206.326	4 357 210–4 841 880	6–8	9.96+10	8.47−01	3.45+00	0.706	A	3
				206.118	4 356 570–4 841 730	4–6	9.30+10	8.89−01	2.41+00	0.551	A	3
				206.390	4 357 210–4 841 730	6–6	6.64+09	4.24−02	1.72−01	−0.594	B+	3
23	$1s^24f$–$1s^25d$	^{2}F°–^{2}D		*206.83*	*4 357 801–4 841 300*	14–10	1.96+09	8.96−03	8.54−02	−0.902	B+	3
				206.830	4 357 930–4 841 420	8–6	1.86+09	8.97−03	4.88−02	−1.144	B+	3
				206.830	4 357 630–4 841 120	6–4	1.96+09	8.38−03	3.42−02	−1.299	B+	3
				206.701	4 357 630–4 841 420	6–6	9.22+07	5.90−04	2.41−03	−2.451	B	3

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Froese Fischer (2004a, 2002b); Ref. 2 = Nahar (2002); Ref. 3 = Guennou and Sureau (1987); Ref. 4 = Peach *et al.* (1988).

References for Allowed Transitions of S XIV

Froese Fischer, C., 2004a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., 2004b, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Guennou, H. and A. Sureau, 1987, J. Phys. B **20**, 919.

Nahar, S. N., 2002, Astron. Astrophys. **389**, 716.

Peach, G., H. E. Saraph, and M. J. Seaton, 1988, J. Phys. B **21**, 3669. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

4.15. S XV

$Z=16$
Helium Isoelectronic Sequence
Ground State: $1s^2\ ^1S_0$
Ionization Energy: 26 001 513 cm^{-1} (3223.7765 eV)

4.15.1. Allowed Transitions for S XV

Computed transition rates for this heliumlike spectrum are very accurate. Kingston *et al.* (2002) computed the transition probabilities for transitions between the $1s^2$, $1s2s$, $1s2p$, $1s3s$, $1s3p$, and $1s3d$ states. The transition probabilities were calculated using two sets of wave functions. One set of wave functions was generated with the MCDF method and the other set was obtained with the CIV3 including BP corrections. For the 2-2 transitions, they also presented transition probabilities computed with the MCDF method and the accurate energies which they have taken from work of Plante *et al.* (1994). These results were used in our table. For the 2-3 transitions, mean values of the MCDF and CIV3 results were adopted.

For the $1s^2\ ^1S_0$-$1snp\ ^1P^\circ$ $(n=4-10)$ transitions, oscillator strengths were selected from the work of Khan *et al.* (1988). They started with hydrogenic wave functions and then applied the effective charge technique.

Oscillator strengths from the R-matrix calculations of the OP (Fernley *et al.*, 1987) were taken for strong transitions from upper levels when calculations with intermediate coupling were not available. The OP multiplet values were decomposed into fine-structure components assuming *LS* coupling.

The transition probabilities of allowed lines for S XV are given in Table 55, and a wavelength finding list for these lines is provided in Table 56.

TABLE 55. Wavelength finding list for allowed lines of S XV

Wavelength (vac.) (Å)	Mult. No.
3.88	11
3.89	10
3.90	9
3.92	8
3.95	7
4.00	6
4.09	5
4.30	4
4.305	3
5.04	2
5.066	1
16.255	31
16.256	31
16.410	29
16.411	29
16.615	60
16.624	60
16.632	27
16.633	27

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
16.64	32
16.660	60
16.779	58
16.788	58
16.80	30
16.824	58
16.93	61
16.968	25
16.969	25
17.013	56
17.022	56
17.04	28
17.060	56
17.10	59
17.34	57
17.366	54
17.376	54
17.38	26
17.416	54
17.511	23
17.513	23
17.70	55
17.919	52
17.929	52
17.943	50
17.95	24
17.953	50
17.971	52
17.995	50
18.28	53
18.30	51
18.496	21
18.499	21
18.500	21
18.945	48
18.956	48
18.98	22
18.991	46
19.002	48
19.003	46
19.003	48
19.050	46
19.35	49
19.37	47
20.635	19
20.642	19
20.644	19
21.177	44
21.191	44
21.22	20
21.247	44
21.250	44
21.291	42
21.306	42
21.365	42
21.69	45
21.74	43

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
27.335	16
27.530	15
27.560	15
27.567	15
28.407	38
28.412	39
28.432	38
28.433	38
28.45	18
28.517	39
28.526	38
28.538	38
28.539	38
28.624	35
28.694	17
28.911	34
28.938	34
29.048	34
29.32	41
29.340	40
29.54	37
29.879	36
39.051	77
39.052	77
39.053	77
39.63	78
39.631	100
39.646	100
39.707	100
39.958	75
39.960	75
39.961	75
40.011	116
40.012	116
40.013	116
40.036	116
40.04	117
40.11	101
40.56	76
40.572	98
40.588	98
40.652	98
40.964	114
40.965	114
40.966	114
40.967	114
40.990	114
40.99	115
41.06	99
41.301	73
41.304	73
41.305	73
41.94	74
41.968	96
41.985	96
42.054	96
42.376	112
42.377	112
42.380	112
42.381	112
42.40	113
42.404	112
42.49	97
43.430	71
43.436	71
43.438	71
44.12	72
44.189	94
44.209	94
44.284	94
44.621	110
44.622	110
44.627	110
44.628	110
44.629	110
44.63	111
44.652	110
44.75	95
47.182	69
47.193	69
47.196	69
47.951	92
47.97	70
47.973	92
48.058	92
48.063	92
48.122	90
48.145	90
48.235	90
48.58	109
48.591	108
48.592	108
48.602	108
48.603	108
48.605	108
48.628	108
48.66	93
48.74	91
55.082	67
55.108	67
55.114	67
56.076	88
56.09	68
56.107	88
56.219	88
56.229	88
56.484	86
56.516	86
56.640	86
56.92	107
57.012	106
57.013	106
57.039	106
57.040	106

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
57.046	106
57.05	89
57.062	106
57.23	87
75.595	130
75.601	130
75.602	130
76.44	131
76.528	147
76.552	147
76.648	147
77.076	160
77.082	160
77.084	160
77.10	161
77.115	160
77.22	148
79.071	128
79.080	128
79.083	128
79.679	65
79.783	65
79.808	65
79.98	129
80.119	145
80.145	145
80.250	145
80.694	158
80.70	159
80.703	158
80.705	158
80.736	158
80.86	146
81.45	66
81.503	84
81.568	84
81.783	84
81.826	84
83.22	105
83.227	82
83.295	82
83.53	85
83.565	82
83.781	104
83.783	104
83.890	104
83.896	104
83.898	104
83.924	104
84.32	83
84.507	126
84.522	126
84.526	126
85.52	127
85.751	143
85.781	143
85.901	143

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
86.35	157
86.363	156
86.378	156
86.382	156
86.412	156
86.56	144
93.933	124
93.959	124
93.966	124
95.13	125
95.566	141
95.603	141
95.753	141
96.15	155
96.231	154
96.259	154
96.266	154
96.291	154
96.48	142
113.442	122
113.504	122
113.519	122
115.04	123
115.090	139
115.144	139
115.335	139
115.360	139
116.083	137
116.138	137
116.358	137
116.53	153
116.75	140
116.811	152
116.877	152
116.893	152
116.900	152
117.21	138
132.631	172
132.649	172
132.654	172
133.87	173
134.177	185
134.215	185
134.365	185
134.92	197
134.939	196
134.958	196
134.963	196
135.000	196
135.17	186
143.718	170
143.747	170
143.755	170
145.12	171
145.620	183
145.664	183
145.841	183

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
146.35	195
146.432	194
146.463	194
146.470	194
146.503	194
146.72	184
162.746	168
162.799	168
162.813	168
164.44	169
165.360	181
165.417	181
165.645	181
166.03	193
166.235	192
166.291	192
166.305	192
166.327	192
166.62	182
173.151	120
173.401	120
173.464	120
176.19	121
176.458	135
176.585	135
176.990	135
177.094	135
179.72	151
180.32	136
180.568	133
180.700	133
181.125	150
181.234	133
181.338	150
181.399	150
181.468	150
182.23	134
201.726	166
201.849	166
201.880	166
204.07	167
206.199	179
206.288	179
206.52	191
206.643	179
207.114	190
207.244	190
207.257	190
207.278	190
207.77	180
224.050	206
224.102	206
224.115	206
225.94	207
226.827	215
226.889	215
227.137	215

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
227.66	225
227.844	224
227.898	224
227.912	224
227.944	224
228.25	216
257.621	204
257.716	204
257.740	204
259.95	205
261.573	213
261.655	213
261.986	213
262.24	223
262.651	222
262.749	222
262.774	222
262.783	222
263.23	214
319.859	164
320.353	164
320.477	164
324.58	165
325.248	177
325.469	177
325.930	202
326.146	202
326.150	177
326.200	202
326.355	177
329.25	203
330.81	189
331.84	178
332.93	221
332.974	211
333.108	211
333.306	175
333.538	175
333.622	188
333.644	211
333.992	188
334.023	220
334.160	188
334.237	220
334.249	220
334.295	188
334.306	220
334.468	175
335.05	212
335.58	176
382.577	232
382.730	232
382.768	232
385.65	233
388.264	238
388.380	238
388.837	238

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
390.36	239
409.485	13
492.070	230
492.417	230
492.504	230
496.56	231
502.525	236
502.720	236
503.487	236
505.15	237
531.686	200
532.544	200
532.762	200
538.71	201
548.64	219
553.563	218
553.860	209
554.152	218
554.232	209
554.493	218
554.730	218
555.716	209
556.77	210
673.41	12
706.15	244
706.67	244
706.80	244
712.0	245
720.99	248
721.26	248
722.31	248
724.2	249
738.31	12
756.21	12
820.55	228
821.92	228
822.26	228
830.4	229
854.58	234
855.15	234
857.37	234
858.1	235
991.9	14
1 198.32	242
1 200.38	242
1 200.90	242
1 211.7	243
1 247.88	246
1 248.67	246
1 251.85	246
1 252.0	247
1 486.92	63
1 676.92	252
1 679.85	252
1 680.59	252
1 694.6	253
1 746.11	254
1 747.21	254
1 750.8	255
1 751.59	254
Wavelength (air) (Å)	**Mult. No.**
2 422.6	62
2 673.9	62
2 745.8	62
3 409	64
3 752.1	81
3 992.5	80
4 149.2	80
4 155.1	80
4 391.3	81
4 599.4	80
4 945.2	80
4 953.5	80
5 847	118
6 463	118
6 637	118
8 060	119
9 646	132
10 040	132
11 137	132
11 544	162
12 004	132
12 572	33
12 774	162
13 125	162
15 616	163
17 222	102
17 323	102
18 931	174
19 711	174
Wavenumber (cm^{-1})	**Mult. No.**
4 996	198
4 570	174
4 514	198
4 393	198
4 238	174
3 693	199
3 221	103
3 137	226
3 040	208
2 919	208
2 834	226
2 757	226
2 629	208
2 437	208
2 328	227
2 097	240
1 894	240
1 843	240
1 560	241

TABLE 55. Wavelength finding list for allowed lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 471	250
1 328	250
1 292	250
1 266	149
1 096	251
1 071	256
967	256
941	256
799	257
600	187
536	79
336	217

TABLE 56. Transition probabilities of allowed lines for S XV

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
1	$1s^2$-$1s2p$	^{1}S-^{3}P°										
				5.066	0–19 737 521	1–3	5.82+11	6.71−03	1.12−04	−2.173	B+	1
2		^{1}S-^{1}P°		5.04	0–19 846 285	1–3	6.55+13	7.48−01	1.24−02	−0.126	A+	1
3	$1s^2$-$1s3p$	^{1}S-^{3}P°										
				4.305	0–23 230 551	1–3	1.85+11	1.54−03	2.18−05	−2.812	B	1
4		^{1}S-^{1}P°		4.30	0–23 260 416	1–3	2.03+13	1.69−01	2.39−03	−0.772	A	1
5	$1s^2$-$1s4p$	^{1}S-^{1}P°		4.09	0–24 458 842	1–3	7.53+12	5.66−02	7.62−04	−1.247	C+	2
6	$1s^2$-$1s5p$	^{1}S-^{1}P°		4.00	0–25 014 007	1–3	3.82+12	2.74−02	3.61−04	−1.562	C+	2
7	$1s^2$-$1s6p$	^{1}S-^{1}P°		3.95	0–25 315 693	1–3	2.19+12	1.54−02	2.00−04	−1.812	C+	2
8	$1s^2$-$1s7p$	^{1}S-^{1}P°		3.92	0–25 497 627	1–3	1.38+12	9.53−03	1.23−04	−2.021	C+	2
9	$1s^2$-$1s8p$	^{1}S-^{1}P°		3.90	0–25 615 718	1–3	9.21+11	6.31−03	8.11−05	−2.200	C+	2
10	$1s^2$-$1s9p$	^{1}S-^{1}P°		3.89	0–25 696 685	1–3	6.45+11	4.39−03	5.63−05	−2.358	C+	2
11	$1s^2$-$1s10p$	^{1}S-^{1}P°		3.88	0–25 754 601	1–3	4.70+11	3.18−03	4.07−05	−2.498	C+	2
12	$1s2s$-$1sp$	^{3}S-^{3}P°		*702.5*	*19 602 076–19 744 416*	3–9	2.24+08	4.98−02	3.45−01	−0.826	A+	1
				673.41	19 602 076–19 750 573	3–5	2.56+08	2.90−02	1.93−01	−1.060	A+	1
				738.31	19 602 076–19 737 521	3–3	1.92+08	1.57−02	1.14−01	−1.327	A+	1
				756.21	19 602 076–19 734 314	3–1	1.80+08	5.14−03	3.84−02	−1.812	A	1
13		^{3}S-^{1}P°										
				409.485	19 602 076–19 846 285	3–3	1.00+07	2.52−04	1.01−03	−3.121	B+	1
14		^{1}S-^{1}P°		991.9	19 745 473–19 846 285	1–3	8.17+07	3.61−02	1.18−01	−1.442	A+	1
15	$1s2s$-$1s3p$	^{3}S-^{3}P°		*27.54*	19 602 076–*23 232 597*	3–9	1.09+12	3.73−01	1.02−01	0.049	A	1
				27.530	19 602 076–23 234 429	3–5	1.09+12	2.07−01	5.63−02	−0.207	A	1
				27.560	19 602 076–23 230 551	3–3	1.09+12	1.24−01	3.38−02	−0.429	A	1
				27.567	19 602 076–23 229 571	3–1	1.11+12	4.20−02	1.14−02	−0.900	A	1
16		^{3}S-^{1}P°										
				27.335	19 602 076–23 260 416	3–3	9.44+09	1.06−03	2.85−04	−2.498	B+	1
17		^{1}S-^{3}P°										
				28.694	19 745 473–23 230 551	1–3	1.10+10	4.09−03	3.86−04	−2.388	B+	1
18		^{1}S-^{1}P°		28.45	19 745 473–23 260 416	1–3	1.13+12	4.11−01	3.85−02	−0.386	A	1

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
19	1s2s-1s4p	^{3}S-^{3}P°		*20.64*	19 602 076–*24 447 430*	3–9	5.04+11	9.66−02	1.97−02	−0.538	B	3
				20.635	19 602 076–24 448 199	3–5	5.05+11	5.38−02	1.09−02	−0.792	B	3,LS
				20.642	19 602 076–24 446 570	3–3	5.06+11	3.23−02	6.58−03	−1.014	B	3,LS
				20.644	19 602 076–24 446 163	3–1	5.07+11	1.08−02	2.20−03	−1.489	B	3,LS
20		^{1}S-^{1}P°		21.22	19 745 473–24 458 842	1–3	4.88+11	9.88−02	6.90−03	−1.005	B	3
21	1s2s-1s5p	^{3}S-^{3}P°		*18.50*	19 602 076–*25 008 238*	3–9	2.59+11	3.98−02	7.27−03	−0.923	B	3
				18.496	19 602 076–25 008 632	3–5	2.59+11	2.21−02	4.03−03	−1.178	B	3,LS
				18.499	19 602 076–25 007 798	3–3	2.59+11	1.33−02	2.43−03	−1.399	B	3,LS
				18.500	19 602 076–25 007 589	3–1	2.59+11	4.43−03	8.09−04	−1.876	C+	3,LS
22		^{1}S-^{1}P°		18.98	19 745 473–25 014 007	1–3	2.51+11	4.06−02	2.54−03	−1.391	B	3
23	1s2s-1s6p	^{3}S-^{3}P°		*17.51*	19 602 076–*25 312 382*	3–9	1.50+11	2.06−02	3.57−03	−1.209	B	3
				17.511	19 602 076–25 312 610	3–5	1.50+11	1.15−02	1.98−03	−1.462	B	3,LS
				17.513	19 602 076–25 312 128	3–3	1.51+11	6.92−03	1.19−03	−1.683	B	3,LS
				17.513	19 602 076–25 312 007	3–1	1.51+11	2.31−03	3.99−04	−2.159	C+	3,LS
24		^{1}S-^{1}P°		17.95	19 745 473–25 315 693	1–3	1.45+11	2.10−02	1.24−03	−1.678	B	3
25	1s2s-1s7p	^{3}S-^{3}P°		*16.97*	19 602 076–*25 495 552*	3–9	9.45+10	1.22−02	2.05−03	−1.437	B	3
				16.968	19 602 076–25 495 695	3–5	9.47+10	6.81−03	1.14−03	−1.690	B	3,LS
				16.968	19 602 076–25 495 392	3–3	9.45+10	4.08−03	6.83−04	−1.912	C+	3,LS
				16.969	19 602 076–25 495 315	3–1	9.45+10	1.36−03	2.27−04	−2.389	C+	3,LS
26		^{1}S-^{1}P°		17.38	19 745 473–25 497 627	1–3	9.11+10	1.24−02	7.09−04	−1.907	C+	3
27	1s2s-1s8p	^{3}S-^{3}P°		*16.63*	19 602 076–*25 614 332*	3–9	6.35+10	7.90−03	1.30−03	−1.625	C+	3
				16.632	19 602 076–25 614 428	3–5	6.35+10	4.39−03	7.21−04	−1.880	C+	3,LS
				16.633	19 602 076–25 614 225	3–3	6.34+10	2.63−03	4.32−04	−2.103	C+	3,LS
				16.633	19 602 076–25 614 174	3–1	6.35+10	8.78−04	1.44−04	−2.579	C+	3,LS
28		^{1}S-^{1}P°		17.04	19 745 473–25 615 718	1–3	6.12+10	7.99−03	4.48−04	−2.097	C+	3
29	1s2s-1s9p	^{3}S-^{3}P°		*16.41*	19 602 076–*25 695 713*	3–9	4.44+10	5.38−03	8.72−04	−1.792	C+	3
				16.410	19 602 076–25 695 781	3–5	4.44+10	2.99−03	4.84−04	−2.047	C+	3,LS
				16.411	19 602 076–25 695 638	3–3	4.46+10	1.80−03	2.91−04	−2.268	C+	3,LS
				16.411	19 602 076–25 695 602	3–1	4.45+10	5.99−04	9.70−05	−2.745	C	3,LS
30		^{1}S-^{1}P°		16.80	19 745 473–25 696 685	1–3	4.30+10	5.46−03	3.02−04	−2.263	C+	3
31	1s2s-1s10p	^{3}S-^{3}P°		*16.26*	19 602 076–*25 753 894*	3–9	3.23+10	3.84−03	6.17−04	−1.939	C+	3
				16.255	19 602 076–25 753 943	3–5	3.24+10	2.14−03	3.43−04	−2.192	C+	3,LS
				16.256	19 602 076–25 753 839	3–3	3.23+10	1.28−03	2.05−04	−2.416	C+	3,LS
				16.256	19 602 076–25 753 813	3–1	3.24+10	4.28−04	6.87−05	−2.891	C	3,LS
32		^{1}S-^{1}P°		16.64	19 745 473–25 754 601	1–3	3.12+10	3.89−03	2.13−04	−2.410	C+	3
33	1s2p-1s2s	^{3}P°-^{1}S										
			12 572	12 575	19 737 521–19 745 473	3–1	9.20+02	7.27−06	9.02−04	−4.661	B+	1
34	1s2p-1s3s	^{3}P°-^{3}S		*29.00*	*19 744 416*–23 193 163	9–3	3.61+11	1.52−02	1.30−02	−0.864	B+	1
				29.048	19 750 573–23 193 163	5–3	2.03+11	1.54−02	7.36−03	−1.114	B+	1
				28.938	19 737 521–23 193 163	3–3	1.18+11	1.49−02	4.24−03	−1.350	B+	1
				28.911	19 734 314–23 193 163	1–3	4.02+10	1.51−02	1.43−03	−1.821	B+	1

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
35		$^3P°-^1S$										
				28.624	19 737 521–23 231 087	3–1	2.96+09	1.21−04	3.42−05	−3.440	B	1
36		$^1P°-^3S$										
				29.879	19 846 285–23 193 163	3–3	1.13+09	1.51−04	4.44−05	−3.344	B	1
37		$^1P°-^1S$		29.54	19 846 285–23 231 087	3–1	4.18+11	1.82−02	5.32−03	−1.263	B+	1
38	1*s*2*p*-1*s*3*d*	$^3P°-^3D$		*28.48*	*19 744 416–23 255 348*	9–15	3.18+12	6.44−01	5.43−01	0.763	A+	1
				28.526	19 750 573–23 256 165	5–7	3.33+12	5.69−01	2.67−01	0.454	A+	1
				28.432	19 737 521–23 254 645	3–5	2.21+12	4.47−01	1.25−01	0.127	A+	1
				28.407	19 734 314–23 254 611	1–3	1.86+12	6.75−01	6.30−02	−0.171	A	1
				28.538	19 750 573–23 254 645	5–5	6.69+11	8.17−02	3.83−02	−0.389	A	1
				28.433	19 737 521–23 254 611	3–3	1.38+12	1.67−01	4.70−02	−0.300	A	1
				28.539	19 750 573–23 254 611	5–3	9.24+10	6.77−03	3.17−03	−1.470	B+	1
39		$^3P°-^1D$										
				28.412	19 737 521–23 257 195	3–5	3.03+11	6.12−02	1.71−02	−0.736	A	1
				28.517	19 750 573–23 257 195	5–5	1.64+11	1.99−02	9.36−03	−1.002	B+	1
40		$^1P°-^3D$										
				29.340	19 846 285–23 254 645	3–5	4.51+11	9.69−02	2.80−02	−0.537	A	1
				29.340	19 846 285–23 254 611	3–3	1.09+10	1.41−03	4.09−04	−2.374	B	1
41		$^1P°-^1D$		29.32	19 846 285–23 257 195	3–5	2.80+12	6.01−01	1.74−01	0.256	A+	1
42	1*s*2*p*-1*s*4*s*	$^3P°-^3S$		*21.34*	*19 744 416*–24 431 101	9–3	1.57+11	3.56−03	2.25−03	−1.494	B	3
				21.365	19 750 573–24 431 101	5–3	8.70+10	3.57−03	1.25−03	−1.748	B	3,LS
				21.306	19 737 521–24 431 101	3–3	5.26+10	3.58−03	7.53−04	−1.969	C+	3,LS
				21.291	19 734 314–24 431 101	1–3	1.76+10	3.58−03	2.50−04	−2.446	C+	3,LS
43		$^1P°-^1S$		21.74	19 846 285–24 446 439	3–1	1.51+11	3.57−03	7.66−04	−1.970	C+	3
44	1*s*2*p*-1*s*4*d*	$^3P°-^3D$		*21.22*	*19 744 416–24 456 830*	9–15	1.09+12	1.22−01	7.70−02	0.041	B	3
				21.247	19 750 573–24 457 176	5–7	1.09+12	1.03−01	3.60−02	−0.288	B	3,LS
				21.191	19 737 521–24 456 527	3–5	8.20+11	9.20−02	1.92−02	−0.559	B	3,LS
				21.177	19 734 314–24 456 527	1–3	6.10+11	1.23−01	8.57−03	−0.910	B	3,LS
				21.250	19 750 573–24 456 527	5–5	2.70+11	1.83−02	6.40−03	−1.039	B	3,LS
				21.191	19 737 521–24 456 527	3–3	4.56+11	3.07−02	6.42−03	−1.036	B	3,LS
				21.250	19 750 573–24 456 527	5–3	3.00+10	1.22−03	4.26−04	−2.215	C+	3,LS
45		$^1P°-^1D$		21.69	19 846 285–24 457 576	3–5	1.03+12	1.21−01	2.59−02	−0.440	B	3
46	1*s*2*p*-1*s*5*s*	$^3P°-^3S$		*19.03*	*19 744 416*–24 999 972	9–3	7.81+10	1.41−03	7.97−04	−1.897	C+	3
				19.050	19 750 573–24 999 972	5–3	4.32+10	1.41−03	4.42−04	−2.152	C+	3,LS
				19.003	19 737 521–24 999 972	3–3	2.62+10	1.42−03	2.66−04	−2.371	C+	3,LS
				18.991	19 734 314–24 999 972	1–3	8.75+09	1.42−03	8.87−05	−2.848	C	3,LS
47		$^1P°-^1S$		19.37	19 846 285–25 007 605	3–1	7.55+10	1.42−03	2.71−04	−2.371	C+	3
48	1*s*2*p*-1*s*5*d*	$^3P°-^3D$		*18.98*	*19 744 416–25 013 025*	9–15	5.00+11	4.50−02	2.53−02	−0.393	B	3
				19.002	19 750 573–25 013 202	5–7	4.99+11	3.78−02	1.18−02	−0.724	B	3,LS
				18.956	19 737 521–25 012 870	3–5	3.78+11	3.39−02	6.34−03	−0.993	B	3,LS
				18.945	19 734 314–25 012 870	1–3	2.80+11	4.52−02	2.81−03	−1.345	B	3,LS
				19.003	19 750 573–25 012 870	5–5	1.25+11	6.76−03	2.11−03	−1.471	B	3,LS
				18.956	19 737 521–25 012 870	3–3	2.10+11	1.13−02	2.11−03	−1.470	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				19.003	19 750 573–25 012 870	5–3	1.39+10	4.50−04	1.40−04	−2.648	C+	3,LS
49		$^{1}P^{\circ}$-^{1}D		19.35	19 846 285–25 013 407	3–5	4.67+11	4.37−02	8.35−03	−0.882	B	3
50	1s2p-1s6s	$^{3}P^{\circ}$-^{3}S		*17.98*	*19 744 416*–25 307 614	9–3	4.42+10	7.14−04	3.80−04	−2.192	C+	3
				17.995	19 750 573–25 307 614	5–3	2.45+10	7.14−04	2.11−04	−2.447	C+	3,LS
				17.953	19 737 521–25 307 614	3–3	1.48+10	7.16−04	1.27−04	−2.668	C+	3,LS
				17.943	19 734 314–25 307 614	1–3	4.94+09	7.16−04	4.22−05	−3.145	C	3,LS
51		$^{1}P^{\circ}$-^{1}S		18.30	19 846 285–25 312 000	3–1	4.30+10	7.19−04	1.30−04	−2.666	C+	3
52	1s2p-1s6d	$^{3}P^{\circ}$-^{3}D		*17.95*	*19 744 416–25 315 137*	9–15	2.73+11	2.20−02	1.17−02	−0.703	B	3
				17.971	19 750 573–25 315 239	5–7	2.73+11	1.85−02	5.47−03	−1.034	B	3,LS
				17.929	19 737 521–25 315 047	3–5	2.05+11	1.65−02	2.92−03	−1.305	B	3,LS
				17.919	19 734 314–25 315 047	1–3	1.53+11	2.21−02	1.30−03	−1.656	B	3,LS
				17.971	19 750 573–25 315 047	5–5	6.82+10	3.30−03	9.76−04	−1.783	C+	3,LS
				17.929	19 737 521–25 315 047	3–3	1.15+11	5.52−03	9.77−04	−1.781	C+	3,LS
				17.971	19 750 573–25 315 047	5–3	7.57+09	2.20−04	6.50−05	−2.959	C	3,LS
53		$^{1}P^{\circ}$-^{1}D		18.28	19 846 285–25 315 357	3–5	2.55+11	2.13−02	3.84−03	−1.194	B	3
54	1s2p-1s7s	$^{3}P^{\circ}$-^{3}S		*17.40*	*19 744 416*–25 492 558	9–3	2.75+10	4.16−04	2.15−04	−2.427	C+	3
				17.416	19 750 573–25 492 558	5–3	1.53+10	4.17−04	1.19−04	−2.681	C+	3,LS
				17.376	19 737 521–25 492 558	3–3	9.23+09	4.18−04	7.17−05	−2.902	C	3,LS
				17.366	19 734 314–25 492 558	1–3	3.08+09	4.18−04	2.39−05	−3.379	C	3,LS
55		$^{1}P^{\circ}$-^{1}S		17.70	19 846 285–25 495 299	3–1	2.69+10	4.21−04	7.36−05	−2.899	C	3
56	1s2p-1s8s	$^{3}P^{\circ}$-^{3}S		*17.04*	*19 744 416*–25 612 331	9–3	1.83+10	2.66−04	1.34−04	−2.621	C	3
				17.060	19 750 573–25 612 331	5–3	1.02+10	2.66−04	7.47−05	−2.876	C	3,LS
				17.022	19 737 521–25 612 331	3–3	6.12+09	2.66−04	4.47−05	−3.098	C	3,LS
				17.013	19 734 314–25 612 331	1–3	2.04+09	2.66−04	1.49−05	−3.575	C	3,LS
57		$^{1}P^{\circ}$-^{1}S		17.34	19 846 285–25 614 158	3–1	1.79+10	2.69−04	4.60−05	−3.093	C	3
58	1s2p-1s9s	$^{3}P^{\circ}$-^{3}S		*16.81*	*19 744 416*–25 694 310	9–3	1.28+10	1.80−04	8.98−05	−2.790	C	3
				16.824	19 750 573–25 694 310	5–3	7.07+09	1.80−04	4.98−05	−3.046	C	3,LS
				16.788	19 737 521–25 694 310	3–3	4.28+09	1.81−04	3.00−05	−3.265	C	3,LS
				16.779	19 734 314–25 694 310	1–3	1.43+09	1.81−04	9.99−06	−3.742	D+	3,LS
59		$^{1}P^{\circ}$-^{1}S		17.10	19 846 285–25 695 589	3–1	1.25+10	1.83−04	3.09−05	−3.260	C	3
60	1s2p-1s10s	$^{3}P^{\circ}$-^{3}S		*16.64*	*19 744 416*–25 752 872	9–3	9.24+09	1.28−04	6.31−05	−2.939	C	3
				16.660	19 750 573–25 752 872	5–3	5.13+09	1.28−04	3.51−05	−3.194	C	3,LS
				16.624	19 737 521–25 752 872	3–3	3.09+09	1.28−04	2.10−05	−3.416	C	3,LS
				16.615	19 734 314–25 752 872	1–3	1.03+09	1.28−04	7.00−06	−3.893	D+	3,LS
61		$^{1}P^{\circ}$-^{1}S		16.93	19 846 285–25 753 802	3–1	9.06+09	1.30−04	2.17−05	−3.409	C	3
62	1s3s-1s3p	^{3}S-$^{3}P^{\circ}$	*2 535*	*2 536*	23 193 163–*23 232 597*	3–9	2.95+07	8.52−02	2.13+00	−0.592	A+	1
			2 422.6	2 423.3	23 193 163–23 234 429	3–5	3.40+07	4.98−02	1.19+00	−0.826	A+	1
			2 673.9	2 674.7	23 193 163–23 230 551	3–3	2.50+07	2.68−02	7.06−01	−1.095	A+	1
			2 745.8	2 746.6	23 193 163–23 229 571	3–1	2.33+07	8.77−03	2.38−01	−1.580	A+	1
63		^{3}S-$^{1}P^{\circ}$										
				1 486.92	23 193 163–23 260 416	3–3	1.36+06	4.52−04	6.64−03	−2.868	B+	1
64		^{1}S-$^{1}P^{\circ}$	3 409	3 410	23 231 087–23 260 416	1–3	1.19+07	6.23−02	6.99−01	−1.206	A+	1

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
65	1s3s-1s4p	^{3}S-^{3}P$^\circ$		*79.73*	23 193 163–*24 447 430*	3–9	1.52+11	4.34−01	3.42−01	0.115	B+	3
				79.679	23 193 163–24 448 199	3–5	1.53+11	2.42−01	1.90−01	−0.139	B+	3,LS
				79.783	23 193 163–24 446 570	3–3	1.52+11	1.45−01	1.14−01	−0.362	B+	3,LS
				79.808	23 193 163–24 446 163	3–1	1.52+11	4.84−02	3.81−02	−0.838	B	3,LS
66		^{1}S-^{1}P$^\circ$		81.45	23 231 087–24 458 842	1–3	1.50+11	4.48−01	1.20−01	−0.349	B+	3
67	1s3s-1s5p	^{3}S-^{3}P$^\circ$		*55.09*	23 193 163–*25 008 238*	3–9	8.25+10	1.13−01	6.13−02	−0.470	B	3
				55.082	23 193 163–25 008 632	3–5	8.27+10	6.27−02	3.41−02	−0.726	B	3,LS
				55.108	23 193 163–25 007 798	3–3	8.26+10	3.76−02	2.04−02	−0.948	B	3,LS
				55.114	23 193 163–25 007 589	3–1	8.23+10	1.25−02	6.80−03	−1.426	B	3,LS
68		^{1}S-^{1}P$^\circ$		56.09	23 231 087–25 014 007	1–3	8.11+10	1.15−01	2.12−02	−0.939	B	3
69	1s3s-1s6p	^{3}S-^{3}P$^\circ$		*47.19*	23 193 163–*25 312 382*	3–9	4.83+10	4.84−02	2.26−02	−0.838	B	3
				47.182	23 193 163–25 312 610	3–5	4.85+10	2.70−02	1.25−02	−1.092	B	3,LS
				47.193	23 193 163–25 312 128	3–3	4.85+10	1.62−02	7.55−03	−1.313	B	3,LS
				47.196	23 193 163–25 312 007	3–1	4.84+10	5.39−03	2.51−03	−1.791	B	3,LS
70		^{1}S-^{1}P$^\circ$		47.97	23 231 087–25 315 693	1–3	4.77+10	4.94−02	7.80−03	−1.306	B	3
71	1s3s-1s7p	^{3}S-^{3}P$^\circ$		*43.43*	23 193 163–*25 495 552*	3–9	3.05+10	2.59−02	1.11−02	−1.110	B	3
				43.430	23 193 163–25 495 695	3–5	3.06+10	1.44−02	6.17−03	−1.365	B	3,LS
				43.436	23 193 163–25 495 392	3–3	3.06+10	8.65−03	3.71−03	−1.586	B	3,LS
				43.438	23 193 163–25 495 315	3–1	3.06+10	2.88−03	1.23−03	−2.063	B	3,LS
72		^{1}S-^{1}P$^\circ$		44.12	23 231 087–25 497 627	1–3	3.01+10	2.64−02	3.83−03	−1.578	B	3
73	1s3s-1s8p	^{3}S-^{3}P$^\circ$		*41.30*	23 193 163–*25 614 832*	3–9	2.05+10	1.57−02	6.41−03	−1.327	B	3
				41.301	23 193 163–25 614 428	3–5	2.05+10	8.75−03	3.56−03	−1.581	B	3,LS
				41.304	23 193 163–25 614 225	3–3	2.05+10	5.25−03	2.14−03	−1.803	B	3,LS
				41.305	23 193 163–25 614 174	3–1	2.05+10	1.75−03	7.13−04	−2.280	C+	3,LS
74		^{1}S-^{1}P$^\circ$		41.94	23 231 087–25 615 718	1–3	2.03+10	1.61−02	2.22−03	−1.793	B	3
75	1s3s-1s9p	^{3}S-^{3}P$^\circ$		*39.96*	23 193 163–*25 695 713*	3–9	1.44+10	1.03−02	4.08−03	−1.510	B	3
				39.958	23 193 163–25 695 781	3–5	1.44+10	5.76−03	2.27−03	−1.762	B	3,LS
				39.960	23 193 163–25 695 638	3–3	1.45+10	3.46−03	1.36−03	−1.984	B	3,LS
				39.961	23 193 163–25 695 602	3–1	1.44+10	1.15−03	4.53−04	−2.462	C+	3,LS
76		^{1}S-^{1}P$^\circ$		40.56	23 231 087–25 696 685	1–3	1.42+10	1.05−02	1.40−03	−1.979	B	3
77	1s3s-1s10p	^{3}S-^{3}P$^\circ$		*39.05*	23 193 163–*25 753 894*	3–9	1.05+10	7.20−03	2.78−03	−1.666	B	3
				39.051	23 193 163–25 753 943	3–5	1.05+10	4.01−03	1.54−03	−1.920	B	3,LS
				39.052	23 193 163–25 753 839	3–3	1.05+10	2.41−03	9.29−04	−2.141	C+	3,LS
				39.053	23 193 163–25 753 813	3–1	1.05+10	8.03−04	3.09−04	−2.618	C+	3,LS
78		^{1}S-^{1}P$^\circ$		39.63	23 231 087–25 754 601	1–3	1.04+10	7.34−03	9.57−04	−2.134	C+	3
79	1s3p-1s3s	^{3}P$^\circ$-^{1}S										
				536 cm^{-1}	23 230 551–23 231 087	3–1	1.98+00	3.45−06	6.36−03	−4.985	B+	1
80	1s3p-1s3d	^{3}P$^\circ$-^{3}D	*4 394*	*4 395*	*23 232 597–23 255 348*	9–15	4.11+06	1.98−02	2.58+00	−0.749	A+	1
			4 599.4	4 600.7	23 234 429–23 256 165	5–7	3.77+06	1.67−02	1.26+00	−1.078	A+	1
			4 149.2	4 150.4	23 230 551–23 254 645	3–5	3.41+06	1.47−02	6.01−01	−1.356	A+	1
			3 992.5	3 993.6	23 229 571–23 254 611	1–3	3.20+06	2.29−02	3.01−01	−1.640	A+	1
			4 945.2	4 946.6	23 234 429–23 254 645	5–5	6.08+05	2.23−03	1.81−01	−1.953	A+	1

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
			4 155.1	4 156.3	23 230 551–23 254 611	3–3	2.11+06	5.47−03	2.24−01	−1.785	A+	1
			4 953.5	4 954.9	23 234 429–23 254 611	5–3	8.28+04	1.83−04	1.49−02	−3.039	A	1
81		$^{3}P^{\circ}-^{1}D$										
			3 752.1	3 753.2	23 230 551–23 257 195	3–5	6.10+05	2.15−03	7.96−02	−2.190	A	1
			4 391.3	4 392.5	23 234 429–23 257 195	5–5	2.12+05	6.15−04	4.44−02	−2.512	A	1
82	1s3p-1s4s	$^{3}P^{\circ}-^{3}S$		*83.44*	*23 232 597*–24 431 101	9–3	1.10+11	3.83−02	9.46−02	−0.463	B	3
				83.565	23 234 429–24 431 101	5–3	6.10+10	3.83−02	5.26−02	−0.718	B	3,LS
				83.295	23 230 551–24 431 101	3–3	3.69+10	3.84−02	3.15−02	−0.939	B	3,LS
				83.227	23 229 571–24 431 101	1–3	1.23+10	3.84−02	1.05−02	−1.416	B	3,LS
83		$^{1}P^{\circ}-^{1}S$		84.32	23 260 416–24 446 439	3–1	1.05+11	3.73−02	3.11−02	−0.951	B	3
84	1s3p-1s4d	$^{3}P^{\circ}-^{3}D$		*81.68*	*23 232 597–24 456 830*	9–15	3.57+11	5.95−01	1.44+00	0.729	B+	3
				81.783	23 234 429–24 457 176	5–7	3.56+11	5.00−01	6.73−01	0.398	B+	3,LS
				81.568	23 230 551–24 456 527	3–5	2.69+11	4.48−01	3.60−01	0.128	B+	3,LS
				81.503	23 229 571–24 456 527	1–3	2.00+11	5.97−01	1.60−01	−0.224	B+	3,LS
				81.826	23 234 429–24 456 527	5–5	8.90+10	8.93−02	1.20−01	−0.350	B+	3,LS
				81.568	23 230 551–24 456 527	3–3	1.49+11	1.49−01	1.20−01	−0.350	B+	3,LS
				81.826	23 234 429–24 456 527	5–3	9.88+09	5.95−03	8.01−03	−1.527	B	3,LS
85		$^{1}P^{\circ}-^{1}D$		83.53	23 260 416–24 457 576	3–5	3.60+11	6.28−01	5.18−01	0.275	B+	3
86	1s3p-1s5s	$^{3}P^{\circ}-^{3}S$		*56.58*	*23 232 597*–24 999 972	9–3	5.36+10	8.57−03	1.44−02	−1.113	B	3
				56.640	23 234 429–24 999 972	5–3	2.97+10	8.57−03	7.99−03	−1.368	B	3,LS
				56.516	23 230 551–24 999 972	3–3	1.79+10	8.59−03	4.79−03	−1.589	B	3,LS
				56.484	23 229 571–24 999 972	1–3	5.99+09	8.59−03	1.59−03	−2.066	B	3,LS
87		$^{1}P^{\circ}-^{1}S$		57.23	23 260 416–25 007 605	3–1	5.13+10	8.40−03	4.75−03	−1.599	B	3
88	1s3p-1s5d	$^{3}P^{\circ}-^{3}D$		*56.17*	*23 232 597–25 013 025*	9–15	1.73+11	1.37−01	2.27−01	0.091	B	3
				56.219	23 234 429–25 013 202	5–7	1.73+11	1.15−01	1.06−01	−0.240	B+	3,LS
				56.107	23 230 551–25 012 870	3–5	1.31+11	1.03−01	5.70−02	−0.510	B	3,LS
				56.076	23 229 571–25 012 870	1–3	9.69+10	1.37−01	2.52−02	−0.863	B	3,LS
				56.229	23 234 429–25 012 870	5–5	4.32+10	2.05−02	1.89−02	−0.989	B	3,LS
				56.107	23 230 551–25 012 870	3–3	7.27+10	3.43−02	1.90−02	−0.988	B	3,LS
				56.229	23 234 429–25 012 870	5–3	4.82+09	1.37−03	1.26−03	−2.164	B	3,LS
89		$^{1}P^{\circ}-^{1}D$		57.05	23 260 416–25 013 407	3–5	1.72+11	1.40−01	7.88−02	−0.377	B	3
90	1s3p-1s6s	$^{3}P^{\circ}-^{3}S$		*48.19*	*23 232 597*–25 307 614	9–3	2.99+10	3.47−03	4.95−03	−1.505	B	3
				48.235	23 234 429–25 307 614	5–3	1.66+10	3.47−03	2.75−03	−1.761	B	3,LS
				48.145	23 230 551–25 307 614	3–3	1.00+10	3.48−03	1.65−03	−1.981	B	3,LS
				48.122	23 229 571–25 307 614	1–3	3.34+09	3.48−03	5.51−04	−2.458	C+	3,LS
91		$^{1}P^{\circ}-^{1}S$		48.74	23 260 416–25 312 000	3–1	2.87+10	3.41−03	1.64−03	−1.990	B	3
92	1s3p-1s6d	$^{3}P^{\circ}-^{3}D$		*48.02*	*23 232 597–25 315 137*	9–15	9.70+10	5.59−02	7.95−02	−0.298	B	3
				48.058	23 234 429–25 315 239	5–7	9.67+10	4.69−02	3.71−02	−0.630	B	3,LS
				47.973	23 230 551–25 315 047	3–5	7.30+10	4.20−02	1.99−02	−0.900	B	3,LS
				47.951	23 229 571–25 315 047	1–3	5.42+10	5.60−02	8.84−03	−1.252	B	3,LS
				48.063	23 234 429–25 315 047	5–5	2.42+10	8.38−03	6.63−03	−1.378	B	3,LS
				47.973	23 230 551–25 315 047	3–3	4.06+10	1.40−02	6.63−03	−1.377	B	3,LS
				48.063	23 234 429–25 315 047	5–3	2.69+09	5.58−04	4.41−04	−2.554	C+	3,LS
93		$^{1}P^{\circ}-^{1}D$		48.66	23 260 416–25 315 357	3–5	9.46+10	5.60−02	2.69−02	−0.775	B	3

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
94	1s3p-1s7s	^{3}P°-^{3}S		*44.25*	*23 232 597*–25 492 558	9–3	1.84+10	1.80−03	2.36−03	−1.790	B	3
				44.284	23 234 429–25 492 558	5–3	1.02+10	1.80−03	1.31−03	−2.046	B	3,LS
				44.209	23 230 551–25 492 558	3–3	6.14+09	1.80−03	7.85−04	−2.268	C+	3,LS
				44.189	23 229 571–25 492 558	1–3	2.06+09	1.81−03	2.63−04	−2.742	C+	3,LS
95		^{1}P°-^{1}S		44.75	23 260 416–25 495 299	3–1	1.77+10	1.77−03	7.82−04	−2.275	C+	3
96	1s3p-1s8s	^{3}P°-^{3}S		*42.02*	*23 232 597*–25 612 331	9–3	1.21+10	1.07−03	1.33−03	−2.016	C+	3
				42.054	23 234 429–25 612 331	5–3	6.73+09	1.07−03	7.40−04	−2.272	C+	3,LS
				41.985	23 230 551–25 612 331	3–3	4.05+09	1.07−03	4.43−04	−2.493	C+	3,LS
				41.968	23 229 571–25 612 331	1–3	1.35+09	1.07−03	1.47−04	−2.971	C+	3,LS
97		^{1}P°-^{1}S		42.49	23 260 416–25 614 158	3–1	1.17+10	1.06−03	4.44−04	−2.498	C+	3
98	1s3p-1s9s	^{3}P°-^{3}S		*40.62*	*23 232 597*–25 694 310	9–3	8.41+09	6.94−04	8.35−04	−2.204	C+	3
				40.652	23 234 429–25 694 310	5–3	4.67+09	6.94−04	4.64−04	−2.460	C+	3,LS
				40.588	23 230 551–25 694 310	3–3	2.81+09	6.95−04	2.78−04	−2.681	C+	3,LS
				40.572	23 229 571–25 694 310	1–3	9.39+08	6.95−04	9.28−05	−3.158	C	3,LS
99		^{1}P°-^{1}S		41.06	23 260 416–25 695 589	3–1	8.10+09	6.83−04	2.77−04	−2.688	C+	3
100	1s3p-1s10s	^{3}P°-^{3}S		*39.68*	*23 232 597*–25 752 872	9–3	6.08+09	4.79−04	5.63−04	−2.365	C+	3
				39.707	23 234 429–25 752 872	5–3	3.38+09	4.79−04	3.13−04	−2.621	C+	3,LS
				39.646	23 230 551–25 752 872	3–3	2.04+09	4.80−04	1.87−04	−2.842	C+	3,LS
				39.631	23 229 571–25 752 872	1–3	6.80+08	4.80−04	6.26−05	−3.319	C	3,LS
101		^{1}P°-^{1}S		40.11	23 260 416–25 753 802	3–1	5.87+09	4.72−04	1.87−04	−2.849	C+	3
102	1s3d-1s3p	^{3}D-^{1}P°										
			17 323	17 328	23 254 645–23 260 416	5–3	1.55+04	4.20−04	1.19−01	−2.678	A	1
			17 222	17 227	23 254 611–23 260 416	3–3	2.72+02	1.21−05	2.05−03	−4.440	B+	1
103		^{1}D-^{1}P°		3 221 cm^{-1}	23 257 195–23 260 416	5–3	1.74+04	1.51−03	7.70−01	−2.122	A+	1
104	1s3d-1s4p	^{3}D-^{3}P°		*83.89*	*23 255 348–24 447 430*	15–9	1.97+10	1.25−02	5.17−02	−0.727	B	3
				83.890	23 256 165–24 448 199	7–5	1.66+10	1.25−02	2.41−02	−1.058	B	3,LS
				83.898	23 254 645–24 446 570	5–3	1.48+10	9.40−03	1.29−02	−1.328	B	3,LS
				83.924	23 254 611–24 446 163	3–1	1.98+10	6.96−03	5.76−03	−1.680	B	3,LS
				83.783	23 254 645–24 448 199	5–5	2.98+09	3.14−03	4.33−03	−1.804	B	3,LS
				83.896	23 254 611–24 446 570	3–3	4.95+09	5.22−03	4.32−03	−1.805	B	3,LS
				83.781	23 254 611–24 448 199	3–5	1.98+08	3.48−04	2.88−04	−2.981	C+	3,LS
105		^{1}D-^{1}P°		83.22	23 257 195–24 458 842	5–3	1.68+10	1.04−02	1.43−02	−1.284	B	3
106	1s3d-1s5p	^{3}D-^{3}P°		*57.05*	*23 255 348–25 008 238*	15–9	8.50+09	2.49−03	7.01−03	−1.428	B	3
				57.062	23 256 165–25 008 632	7–5	7.14+09	2.49−03	3.27−03	−1.759	B	3,LS
				57.040	23 254 645–25 007 798	5–3	6.39+09	1.87−03	1.75−03	−2.029	B	3,LS
				57.046	23 254 611–25 007 589	3–1	8.55+09	1.39−03	7.83−04	−2.380	C+	3,LS
				57.013	23 254 645–25 008 632	5–5	1.28+09	6.24−04	5.85−04	−2.506	C+	3,LS
				57.039	23 254 611–25 007 798	3–3	2.13+09	1.04−03	5.85−04	−2.506	C+	3,LS
				57.012	23 254 611–25 008 632	3–5	8.53+07	6.93−05	3.90−05	−3.682	C	3,LS
107		^{1}D-^{1}P°		56.92	23 257 195–25 014 007	5–3	7.25+09	2.11−03	1.98−03	−1.977	B	3
108	1s3d-1s6p	^{3}D-^{3}P°		*48.61*	*23 255 348–25 312 382*	15–9	4.45+09	9.46−04	2.27−03	−1.848	C+	3
				48.628	23 256 165–25 312 610	7–5	3.74+09	9.47−04	1.06−03	−2.179	B	3,LS
				48.603	23 254 645–25 312 128	5–3	3.35+09	7.11−04	5.68−04	−2.449	C+	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				48.605	23 254 611–25 312 007	3–1	4.46+09	5.26−04	2.52−04	−2.802	C+	3,LS
				48.592	23 254 645–25 312 610	5–5	6.70+08	2.37−04	1.89−04	−2.926	C+	3,LS
				48.602	23 254 611–25 312 128	3–3	1.12+09	3.95−04	1.89−04	−2.926	C+	3,LS
				48.591	23 254 611–25 312 610	3–5	4.46+07	2.63−05	1.26−05	−4.103	C	3,LS
109		^{1}D-^{1}P°		48.58	23 257 195–25 315 693	5–3	3.82+09	8.12−04	6.49−04	−2.391	C+	3
110	1s3d-1s7p	^{3}D-^{3}P°		*44.64*	*23 255 348–25 495 552*	15–9	2.63+09	4.72−04	1.04−03	−2.150	C+	3
				44.652	23 256 165–25 495 695	7–5	2.22+09	4.73−04	4.86−04	−2.480	C+	3,LS
				44.628	23 254 645–25 495 392	5–3	1.98+09	3.55−04	2.60−04	−2.751	C+	3,LS
				44.629	23 254 611–25 495 315	3–1	2.64+09	2.63−04	1.15−04	−3.103	C+	3,LS
				44.622	23 254 645–25 495 695	5–5	3.95+08	1.18−04	8.66−05	−3.229	C	3,LS
				44.627	23 254 611–25 495 392	3–3	6.60+08	1.97−04	8.68−05	−3.228	C	3,LS
				44.621	23 254 611–25 495 695	3–5	2.63+07	1.31−05	5.77−06	−4.406	D+	3,LS
111		^{1}D-^{1}P°		44.63	23 257 195–25 497 627	5–3	2.26+09	4.06−04	2.98−04	−2.693	C+	3
112	1s3d-1s8p	^{3}D-^{3}P°		*42.39*	*23 255 348–25 614 332*	15–9	1.70+09	2.74−04	5.74−04	−2.386	C+	3
				42.404	23 256 165–25 614 428	7–5	1.43+09	2.75−04	2.68−04	−2.716	C+	3,LS
				42.380	23 254 645–25 614 225	5–3	1.27+09	2.06−04	1.43−04	−2.987	C+	3,LS
				42.381	23 254 611–25 614 174	3–1	1.70+09	1.53−04	6.40−05	−3.338	C	3,LS
				42.377	23 254 645–25 614 428	5–5	2.55+08	6.87−05	4.79−05	−3.464	C	3,LS
				42.380	23 254 611–25 614 225	3–3	4.27+08	1.15−04	4.81−05	−3.462	C	3,LS
				42.376	23 254 611–25 614 428	3–5	1.70+07	7.64−06	3.19−06	−4.640	D+	3,LS
113		^{1}D-^{1}P°		42.40	23 257 195–25 615 718	5–3	1.45+09	2.35−04	1.64−04	−2.930	C+	3
114	1s3d-1s9p	^{3}D-^{3}P°		*40.98*	*23 255 348–25 695 713*	15–9	1.16+09	1.75−04	3.54−04	−2.581	C	3
				40.990	23 256 165–25 695 781	7–5	9.73+08	1.75−04	1.65−04	−2.912	C+	3,LS
				40.967	23 254 645–25 695 638	5–3	8.74+08	1.32−04	8.90−05	−3.180	C	3,LS
				40.967	23 254 611–25 695 602	3–1	1.16+09	9.75−05	3.94−05	−3.534	C	3,LS
				40.965	23 254 645–25 695 781	5–5	1.74+08	4.39−05	2.96−05	−3.659	C	3,LS
				40.966	23 254 611–25 695 638	3–3	2.91+08	7.31−05	2.95−05	−3.659	C	3,LS
				40.964	23 254 611–25 695 781	3–5	1.16+07	4.87−06	1.97−06	−4.835	D+	3,LS
115		^{1}D-^{1}P°		40.99	23 257 195–25 696 685	5–3	9.90+08	1.50−04	1.01−04	−3.125	C+	3
116	1s3d-1s10p	^{3}D-^{3}P°		*40.02*	*23 255 348–25 753 894*	15–9	8.24+08	1.19−04	2.35−04	−2.748	C	3
				40.036	23 256 165–25 753 943	7–5	6.93+08	1.19−04	1.09−04	−3.079	C+	3,LS
				40.013	23 254 645–25 753 839	5–3	6.22+08	8.96−05	5.90−05	−3.349	C	3,LS
				40.013	23 254 611–25 753 813	3–1	8.30+08	6.64−05	2.62−05	−3.701	C	3,LS
				40.011	23 254 645–25 753 943	5–5	1.25+08	2.99−05	1.96−05	−3.825	C	3,LS
				40.012	23 254 611–25 753 839	3–3	2.07+08	4.98−05	1.96−05	−3.826	C	3,LS
				40.011	23 254 611–25 753 943	3–5	8.30+06	3.32−06	1.31−06	−5.002	D+	3,LS
117		^{1}D-^{1}P°		40.04	23 257 195–25 754 601	5–3	7.13+08	1.03−04	6.78−05	−3.288	C	3
118	1s4s-1s4p	^{3}S-^{3}P°	*6 122*	*6 124*	24 431 101–*24 447 430*	3–9	6.97+06	1.18−01	7.11+00	−0.451	B+	3
			5 847	5 849	24 431 101–24 448 199	3–5	8.01+06	6.85−02	3.95+00	−0.687	B+	3,LS
			6 463	6 465	24 431 101–24 446 570	3–3	5.94+06	3.72−02	2.37+00	−0.952	B+	3,LS
			6 637	6 639	24 431 101–24 446 163	3–1	5.49+06	1.21−02	7.93−01	−1.440	B+	3,LS
119		^{1}S-^{1}P°	8 060	8 063	24 446 439–24 458 842	1–3	3.11+06	9.08−02	2.41+00	−1.042	B+	3
120	1s4s-1s5p	^{3}S-^{3}P°		*173.27*	24 431 101–*25 008 238*	3–9	3.59+10	4.85−01	8.30−01	0.163	B+	3
				173.151	24 431 101–25 008 632	3–5	3.60+10	2.70−01	4.61−01	−0.092	B+	3,LS
				173.401	24 431 101–25 007 798	3–3	3.59+10	1.62−01	2.77−01	−0.313	B+	3,LS
				173.464	24 431 101–25 007 589	3–1	3.58+10	5.39−02	9.23−02	−0.791	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
121		^{1}S-^{1}P$^{\circ}$		176.19	24 446 439–25 014 007	1–3	3.58+10	5.00−01	2.90−01	−0.301	B+	3
122	1s4s-1s6p	^{3}S-^{3}P$^{\circ}$		*113.47*	24 431 101–*25 312 382*	3–9	2.20+10	1.28−01	1.43−01	−0.416	B	3
				113.442	24 431 101–25 312 610	3–5	2.21+10	7.10−02	7.95−02	−0.672	B	3,LS
				113.504	24 431 101–25 312 128	3–3	2.21+10	4.26−02	4.77−02	−0.893	B	3,LS
				113.519	24 431 101–25 312 007	3–1	2.20+10	1.42−02	1.59−02	−1.371	B	3,LS
123		^{1}S-^{1}P$^{\circ}$		115.04	24 446 439–25 315 693	1–3	2.20+10	1.31−01	4.96−02	−0.883	B	3
124	1s4s-1s7p	^{3}S-^{3}P$^{\circ}$		*93.95*	24 431 101–*25 495 552*	3–9	1.40+10	5.57−02	5.17−02	−0.777	B	3
				93.933	24 431 101–25 495 695	3–5	1.41+10	3.10−02	2.87−02	−1.032	B	3,LS
				93.959	24 431 101–25 495 392	3–3	1.41+10	1.86−02	1.72−02	−1.253	B	3,LS
				93.966	24 431 101–25 495 315	3–1	1.41+10	6.21−03	5.76−03	−1.730	B	3,LS
125		^{1}S-^{1}P$^{\circ}$		95.13	24 446 439–25 497 627	1–3	1.40+10	5.68−02	1.78−02	−1.246	B	3
126	1s4s-1s8p	^{3}S-^{3}P$^{\circ}$		*84.51*	24 431 101–*25 614 332*	3–9	9.45+09	3.04−02	2.54−02	−1.040	B	3
				84.507	24 431 101–25 614 428	3–5	9.47+09	1.69−02	1.41−02	−1.295	B	3,LS
				84.522	24 431 101–25 614 225	3–3	9.43+09	1.01−02	8.43−03	−1.519	B	3,LS
				84.526	24 431 101–25 614 174	3–1	9.47+09	3.38−03	2.82−03	−1.994	B	3,LS
127		^{1}S-^{1}P$^{\circ}$		85.52	24 446 439–25 615 718	1–3	9.41+09	3.10−02	8.72−03	−1.509	B	3
128	1s4s-1s9p	^{3}S-^{3}P$^{\circ}$		*79.08*	24 431 101–*25 695 713*	3–9	6.66+09	1.87−02	1.46−02	−1.251	B	3
				79.071	24 431 101–25 695 781	3–5	6.66+09	1.04−02	8.12−03	−1.506	B	3,LS
				79.080	24 431 101–25 695 638	3–3	6.67+09	6.25−03	4.88−03	−1.727	B	3,LS
				79.083	24 431 101–25 695 602	3–1	6.66+09	2.08−03	1.62−03	−2.205	B	3,LS
129		^{1}S-^{1}P$^{\circ}$		79.98	24 446 439–25 696 685	1–3	6.63+09	1.91−02	5.02−03	−1.719	B	3
130	1s4s-1s10p	^{3}S-^{3}P$^{\circ}$		*75.60*	24 431 101–*25 753 894*	3–9	4.86+09	1.25−02	9.32−03	−1.426	B	3
				75.595	24 431 101–25 753 943	3–5	4.87+09	6.95−03	5.18−03	−1.681	B	3,LS
				75.601	24 431 101–25 753 839	3–3	4.87+09	4.17−03	3.11−03	−1.903	B	3,LS
				75.602	24 431 101–25 753 813	3–1	4.87+09	1.39−03	1.03−03	−2.380	B	3,LS
131		^{1}S-^{1}P$^{\circ}$		76.44	24 446 439–25 754 601	1–3	4.82+09	1.27−02	3.19−03	−1.896	B	3
132	1s4p-1s4d	^{3}P$^{\circ}$-^{3}D	*10 635*	*10 638*	*24 447 430–24 456 830*	9–15	1.31+06	3.71−02	1.17+01	−0.476	B+	3
			11 137	11 140	24 448 199–24 457 176	5–7	1.14+06	2.98−02	5.46+00	−0.827	B+	3,LS
			10 040	10 043	24 446 570–24 456 527	3–5	1.17+06	2.95−02	2.92+00	−1.053	B+	3,LS
			9 646	9 649	24 446 163–24 456 527	1–3	9.79+05	4.10−02	1.30+00	−1.387	B+	3,LS
			12 004	12 008	24 448 199–24 456 527	5–5	2.29+05	4.94−03	9.76−01	−1.607	B+	3,LS
			10 040	10 043	24 446 570–24 456 527	3–3	6.51+05	9.84−03	9.76−01	−1.530	B+	3,LS
			12 004	12 008	24 448 199–24 456 527	5–3	2.54+04	3.29−04	6.50−02	−2.784	B	3,LS
133	1s4p-1s5s	^{3}P$^{\circ}$-^{3}S		*180.98*	*24 447 430*–24 999 972	9–3	3.80+10	6.21−02	3.33−01	−0.253	B+	3
				181.234	24 448 199–24 999 972	5–3	2.11+10	6.23−02	1.85−01	−0.507	B+	3,LS
				180.700	24 446 570–24 999 972	3–3	1.28+10	6.24−02	1.11−01	−0.728	B+	3,LS
				180.568	24 446 163–24 999 972	1–3	4.26+09	6.25−02	3.71−02	−1.204	B	3,LS
134		^{1}P$^{\circ}$-^{1}S		182.23	24 458 842–25 007 605	3–1	3.62+10	6.00−02	1.08−01	−0.745	B+	3
135	1s4p-1s5d	^{3}P$^{\circ}$-^{3}D		*176.80*	*24 447 430–25 013 025*	9–15	7.44+10	5.81−01	3.04+00	0.718	B+	3
				176.990	24 448 199–25 013 202	5–7	7.42+10	4.88−01	1.42+00	0.387	B+	3,LS
				176.585	24 446 570–25 012 870	3–5	5.61+10	4.37−01	7.62−01	0.118	B+	3,LS
				176.458	24 446 163–25 012 870	1–3	4.16+10	5.83−01	3.38−01	−0.234	B+	3,LS
				177.094	24 448 199–25 012 870	5–5	1.85+10	8.71−02	2.53−01	−0.361	B+	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				176.585	24 446 570–25 012 870	3–3	3.12+10	1.46−01	2.54−01	−0.359	B+	3,LS
				177.094	24 448 199–25 012 870	5–3	2.06+09	5.81−03	1.69−02	−1.537	B	3,LS
136		$^1P^\circ$-^1D		180.32	24 458 842–25 013 407	3–5	7.60+10	6.18−01	1.10+00	0.268	B+	3
137	1*s*4*p*-1*s*6*s*	$^3P^\circ$-^3S		*116.25*	*24 447 430*–25 307 614	9–3	2.08+10	1.41−02	4.85−02	−0.897	B	3
				116.358	24 448 199–25 307 614	5–3	1.16+10	1.41−02	2.70−02	−1.152	B	3,LS
				116.138	24 446 570–25 307 614	3–3	6.97+09	1.41−02	1.61−02	−1.374	B	3,LS
				116.083	24 446 163–25 307 614	1–3	2.33+09	1.41−02	5.38−03	−1.851	B	3,LS
138		$^1P^\circ$-^1S		117.21	24 458 842–25 312 000	3–1	2.00+10	1.37−02	1.59−02	−1.386	B	3
139	1*s*4*p*-1*s*6*d*	$^3P^\circ$-^3D		*115.25*	*24 447 430–25 815 137*	9–15	4.37+10	1.45−01	4.95−01	0.116	B+	3
				115.335	24 448 199–25 315 239	5–7	4.37+10	1.22−01	2.31−01	−0.215	B+	3,LS
				115.144	24 446 570–25 315 047	3–5	3.29+10	1.09−01	1.24−01	−0.485	B+	3,LS
				115.090	24 446 163–25 315 047	1–3	2.43+10	1.45−01	5.49−02	−0.839	B	3,LS
				115.360	24 448 199–25 315 047	5–5	1.09+10	2.17−02	4.12−02	−0.965	B	3,LS
				115.144	24 446 570–25 315 047	3–3	1.82+10	3.62−02	4.11−02	−0.964	B	3,LS
				115.360	24 448 199–25 315 047	5–3	1.21+09	1.45−03	2.75−03	−2.140	B	3,LS
140		$^1P^\circ$-^1D		116.75	24 458 842–25 315 357	3–5	4.41+10	1.50−01	1.73−01	−0.347	B+	3
141	1*s*4*p*-1*s*7*s*	$^3P^\circ$-^3S		*95.68*	*24 447 430*–25 492 558	9–3	1.26+10	5.77−03	1.64−02	−1.285	B	3
				95.753	24 448 199–25 492 558	5–3	7.00+09	5.77−03	9.09−03	−1.540	B	3,LS
				95.603	24 446 570–25 492 558	3–3	4.22+09	5.78−03	5.45−03	−1.761	B	3,LS
				95.566	24 446 163–25 492 558	1–3	1.41+09	5.78−03	1.81−03	−2.238	B	3,LS
142		$^1P^\circ$-^1S		96.48	24 458 842–25 495 299	3–1	1.22+10	5.67−03	5.40−03	−1.769	B	3
143	1*s*4*p*-1*s*8*s*	$^3P^\circ$-^3S		*85.84*	*24 447 430*–25 612 331	9–3	8.20+09	3.02−03	7.69−03	−1.566	B	3
				85.901	24 448 199–25 612 331	5–3	4.55+09	3.02−03	4.27−03	−1.821	B	3,LS
				85.781	24 446 570–25 612 331	3–3	2.75+09	3.03−03	2.56−03	−2.041	B	3,LS
				85.751	24 446 163–25 612 331	1–3	9.16+08	3.03−03	8.55−04	−2.519	C+	3,LS
144		$^1P^\circ$-^1S		86.56	24 458 842–25 614 158	3–1	7.90+09	2.96−03	2.53−03	−2.052	B	3
145	1*s*4*p*-1*s*9*s*	$^3P^\circ$-^3S		*80.20*	*24 447 430*–25 694 310	9–3	5.66+09	1.82−03	4.32−03	−1.786	B	3
				80.250	24 448 199–25 694 310	5–3	3.14+09	1.82−03	2.40−03	−2.041	B	3,LS
				80.145	24 446 570–25 694 310	3–3	1.90+09	1.83−03	1.44−03	−2.260	B	3,LS
				80.119	24 446 163–25 694 310	1–3	6.34+08	1.83−03	4.82−04	−2.738	C+	3,LS
146		$^1P^\circ$-^1S		80.86	24 458 842–25 695 589	3–1	5.44+09	1.78−03	1.42−03	−2.272	B	3
147	1*s*4*p*-1*s*10*s*	$^3P^\circ$-^3S		*76.60*	*24 447 430*–25 752 872	9–3	4.05+09	1.19−03	2.70−03	−1.970	B	3
				76.648	24 448 199–25 752 872	5–3	2.25+09	1.19−03	1.50−03	−2.225	B	3,LS
				76.552	24 446 570–25 752 872	3–3	1.35+09	1.19−03	8.99−04	−2.447	C+	3,LS
				76.528	24 446 163–25 752 872	1–3	4.52+08	1.19−03	2.99−04	−2.924	C+	3,LS
148		$^1P^\circ$-^1S		77.22	24 458 842–25 753 802	3–1	3.92+09	1.17−03	8.92−04	−2.455	C+	3
149	1*s*4*d*-1*s*4*p*	^1D-$^1P^\circ$		1 266 cm^{-1}	24 457 576–24 458 842	5–3	5.25+03	2.95−03	3.83+00	−1.831	B+	3
150	1*s*4*d*-1*s*5*p*	^3D-$^3P^\circ$		*181.35*	*24 456 830–25 008 238*	15–9	1.05+10	3.11−02	2.79−01	−0.331	B	3
				181.338	24 457 176–25 008 632	7–5	8.89+09	3.13−02	1.30−01	−0.659	B+	3,LS
				181.399	24 456 527–25 007 798	5–3	7.91+09	2.34−02	6.98−02	−0.932	B	3,LS
				181.468	24 456 527–25 007 589	3–1	1.06+10	1.74−02	3.11−02	−1.282	B	3,LS
				181.125	24 456 527–25 008 632	5–5	1.59+09	7.82−03	2.33−02	−1.408	B	3,LS
				181.399	24 456 527–25 007 798	3–3	2.64+09	1.30−02	2.32−02	−1.409	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				181.125	24 456 527–25 008 632	3–5	1.06+08	8.69−04	1.55−03	−2.584	B	3,LS
151		^{1}D-^{1}P°		179.72	24 457 576–25 014 007	5–3	9.22+09	2.68−02	7.92−02	−0.873	B	3
152	1*s*4*d*-1*s*6*p*	^{3}D-^{3}P°		*116.88*	*24 456 830–25 312 382*	15–9	5.26+09	6.47−03	3.73−02	−1.013	B	3
				116.900	24 457 176–25 312 610	7–5	4.42+09	6.47−03	1.74−02	−1.344	B	3,LS
				116.877	24 456 527–25 312 128	5–3	3.96+09	4.86−03	9.35−03	−1.614	B	3,LS
				116.893	24 456 527–25 312 007	3–1	5.27+09	3.60−03	4.15−03	−1.967	B	3,LS
				116.811	24 456 527–25 312 610	5–5	7.92+08	1.62−03	3.11−03	−2.092	B	3,LS
				116.877	24 456 527–25 312 128	3–3	1.32+09	2.70−03	3.11−03	−2.092	B	3,LS
				116.811	24 456 527–25 312 610	3–5	5.28+07	1.80−04	2.07−04	−3.268	C+	3,LS
153		^{1}D-^{1}P°		116.53	24 457 576–25 315 693	5–3	4.61+09	5.63−03	1.08−02	−1.551	B	3
154	1*s*4*d*-1*s*7*p*	^{3}D-^{3}P°		*96.27*	*24 456 830–25 495 652*	15–9	3.02+09	2.51−03	1.20−02	−1.424	B	3
				96.291	24 457 176–25 495 695	7–5	2.53+09	2.51−03	5.57−03	−1.755	B	3,LS
				96.259	24 456 527–25 495 392	5–3	2.27+09	1.89−03	2.99−03	−2.025	B	3,LS
				96.266	24 456 527–25 495 315	3–1	3.02+09	1.40−03	1.33−03	−2.377	B	3,LS
				96.231	24 456 527–25 495 695	5–5	4.53+08	6.29−04	9.96−04	−2.502	C+	3,LS
				96.259	24 456 527–25 495 392	3–3	7.56+08	1.05−03	9.98−04	−2.502	C+	3,LS
				96.231	24 456 527–25 495 695	3–5	3.02+07	6.99−05	6.64−05	−3.678	C	3,LS
155		^{1}D-^{1}P°		96.15	24 457 576–25 497 627	5–3	2.64+09	2.20−03	3.48−03	−1.959	B	3
156	1*s*4*d*-1*s*8*p*	^{3}D-^{3}P°		*86.39*	*24 456 830–25 614 332*	15–9	1.89+09	1.27−03	5.41−03	−1.720	B	3
				86.412	24 457 176–25 614 428	7–5	1.59+09	1.27−03	2.52−03	−2.051	B	3,LS
				86.378	24 456 527–25 614 225	5–3	1.42+09	9.56−04	1.35−03	−2.321	B	3,LS
				86.382	24 456 527–25 614 174	3–1	1.90+09	7.08−04	6.04−04	−2.673	C+	3,LS
				86.363	24 456 527–25 614 428	5–5	2.85+08	3.19−04	4.53−04	−2.797	C+	3,LS
				86.378	24 456 527–25 614 225	3–3	4.75+08	5.31−04	4.53−04	−2.798	C+	3,LS
				86.363	24 456 527–25 614 428	3–5	1.90+07	3.54−05	3.01−05	−3.974	C	3,LS
157		^{1}D-^{1}P°		86.35	24 457 576–25 615 718	5–3	1.67+09	1.12−03	1.59−03	−2.252	B	3
158	1*s*4*d*-1*s*9*p*	^{3}D-^{3}P°		*80.72*	*24 456 830–25 695 713*	15–9	1.28+09	7.53−04	3.00−03	−1.947	C+	3
				80.736	24 457 176–25 695 781	7–5	1.08+09	7.54−04	1.40−03	−2.278	B	3,LS
				80.703	24 456 527–25 695 638	5–3	9.64+08	5.65−04	7.50−04	−2.549	C+	3,LS
				80.705	24 456 527–25 695 602	3–1	1.29+09	4.19−04	3.34−04	−2.901	C+	3,LS
				80.694	24 456 527–25 695 781	5–5	1.94+08	1.89−04	2.51−04	−3.025	C+	3,LS
				80.703	24 456 527–25 695 638	3–3	3.22+08	3.14−04	2.50−04	−3.026	C+	3,LS
				80.694	24 456 527–25 695 781	3–5	1.28+07	2.09−05	1.66−05	−4.203	C	3,LS
159		^{1}D-^{1}P°		80.70	24 457 576–25 696 685	5–3	1.13+09	6.59−04	8.76−04	−2.482	C+	3
160	1*s*4*d*-1*s*10*p*	^{3}D-^{3}P°		*77.10*	*24 456 830–25 753 894*	15–9	9.04+08	4.83−04	1.84−03	−2.140	C+	3
				77.115	24 457 176–25 753 943	7–5	7.60+08	4.84−04	8.60−04	−2.470	C+	3,LS
				77.082	24 456 527–25 753 839	5–3	6.79+08	3.63−04	4.60−04	−2.741	C+	3,LS
				77.084	24 456 527–25 753 813	3–1	9.06+08	2.69−04	2.04−04	−3.093	C+	3,LS
				77.076	24 456 527–25 753 943	5–5	1.36+08	1.21−04	1.53−04	−3.218	C+	3,LS
				77.082	24 456 527–25 753 839	3–3	2.27+08	2.02−04	1.53−04	−3.218	C+	3,LS
				77.076	24 456 527–25 753 943	3–5	9.10+06	1.35−05	1.02−05	−4.393	C	3,LS
161		^{1}D-^{1}P°		77.10	24 457 576–25 754 601	5–3	7.96+08	4.25−04	5.40−04	−2.673	C+	3
162	1*s*5*s*-1*s*5*p*	^{3}S-^{3}P°	*12 094*	*12 098*	24 999 972–*25 008 238*	3–9	2.27+06	1.49−01	1.78+01	−0.350	B+	3
			11 544	11 547	24 999 972–25 008 632	3–5	2.61+06	8.69−02	9.91+00	−0.584	B+	3,LS
			12 774	12 778	24 999 972–25 007 798	3–3	1.92+06	4.71−02	5.94+00	−0.850	B+	3,LS
			13 125	13 129	24 999 972–25 007 589	3–1	1.78+06	1.53−02	1.98+00	−1.338	B+	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
163		^{1}S-^{1}P$^\circ$	15 616	15 620	25 007 605–25 014 007	1–3	1.07+06	1.17−01	6.01+00	−0.932	B+	3
164	1s5s-1s6p	^{3}S-^{3}P$^\circ$		*320.09*	24 999 972–*25 312 382*	3–9	1.17+10	5.39−01	1.71+00	0.209	B+	3
				319.859	24 999 972–25 312 610	3–5	1.17+10	3.00−01	9.47−01	−0.046	B+	3,LS
				320.353	24 999 972–25 312 128	3–3	1.17+10	1.80−01	5.69−01	−0.268	B+	3,LS
				320.477	24 999 972–25 312 007	3–1	1.17+10	5.98−02	1.89−01	−0.746	B+	3,LS
165		^{1}S-^{1}P$^\circ$		324.58	25 007 605–25 315 693	1–3	1.18+10	5.57−01	5.95−01	−0.254	B+	3
166	1s5s-1s7p	^{3}S-^{3}P$^\circ$		*201.78*	24 999 972–*25 495 552*	3–9	7.76+09	1.42−01	2.83−01	−0.371	B+	3
				201.726	24 999 972–25 495 695	3–5	7.79+09	7.92−02	1.57−01	−0.624	B+	3,LS
				201.849	24 999 972–25 495 392	3–3	7.78+09	4.75−02	9.46−02	−0.846	B	3,LS
				201.880	24 999 972–25 495 315	3–1	7.76+09	1.58−02	3.15−02	−1.324	B	3,LS
167		^{1}S-^{1}P$^\circ$		204.07	25 007 605–25 497 627	1–3	7.79+09	1.46−01	9.80−02	−0.836	B	3
168	1s5s-1s8p	^{3}S-^{3}P$^\circ$		*162.77*	24 999 972–*25 614 332*	3–9	5.27+09	6.28−02	1.01−01	−0.725	B	3
				162.746	24 999 972–25 614 428	3–5	5.27+09	3.49−02	5.61−02	−0.980	B	3,LS
				162.799	24 999 972–25 614 225	3–3	5.29+09	2.10−02	3.37−02	−1.201	B	3,LS
				162.813	24 999 972–25 614 174	3–1	5.27+09	6.98−03	1.12−02	−1.679	B	3,LS
169		^{1}S-^{1}P$^\circ$		164.44	25 007 605–25 615 718	1–3	5.27+09	6.41−02	3.47−02	−1.193	B	3
170	1s5s-1s9p	^{3}S-^{3}P$^\circ$		*143.73*	24 999 972–*25 695 713*	3–9	3.70+09	3.44−02	4.88−02	−0.986	B	3
				143.718	24 999 972–25 695 781	3–5	3.70+09	1.91−02	2.71−02	−1.242	B	3,LS
				143.747	24 999 972–25 695 638	3–3	3.71+09	1.15−02	1.63−02	−1.462	B	3,LS
				143.755	24 999 972–25 695 602	3–1	3.70+09	3.82−03	5.42−03	−1.941	B	3,LS
171		^{1}S-^{1}P$^\circ$		145.12	25 007 605–25 696 685	1–3	3.71+09	3.52−02	1.68−02	−1.453	B	3
172	1s5s-1s10p	^{3}S-^{3}P$^\circ$		*132.64*	24 999 972–*25 753 894*	3–9	2.70+09	2.13−02	2.80−02	−1.194	B	3
				132.631	24 999 972–25 753 943	3–5	2.71+09	1.19−02	1.55−02	−1.447	B	3,LS
				132.649	24 999 972–25 753 839	3–3	2.71+09	7.14−03	9.35−03	−1.669	B	3,LS
				132.654	24 999 972–25 753 813	3–1	2.71+09	2.38−03	3.11−03	−2.146	B	3,LS
173		^{1}S-^{1}P$^\circ$		133.87	25 007 605–25 754 601	1–3	2.72+09	2.19−02	9.65−03	−1.660	B	3
174	1s5p-1s5d	^{3}P$^\circ$-^{3}D		*4 787* cm^{-1}	*25 008 238–25 013 025*	9–15	4.70+05	5.12−02	3.17+01	−0.336	B+	3
				4 570 cm^{-1}	25 008 632–25 013 202	5–7	4.09+05	4.11−02	1.48+01	−0.687	A	3,LS
			19 711	19 716	25 007 798–25 012 870	3–5	4.19+05	4.07−02	7.92+00	−0.913	B+	3,LS
			18 931	18 936	25 007 589–25 012 870	1–3	3.50+05	5.65−02	3.52+00	−1.248	B+	3,LS
				4 238 cm^{-1}	25 008 632–25 012 870	5–5	8.15+04	6.80−03	2.64+00	−1.469	B+	3,LS
			19 711	19 716	25 007 798–25 012 870	3–3	2.33+05	1.36−02	2.64+00	−1.389	B+	3,LS
				4 238 cm^{-1}	25 008 632–25 012 870	5–3	9.04+03	4.53−04	1.75−01	−2.645	B+	3,LS
175	1s5p-1s6s	^{3}P$^\circ$-^{3}S		*334.03*	*25 008 238*–25 307 614	9–3	1.56+10	8.71−02	8.62−01	−0.106	B+	3
				334.468	25 008 632–25 307 614	5–3	8.66+09	8.71−02	4.79−01	−0.361	B+	3,LS
				333.538	25 007 798–25 307 614	3–3	5.23+09	8.73−02	2.87−01	−0.582	B+	3,LS
				333.306	25 007 589–25 307 614	1–3	1.75+09	8.74−02	9.59−02	−1.058	B	3,LS
176		^{1}P$^\circ$-^{1}S		335.58	25 014 007–25 312 000	3–1	1.50+10	8.42−02	2.79−01	−0.598	B+	3
177	1s5p-1s6d	^{3}P$^\circ$-^{3}D		*325.84*	*25 008 238–25 315 137*	9–15	2.23+10	5.92−01	5.72+00	0.727	B+	3
				326.150	25 008 632–25 315 239	5–7	2.23+10	4.98−01	2.67+00	0.396	B+	3,LS
				325.469	25 007 798–25 315 047	3–5	1.68+10	4.45−01	1.43+00	0.125	B+	3,LS
				325.248	25 007 589–25 315 047	1–3	1.25+10	5.94−01	6.36−01	−0.226	B+	3,LS
				326.355	25 008 632–25 315 047	5–5	5.56+09	8.88−02	4.77−01	−0.353	B+	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				325.469	25 007 798–25 315 047	3–3	9.32+09	1.48−01	4.75−01	−0.353	B+	3,LS
				326.355	25 008 632–25 315 047	5–3	6.18+08	5.92−03	3.18−02	−1.529	B	3,LS
178		^{1}P°-^{1}D		331.84	25 014 007–25 315 357	3–5	2.31+10	6.35−01	2.08+00	0.280	B+	3
179	1s5p-1s7s	^{3}P°-^{3}S		*206.48*	*25 008 238*–25 492 558	9–3	9.33+09	1.99−02	1.22−01	−0.747	B	3
				206.643	25 008 632–25 492 558	5–3	5.18+09	1.99−02	6.76−02	−1.002	B	3,LS
				206.288	25 007 798–25 492 558	3–3	3.12+09	1.99−02	4.05−02	−1.224	B	3,LS
				206.199	25 007 589–25 492 558	1–3	1.04+09	1.99−02	1.35−02	−1.701	B	3,LS
180		^{1}P°-^{1}S		207.77	25 014 007–25 495 299	3–1	8.99+09	1.94−02	3.98−02	−1.235	B	3
181	1s5p-1s8s	^{3}P°-^{3}S		*165.54*	*25 008 238*–25 612 331	9–3	5.96+09	8.17−03	4.01−02	−1.134	B	3
				165.645	25 008 632–25 612 331	5–3	3.31+09	8.18−03	2.23−02	−1.388	B	3,LS
				165.417	25 007 798–25 612 331	3–3	2.00+09	8.19−03	1.33−02	−1.610	B	3,LS
				165.360	25 007 589–25 612 331	1–3	6.66+08	8.19−03	4.45−03	−2.087	B	3,LS
182		^{1}P°-^{1}S		166.62	25 014 007–25 614 158	3–1	5.74+09	7.96−03	1.31−02	−1.622	B	3
183	1s5p-1s9s	^{3}P°-^{3}S		*145.76*	*25 008 238*–25 694 310	9–3	4.05+09	4.30−03	1.86−02	−1.412	B	3
				145.841	25 008 632–25 694 310	5–3	2.25+09	4.31−03	1.03−02	−1.667	B	3,LS
				145.664	25 007 798–25 694 310	3–3	1.36+09	4.32−03	6.21−03	−1.887	B	3,LS
				145.620	25 007 589–25 694 310	1–3	4.53+08	4.32−03	2.07−03	−2.365	B	3,LS
184		^{1}P°-^{1}S		146.72	25 014 007–25 695 589	3–1	3.94+09	4.24−03	6.14−03	−1.896	B	3
185	1s5p-1s10s	^{3}P°-^{3}S		*134.29*	*25 008 238*–25 752 872	9–3	2.90+09	2.61−03	1.04−02	−1.629	B	3
				134.365	25 008 632–25 752 872	5–3	1.61+09	2.61−03	5.77−03	−1.884	B	3,LS
				134.215	25 007 798–25 752 872	3–3	9.70+08	2.62−03	3.47−03	−2.105	B	3,LS
				134.177	25 007 589–25 752 872	1–3	3.23+08	2.62−03	1.15−03	−2.582	B	3,LS
186		^{1}P°-^{1}S		135.17	25 014 007–25 753 802	3–1	2.80+09	2.55−03	3.41−03	−2.116	B	3
187	1s5d-1s5p	^{1}D-^{1}P°		600 cm^{-1}	25 013 407–25 014 007	5–3	1.52+03	3.79−03	1.04+01	−1.722	A	3
188	1s5d-1s6p	^{3}D-^{3}P°		*334.05*	*25 013 025–25 312 382*	15–9	5.32+09	5.34−02	8.81−01	−0.096	B+	3
				333.992	25 013 202–25 312 610	7–5	4.48+09	5.35−02	4.11−01	−0.427	B+	3,LS
				334.160	25 012 870–25 312 128	5–3	3.99+09	4.01−02	2.20−01	−0.698	B+	3,LS
				334.295	25 012 870–25 312 007	3–1	5.32+09	2.97−02	9.80−02	−1.050	B	3,LS
				333.622	25 012 870–25 312 610	5–5	8.03+08	1.34−02	7.35−02	−1.174	B	3,LS
				334.160	25 012 870–25 312 128	3–3	1.33+09	2.23−02	7.36−02	−1.175	B	3,LS
				333.622	25 012 870–25 312 610	3–5	5.36+07	1.49−03	4.91−03	−2.350	B	3,LS
189		^{1}D-^{1}P°		330.81	25 013 407–25 315 693	5–3	4.70+09	4.63−02	2.52−01	−0.635	B+	3
190	1s5d-1s7p	^{3}D-^{3}P°		*207.24*	*25 013 025–25 495 552*	15–9	2.93+09	1.13−02	1.16−01	−0.771	B	3
				207.257	25 013 202–25 495 695	7–5	2.46+09	1.13−02	5.39−02	−1.102	B	3,LS
				207.244	25 012 870–25 495 392	5–3	2.20+09	8.50−03	2.90−02	−1.372	B	3,LS
				207.278	25 012 870–25 495 315	3–1	2.93+09	6.30−03	1.29−02	−1.724	B	3,LS
				207.114	25 012 870–25 495 695	5–5	4.42+08	2.84−03	9.68−03	−1.848	B	3,LS
				207.244	25 012 870–25 495 392	3–3	7.33+08	4.72−03	9.66−03	−1.849	B	3,LS
				207.114	25 012 870–25 495 695	3–5	2.94+07	3.15−04	6.44−04	−3.025	C+	3,LS
191		^{1}D-^{1}P°		206.52	25 013 407–25 497 627	5–3	2.60+09	9.97−03	3.39−02	−1.302	B	3
192	1s5d-1s8p	^{3}D-^{3}P°		*166.30*	*25 013 025–25 614 332*	15–9	1.80+09	4.47−03	3.67−02	−1.174	B	3
				166.327	25 013 202–25 614 428	7–5	1.51+09	4.48−03	1.71−02	−1.504	B	3,LS
				166.291	25 012 870–25 614 225	5–3	1.35+09	3.36−03	9.19−03	−1.775	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				166.305	25 012 870–25 614 174	3–1	1.80+09	2.49−03	4.09−03	−2.127	B	3,LS
				166.235	25 012 870–25 614 428	5–5	2.70+08	1.12−03	3.06−03	−2.252	B	3,LS
				166.291	25 012 870–25 614 225	3–3	4.51+08	1.87−03	3.07−03	−2.251	B	3,LS
				166.235	25 012 870–25 614 428	3–5	1.80+07	1.24−04	2.03−04	−3.429	C+	3,LS
193		^{1}D-^{1}P$^\circ$		166.03	25 013 407–25 615 718	5–3	1.59+09	3.95−03	1.08−02	−1.704	B	3
194	1*s*5*d*-1*s*9*p*	^{3}D-^{3}P$^\circ$		*146.48*	*25 013 025–25 695 713*	15–9	1.19+09	2.29−03	1.66−02	−1.464	B	3
				146.503	25 013 202–25 695 781	7–5	9.96+08	2.29−03	7.73−03	−1.795	B	3,LS
				146.463	25 012 870–25 695 638	5–3	8.91+08	1.72−03	4.14−03	−2.066	B	3,LS
				146.470	25 012 870–25 695 602	3–1	1.19+09	1.28−03	1.85−03	−2.416	B	3,LS
				146.432	25 012 870–25 695 781	5–5	1.79+08	5.74−04	1.38−03	−2.542	B	3,LS
				146.463	25 012 870–25 695 638	3–3	2.97+08	9.56−04	1.38−03	−2.542	B	3,LS
				146.432	25 012 870–25 695 781	3–5	1.19+07	6.38−05	9.22−05	−3.718	C	3,LS
195		^{1}D-^{1}P$^\circ$		146.35	25 013 407–25 696 685	5–3	1.06+09	2.04−03	4.91−03	−1.991	B	3
196	1*s*5*d*-1*s*10*p*	^{3}D-^{3}P$^\circ$		*134.98*	*25 013 025–25 753 894*	15–9	8.29+08	1.36−03	9.05−03	−1.690	B	3
				135.000	25 013 202–25 753 943	7–5	6.97+08	1.36−03	4.23−03	−2.021	B	3,LS
				134.958	25 012 870–25 753 839	5–3	6.23+08	1.02−03	2.26−03	−2.292	B	3,LS
				134.963	25 012 870–25 753 813	3–1	8.31+08	7.56−04	1.00−03	−2.644	B	3,LS
				134.939	25 012 870–25 753 943	5–5	1.25+08	3.40−04	7.55−04	−2.770	C+	3,LS
				134.958	25 012 870–25 753 839	3–3	2.08+08	5.67−04	7.55−04	−2.769	C+	3,LS
				134.939	25 012 870–25 753 943	3–5	8.31+06	3.78−05	5.03−05	−3.945	C	3,LS
197		^{1}D-^{1}P$^\circ$		134.92	25 013 407–25 754 601	5–3	7.37+08	1.21−03	2.68−03	−2.218	B	3
198	1*s*6*s*-1*s*6*p*	^{3}S-^{3}P$^\circ$		*4 768* cm^{-1}	25 307 614–*25 312 382*	3–9	9.09+05	1.80−01	3.73+01	−0.268	A	3
				4 996 cm^{-1}	25 307 614–25 312 610	3–5	1.05+06	1.05−01	2.07+01	−0.502	A	3,LS
				4 514 cm^{-1}	25 307 614–25 312 128	3–3	7.75+05	5.70−02	1.24+01	−0.767	A	3,LS
				4 393 cm^{-1}	25 307 614–25 312 007	3–1	7.14+05	1.85−02	4.15+00	−1.256	B+	3,LS
199		^{1}S-^{1}P$^\circ$		3 693 cm^{-1}	25 312 000–25 315 693	1–3	4.25+05	1.40−01	1.25+01	−0.854	A	3
200	1*s*6*s*-1*s*7*p*	^{3}S-^{3}P$^\circ$		*532.09*	25 307 614–*25 495 552*	3–9	4.66+09	5.93−01	3.12+00	0.250	B+	3
				531.686	25 307 614–25 495 695	3–5	4.69+09	3.31−01	1.73+00	−0.003	B+	3,LS
				532.544	25 307 614–25 495 392	3–3	4.68+09	1.99−01	1.04+00	−0.224	B+	3,LS
				532.762	25 307 614–25 495 315	3–1	4.66+09	6.61−02	3.47−01	−0.703	B+	3,LS
201		^{1}S-^{1}P$^\circ$		538.71	25 312 000–25 497 627	1–3	4.71+09	6.15−01	1.09+00	−0.211	B+	3
202	1*s*6*s*-1*s*8*p*	^{3}S-^{3}P$^\circ$		*326.03*	25 307 614–*25 614 332*	3–9	3.28+09	1.57−01	5.05−01	−0.327	B+	3
				325.930	25 307 614–25 614 428	3–5	3.29+09	8.73−02	2.81−01	−0.582	B+	3,LS
				326.146	25 307 614–25 614 225	3–3	3.29+09	5.24−02	1.68−01	−0.804	B+	3,LS
				326.200	25 307 614–25 614 174	3–1	3.29+09	1.75−02	5.63−02	−1.280	B	3,LS
203		^{1}S-^{1}P$^\circ$		329.25	25 312 000–25 615 718	1–3	3.31+09	1.61−01	1.75−01	−0.793	B+	3
204	1*s*6*s*-1*s*9*p*	^{3}S-^{3}P$^\circ$		*257.67*	25 307 614–*25 695 713*	3–9	2.33+09	6.95−02	1.77−01	−0.681	B	3
				257.621	25 307 614–25 695 781	3–5	2.33+09	3.86−02	9.82−02	−0.936	B	3,LS
				257.716	25 307 614–25 695 638	3–3	2.33+09	2.32−02	5.90−02	−1.157	B	3,LS
				257.740	25 307 614–25 695 602	3–1	2.33+09	7.72−03	1.96−02	−1.635	B	3,LS
205		^{1}S-^{1}P$^\circ$		259.95	25 312 000–25 696 685	1–3	2.33+09	7.09−02	6.07−02	−1.149	B	3
206	1*s*6*s*-1*s*10*p*	^{3}S-^{3}P$^\circ$		*224.07*	25 307 614–*25 753 894*	3–9	1.70+09	3.83−02	8.48−02	−0.940	B	3
				224.050	25 307 614–25 753 943	3–5	1.70+09	2.13−02	4.71−02	−1.194	B	3,LS
				224.102	25 307 614–25 753 839	3–3	1.70+09	1.28−02	2.83−02	−1.416	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				224.115	25 307 614–25 753 813	3–1	1.70+09	4.27−03	9.45−03	−1.892	B	3,LS
207		^{1}S-^{1}P°		225.94	25 312 000–25 754 601	1–3	1.70+09	3.90−02	2.90−02	−1.409	B	3
208	1*s*6*p*-1*s*6*d*	^{3}P°-^{3}D		*2 755* cm^{-1}	*25 312 382–25 315 137*	9–15	1.94+05	6.37−02	6.86+01	−0.242	A	3
				2 629 cm^{-1}	25 312 610–25 315 239	5–7	1.69+05	5.12−02	3.20+01	−0.592	A	3,LS
				2 919 cm^{-1}	25 312 128–25 315 047	3–5	1.73+05	5.08−02	1.71+01	−0.817	A	3,LS
				3 040 cm^{-1}	25 312 007–25 315 047	1–3	1.45+05	7.05−02	7.63+00	−1.152	B+	3,LS
				2 437 cm^{-1}	25 312 610–25 315 047	5–5	3.36+04	8.49−03	5.73+00	−1.372	B+	3,LS
				2 919 cm^{-1}	25 312 128–25 315 047	3–3	9.60+04	1.69−02	5.71+00	−1.295	B+	3,LS
				2 437 cm^{-1}	25 312 610–25 315 047	5–3	3.74+03	5.66−04	3.82−01	−2.548	B+	3,LS
209	1*s*6*p*-1*s*7*s*	^{3}P°-^{3}S		*555.01*	*25 312 610–25 492 558*	9–3	7.33+09	1.13−01	1.86+00	0.007	B+	3
				555.716	25 312 610–25 492 558	5–3	4.07+09	1.13−01	1.03+00	−0.248	B+	3,LS
				554.232	25 312 128–25 492 558	3–3	2.45+09	1.13−01	6.18−01	−0.470	B+	3,LS
				553.860	25 312 007–25 492 558	1–3	8.26+08	1.14−01	2.07−01	−0.943	B+	3,LS
210		^{1}P°-^{1}S		556.77	25 315 693–25 495 299	3–1	7.03+09	1.09−01	5.99−01	−0.485	B+	3
211	1*s*6*p*-1*s*8*s*	^{3}P°-^{3}S		*333.39*	*25 312 382*–25 612 331	9–3	4.63+09	2.57−02	2.54−01	−0.636	B+	3
				333.644	25 312 610–25 612 331	5–3	2.58+09	2.58−02	1.41−01	−0.889	B+	3,LS
				333.108	25 312 128–25 612 331	3–3	1.55+09	2.58−02	8.48−02	−1.111	B	3,LS
				332.974	25 312 007–25 612 331	1–3	5.17+08	2.58−02	2.82−02	−1.588	B	3,LS
212		^{1}P°-^{1}S		335.05	25 315 693–25 614 158	3–1	4.49+09	2.52−02	8.33−02	−1.121	B	3
213	1*s*6*p*-1*s*9*s*	^{3}P°-^{3}S		*261.83*	*25 312 382*–25 694 310	9–3	3.10+09	1.06−02	8.25−02	−1.020	B	3
				261.986	25 312 610–25 694 310	5–3	1.72+09	1.06−02	4.57−02	−1.276	B	3,LS
				261.655	25 312 128–25 694 310	3–3	1.04+09	1.07−02	2.76−02	−1.493	B	3,LS
				261.573	25 312 007–25 694 310	1–3	3.48+08	1.07−02	9.21−03	−1.971	B	3,LS
214		^{1}P°-^{1}S		263.23	25 315 693–25 695 589	3–1	3.00+09	1.04−02	2.70−02	−1.506	B	3
215	1*s*6*p*-1*s*10*s*	^{3}P°-^{3}S		*227.02*	*25 312 382*–25 752 872	9–3	2.18+09	5.62−03	3.78−02	−1.296	B	3
				227.137	25 312 610–25 752 872	5–3	1.21+09	5.63−03	2.10−02	−1.551	B	3,LS
				226.889	25 312 128–25 752 872	3–3	7.31+08	5.64−03	1.26−02	−1.772	B	3,LS
				226.827	25 312 007–25 752 872	1–3	2.44+08	5.64−03	4.21−03	−2.249	B	3,LS
216		^{1}P°-^{1}S		228.25	25 315 693–25 753 802	3–1	2.11+09	5.50−03	1.24−02	−1.783	B	3
217	1*s*6*d*-1*s*6*p*	^{1}D-^{1}P°		336 cm^{-1}	25 315 357–25 315 693	5–3	5.87+02	4.67−03	2.29+01	−1.632	A	3
218	1*s*6*d*-1*s*7*p*	^{3}D-^{3}P°		*554.28*	*25 315 137–25 495 552*	15–9	2.82+09	7.79−02	2.13+00	0.068	B+	3
				554.152	25 315 239–25 495 695	7–5	2.37+09	7.80−02	9.96−01	−0.263	B+	3,LS
				554.493	25 315 047–25 495 392	5–3	2.11+09	5.84−02	5.33−01	−0.535	B+	3,LS
				554.730	25 315 047–25 495 315	3–1	2.82+09	4.33−02	2.37−01	−0.886	B+	3,LS
				553.563	25 315 047–25 495 695	5–5	4.25+08	1.95−02	1.77−01	−1.011	B+	3,LS
				554.493	25 315 047–25 495 392	3–3	7.05+08	3.25−02	1.78−01	−1.011	B+	3,LS
				553.563	25 315 047–25 495 695	3–5	2.83+07	2.17−03	1.18−02	−2.186	B	3,LS
219		^{1}D-^{1}P°		548.64	25 315 357–25 497 627	5–3	2.51+09	6.80−02	6.14−01	−0.469	B+	3
220	1*s*6*d*-1*s*8*p*	^{3}D-^{3}P°		*334.23*	*25 315 137–25 614 332*	15–9	1.67+09	1.68−02	2.77−01	−0.599	B	3
				334.237	25 315 239–25 614 428	7–5	1.40+09	1.68−02	1.29−01	−0.930	B+	3,LS
				334.249	25 315 047–25 614 225	5–3	1.25+09	1.26−02	6.93−02	−1.201	B	3,LS
				334.306	25 315 047–25 614 174	3–1	1.67+09	9.33−03	3.08−02	−1.553	B	3,LS
				334.023	25 315 047–25 614 428	5–5	2.51+08	4.20−03	2.30−02	−1.678	B	3,LS
				334.249	25 315 047–25 614 225	3–3	4.18+08	7.00−03	2.31−02	−1.678	B	3,LS

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				334.023	25 315 047–25 614 428	3–5	1.68+07	4.67−04	1.54−03	−2.854	B	3,LS
221		^{1}D-^{1}P°		332.93	25 315 357–25 615 718	5–3	1.50+09	1.50−02	8.22−02	−1.125	B	3
222	1*s*6*d*-1*s*9*p*	^{3}D-^{3}P°		*262.76*	*25 315 137–25 695 713*	15–9	1.07+09	6.66−03	8.64−02	−1.000	B	3
				262.783	25 315 239–25 695 781	7–5	9.02+08	6.67−03	4.03−02	−1.331	B	3,LS
				262.749	25 315 047–25 695 638	5–3	8.05+08	5.00−03	2.16−02	−1.602	B	3,LS
				262.774	25 315 047–25 695 602	3–1	1.07+09	3.70−03	9.60−03	−1.955	B	3,LS
				262.651	25 315 047–25 695 781	5–5	1.61+08	1.67−03	7.22−03	−2.078	B	3,LS
				262.749	25 315 047–25 695 638	3–3	2.69+08	2.78−03	7.21−03	−2.079	B	3,LS
				262.651	25 315 047–25 695 781	3–5	1.07+07	1.85−04	4.79−04	−3.256	C+	3,LS
223		^{1}D-^{1}P°		262.24	25 315 357–25 696 685	5–3	9.66+08	5.98−03	2.58−02	−1.524	B	3
224	1*s*6*d*-1*s*10*p*	^{3}D-^{3}P°		*227.92*	*25 315 137–25 753 894*	15–9	7.38+08	3.45−03	3.88−02	−1.286	B	3
				227.944	25 315 239–25 753 943	7–5	6.20+08	3.45−03	1.81−02	−1.617	B	3,LS
				227.898	25 315 047–25 753 839	5–3	5.54+08	2.59−03	9.71−03	−1.888	B	3,LS
				227.912	25 315 047–25 753 813	3–1	7.40+08	1.92−03	4.32−03	−2.240	B	3,LS
				227.844	25 315 047–25 753 943	5–5	1.11+08	8.62−04	3.23−03	−2.366	B	3,LS
				227.898	25 315 047–25 753 839	3–3	1.85+08	1.44−03	3.24−03	−2.365	B	3,LS
				227.844	25 315 047–25 753 943	3–5	7.39+06	9.58−05	2.15−04	−3.542	C+	3,LS
225		^{1}D-^{1}P°		227.66	25 315 357–25 754 601	5–3	6.64+08	3.10−03	1.16−02	−1.810	B	3
226	1*s*7*s*-1*s*7*p*	^{3}S-^{3}P°		*2 994* cm^{-1}	25 492 558–*25 495 552*	3–9	4.22+05	2.12−01	6.98+01	−0.197	A	3
				3 137 cm^{-1}	25 492 558–25 495 695	3–5	4.84+05	1.23−01	3.87+01	−0.433	A	3,LS
				2 834 cm^{-1}	25 492 558–25 495 392	3–3	3.58+05	6.69−02	2.33+01	−0.697	A	3,LS
				2 757 cm^{-1}	25 492 558–25 495 315	3–1	3.30+05	2.17−02	7.77+00	−1.186	B+	3,LS
227		^{1}S-^{1}P°		2 328 cm^{-1}	25 495 299–25 497 627	1–3	1.99+05	1.65−01	2.34+01	−0.783	A	3
228	1*s*7*s*-1*s*8*p*	^{3}S-^{3}P°		*821.2*	25 492 558–*25 614 332*	3–9	2.15+09	6.52−01	5.29+00	0.291	B+	3
				820.55	25 492 558–25 614 428	3–5	2.16+09	3.63−01	2.94+00	0.037	B+	3,LS
				821.92	25 492 558–25 614 225	3–3	2.14+09	2.17−01	1.76+00	−0.186	B+	3,LS
				822.26	25 492 558–25 614 174	3–1	2.14+09	7.24−02	5.88−01	−0.663	B+	3,LS
229		^{1}S-^{1}P°		830.4	25 495 299–25 615 718	1–3	2.17+09	6.73−01	1.84+00	−0.172	B+	3
230	1*s*7*s*-1*s*9*p*	^{3}S-^{3}P°		*492.23*	25 492 558–*25 695 713*	3–9	1.58+09	1.72−01	8.37−01	−0.287	B+	3
				492.070	25 492 558–25 695 781	3–5	1.58+09	9.57−02	4.65−01	−0.542	B+	3,LS
				492.417	25 492 558–25 695 638	3–3	1.58+09	5.74−02	2.79−01	−0.764	B+	3,LS
				492.504	25 492 558–25 695 602	3–1	1.58+09	1.91−02	9.29−02	−1.242	B	3,LS
231		^{1}S-^{1}P°		496.56	25 495 299–25 696 685	1–3	1.59+09	1.77−01	2.89−01	−0.752	B+	3
232	1*s*7*s*-1*s*10*p*	^{3}S-^{3}P°		*382.65*	25 492 558–*25 753 894*	3–9	1.15+09	7.59−02	2.87−01	−0.643	B+	3
				382.577	25 492 558–25 753 943	3–5	1.16+09	4.23−02	1.59−01	−0.897	B+	3,LS
				382.730	25 492 558–25 753 839	3–3	1.16+09	2.54−02	9.60−02	−1.118	B	3,LS
				382.768	25 492 558–25 753 813	3–1	1.16+09	8.46−03	3.19−02	−1.596	B	3,LS
233		^{1}S-^{1}P°		385.65	25 495 299–25 754 601	1–3	1.16+09	7.77−02	9.86−02	−1.110	B	3
234	1*s*7*p*-1*s*8*s*	^{3}P°-^{3}S		*856.3*	*25 495 552*–25 612 331	9–3	3.79+09	1.39−01	3.52+00	0.097	B+	3
				857.37	25 495 695–25 612 331	5–3	2.10+09	1.39−01	1.96+00	−0.158	B+	3,LS
				855.15	25 495 392–25 612 331	3–3	1.27+09	1.39−01	1.17+00	−0.380	B+	3,LS
				854.58	25 495 315–25 612 331	1–3	4.23+08	1.39−01	3.91−01	−0.857	B+	3,LS
235		^{1}P°-^{1}S		858.1	25 497 627–25 614 158	3–1	3.62+09	1.33−01	1.13+00	−0.399	B+	3

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
236	1s7p-1s9s	^{3}P°-^{3}S		*503.12*	*25 495 552*–25 694 310	9–3	2.51+09	3.17−02	4.73−01	−0.545	B+	3
				503.487	25 495 695–25 694 310	5–3	1.39+09	3.18−02	2.63−01	−0.799	B+	3,LS
				502.720	25 495 392–25 694 310	3–3	8.39+08	3.18−02	1.57−01	−1.020	B+	3,LS
				502.525	25 495 315–25 694 310	1–3	2.80+08	3.18−02	5.26−02	−1.498	B	3,LS
237		^{1}P°-^{1}S		505.15	25 497 627–25 695 589	3–1	2.42+09	3.09−02	1.54−01	−1.033	B+	3
238	1s7p-1s10s	^{3}P°-^{3}S		*388.62*	*25 495 552*–25 752 872	9–3	1.73+09	1.31−02	1.51−01	−0.928	B	3
				388.837	25 495 695–25 752 872	5–3	9.63+08	1.31−02	8.38−02	−1.184	B	3,LS
				388.380	25 495 392–25 752 872	3–3	5.79+08	1.31−02	5.02−02	−1.406	B	3,LS
				388.264	25 495 315–25 752 872	1–3	1.93+08	1.31−02	1.67−02	−1.883	B	3,LS
239		^{1}P°-^{1}S		390.36	25 497 627–25 753 802	3–1	1.69+09	1.29−02	4.97−02	−1.412	B	3
240	1s8s-1s8p	^{3}S-^{3}P°		*2 001* cm^{-1}	25 612 331–*25 614 332*	3–9	2.16+05	2.43−01	1.20+02	−0.137	A	3
				2 097 cm^{-1}	25 612 331–25 614 428	3–5	2.48+05	1.41−01	6.64+01	−0.374	A	3,LS
				1 894 cm^{-1}	25 612 331–25 614 225	3–3	1.84+05	7.67−02	4.00+01	−0.638	A	3,LS
				1 843 cm^{-1}	25 612 331–25 614 174	3–1	1.69+05	2.49−02	1.33+01	−1.127	A	3,LS
241		^{1}S-^{1}P°		1 560 cm^{-1}	25 614 158–25 615 718	1–3	1.03+05	1.91−01	4.03+01	−0.719	A	3
242	1s8s-1s9p	^{3}S-^{3}P°		*1 199.3*	25 612 331–*25 695 713*	3–9	1.10+09	7.12−01	8.43+00	0.330	B+	3
				1 198.32	25 612 331–25 695 781	3–5	1.10+09	3.96−01	4.68+00	0.075	B+	3,LS
				1 200.38	25 612 331–25 695 638	3–3	1.10+09	2.37−01	2.81+00	−0.148	B+	3,LS
				1 200.90	25 612 331–25 695 602	3–1	1.10+09	7.91−02	9.38−01	−0.625	B+	3,LS
243		^{1}S-^{1}P°		1 211.7	25 614 158–25 696 685	1–3	1.11+09	7.34−01	2.93+00	−0.134	B+	3
244	1s8s-1s10p	^{3}S-^{3}P°		*706.4*	25 612 331–*25 753 894*	3–9	8.33+08	1.87−01	1.30+00	−0.251	B+	3
				706.15	25 612 331–25 753 943	3–5	8.35+08	1.04−01	7.25−01	−0.506	B+	3,LS
				706.67	25 612 331–25 753 839	3–3	8.32+08	6.23−02	4.34−01	−0.728	B+	3,LS
				706.80	25 612 331–25 753 813	3–1	8.33+08	2.08−02	1.45−01	−1.205	B+	3,LS
245		^{1}S-^{1}P°		712.0	25 614 158–25 754 601	1–3	8.42+08	1.92−01	4.50−01	−0.717	B+	3
246	1s8p-1s9s	^{3}P°-^{3}S		*1 250.3*	*25 614 332*–25 694 310	9–3	2.10+09	1.64−01	6.07+00	0.169	B+	3
				1 251.85	25 614 428–25 694 310	5–3	1.16+09	1.64−01	3.37+00	−0.086	B+	3,LS
				1 248.67	25 614 225–25 694 310	3–3	7.02+08	1.64−01	2.02+00	−0.308	B+	3,LS
				1 247.88	25 614 174–25 694 310	1–3	2.36+08	1.65−01	6.77−01	−0.783	B+	3,LS
247		^{1}P°-^{1}S		1 252.0	25 615 718–25 695 589	3–1	2.03+09	1.59−01	1.97+00	−0.321	B+	3
248	1s8p-1s10s	^{3}P°-^{3}S		*721.8*	*25 614 332*–25 752 872	9–3	1.45+09	3.78−02	8.08−01	−0.468	B+	3
				722.31	25 614 428–25 752 872	5–3	8.05+08	3.78−02	4.49−01	−0.724	B+	3,LS
				721.26	25 614 225–25 752 872	3–3	4.85+08	3.78−02	2.69−01	−0.945	B+	3,LS
				720.99	25 614 174–25 752 872	1–3	1.62+08	3.78−02	8.97−02	−1.423	B	3,LS
249		^{1}P°-^{1}S		724.2	25 615 718–25 753 802	3–1	1.41+09	3.69−02	2.64−01	−0.956	B+	3
250	1s9s-1s9p	^{3}S-^{3}P°		*1 403* cm^{-1}	25 694 310–*25 695 713*	3–9	1.20+05	2.74−01	1.93+02	−0.085	A	3
				1 471 cm^{-1}	25 694 310–25 695 781	3–5	1.39+05	1.60−01	1.07+02	−0.319	A	3,LS
				1 328 cm^{-1}	25 694 310–25 695 638	3–3	1.02+05	8.66−02	6.44+01	−0.585	A	3,LS
				1 292 cm^{-1}	25 694 310–25 695 602	3–1	9.39+04	2.81−02	2.14+01	−1.074	A	3,LS
251		^{1}S-^{1}P°		1 096 cm^{-1}	25 695 589–25 696 685	1–3	5.74+04	2.15−01	6.45+01	−0.668	A	3
252	1s9s-1s10p	^{3}S-^{3}P°		*1 678.3*	25 694 310–*25 753 894*	3–9	6.06+08	7.68−01	1.27+01	0.362	B+	3

TABLE 56. Transition probabilities of allowed lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	A_{ki} (s^{-1})	f_{ik}	S (a.u.)	log gf	Acc.	Source[b]
				1 676.92	25 694 310–25 753 943	3–5	6.09+08	4.28−01	7.08+00	0.109	B+	3,LS
				1 679.85	25 694 310–25 753 839	3–3	6.05+08	2.56−01	4.24+00	−0.115	B+	3,LS
				1 680.59	25 694 310–25 753 813	3–1	6.05+08	8.54−02	1.41+00	−0.591	B+	3,LS
253		^{1}S-^{1}P°		1 694.6	25 695 589–25 754 601	1–3	6.16+08	7.96−01	4.44+00	−0.099	B+	3
254	1*s*9*p*-1*s*10*s*	^{3}P°-^{3}S		*1 749.5*	*25 695 713*–25 752 872	9–3	1.25+09	1.91−01	9.88+00	0.235	B+	3
				1 751.59	25 695 781–25 752 872	5–3	6.92+08	1.91−01	5.50+00	−0.020	B+	3,LS
				1 747.21	25 695 638–25 752 872	3–3	4.17+08	1.91−01	3.29+00	−0.242	B+	3,LS
				1 746.11	25 695 602–25 752 872	1–3	1.39+08	1.91−01	1.09+00	−0.719	B+	3,LS
255		^{1}P°-^{1}S		1 750.8	25 696 685–25 753 802	3–1	1.20+09	1.84−01	3.19+00	−0.258	B+	3
256	1*s*10*s*-1*s*10*p*	^{3}S-^{3}P°		*1 022* cm^{-1}	25 752 872–*25 753 894*	3–9	7.09+04	3.05−01	2.95+02	−0.039	A	3
				1 071 cm^{-1}	25 752 872–25 753 943	3–5	8.17+04	1.78−01	1.64+02	−0.272	A	3,LS
				967 cm^{-1}	25 752 872–25 753 839	3–3	6.01+04	9.64−02	9.84+01	−0.539	A	3,LS
				941 cm^{-1}	25 752 872–25 753 813	3–1	5.53+04	3.12−02	3.27+01	−1.029	A	3,LS
257		^{1}S-^{1}P°		799 cm^{-1}	25 753 802–25 754 601	1–3	3.39+04	2.39−01	9.84+01	−0.622	A	3

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Kingston *et al.* (2002); Ref. 2 = Khan *et al.* (1988); Ref. 3 = Fernley *et al.* (1987); Ref. 4 = Plante *et al.* (1994).

References for Allowed Transitions of S XV

Fernley, J. A., K. T. Taylor, and M. J. Seaton, 1987, J. Phys B **20**, 6457. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Khan, F., Khandelwal G. S., and J. W. Wilson, 1988, Astrophys. J. **329**, 493.

Kingston. A. E., P. H. Norrington, and A. W. Boone, 2002, J. Phys B **35**, 4007.

Plante, D. R., W. R. Johnson, and J. Sapirstein, 1994, Phys. Rev A **49**, 3519.

4.15.2. Forbidden Transitions for S XV

Kingston *et al.* (2002) computed the transition probabilities for transitions between levels of low configurations. The calculations cover the magnetic dipole (M1), electric quadrupole (E2), and magnetic quadrupole (M2) transitions from levels up to the $2p^2$ configuration. The transition probabilities were calculated using two sets of CI wave functions. One set of wave functions was generated with the MCDF method and the other set was obtained with the CIV3 method including BP corrections. For the 2-2 transitions, they also presented transition probabilities computed with the MCDF method and the accurate energies taken from work of Plante *et al.* (1994). These results were taken in our table. For the 2-3 transitions, mean values of the MCDF and CIV3 results were adopted.

A wavelength finding list of forbidden lines for S XV is given in Table 57, and the transition probabilities for the lines are provided in Table 58.

TABLE 57. Wavelength finding list for forbidden lines of S XV

Wavelength (vac.) (Å)	Mult. No.
4.300	3
4.300	4
5.063	2
5.102	1
27.359	8
27.367	7
27.378	7
28.386	15
28.386	19
28.406	18
28.420	18
28.476	10
28.491	15
28.497	9
28.570	14
28.597	14
28.628	14
28.662	6
28.704	14
28.731	13
28.736	14
28.744	14
29.290	17
29.515	16
29.549	16
697.36	5
893.09	12
919.42	12
1 044.80	12
1 561.72	22
1 587.25	21

TABLE 57. Wavelength finding list for forbidden lines of S XV—Continued

Wavelength (vac.) (Å)	Mult. No.
1 626.49	21
1 627.39	21
Wavelength (air) (Å)	**Mult. No.**
2 636.1	20
3 241.1	23
7 660	11
Wave number (cm^{-1})	**Mult. No.**
3 207	11

TABLE 58. Transition probabilities of forbidden lines for S XV

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	E_i–E_k (cm^{-1})	g_i–g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
1	$1s^2$–$1s2s$	^{1}S–^{1}S									
				5.102	0–19 602 076	1–3	M1	1.43+06	2.11−05	B+	1
2	$1s^2$–$1s2p$	^{1}S–^{3}P°									
				5.063	0–19 750 573	1–5	M2	1.18+08	1.32−01	A+	1
3	$1s^2$–$1s3d$	^{1}S–^{3}D									
				4.300	0–23 254 645	1–5	E2	1.90+09	1.25−05	B+	1
4		^{1}S–^{1}D									
				4.300	0–23 257 195	1–5	E2	7.80+09	5.12−05	B+	1
5	$1s2s$–$1s2s$	^{3}S–^{1}S									
				697.36	19 602 076–197 454 73	3–1	M1	2.92+00	3.67−05	B+	1
6	$1s2s$–$1s3p$	^{1}S–^{3}P°									
				28.662	19 745 473–23 234 429	1–5	M2	6.31+04	4.09−01	A+	1
7	$1s2s$–$1s3d$	^{3}S–^{3}D									
				27.367	19 602 076–23 256 165	3–7	E2	6.83+08	6.55−02	A	1
				27.378	19 602 076–23 254 645	3–5	E2	5.48+08	3.76−02	A	1
				27.378	19 602 076–23 254 611	3–3	E2	6.82+08	2.81−02	A	1
8		^{3}S–^{1}D									
				27.359	19 602 076–23 257 195	3–5	E2	1.34+08	9.15−03	A	1
9		^{1}S–^{3}D									
				28.497	19 745 473–23 254 645	1–5	E2	1.23+08	1.03−02	A	1
10		^{1}S–^{1}D									
				28.476	19 745 473–23 257 195	1–5	E2	5.05+08	4.22−02	A	1
11	$1s2p$–$1s2p$	^{3}P°–^{3}P°									
			7660	7662	19 737 521–19 750 573	3–5	M1	2.97+01	2.48+00	A	1
				3207 cm^{-1}	19 734 314–19 737 521	1–3	M1	5.84−01	1.97+00	A	1
12		^{3}P°–^{1}P°									
				919.42	19 737 521–19 846 285	3–3	M1	1.48+04	1.28+00	B+	1
				1044.80	19 750 573–19 846 285	5–3	M1	1.51+02	1.92−02	B+	1
				893.09	19 734 314–19 846 285	1–3	M1	2.10+02	1.66−02	A	1

TABLE 58. Transition probabilities of forbidden lines for S XV—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})[a]	$E_i - E_k$ (cm^{-1})	$g_i - g_k$	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source[b]
13	$1s2p-1s3s$	$^3P^\circ-^1S$									
				28.731	19 750 573–23 231 087	5–1	M2	2.75+04	3.61−02	A	1
14	$1s2p-1s3p$	$^3P^\circ-^3P^\circ$									
				28.704	19 750 573–23 234 429	5–5	E2	9.35+07	8.13−03	A	1
				28.628	19 737 521–23 230 551	3–3	E2	6.37+07	3.28−03	A	1
				28.744	19 750 573–23 229 571	5–1	E2	2.68+08	4.69−03	A	1
				28.736	19 750 573–23 230 551	5–3	E2	2.00+08	1.05−02	A	1
				28.597	19 737 521–23 234 429	3–5	E2	1.19+08	1.02−02	A	1
				28.570	19 734 314–23 234 429	1–5	E2	5.39+07	4.58−03	A	1
15		$^3P^\circ-^1P^\circ$									
				28.386	19 737 521–23 260 416	3–3	E2	5.37+06	2.65−04	B+	1
				28.491	19 750 573–23 260 416	5–3	E2	1.81+06	9.11−05	B+	1
16		$^1P^\circ-^3P^\circ$									
				29.549	19 846 285–23 230 551	3–3	E2	5.54+06	3.34−04	B+	1
				29.515	19 846 285–23 234 429	3–5	E2	9.61+05	9.61−05	B+	1
17		$^1P^\circ-^1P^\circ$									
				29.290	19 846 285–23 260 416	3–3	E2	2.82+08	1.63−02	A	1
18	$1s2p-1s3d$	$^3P^\circ-^3D$									
				28.420	19 737 521–23 256 165	3–7	M2	1.94+04	1.69−01	A+	1
				28.406	19 734 314–23 254 645	1–5	M2	3.58+02	2.22−03	A	1
19		$^3P^\circ-^1D$									
				28.386	19 734 314–23 257 195	1–5	M2	7.14+04	4.41−01	A+	1
20	$1s3s-1s3s$	$^3S-^1S$									
			2636.1	2636.9	23 193 163–23 231 087	3–1	M1	7.37−02	5.01−05	B+	1
21	$1s3s-1s3d$	$^3S-^3D$									
				1587.25	23 193 163–23 256 165	3–7	E2	8.89+00	5.60−01	A	1
				1626.49	23 193 163–23 254 645	3–5	E2	6.32+00	3.21−01	A	1
				1627.39	23 193 163–23 254 611	3–3	E2	7.85+00	2.40−01	A	1
22		$^3S-^1D$									
				1561.72	23 193 163–23 257 195	3–5	E2	1.89+00	7.82−02	A	1
23	$1s3p-1s3p$	$^3P^\circ-^1P^\circ$									
			3241.1	3242.0	23 229 571–23 260 416	1–3	M1	4.96+00	1.88−02	A	1

[a]Wavelengths (Å) are always given unless cm^{-1} is indicated.
[b]Ref. 1 = Kingston *et al.* (2002).

References for Forbidden Transitions of S XV

Kingston. A. E., P. H. Norrington, and A. W. Boone, 2002, J. Phys B **35**, 4007.

Plante, D. R., W. R. Johnson, and J. Sapirstein, 1994, Phys. Rev A **49**, 3519.

5. References

Almaraz, M. A., A. Hibbert, C. Lavin, I. Martin, and K. L. Bell, 2000, J. Phys. B **33**, 3277.

Beideck, D. J., R. M. Schectman, S. R. Federman, and D. G. Ellis, 1994, Astrophys. J. **428**, 393.

Berzinsh, U., L. Caiyan, R. Zerne, S. Svanberg, and E. Biémont, 1997, Phys. Rev. A **55**, 1836.

Bhattacharya, N., B. Bapat, S. A. Rangwala, S. V. K. Kumar, and E. Krishnakumar, 1998, Eur. Phys. J. D **02**, 125.

Biémont, E., H. P. Garnir, S. R. Federman, Z. S. Li, and S. Svanberg, 1998, Astrophys. J. **502**, 1010.

Biémont, E., P. J. Storey, and C. J. Zeippen, 1996, Astron. Astrophys. **309**, 991.

Burke, V. M. and D. L. Lennon (unpublished). Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Butler, K., C. Mendoza, and C. J. Zeippen (unpublished). Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Butler, K., C. Mendoza, and C. J. Zeippen, 1993, J. Phys. B **26**, 4409; Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Butler, K. and C. J. Zeippen (unpublished). Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Cornille, M., T. Ludac, D. Hitz, S. Bliman, G. A. Heckman, and E. J. Knystautas, 1991, Phys. Rev. A **43**, 115.

Cowley, C. R., W. L. Wiese, J. R. Fuhr, and L. A. Kusnetsova, 2000, *Allen's Astrophysical Quantities*, 4th ed., edited by A. N. Cox (AIP, New York), Chap. 4, pp. 53–93.

Fawcett, B. C., 1987, At. Data Nucl. Data Tables **37**, 367.

Fawcett, B. C., and R. W. Hayes, 1987, Phys. Scr. **36**, 80.

Fernley, J. A., K. T. Taylor, and M. J. Seaton, 1987, J. Phys. B **20**, 6457; Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Fernley, J. A., A. Hibbert, A. E. Kingston, and M. J. Seaton, 1999, J. Phys. B **32**, 5507. Complete list on http:/legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Froese Fischer, C., 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., 2002b, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., 2004a, Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., 2004b, Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCDHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C. and G. Tachiev, 2004, At. Data Nucl. Data Tables **87**, 1. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection, MCHF, ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Froese Fischer, C., G. Tachiev, and A. Irimia, 2006, At. Data Nucl. Data Tables **92**, 607. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection, MCHF, ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Fuhr, J. R., H. R. Felrice, K. Olsen, and J. Hwang, 2003, *Atomic Transition Probability Bibliographic Database* (version 7.0). [Online] Available: http://physics.nist.gov/fvalbib. National Institute of Standards and Technology, Gaithersburg, MD.

Galavis, M. E., C. Mendoza, and C. J. Zeippen, 1997, Astron. Astrophys. Suppl. Ser. **123**, 159.

Galavís, M. E., C. Mendoza, and C. J. Zeippen, 1998, Astron. Astrophys. Suppl. Ser. **131**, 499.

Godefroid, M., C. E. Magnusson, P. O. Zetterberg, and I. Joelsson, 1985, Phys. Scr. **32**, 125.

Guennou, H., and A. Sureau, 1987, J. Phys. B **20**, 919.

Gupta, G. P., and A. Z. Msezane, 2000a, Astrophys. J., Suppl. Ser. **130**, 227.

Gupta, G. P., and A. Z. Msezane, 2000b, At. Data Nucl. Data Tables **74**, 267.

Heise, C., P. L. Smith, and A. G. Calamai, 1995, Astrophys. J. **451**, L41.

Hibbert, A., T. Brage, and J. Fleming, 2002, Mon. Not. R. Astron. Soc. **333**, 885.

Irimia, A., and C. Froese Fischer, 2005, Phys. Scr. **71**, 172, Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection, MCHF, energy adjusted*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Joelsson, I., P. O. Zetterberg, and C. E. Magnusson, 1979, Phys. Scr. **20**, 145.

Kelleher, D. E., and L. I. Podobedova, 2008a, J. Phys. Chem. Ref. Data **37**, 267.

Kelleher, D. E., and L. I. Podobedova, 2008b, J. Phys. Chem. Ref. Data **37**, 709.

Kelleher, D. E., and L. I. Podobedova, 2008c, J. Phys. Chem. Ref. Data **37**, 1285.

Khan, F., G. S. Khandelwal, and J. W. Wilson, 1988, Astrophys. J. **329**, 493.

Kingston, A. E. and A. Hibbert, 2000, J. Phys. B **33**, 693.

Kingston, A. E., P. H. Norrington, and A. W. Boone, 2002, J. Phys. B **35**, 4007.

Kirm, M., P. Bengtsson, and L. Engström, 1996, Phys. Scr. **54**, 167.

Kohstall, C., S. Fritzsche, B. Fricke, and W.-D. Sepp, 1998, At. Data Nucl. Data Tables **70**, 63.

Li, Z. S., A. Persson, S. Svanberg, H. P. Garnir, and E. Biémont, 1998, Eur. Phys. J. D **2**, 11.

Luo, D., and A. K. Pradhan, 1989, J. Phys. B **22**, 3377; Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project). S11.

Martin, W. C., R. Zalubas, and A. Musgrove, 1990, J. Phys. Chem. Ref. Data **19**, 821.

Mendoza, C., W. Eissner, M. Le Dourneuf, and C. J. Zeippen, 1995, J. Phys. B **28**, 3485. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Merkelis, G., I. Martinson, R. Kisielius, and M. J. Vilkas, 1999, Phys. Scr. **59**, 122.

Merkelis, G., J. J. Vilkas, G. Gaigalas, and R. Kisielius, 1995, Phys. Scr. **51**, 233.

Mohr, P. J., B. N. Taylor, and D. B. Newell, 2008, J. Phys. Chem. Ref. Data **37**, 1187

Müller, D., 1968, Z. Naturforsch. A **23A**, 1707.

Nahar, S. N., 2002, Astron. Astrophys. **389**, 716.

Nahar, S. N. and A. K. Pradhan, 1993, J. Phys. B **26**, 1109. Complete list on http://www.legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Peach, G., H. E. Saraph, and M. J. Seaton, 1988, J. Phys. B **21**, 3669. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Peck, E. R. and K. Reeder, 1972, J. Opt. Soc. Am. **62**, 958.

Plante, D. R., W. R. Johnson, and J. Sapirstein, 1994, Phys. Rev. A **49**, 3519.

Podobedova, L. I., A. Musgrove, D. E. Kelleher, J. Reader, and W. L. Wiese, 2003, J. Phys. Chem. Ref. Data **32**, 1367.

Ralchenko, Yu., A. E. Kramida, Reader, J., and NIST ASD Team, 2008, *NIST Atomic Spectra Database* (version 3.1.5), http://physics.nist.gov/asd3. National Institute of Standards and Technology, Gaithersburg, MD.

Ray, D., P. K. Mukherjee, and H. P. Roy, 1989, Astrophys. J. **346**, 1045.

Safronova, U. I., A. Derevianko, M. S. Safronova, and W. R. Johnson, 1999, J. Phys. B **32**, 3527. Complete data listing from private communication (2000).

Tachiev, G., 2004, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Tachiev, G. and C. Froese Fischer, 2002a, downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Tachiev, G. and C. Froese Fischer, 2002b, Astron. Astrophys. **385**, 716. Downloaded from C. Froese Fischer and G. Tachiev, *The MCHF/MCDHF Collection*, MCHF, *ab initio*, http://atoms.vuse.vanderbilt.edu/ on December 21, 2005.

Träbert, E., 1996, Phys. Scr. **53**, 167.

Tully, J. A., M. J. Seaton, and K. A. Berrington, 1990, J. Phys. B **23**, 3811. Complete list on http://legacy.gsfc.nasa.gov/topbase/ (Opacity Project).

Vilkas, M. J., I. Martinson, G. Merkelis, G. Gaigalas, and R. Kisielius, 1996, Phys. Scr. **54**, 281.

Wiese, W. L., J. R. Fuhr, and T. M. Deters, 1996, J. Phys. Chem. Ref. Data Monogr. **7**, 532

Wiese, W. L., M. W. Smith, and B. M. Miles, 1969, *Atomic Transition Probabilities*, Natl. Bur. Stand. Ref. Data Ser., Natl. Bur. Stand. (U.S.) Circ. No. 22 (U.S. GPO, Washington, D.C.), Vol. II.

Zatsarinny, O. and K. Bartschat, 2006, J. Phys. B **39**, 2861.
Zerne, R., L. Caiyan, U. Berzinsh, and S. Svanberg, 1997, Phys. Scr. **56**, 459.
Zou, Y. and C. Froese Fischer, 2000, Phys. Rev. A **62**, 062505.
Zou, Y. and C. Froese Fischer, 2001, J. Phys. B **34**, 915.