Atomic Transition Probabilities of Silicon. A Critical Compilation

D. E. Kelleher[a] and L. I. Podobedova[b]

Atomic Physics Division, National Institute of Standards and Technology, Gaithersburg, Maryland 20899-8422, USA

(Received 8 May 2006; accepted 8 June 2006; published online 17 July 2008)

This compilation is the third in a series of updates to a critical compilation published in 1969 by Wiese *et al.* [*Atomic Transition Probabilities, Vol. II: Sodium through Calcium*, NSRDS-NBS Vol. 22 (U.S. GPO, Washington, D.C., 1969)]. Atomic transition probabilities have been critically evaluated and compiled for about 5800 spectral lines of silicon (nuclear charge $Z=14$). The cited values and their estimated uncertainties are based on our consideration of all available theoretical and experimental literature sources. All ionization stages (except for hydrogenic) are covered, and 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. In each spectrum, lines are grouped into multiplets which are arranged in order of ascending lower and upper level energies, respectively. For each line, the emission transition probability A_{ki}, the line strength S, and (for allowed lines) the absorption oscillator strength f_{ik} are given, together with the spectroscopic designation, the wavelength, the statistical weights, and the energy levels of the lower and upper states. The estimated relative uncertainties of the line strength are also indicated, as are the source citations. We include only those lines whose transition rates are deemed sufficiently accurate to qualify as reference values. Short introductions precede the tables for each ion.
[DOI: 10.1063/1.2734566]

Key words: atomic spectra; energy levels; ions; line strengths; oscillator strengths; silicon; transition probabilities; uncertainties.

CONTENTS

1. Introduction. 1287
2. Acknowledgments and Future Plans. 1289
3. References for Sections 1 and 2. 1289
4. Si. 1290
 4.1. Si I. 1290
  4.1.1. Allowed Transitions for Si I. 1290
  4.1.2. References for Allowed Transitions for Si I. 1290
  4.1.3. Forbidden Transitions of Si I. 1313
  4.1.4. References for Forbidden Transitions of Si I. 1313
 4.2. Si II. 1315
  4.2.1. Allowed Transitions for Si II. 1315
  4.2.2. References for Allowed Transitions for Si II. 1316
  4.2.3. Forbidden Transitions for Si II. 1333
  4.2.4. References for Forbidden Transitions for Si II. 1333
 4.3. Si III. 1335
  4.3.1. Allowed Transitions for Si III. 1335
  4.3.2. References for Allowed Transitions for Si III. 1335
  4.3.3. Forbidden Transitions for Si III. 1372
  4.3.4. References for Forbidden Transitions for Si III. 1372
 4.4. Si IV. 1380
  4.4.1. Allowed Transitions for Si IV. 1380
  4.4.2. References for Allowed Transitions for Si IV. 1380
  4.4.3. Forbidden Transitions for Si IV. 1392
  4.4.4. References for Forbidden Transitions for Si IV. 1392
 4.5. Si V. 1394
  4.5.1. Allowed Transitions for Si V. 1394
  4.5.2. References for Allowed Transitions for Si V. 1394
  4.5.3. Forbidden Transitions for Si V. 1401
  4.5.4. References for Forbidden Transitions for Si V. 1401
 4.6. Si VI. 1402
  4.6.1. Allowed Transitions for Si VI. 1402
  4.6.2. References for Allowed Transitions for Si VI. 1402
  4.6.3. Forbidden Transitions for Si VI. 1415
  4.6.4. References for Forbidden Transitions for Si VI. 1415
 4.7. Si VII. 1416

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

4.7.1. Allowed Transitions for Si VII. 1416
4.7.2. References for Allowed Transitions for Si VII. 1416
4.7.3. Forbidden Transitions for Si VII. 1424
4.7.4. References for Forbidden Transitions for Si VII. 1424
4.8. Si VIII. 1425
4.8.1. Allowed Transitions for Si VIII. 1425
4.8.2. References for Allowed Transitions for Si VIII. 1425
4.8.3. Forbidden Transitions for Si VIII. . . . 1434
4.8.4. References for Forbidden Transitions for Si VIII. 1435
4.9. Si IX. 1436
4.9.1. Allowed Transitions for Si IX. 1437
4.9.2. References for Allowed Transitions for Si IX. 1437
4.9.3. Forbidden Transitions for Si IX. 1445
4.9.4. References for Forbidden Transitions for Si IX. 1445
4.10. Si X. 1449
4.10.1. Allowed Transitions for Si X. 1449
4.10.2. References for Allowed Transitions for Si X. 1449
4.10.3. Forbidden Transitions of Si X. 1459
4.10.4. References for Forbidden Transitions for Si X. 1459
4.11. Si XI. 1460
4.11.1. Allowed Transitions for Si XI. 1460
4.11.2. References for Allowed Transitions for Si XI. 1461
4.11.3. Forbidden Transitions for Si XI. 1468
4.11.4. References for Forbidden Transitions for Si XI. 1469
4.12. Si XII. 1470
4.12.1. Allowed Transitions for Si XII. 1470
4.12.2. References for Allowed Transitions for Si XII. 1471
4.13. Si XIII. 1478
4.13.1. Allowed Transitions for Si XIII. 1478
4.13.2. References for Allowed Transitions for Si XIII. 1478
5. Collective References for Si. 1500

List of Tables

1. Correspondence between accuracy and estimated relative uncertainty. 1288
2. Conversion factors for transition rates. A_{ki} is the emission transition probability in s^{-1}, f_{ki} is the absorption oscillatory strength, g is the statistical weight. R_∞ is the Rydberg constant, α is the fine-structure constant, c is the speed of light, and σ is the energy difference between the upper (k) and lower (i) levels of the transition (R_∞ and σ are in cm^{-1}, c is in cm/sec). The line strength, $S^k_{E,M}$, is the absolute square of the reduced matrix element of the k^{th} multipolar electric/magnetic operator, respectively. The numerical values are based on the 2002 CODATA recommended values of fundamental constants,[9] with the line strength in atomic units and λ the vacuum wavelength in Ångströms.. 1289
3. Wavelength finding list for allowed lines of Si I. 1290
4. Transition probabilities of allowed lines for Si I. 1295
5. Wavelength finding list for forbidden lines of Si I. 1313
6. Transition probabilities of forbidden lines for Si I. 1314
7. Wavelength finding list for allowed lines of Si II. 1316
8. Transition probabilities of allowed lines for Si II. 1319
9. Wavelength finding list for forbidden lines of Si II. 1333
10. Transition probabilities of forbidden lines for Si II. 1333
11. Wavelength finding list for allowed lines of Si III. 1335
12. Transition probabilities of allowed lines for Si III. 1344
13. Wavelength finding list for forbidden lines of Si III. 1372
14. Transition probabilities of forbidden lines for Si III. 1374
15. Wavelength finding list for allowed lines of Si IV. 1381
16. Transition probabilities of allowed lines for Si IV. 1383
17. Wavelength finding list for forbidden lines of Si IV. 1392
18. Transition probabilities of forbidden lines for Si IV. 1392
19. Wavelength finding list for allowed lines of Si V. 1394
20. Transition probabilities of allowed lines for Si V. 1396
21. Wavelength finding list for forbidden lines of Si V. 1401
22. Transition probabilities of forbidden lines for Si V. 1401
23. Wavelength finding list for allowed lines of Si VI. 1402
24. Transition probabilities of allowed lines for Si VI. 1405
25. Wavelength finding list for forbidden lines of Si VI. 1415
26. Transition probabilities of forbidden lines for Si VI. 1416
27. Wavelength finding list for allowed lines of Si VII. 1417

28. Transition probabilities of allowed lines for Si VII. 1418
29. Wavelength finding list for forbidden lines of Si VII. 1424
30. Transition probabilities of forbidden lines for Si VII. 1425
31. Wavelength finding list for allowed lines of Si VIII. 1426
32. Transition probabilities of allowed lines for Si VIII. 1427
33. Wavelength finding list for forbidden lines of Si VIII. 1435
34. Transition probabilities for forbidden lines for Si VIII. 1435
35. Wavelength finding list for allowed lines of Si IX. 1437
36. Transition probabilities of allowed lines for Si IX. 1439
37. Wavelength finding list for forbidden liens of Si IX. 1446
38. Transition probabilities of forbidden lines for Si IX. 1446
39. Wavelength finding list for allowed lines of Si X. 1450
40. Transition probabilities of allowed lines for Si X. 1452
41. Wavelength finding list for forbidden lines of Si X. 1460
42. Transition probabilities of forbidden lines for Si X. 1460
43. Wavelength finding list for allowed lines of Si XI. 1461
44. Transition probabilities of allowed lines for Si XI. 1462
45. Wavelength finding list for forbidden lines of Si XI. 1469
46. Transition probabilities of forbidden lines for Si XI. 1469
47. Wavelength finding list for allowed lines of Si XII. 1471
48. Transition probabilities of allowed lines for Si XII. 1472
49. Wavelength finding list for allowed lines of Si XIII. 1479
50. Transition probabilities of allowed lines for Si XIII. 1484

1. Introduction

This is the third installment of an effort to update, revise, and expand the reference data tables on atomic transition probabilities [c] for all ionization stages of the elements sodium through calcium.

[c]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 phenomenon of radiative transitions. We also use the generic term "transition rate" to refer to any of the above.

The original compilation, *Atomic Transition Probabilities, Vol. II: Sodium through Calcium*, was published in 1969 by Wiese *et al.*[114] These older transition rates, with updated energies and wavelengths, are also available in the current versions of the Atomic Spectra Database (ASD).[80] This new tabulation has been undertaken because a vast amount of new material, referenced in the Bibliographic Database on Atomic Transition Probabilities,[81] has become available in recent years, primarily from sophisticated atomic structure calculations. Since this material is so extensive, the new tables will be published in several parts. This third part contains all nonhydrogenic spectra of the element silicon ($Z=14$). Subsequent volumes will cover P to Ca ($Z=15-20$). The quality of many of the data has also increased, particularly for transitions between lower-lying levels.

The general introduction to our first compilation, of Na and Mg,[53] contains a detailed discussion of the principal criteria for our judgments and our method of data selection and evaluation. We have maintained the same layout of the earlier critical compilations of atomic transition probabilities. In addition to the spectroscopic information given for each spectral line, we list the transition probability for spontaneous emission A_{ki} and several equivalent expressions, the estimated "accuracy" (Acc), and citations to the sources from which the transition rate was derived.

The material for each spectrum is subdivided into a main table for allowed (electric dipole) 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. 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. Most authors who have carried out recent calculations for S and A_{ki} for E2 transitions follow a definition for S(E2) given by Cowan[23] and others. Since this appears now to be the preferred definition, we follow this convention. This is reflected in the change of the conversion factor from that given in an earlier NIST compilation.[114]

The tables are grouped according to multiplets and arranged in order of increasing lower and upper energy levels. We list all individual lines within each multiplet unless transition rate or energy level data were unavailable. Finally, in order to facilitate finding lines by wavelength in each spectrum, we have provided finding lists ordered by increasing wavelengths.

We present two wavelength columns. The first column lists air wavelengths for lines in the near ultraviolet, visible, and near infrared spectra (2000 Å $<\lambda<$ 20 000 Å). The second gives the vacuum wavelength (or the vacuum wave number for infrared lines above 20 000 Å). Wavelengths are derived from the most recent NIST atomic energy level data for silicon.[66] The listed vacuum wavelength is equal to the inverse of the difference between the upper and lower level energies. Air wavelengths are derived from these by dividing the vacuum wavelength by the corresponding index of refraction in air.[86] The ASD (Ref. 80) database help file contains a detailed discussion of how the air index of refraction and the number of significant figures are derived for the wavelengths. A "cm^{-1}" in this column indicates that a wave number (energy difference in cm^{-1}) rather than a wavelength is listed. 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) One level is part of a system whose absolute energies are not well known with respect to the other levels of the atom or ion. For example, the absolute energy scale for excited ^4P levels is sometimes not experimentally established with respect to the ^2P levels. (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.

Next, we list the lower and upper energies and statistical weights ($g=2J+1$, where J is the quantum number for the total orbital angular momentum). We have expressed the atomic transition rates in four different ways because different user communities have different preferences. Thus, in addition to the transition probability for spontaneous emission A_{ki}, we present the (absorption) oscillator strength f_{ik} as well as the line strength S and log $g_i f_{ik}$. We use a shortened exponential notation for A_{ki}, f_{ik}, and S; for example 1.23 −04 indicates 1.23×10^{-4}. The conversion factors between the tabulated quantities A_{ki}, f_{ik}, and S are listed in Table 2. For the numerical conversions between different transition rates, we have used the vacuum wavelengths listed in the tables, which are usually derived from experimental level energies.

We assign a letter-grade accuracy for each line strength. The cited accuracy can be put on an absolute scale via Table 1. A detailed description of the method for estimating the relative uncertainties is described in Kelleher and Podobedova.[53] Uncertainties for oscillator strengths and especially for transition probabilities can be higher due to uncertainties in the wavelength. Table 2 shows the wavelength dependence of these quantities. It increases for higher multipole transitions. Typically, such uncertainties are significant only for wavelengths longer than 10 000 Å. In Table 1 we list our assigned correspondence between the estimated 90% relative standard deviation of the mean (RSDM) and the published letter indicating the accuracy (Acc):

"LS" in the "Source" column indicates that the line data have been approximated by applying LS coupling fractions [using either Eq. (1) of Kelleher and Podobedova[53] or the listed values in Allen[2]] to a published multiplet value. LS′ is used in those special cases where one level in a transition is not designated in LS coupling, but it has a "unique J," such that there is no other level with the same J and configuration with which it can mix via the spin-orbit interaction.

TABLE 1. Correspondence between accuracy and estimated relative uncertainty

Acc	Relative uncertainty of mean line strength at 90% confidence level[a]
AA	≤0.001
A+	≤0.01
A	≤0.03
B+	≤0.06
B	≤0.10
C+	≤0.15
C	≤0.25
D+	≤0.30
D	≤0.50
E+	≤0.70
E	≤1

[a]There is a 90% probability that the relative uncertainty of the *line strength* is equal to or better than the value cited. Uncertainties of oscillator strengths and transition probabilities may be somewhat higher when the uncertainty in the transition wavelength is significant; see Table 2. This correspondence table is somewhat different from compilations by other NIST authors because we use a different approach to estimate uncertainty.

Multiplet averages are given only if all the fine-structure members of the multiplet are listed. For the energy levels, the multiplet g value (lower and upper levels) is the sum of g's for all the levels involved in the multiplet (lower and upper levels, respectively), with each level counted only once. The cited energy is the g-weighted average of each of the unique levels in the multiplet. The multiplet wavelength is determined from these energies. The multiplet line strength is the sum of the individual fine-structure line strengths. The oscillator strength and transition probability are derived from the line strength according to Table 2.

TABLE 2. Conversion factors for transition rates. A_{ki} is the emission transition probability in s^{-1}, f_{ki} is the absorption oscillatory strength, g is the statistical weight. R_∞ is the Rydberg constant, α is the fine-structure constant, c is the speed of light, and σ is the energy difference between the upper (k) and lower (i) levels of the transition (R_∞ and σ are in cm^{-1}, c is in cm/sec). The line strength, $S^k_{E,M}$, is the absolute square of the reduced matrix element of the k^{th} multipolar electric/magnetic operator, respectively. The numerical values are based on the 2002 CODATA recommended values of fundamental constants,[9] with the line strength in atomic units and λ the vacuum wavelength in Ångströms.

$$g_i f_{ik} = (R_\infty / 2\pi\alpha^3 c) g_k A_{ki} / \sigma^2 = 1.499\,193\,8 \times 10^{-16}\, g_k A_{ki} \lambda^2; \quad g_i f_{ik} = -g_k f_{ki}$$

Type	$g_i f_{ik}$	$g_k A_{ki}$	Parity change?	Selection rules
E1	$\frac{1}{3\alpha}\left(\frac{\alpha\sigma}{R_\infty}\right) S_E^{(1)}$	$\frac{2}{3}\alpha\pi c\sigma\left(\frac{\alpha\sigma}{R_\infty}\right)^2 S_E^{(1)}$	Yes	$\Delta J=0, \pm 1$ (no $0 \leftrightarrow 0$); $\Delta M=0, \pm 1$ (no $0 \leftrightarrow 0$ if $\Delta J=0$)
	$303.755\,68\ S/\lambda$	$2.026\,126\,9 \times 10^{18}\ S/\lambda^3$		
M1	$\frac{\alpha}{12}\left(\frac{\alpha\sigma}{R_\infty}\right) S_M^{(1)}$	$\frac{1}{6}\alpha^3\pi c\sigma\left(\frac{\alpha\sigma}{R_\infty}\right)^2 S_M^{(1)}$	No	Same as E1
	$4.043\,850\,4 \times 10^{-3}\ S/\lambda$	$2.697\,350\,0 \times 10^{13}\ S/\lambda^3$		
E2	$\frac{1}{240\alpha}\left(\frac{\alpha\sigma}{R_\infty}\right)^3 S_E^{(2)}$	$\frac{1}{120}\alpha\pi c\sigma\left(\frac{\alpha\sigma}{R_\infty}\right)^4 S_E^{(2)}$	No	$\Delta J=0, \pm 1, \pm 2$ (no $0 \leftrightarrow 0$, $0 \leftrightarrow 1$, or $1/2 \leftrightarrow 1/2$); $\Delta M=0, \pm 1, \pm 2$
	$167.902\,21\ S/\lambda^3$	$1.119\,950\,0 \times 10^{18}\ S/\lambda^5$		
M2	$\frac{\alpha}{960}\left(\frac{\alpha\sigma}{R_\infty}\right)^3 S_M^{(2)}$	$\frac{1}{480}\alpha^3\pi c\sigma\left(\frac{\alpha\sigma}{R_\infty}\right)^4 S_M^{(2)}$	Yes	Same as E2
	$2.235\,255\,0 \times 10^{-3}\ S/\lambda^3$	$1.490\,971\,4 \times 10^{13}\ S/\lambda^5$		
E3	$\frac{1}{37\,800\alpha}\left(\frac{\alpha\sigma}{R_\infty}\right)^5 S_E^{(3)}$	$\frac{1}{18\,900}\alpha\pi c\sigma\left(\frac{\alpha\sigma}{R_\infty}\right)^6 S_E^{(3)}$	Yes	
	$47.140\,897\ S/\lambda^5$	$3.144\,416\,5 \times 10^{17} S/\lambda^7$		

2. Acknowledgments and Future Plans

It is pleasure to acknowledge the assistance and cooperation of many colleagues in this field. We would especially like to acknowledge the support and valuable suggestions of W. L. Wiese, as well as his critical reading of the manuscripts. We are grateful to Y. Ralchenko for writing the code to convert the tables from ASCII to Latex. Also, in some cases different authors have provided us with the results of their calculations prior to publication, as indicated in the references. Partial support for this work was provided by the NASA Office of Space Sciences, Grant No. W-10,215. We plan to continue this critical compilation work with analogous tables for the elements phosphorus through calcium.

3. References for Sections 1 and 2

[2]C. W. Allen, *Allen's Astrophysical Quantities*, 4th ed. (Springer, New York, 2000).
[23]R. D. Cowan, *The Theory of Atomic Structure and Spectra* (University of California Press, Berkeley, CA, 1981).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[66]W. C. Martin and R. Zalubas, J. Phys. Chem. Ref. Data **2**, 323 (1983).
[76]P. J. Mohr and B. N. Taylor, 2002 CODATA Recommended Values of the Fundamental Physical Constants, http://physics.nist.gov/constants.
[80]NIST Atomic Spectra Database (ASD), http://physics.nist.gov/PhysRefData/ASD/index.html.
[81]NIST Atomic Transition Probability Bibliographic Database, http://www.physics.nist.gov/PhysRefData/Fvalbib/html/.
[86]E. R. Peck and K. Reeder, J. Opt. Soc. Am. **62**, 958 (1972).
[113]W. L. Wiese, J. R. Fuhr, and T. M. Deters, *Atomic Transition Probabilities of Carbon, Nitrogen, and Oxygen*, JPCRD Monograph 7 (AIP, New York, 1996).
[114]W. L. Wiese, M. W. Smith, and B. M. Miles, *Atomic Transition Probabilities, Vol. II: Sodium through Calcium*, NSRDS-NBS Vol. 22 (U.S. GPO, Washington, D.C., 1969). The first updated compilation of NIST transition probabilities has been published. See Wiese *et al.* (Ref. 113).

4. Si

4.1. Si I

Ground state: $1s^2 2s^2 2p^6 3s^2 3p^2\ ^3P_0$
Ionization energy: 8.151 682 eV (65 747.76 cm^{-1})

4.1.1. Allowed Transitions for Si I

Only Opacity Project[79] (OP) results were available for transitions from energy levels above the $3p4p$. Froese Fischer[35] has performed extensive multiconfiguration Hartree-Fock (MCHF) calculations with Breit-Pauli corrections to order α^2. O'Brian and Lawler[83] measured lifetimes and branching ratios to derive transition probabilities, with accuracies in the 10% range for most measured transitions. Smith *et al.*[96] made hook method absorption and branching-ratio emission measurements of relative f values, combining them with published beam-foil lifetime measurements; their uncertainties are in the 16%–45% range. Garz[40] measured relative oscillator strengths in an electric arc and used published lifetimes to put their results on an absolute scale.

The energy levels $3pnd\ a\ ^3P^\circ$ are so labeled because they also have a substantial amount of $3s3p^3\ ^3P^\circ$ character. This leads to substantial cancellation in the dipole matrix element. Significant differences between using length and velocity forms were observed by Froese Fischer,[35] for example. Nevertheless, reasonably good agreement (10%–20%) was found between Froese Fischer[35] and O'Brian and Lawler[83] for these transitions. For these same lines, line strengths of Coutinho and Trigueiros[21] were observed to be about a factor of 9 larger than those of O'Brian and Lawler.[83] For most other transitions we observed somewhat better agreement between Coutinho and Trigueiros[21] and the two references, Froese Fischer[35] and O'Brian and Lawler,[83] but there was a strong trend in the disagreement with line strength. We were unable to assign accuracies to values from Coutinho and Trigueiros[21] consistent with the requirements for the present compilation.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[35,40,79,83,96] as described in the introduction to Kelleher and Podobedova.[53] Pooling of the spin-allowed and intercombination data was performed separately. OP lines constituted a third group.

LS' is used in those special cases where one energy level in a transition is not designated in LS coupling, but it has a unique J, such that there is no other energy level with the same J and configuration with which it can have mixed character in LS coupling via spin-orbit interactions.

4.1.2. References for Allowed Transitions for Si I

[21]L. H. Coutinho and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transt. **75**, 357 (2002).

[35]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).

[40]T. Garz, Astron. Astrophys. **26**, 471 (1973).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[78]S. N. Nahar and A. K. Pradhan, J. Phys. B **26**, 1109 (1993).

[79]S. N. Nahar and A. K. Pradhan, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Nahar and Pradhan (Ref. 78).

[83]T. R. O'Brian and J. E. Lawler, Phys. Rev. A **44**, 7134 (1991).

[96]P. L. Smith, M. C. E. Huber, G. P. Tozzi, H. E. Griesinger, B. L. Cardon, and G. G. Lombardi, Astrophys. J. **322**, 573 (1987).

TABLE 3. Wavelength finding list for allowed lines of Si I

Wavelength (vac) (Å)	Mult. No.
1 589.173	35
1 591.123	35
1 594.566	35
1 594.829	35
1 594.950	35
1 598.674	35
1 625.705	32
1 627.746	32
1 629.441	32
1 629.948	32
1 631.624	32
1 633.328	32
1 660.475	31
1 666.376	30
1 667.629	30
1 668.520	30
1 671.117	30
1 672.596	30
1 675.205	30
1 693.293	24
1 695.507	24
1 696.207	24
1 697.941	24
1 699.716	24
1 700.419	24
1 700.64	22
1 702.869	22
1 704.442	23
1 707.115	22
1 769.786	36
1 772.225	21
1 776.824	21
1 809.105	34
1 813.269	34
1 814.079	33
1 836.510	16
1 841.152	16
1 841.449	16
1 843.770	16
1 845.520	10
1 846.112	16
1 847.474	10
1 848.150	10

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavelength (vac) (Å)	Mult. No.
1 848.748	16
1 850.672	10
1 852.472	10
1 853.152	10
1 874.842	29
1 881.854	9
1 901.338	26
1 904.665	25
1 977.598	8
1 979.205	8
1 980.618	8
1 983.233	8
1 986.364	8
1 988.994	8

Wavelength (air) (Å)	Mult. No.
2 058.133	18
2 072.764	17
2 082.021	17
2 084.462	14
2 086.747	14
2 087.611	14
2 122.990	13
2 124.122	12
2 207.978	1
2 210.892	1
2 211.745	1
2 216.669	1
2 218.057	1
2 218.916	1
2 278.280	28
2 303.058	27
2 435.154	11
2 438.768	3
2 443.365	3
2 452.118	3
2 506.897	2
2 514.316	2
2 516.112	2
2 519.202	2
2 524.108	2
2 528.508	2
2 532.381	20
2 568.640	19
2 631.282	15
2 881.578	5
2 970.353	4
2 987.643	4
2 994.546	4
3 905.523	7
4 102.936	6
4 115.964	6
5 645.611	51
5 665.555	51
5 690.425	51
5 701.104	51

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavelength (air) (Å)	Mult. No.
5 708.398	51
5 754.218	51
5 772.144	53
5 780.386	50
5 793.071	50
5 797.856	50
5 806.277	50
5 859.199	50
5 872.709	50
5 948.538	52
6 976.51	95
7 003.569	95
7 005.88	95
7 016.79	95
7 083.950	95
7 097.47	95
7 193.55	96
7 210.31	96
7 272.03	96
7 277.51	96
7 289.60	96
7 358.29	96
7 680.266	89
7 742.70	115
7 918.384	90
7 925.85	98
7 932.348	90
7 944.001	90
7 970.307	90
8 006.69	114
8 008.39	91
8 029.17	91
8 035.618	90
8 049.60	114
8 070.59	91
8 071.284	91
8 073.03	114
8 074.574	90
8 112.58	91
8 154.87	91
8 353.719	97
8 648.45	113
8 899.23	93
8 967.727	111
9 021.591	111
9 051.03	111
9 393.42	88
9 413.500	49
9 421.786	88
9 505.205	88
9 887.047	92
9 969.132	83
10 001.353	83
10 025.74	83
10 068.33	83
10 131.101	83
10 156.13	83

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavelength (air) (Å)	Mult. No.
10 288.944	43
10 313.20	94
10 371.264	43
10 585.142	43
10 603.425	42
10 660.973	42
10 689.716	81
10 694.252	81
10 727.406	81
10 749.378	42
10 784.563	81
10 786.849	42
10 827.089	42
10 843.858	80
10 869.536	48
10 882.809	81
10 976.346	81
10 979.308	42
11 485.81	86
11 503.51	108
11 592.29	108
11 640.94	108
11 890.483	47
11 984.199	41
11 991.569	41
12 031.504	41
12 103.535	41
12 196.645	46
12 270.692	41
12 390.154	46
12 395.832	41
12 439.964	46
13 029.52	82
13 030.92	82
13 086.03	82
13 102.058	82
13 152.743	40
13 176.889	74
13 287.565	40
13 309.04	82
13 325.626	82
13 396.472	112
13 432.158	112
13 606.912	102
13 631.94	84
13 640.682	40
13 693.80	84
13 711.352	84
13 762.279	102
13 905.338	87
13 949.664	102
13 995.45	102
14 026.486	102
14 059.985	45
14 113.004	102
14 224.526	45
14 444.770	56

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavelength (air) (Å)	Mult. No.
14 486.268	56
15 361.161	75
15 381.74	110
15 506.98	110
15 557.779	75
15 810.46	169
15 827.213	169
15 833.603	85
15 884.454	75
15 888.410	44
15 960.063	75
16 055.64	169
16 060.009	75
16 094.787	75
16 129.02	136
16 157.49	169
16 163.691	61
16 186.48	122
16 215.670	61
16 241.833	61
16 275.11	169
16 380.177	55
16 381.535	61
16 434.927	61
16 643.08	169
16 680.770	61
16 828.159	61
17 757.40	165
17 861.8	165
18 283.6	165
18 284.50	76
18 318.2	165
18 356.4	165
18 572.0	135
18 594.77	163
18 611.1	164
18 626.39	60
18 654.00	164
18 722.87	76
18 735.3	164
18 748.1	164
18 838.8	165
18 914.44	76
18 916.27	60
19 006.5	59
19 030.76	76
19 283.30	76
19 304.25	164
19 385.94	65
19 405.0	164
19 432.97	65
19 493.37	77
19 506.10	76
19 508.15	65
19 610.4	59
19 722.51	65
19 928.88	65

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavelength (air) (Å)	Mult. No.
19 973.8	109
19 975.4	167
Wavenumber (cm^{-1})	**Mult. No.**
4 996.647	65
4 985.37	109
4 924.333	105
4 914.148	77
4 913.201	39
4 895.760	39
4 867.541	39
4 845.350	77
4 681.642	78
4 640.25	158
4 631.47	158
4 607.34	158
4 513.15	158
4 467.89	158
4 435.84	103
4 418.35	159
4 410.746	104
4 394.21	159
4 373.70	158
4 359.040	64
4 358.736	166
4 354.58	168
4 326.733	64
4 300.03	159
4 215.89	157
4 198.717	64
4 182.98	157
4 173.62	63
4 119.07	157
4 106.570	157
4 068.193	71
4 043.53	157
4 030.728	133
4 015.701	71
3 995.875	71
3 987.664	67
3 979.62	157
3 953.77	134
3 929.45	134
3 912.429	38
3 894.988	38
3 866.769	38
3 784.413	38
3 766.972	38
3 752.106	38
3 687.962	156
3 667.190	156
3 650.919	156
3 627.939	156
3 625.15	161
3 520.431	155
3 507.437	156

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavenumber (cm^{-1})	Mult. No.
3 447.414	156
3 440.636	121
3 429.40	191
3 332.23	130
3 296.895	118
3 282.980	107
3 263.154	107
3 259.019	79
3 253.95	130
3 240.57	191
3 228.097	118
3 210.662	107
3 197.945	70
3 172.85	69
3 155.91	191
3 154.426	117
3 143.525	107
3 123.699	107
3 120.87	130
3 110.617	107
3 083.769	117
3 068.62	174
3 064.25	152
3 032.207	152
3 014.971	117
3 013.695	118
2 994.00	162
2 992.956	152
2 992.937	106
2 982.063	117
2 975.50	174
2 970.663	37
2 943.46	174
2 942.444	37
2 940.445	106
2 940.024	117
2 939.085	152
2 933.02	184
2 927.049	120
2 899.834	152
2 856.238	147
2 837.835	101
2 832.238	106
2 826.135	37
2 812.412	106
2 810.00	190
2 808.694	37
2 800.569	117
2 792.987	106
2 780.475	37
2 773.161	106
2 759.920	106
2 743.886	37
2 733.231	116
2 726.445	37
2 719.309	152

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavenumber (cm^{-1})	Mult. No.
2 714.577	153
2 713.71	153
2 703.684	116
2 681.669	153
2 669.807	116
2 664.433	116
2 636.17	190
2 615.68	132
2 591.367	132
2 588.547	153
2 582.37	58
2 573.252	73
2 566.769	54
2 546.323	58
2 542.214	153
2 528.108	148
2 519.54	196
2 502.780	160
2 500.58	154
2 500.36	190
2 499.56	128
2 490.21	128
2 489.282	116
2 488.857	148
2 479.764	58
2 468.543	154
2 464.074	58
2 457.08	128
2 450.031	116
2 449.092	153
2 397.515	58
2 375.421	154
2 308.332	148
2 295.324	144
2 256.073	144
2 242.86	144
2 235.546	58
2 177.570	149
2 117.69	183
2 100.53	139
2 078.257	139
2 053.94	139
2 039.006	139
2 038.115	149
2 021.100	137
2 014.69	139
1 977.694	145
1 964.444	150
1 951.58	185
1 944.786	145
1 920.00	139
1 909.398	119
1 900.148	195
1 892.32	145
1 857.39	185
1 838.587	151

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavenumber (cm^{-1})	Mult. No.
1 837.063	100
1 834.16	139
1 833.26	185
1 831.452	57
1 830.756	57
1 829.55	189
1 805.331	145
1 790.51	57
1 775.59	178
1 775.322	72
1 760.627	140
1 748.507	57
1 731.660	146
1 730.539	173
1 727.719	140
1 715.57	178
1 712.90	206
1 709.047	100
1 703.40	140
1 679.19	146
1 672.34	131
1 672.29	189
1 669.483	57
1 649.79	140
1 645.40	189
1 637.417	173
1 605.38	173
1 588.264	140
1 586.538	57
1 586.50	131
1 583.73	212
1 572.08	178
1 563.95	140
1 541.84	62
1 538.103	62
1 538.10	181
1 524.07	206
1 505.796	62
1 474.19	181
1 443.59	201
1 439.41	206
1 439.237	62
1 377.780	62
1 311.221	62
1 294.734	124
1 277.93	193
1 247.89	200
1 202.77	66
1 198.17	171
1 167.29	211
1 166.727	66
1 144.02	182
1 137.41	188
1 127.11	193
1 100.168	66
1 095.32	142

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavenumber (cm^{-1})	Mult. No.
1 093.50	213
1 049.83	182
1 025.70	182
1 018.53	201
1 003.449	141
1 002.434	175
973.17	179
919.69	194
919.67	205
912.738	99
870.28	187
867.77	214
852.04	170
851.012	127
846.22	179
841.67	127
820.00	170
808.54	127
787.19	172
783.86	205
777.341	126
773.10	202
768.40	215
767.99	126
765.439	177
750.769	99
743.33	187
726.88	170
696.16	202
670.16	202
668.520	99
637.886	126
636.03	197
628.54	126
595.63	126
595.41	126
579.09	180

TABLE 3. Wavelength finding list for allowed lines of Si I—Continued

Wavenumber (cm^{-1})	Mult. No.
547.89	208
515.11	204
507.124	125
489.862	143
433.078	138
432.56	199
394.046	138
385.630	138
377.008	68
354.795	138
353.96	204
351.96	216
326.599	125
317.25	125
312.39	192
310.449	68
288.25	192
287.348	125
278.00	125
277.083	123
267.44	209
252.553	138
244.87	125
218.17	210
216.67	213
210.97	198
200.01	176
194.07	192
174.270	138
158.27	129
144.42	186
137.40	207
136.11	176
133.95	129
113.05	203
111.40	207

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])

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
1	$3s^23p^2-3s3p^3$	$^3P-^3D^\circ$	*2 213.97*	*2 214.66*	*149.68–45 303.31*	9–15	4.54+07	5.57−02	3.65+00	−0.300	B	3
			2 216.669	2 217.359	223.157–45 321.848	5–7	4.54+07	4.69−02	1.71+00	−0.630	B	3
			2 210.892	2 211.581	77.115–45 293.629	3–5	3.46+07	4.23−02	9.23−01	−0.897	B	3
			2 207.978	2 208.667	0.000–45 276.188	1–3	2.62+07	5.75−02	4.18−01	−1.240	B	3
			2 218.057	2 218.748	223.157–45 293.629	5–5	1.09+07	8.05−03	2.94−01	−1.395	B	3
			2 211.745	2 212.435	77.115–45 276.188	3–3	1.81+07	1.33−02	2.90−01	−1.399	B	3
			2 218.916	2 219.606	223.157–45 276.188	5–3	1.05+06	4.63−04	1.69−02	−2.635	C+	3
2	$3p^2-3p4s$	$^3P-^3P^\circ$	*2 517.48*	*2 518.24*	*149.68–39 859.92*	9–9	2.21+08	2.10−01	1.57+01	0.276	B	3
			2 516.112	2 516.870	223.157–39 955.053	5–5	1.68+08	1.59−01	6.60+00	−0.100	B	3
			2 519.202	2 519.960	77.115–39 760.285	3–3	5.49+07	5.22−02	1.30+00	−0.805	B	3
			2 528.508	2 529.268	223.157–39 760.285	5–3	9.04+07	5.20−02	2.17+00	−0.585	B	3

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
			2 524.108	2 524.867	77.115–39 683.163	3–1	2.22+08	7.08−02	1.76+00	−0.673	B	3
			2 506.897	2 507.652	77.115–39 955.053	3–5	5.47+07	8.59−02	2.13+00	−0.589	B	3
			2 514.316	2 515.073	0.000–39 760.285	1–3	7.39+07	2.10−01	1.74+00	−0.678	B	3
3		$^3P-^1P°$										
			2 443.365	2 444.105	77.115–40 991.884	3–3	1.32+06	1.18−03	2.85−02	−2.451	D	3
			2 452.118	2 452.860	223.157–40 991.884	5–3	1.73+05	9.35−05	3.78−03	−3.330	E+	3
			2 438.768	2 439.507	0.000–40 991.884	1–3	7.91+05	2.12−03	1.70−02	−2.674	D	3
4		$^1D-^3P°$										
			2 994.546	2 995.419	6 298.850–39 683.163	5–3	2.66+06	2.14−03	1.06−01	−1.971	D+	3
			2 987.643	2 988.515	6 298.850–39 760.285	5–3	1.34+06	1.08−03	5.30−02	−2.268	E+	2
			2 970.353	2 971.220	6 298.850–39 955.053	5–5	6.00+04	7.94−05	3.89−03	−3.401	E+	3
5		$^1D-^1P°$	2 881.578	2 882.423	6 298.850–40 991.884	5–3	2.17+08	1.62−01	7.70+00	−0.092	B	3
6		$^1S-^3P°$										
			4 115.964	4 117.125	15 394.370–39 683.163	1–3	4.44+05	3.39−03	4.59−02	−2.470	D	3
			4 102.936	4 104.094	15 394.370–39 760.285	1–3	6.09+04	4.61−04	6.23−03	−3.336	E	2
7		$^1S-^1P°$	3 905.523	3 906.629	15 394.37–40 991.884	1–3	1.33+07	9.10−02	1.17+00	−1.041	B	3
8	$3p^2-3p3d$	$^3P-^3P°$		*1 984.77*	*149.68–50 533.42*	9–9	8.67+07	5.12−02	3.01+00	−0.336	B	3
				1 988.994	223.157–50 499.838	5–5	6.58+07	3.90−02	1.28+00	−0.710	B	3
				1 980.618	77.115–50 566.397	3–3	2.07+07	1.22−02	2.38−01	−1.437	B	3
				1 986.364	223.157–50 566.397	5–3	3.65+07	1.29−02	4.23−01	−1.190	B	3
				1 979.205	77.115–50 602.44	3–1	8.69+07	1.70−02	3.33−01	−1.292	B	3
				1 983.233	77.115–50 499.838	3–5	2.18+07	2.14−02	4.20−01	−1.192	B	3
				1 977.598	0.000–50 566.397	1–3	2.79+07	4.91−02	3.20−01	−1.309	B	3
9		$^3P-^1F°$										
				1 881.854	223.157–53 362.24	5–7	5.00+06	3.72−03	1.15−01	−1.730	D+	3
10		$^3P-^3D°$		*1 849.25*	*149.68–54 225.62*	9–15	3.04+08	2.60−01	1.43+01	0.369	C+	2
				1 850.672	223.157–54 257.582	5–7	305+08	2.19−01	6.67+00	0.039	C+	2
				1 847.474	77.115–54 205.090	3–5	2.33+08	1.99−01	3.62+00	−0.224	C+	2
				1 845.520	0.000–54 185.264	1–3	1.68+08	2.58−01	1.56+00	−0.588	C+	2
				1 852.472	223.157–54 205.090	5–5	7.40+07	3.81−02	1.16+00	−0.720	C+	2
				1 848.150	77.115–54 185.264	3–3	1.23+08	6.32−02	1.15+00	−0.722	C+	2
				1 853.152	223.157–54 185.264	5–3	7.92+06	2.45−03	7.46−02	−1.912	C	2
11		$^1D-^1D°$	2 435.154	2 435.893	62 298.850–47 351.554	5–5	4.43+07	3.94−02	1.58+00	−0.706	B	3
12		$^1D-^1F°$	2 124.122	2 124.794	6 298.850–53 362.24	5–7	2.97+08	2.82−01	9.86+00	0.149	B	3
13		$^1D-^1P°$	2 122.990	2 123.661	6 298.850–53 387.334	5–3	3.57+07	1.45−02	5.06−01	−1.140	B	3
14		$^1D-^3D°$										
			2 086.747	2 087.411	6 298.850–54 205.090	5–5	3.26+04	2.13−05	7.31−04	−3.973	E	2,4
			2 087.611	2 088.275	6 298.850–54 185.264	5–3	5.46+05	2.14−04	7.37−03	−2.971	E	2,4
			2 084.462	2 085.126	6 298.850–54 257.582	5–7	2.73+06	2.49−03	8.55−02	−1.905	D+	2,4
15		$^1S-^1P°$	2 631.282	2 632.066	15 394.370–53 387.334	1–3	1.06+08	3.30−01	2.86+00	−0.481	B	3
16	$3p^2-3p5s$	$^3P-^3P°$				9–9						4
				1 841.449	223.157–54 528.220	5–5	3.67+07	1.87−02	5.66−01	−1.029	D+	4
				1 843.770	77.115–54 313.818	3–3	3.35+07	1.71−02	3.11−01	−1.290	C+	4
				1 848.748	223.157–54 313.818	5–3	3.92+07	1.21−02	3.67−01	−1.218	D+	4
				1 846.112	77.115–54 245.020	3–1	5.68+07	9.67−03	1.76−01	−1.537	E	LS
				1 836.510	77.115–54 528.220	3–5	1.31+07	1.10−02	2.00−01	−1.481	D+	4

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				1 841.152	0.000–54 313.818	1–3	1.50+07	2.29−02	1.39−01	−1.640	D	4
17		$^1D-^3P^{\circ}$										
			2 082.021	2 082.684	6 298.850–54 313.818	5–3	6.45+06	2.52−03	8.63−02	−1.900	D	4
			2 072.764	2 073.425	6 298.850–54 528.220	5–5	4.59+05	2.96−04	1.01−02	−2.830	E	4
18		$^1D-^1P^{\circ}$	2 058.133	2 058.792	6 298.850–54 871.031	5–3	7.08+07	2.70−02	9.14+01	−0.870	C	4
19		$^1S-^3P^{\circ}$										
			2 568.640	2 569.410	15 394.370–54 313.818	1–3	4.24+06	1.26−02	1.06−01	−1.900	D	4
20		$^1S-^1P^{\circ}$	2 532.381	2 533.142	15 394.370–54 871.031	1–3	2.45+07	7.08−02	5.90−01	−1.150	C	4
21	$3p^2-3p4d$	$^3P-^1D^{\circ}$										
				1 772.225	77.115–56 503.346	3–5	2.39+05	1.87−04	3.28−03	−3.251	E	4
				1 776.824	223.157–56 503.346	5–5	5.83+06	2.76−03	8.07−02	−1.860	D	4
22		$^3P-^1P^{\circ}$										
				1 702.869	77.115–58 801.529	3–3	1.88+07	8.18−03	1.38−01	−1.610	D	4
				1 707.115	223.157–58 801.529	5–3	1.21+06	3.17−04	8.91−03	−2.800	E	4
				1 700.64	0–58 801.529	1–3	3.06+07	3.98−02	2.23−01	−1.400	D+	4
23		$^3P-^1F^{\circ}$										
				1 704.442	223.157–58 893.40	5–7	2.61+07	1.59−02	4.46−01	−1.100	D+	4
24		$^3P-^3D^{\circ}$		*1 697.00*	*149.68–59 077.1*	9–15	1.37+08	9.87−02	4.96−00	−0.051	C	4
				1 697.941	223.157–59 118.03	5–7	1.38+08	8.34−02	2.33+00	−0.380	C	4
				1 696.207	77.115–59 032.19	3–5	1.22+08	8.77−02	1.47+00	−0.580	C	4
				1 693.293	0.000–59 056.508	1–3	6.75+07	8.71−02	4.86−01	−1.060	D+	4
				1 700.419	223.157–59 032.19	5–5	3.12+07	1.35−02	3.78−01	−1.171	D+	4
				1 695.507	77.115–59 056.508	3–3	3.97+07	1.71−02	2.86−01	−1.290	D+	4
				1 699.716	223.157–59 056.508	5–3	1.80+06	4.69−04	1.31−02	−2.630	E+	4
25		$^1D-^1P^{\circ}$		1 904.665	6 298.850–58 801.529	5–3	4.87+06	1.59−03	4.98−02	−2.100	D	4
26		$^1D-^1F^{\circ}$		1 901.338	6 298.850–58 893.40	5–7	1.00+08	7.60−02	2.38+00	−0.420	C	4
27		$^1S-^1P^{\circ}$	2 303.058	2 303.767	15 394.370–58 801.529	1–3	3.48+08	8.32−01	6.31+00	−0.080	C+	4
28	$3p^2-3p6s$	$^1S-^3P^{\circ}$										
			2 278.280	2 278.984	15 394.370–59 273.575	1–3	3.56+06	8.32−03	6.24−02	−2.080	D	4
29	$3p^2$– $3p(^2P^{\circ}_{3/2})6s_{1/2}$	^1D–$(3/2,1/2)^{\circ}$										
				1 874.842	6 298.850–59 636.667	5–3	1.07+08	3.40−02	1.05+00	−0.770	D	4
30	$3p^2-3pnd$	$^3P-u\,^3P^{\circ}$				9–9						4
				1 675.205	223.157–59 917.336	5–5	6.41+07	2.70−02	7.44−01	−0.870	C	4
				1 668.520	77.115–60 010.458	3–3	2.58+07	1.08−02	1.78−01	−1.489	D	4
				1 672.596	223.157–60 010.458	5–3	3.09+07	7.78−03	2.14−01	−1.410	D+	4
				1 667.629	77.115–60 042.50	3–1	8.27+07	1.15−02	1.89−01	−1.462	E	LS
				1 671.117	77.115–59 917.336	3–5	8.30+06	5.79−03	9.56−02	−1.760	D	4
				1 666.376	0.000–60 010.458	1–3	1.75+07	2.19−02	1.20−01	−1.660	D	4
31	$3p^2-3p5d$	$^3P-^1D^{\circ}$										
				1 660.475	77.115–60 300.860	3–5	7.67+06	5.28−03	8.66−02	−1.800	D	4
32		$^3P-^3D^{\circ}$				9–15						4
				1 629.948	223.157–61 574.814	5–7	2.11+08	1.18−01	3.16+00	−0.229	C	4
				1 629.441	77.115–61 447.86	3–5	8.73+07	5.79−02	9.32−01	−0.760	C	4
				1 625.705	0.000–61 511.77	1–3	7.16+07	8.51−02	4.55−01	−1.070	E	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				1 633.328	223.157–61 447.86	5–5	1.12+07	4.48−03	1.20−01	−1.650	D	4
				1 627.746	77.115–61 511.77	3–3	5.34+07	2.12−02	3.41−01	−1.197	E	LS
				1 631.624	223.157–61 511.77	5–3	3.54+06	8.48−04	2.28−02	−2.373	E	LS
33		$^1D-^1F^\circ$		1 814.079	6 298.850–61 423.23	5–7	1.15+08	7.96−02	2.38+00	−0.400	C	4
34		$^1D-^3D^\circ$										
				1 813.269	6 298.850–61 447.86	5–5	1.04+06	5.14−04	1.53−02	−2.590	E+	4
				1 809.105	6 298.850–61 574.814	5–7	6.83+07	4.69−02	1.40+00	−0.630	C	4
35	$3p^2-3p6d$	$^3P-^3D^\circ$		*1 594.12*	*149.68–62 880.4*	9–15	7.91+07	5.02−02	2.37+00	−0.345	E+	1
				1 594.566	223.157–62 936.14	5–7	7.91+07	4.22−02	1.11+00	−0.676	D	LS
				1 594.950	77.115–62 774.99	3–5	5.92+07	3.76−02	5.92−01	−0.948	E+	LS
				1 589.173	0.000–62 925.80	1–3	4.44+07	5.04−02	2.64−01	−1.298	E	LS
				1 598.674	223.157–62 774.99	5–5	1.96+07	7.51−03	1.98−01	−1.425	E	LS
				1 591.123	77.115–62 925.80	3–3	3.32+07	1.26−02	1.98−01	−1.423	E	LS
				1 594.829	223.157–62 925.80	5–3	2.19+06	5.02−04	1.32−02	−2.600	E	LS
36		$^1D-^1F^\circ$		1 769.786	6 298.850–62 802.86	5–7	2.65+07	1.74−02	5.07−01	−1.060	D+	4
37	$3s3p^3$ $-3s^23p4p$	$^3D^\circ-^3D$		*2 858.15* cm^{-1}	*45 303.31–48 161.46*	15–15	4.80+04	8.81−03	1.52+01	−0.879	C	2
				2 942.444 cm^{-1}	45 321.848–48 264.292	7–7	4.62+04	8.01−03	6.27+00	−1.251	C	2
				2 808.694 cm^{-1}	45 293.629–48 102.323	5–5	2.79+04	5.31−03	3.11+00	−1.576	C	2
				2 743.886 cm^{-1}	45 276.188–48 020.074	3–3	2.77+04	5.52−03	1.99+00	−1.781	C	2
				2 780.475 cm^{-1}	45 321.848–48 102.323	7–5	1.16+04	1.60−03	1.33+00	−1.951	C	2
				2 726.445 cm^{-1}	45 293.629–48 020.074	5–3	1.46+04	1.77−03	1.07+00	−2.053	C	2
				2 970.663 cm^{-1}	45 293.629–48 264.292	5–7	5.81+03	1.38−03	7.65−01	−2.161	C	2
				2 826.135 cm^{-1}	45 276.188–48 102.323	3–5	6.38+03	1.99−03	6.97−01	−2.224	C	2
38		$^3D^\circ-^3P$		*3 824.82* cm^{-1}	*45 303.31–49 128.13*	15–9	4.98+05	3.06−02	3.96+01	−0.338	C+	2
				3 866.769 cm^{-1}	45 321.848–49 188.617	7–5	4.27+05	3.06−02	1.82+01	−0.669	C+	2
				3 766.972 cm^{-1}	45 293.629–49 060.601	5–3	3.42+05	2.17−02	9.48+00	−0.965	C+	2
				3 752.106 cm^{-1}	45 276.188–49 028.294	3–1	4.92+05	1.74−02	4.59+00	−1.282	C	2
				3 894.98 cm^{-1}	45 293.629–49 188.617	5–5	8.66+04	8.56−03	3.62+00	−1.369	C	2
				3 784.413 cm^{-1}	45 276.188–49 060.601	3–3	1.24+05	1.30−02	3.40+00	−1.409	C	2
				3 912.429 cm^{-1}	45 276.188–49 18.617	3–5	6.26+03	1.02−03	2.58−01	−2.514	C	2
39		$^3D^\circ-^1D$				15–5						
				4 895.760 cm^{-1}	45 293.629–50 189.389	5–5	9.73+01	6.09−06	2.05−03	−4.516	E	2
				4 867.541 cm^{-1}	45 321.848–50 189.389	7–5	3.37+03	1.52−04	7.21−02	−2.973	D	2
				4 913.201 cm^{-1}	45 276.188–50 189.389	3–5	2.17+00	2.25−07	4.52−05	−6.171	E	2
40	$3p4s-3p4p$	$^3P^\circ-^1P$										
			13 287.565	13 291.198	39 760.285–47 284.061	3–3	4.61+05	1.22−02	1.60+00	−1.437	C	2
			13 640.682	13 644.411	39 955.053–47 284.061	5–3	1.44+03	2.41−02	5.42−03	−3.919	E	2
			13 152.743	13 156.340	39 683.163–47 284.061	1–3	3.04+04	2.37−03	1.02−01	−2.625	D	2
41		$^3P^\circ-^3D$	*12 042.66*	*12 045.96*	*39 859.92–48 161.46*	9–15	1.71+07	6.21−01	2.22+02	0.747	B	2
			12 031.504	12 034.796	39 955.053–48 264.292	5–7	1.73+07	5.24−01	1.04+02	0.418	B	2
			11 984.199	11 987.478	39 760.285–48 102.323	3–5	1.40+07	5.03−01	5.95+01	0.179	B	2
			11 991.569	11 994.850	39 683.163–48 020.074	1–3	1.04+07	6.74−01	2.66+01	−0.171	C+	2
			12 270.692	12 274.050	39 955.053–48 102.323	5–5	3.20+06	7.23−02	1.46+01	−0.442	C+	2
			12 103.535	12 106.847	39 760.285–48 020.074	3–3	6.10+06	1.34−01	1.60+01	−0.396	C+	2
			12 395.832	12 399.224	39 955.053–48 020.074	5–3	3.01+05	4.16−03	8.50−01	−1.682	C+	2
42		$^3P^\circ-^3P$	*10 786.61*	*10 789.57*	*39 859.92–49 128.13*	9–9	2.47+07	4.32−01	1.38+02	0.590	C+	2
			10 827.089	10 830.054	39 955.053–49 188.617	5–5	1.97+07	3.47−01	6.18+01	0.239	B	2

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
			10 749.378	10 752.323	39 760.285–49 060.601	3–3	1.03+07	1.78−01	1.89+01	−0.272	C+	2
			10 979.308	10 982.315	39 955.053–49 060.601	5–3	5.05+06	5.48−02	9.90+00	−0.562	C+	2
			10 786.849	10 789.804	39 760.285–49 028.294	3–1	2.48+07	1.44−01	1.54+01	−0.365	C+	2
			10 603.425	10 606.330	39 760.285–49 188.617	3–5	5.21+06	1.47−01	1.54+01	−0.356	C+	2
			10 660.973	10 663.893	39 683.163–49 060.601	1–3	9.27+06	4.74−01	1.66+01	−0.324	C+	2
43		$^3P^\circ-^3S$	*10 479.58*	*10 482.45*	*39 859.92*–49 399.670	9–3	2.29+07	1.26−01	3.91+01	0.055	C+	2
			10 585.142	10 588.042	39 955.053–49 399.670	5–3	1.78+07	1.80−01	3.13+01	−0.046	B	2
			10 871.264	10 374.106	39 760.285–49 399.670	3–3	4.01+06	6.47−02	6.63+00	−0.712	C+	2
			10 288.944	10 291.764	39 683.163–49 399.670	1–3	7.01+05	3.34−02	1.13+00	−1.476	C+	2
44		$^1P^\circ-^1P$	15 888.410	15 892.751	40 991.884–47 284.061	3–3	8.77+06	3.32−01	5.21+01	−0.002	B	2
45		$^1P^\circ-^3D$										
			14 059.985	14 063.829	40 991.884–48 102.323	3–5	1.42+04	7.03−04	9.77−02	−2.676	D	2
			14 224.526	14 228.414	40 991.884–48 020.074	3–3	2.65+05	8.06−03	1.13+00	−1.617	C	2
46		$^1P^\circ-^3P$										
			12 390.154	12 393.544	40 991.884–49 060.601	3–3	1.55+05	3.58−03	4.38−01	−1.969	D+	2
			12 439.964	12 443.367	40 991.884–49 028.294	3–1	4.85+04	3.75−04	4.61−02	−2.949	E+	2
			12 196.645	12 199.983	40 991.884–49 188.617	3–5	1.65+03	6.13−05	7.39−03	−3.735	E	2
47		$^1P^\circ-^3S$										
			11 890.483	11 893.738	40 991.884–49 399.670	3–3	6.62+04	1.40−03	1.65−01	−2.377	D	2
48		$^1P^\circ-^1D$	10 869.536	10 872.514	40 991.884–50 189.389	3–5	2.18+07	6.44−01	6.92+01	0.286	B	2
49		$^1P^\circ-^1S$	9 413.500	9 416.082	40 991.884–51 612.012	3–1	2.26+07	1.00−01	9.30+00	−0.523	C+	2
50	$3p4s-3p5p$	$^3P^\circ-^3D$				9–15						5
			5 797.856	5 799.464	39 955.053–57 198.027	5–7	2.53+05	1.78−03	1.70−01	−2.051	D	5
			5 793.071	5 794.677	39 760.285–57 017.502	3–5	3.83+05	3.21−03	1.84−01	−2.016	E	LS
			5 780.386	5 781.989	39 683.163–56 978.251	1–3	2.97+05	4.47−03	8.50−02	−2.350	D	5
			5 859.199	5 860.823	39 955.053–57 017.502	5–5	1.24+05	6.36−04	6.14−02	−2.498	E	LS
			5 806.277	5 807.887	39 760.285–56 978.251	3–3	2.12+05	1.07−03	6.14−02	−2.493	E	LS
			5 872.709	5 874.337	39 955.053–56 978.251	5–3	1.36+04	4.23−05	4.09−03	−3.675	E	LS
51		$^3P^\circ-^3P$				9–9						5
			5 708.398	5 709.982	39 955.053–57 468.244	5–5	1.39+06	6.78−03	6.37−01	−1.470	D+	5
			5 690.425	5 692.004	39 760.285–57 328.789	3–3	9.26+05	4.50−03	2.53−01	−1.870	D+	5
			5 754.218	5 755.814	39 955.053–57 328.789	5–3	1.23+06	3.68−03	3.49−01	−1.735	E+	LS
			5 701.104	5 702.686	39 760.285–57 295.881	3–1	1.83+06	2.97−03	1.67−01	−2.050	D	5
			5 645.611	5 647.178	39 760.285–57 468.244	3–5	3.03+05	2.41−03	1.35−01	−2.141	D	5
			5 665.555	5 667.127	39 683.163–57 328.789	1–3	6.31+05	9.12−03	1.70−01	−2.040	D	5
52		$^1P^\circ-^1D$	5 948.538	5 950.186	40 991.884–57 798.080	3–5	2.22+06	1.96−02	1.15+00	−1.231	C	5
53		$^1P^\circ-^1S$	5 772.144	5 773.744	40 991.884–58 311.667	3–1	3.56+06	5.93−03	3.38−01	−1.750	D+	5
54	$3p4p-3p3d$	$^1P-^3F^\circ$										
				2 566.769 cm^{-1}	47 284.061–49 850.830	3–5	3.79+03	1.44−03	5.54−01	−2.365	D+	2
55		$^1P-^1P^\circ$	16 380.177	16 384.651	47 284.061–53 387.334	3–3	4.16+06	1.67−01	2.71+01	−0.300	C+	2
56		$^1P-^3D^\circ$										
			14 444.770	14 448.719	47 284.061–54 205.090	3–5	7.59+02	3.96−05	5.65−03	−3.925	E	2
			14 486.268	14 490.227	47 284.061–54 185.264	3–3	1.69+04	5.30−04	7.59−02	−2.799	D	2
57		$^3D-^3F^\circ$		*1 804.43* cm^{-1}	*48 161.46–49 965.89*	15–21	2.26+05	1.46−01	3.99+02	0.340	B	2
				1 790.51 cm^{-1}	48 264.292–50 054.80	7–9	2.21+05	1.33−01	1.71+02	−0.031	B	2

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				1 831.452 cm^{-1}	48 102.323–49 933.775	5–7	2.11+05	1.32−01	1.19+02	−0.180	B	2
				1 830.756 cm^{-1}	48 020.074–49 850.830	3–5	1.98+05	1.48−01	7.98+01	−0.353	B	2
				1 669.483 cm^{-1}	48 264.292–49 933.775	7–7	1.94+04	1.04−02	1.44+01	−1.138	C+	2
				1 748.507 cm^{-1}	48 102.323–49 850.830	5–5	3.13+04	1.53−02	1.44+01	−1.116	C+	2
				1 586.538 cm^{-1}	48 264.292–49 850.830	7–5	6.62+02	2.82−04	4.09−01	−2.705	C	2
58		$^3D-^3P^\circ$		*2 371.96* cm^{-1}	*48 161.46–50 533.42*	15–9	1.27+04	2.03−03	4.22+00	−1.516	C+	2
				2 235.546 cm^{-1}	48 264.292–50 499.838	7–5	8.58+03	1.84−03	1.90+00	−1.890	C+	2
				2 464.074 cm^{-1}	48 102.323–50 566.397	5–3	7.00+03	1.04−03	6.93−01	−2.284	C	2
				2 582.37 cm^{-1}	48 020.074–50 602.44	3–1	1.14+04	8.52−04	3.23−01	−2.592	C	2
				2 397.515 cm^{-1}	48 102.323–50 499.838	5–5	4.45+03	1.16−03	7.97−01	−2.237	C	2
				2 546.323 cm^{-1}	48 020.074–50 566.397	3–3	4.61+03	1.07−03	4.13−01	−2.493	C	2
				2 479.764 cm^{-1}	48 020.074–50 499.838	3–5	5.84+02	2.37−04	9.45−02	−3.148	C	2
59		$^3D-^1F^\circ$										
			19 006.5	19 011.7	48 102.323–53 362.24	5–7	2.10+04	1.59−03	4.97−01	−2.100	D+	2
			19 610.4	19 615.7	48 264.292–53 362.24	7–7	1.12+04	6.48−04	2.93−01	−2.343	D+	2
60		$^3D-^1P^\circ$										
			18 916.27	18 921.44	48 102.323–53 387.334	5–3	2.02+04	6.51−04	2.03−01	−2.487	D	2
			18 626.39	18 631.48	48 020.074–53 387.334	3–3	6.38+02	3.32−05	6.11−03	−4.002	E	2
61		$^3D-^3D^\circ$	*16 485.82*	*16 490.33*	*48 161.46–54 225.62*	15–15	3.25+06	1.32−01	1.08+02	0.297	C+	2
			16 680.770	16 685.326	48 264.292–54 257.582	7–7	2.79+06	1.16−01	4.47+01	−0.090	B	2
			16 381.535	16 386.010	48 102.323–54 205.090	5–5	2.02+06	8.13−02	2.19+01	−0.391	C+	2
			16 215.670	16 220.100	48 020.074–54 185.264	3–3	2.25+06	8.87−02	1.42+01	−0.575	C+	2
			16 828.159	16 832.755	48 264.292–54 205.090	7–5	4.59+05	1.39−02	5.41+00	−1.012	C+	2
			16 434.927	16 439.416	48 102.323–54 185.264	5–3	7.13+05	1.73−02	4.69+00	−1.063	C+	2
			16 241.833	16 246.270	48 102.323–54 257.582	5–7	6.28+05	3.48−02	9.30+00	−0.759	C+	2
			16 163.691	16 168.107	48 020.074–54 205.090	3–5	7.26+05	4.74−02	7.58+00	−0.847	C+	2
62		$^3P-^3P^\circ$		*1 405.29* cm^{-1}	*49 128.13–50 533.42*	9–9	3.45+04	2.62−02	5.52+01	−0.627	C+	2
				1 311.221 cm^{-1}	49 188.617–50 499.838	5–5	1.89+04	1.65−02	2.07+01	−1.084	C+	2
				1 505.796 cm^{-1}	49 060.601–50 566.397	3–3	1.01+03	6.67−04	4.38−01	−2.699	C	2
				1 377.780 cm^{-1}	49 188.617–50 566.397	5–3	1.30+04	6.17−03	7.37+00	−1.511	C+	2
				1 541.84 cm^{-1}	49 060.601–50 602.44	3–1	1.87+04	3.92−03	2.51+00	−1.930	C+	2
				1 439.237 cm^{-1}	49 060.601–50 499.838	3–5	2.22+04	2.68−02	1.84−01	−1.095	C+	2
				1 538.103 cm^{-1}	49 028.294–50 566.397	1–3	1.42+04	2.69−02	5.77−00	−1.570	C+	2
63		$^3P-^1F^\circ$										
				4 173.62 cm^{-1}	49 188.617–53 362.24	5–7	6.06+04	7.30−03	2.88+00	−1.438	C+	
64		$^3P-^1P^\circ$										
				4 326.733 cm^{-1}	49 060.601–53 387.334	3–3	2.21+04	1.77−03	4.05−01	−2.275	D+	2
				4 198.717 cm^{-1}	49 188.617–53 387.334	5–3	5.46+02	2.79−05	1.09−02	−3.855	E	2
				4 359.040 cm^{-1}	49 028.294–53 387.334	1–3	9.57+04	2.27−02	1.71+00	−1.644	C	2
65		$^3P-^3D^\circ$	*19 612.1*	*19 617.5*	*49 128.13–54 225.62*	9–15	5.93+06	5.71−01	3.32+02	0.711	B	2
			19 722.51	19 727.89	49 188.617–54 257.582	5–7	5.79+06	4.73−01	1.54+02	0.374	B	2
			19 432.97	19 438.28	49 060.601–54 205.090	3–5	4.42+06	4.18−01	8.02+01	0.098	B	2
			19 385.94	19 391.23	49 028.294–54 185.264	1–3	3.43+06	5.80−01	3.70+01	−0.237	B	2
			19 928.88	19 934.32	49 188.617–54 205.090	5–5	1.57+06	9.33−02	3.06+01	−0.331	B	2
			19 508.15	19 513.48	49 060.601–54 185.264	3–3	2.57+06	1.46−01	2.82+01	−0.359	C+	2
				4 966.647 cm^{-1}	49 188.617–54 185.264	5–3	1.84+05	6.63−03	2.18+00	−1.480	C+	2
66		$^3S-^3P^\circ$		*1 133.75* cm^{-1}	49 399.670–*50 533.42*	3–9	2.51+04	8.79−02	7.66+01	−0.579	C+	2
				1 100.168 cm^{-1}	49 399.670–50 499.838	3–5	1.83+04	3.78−02	3.40+01	−0.945	B	2

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				1 166.727 cm^{-1}	49 399.670–50 566.397	3–3	3.27+04	3.60−02	3.05+01	−0.967	B	2
				1 202.77 cm^{-1}	49 399.670–50 602.44	3–1	4.29+04	1.48−02	1.22+01	−1.353	C+	2
67		$^3S-^1P^{\circ}$										
				3 987.664 cm^{-1}	49 399.670–53 387.334	3–3	4.92+03	4.64−04	1.15−01	−2.856	D	2
68		$^1D-^3P^{\circ}$										
				377.008 cm^{-1}	50 189.389–50 566.397	5–3	1.43+01	9.03−07	3.97−03	−5.345	E	2
				310.449 cm^{-1}	50 189.389–50 499.838	5–5	1.51+00	2.34−05	1.24−01	−3.932	D	2
69		$^1D-^1F^{\circ}$		3 172.85 cm^{-1}	50 189.389–53 362.24	5–7	2.25+06	4.70−01	2.44+02	0.371	B	2
70		$^1D-^1P^{\circ}$		3 197.945 cm^{-1}	50 189.389–53 387.334	5–3	1.52+05	1.33−02	6.87+00	−1.177	C+	2
71		$^1D-^3D^{\circ}$										
				4 015.701 cm^{-1}	50 189.389–54 205.090	5–5	3.89+02	3.62−05	1.48−02	−3.742	E+	2
				3 995.875 cm^{-1}	50 189.389–54 185.264	5–3	7.96+03	4.48−04	1.85−01	−2.650	D	2
				4 068.193 cm^{-1}	50 189.389–54 257.582	5–7	7.01+04	8.89−03	3.60+00	−1.352	C+	2
72		$^1S-^1P^{\circ}$		1 775.322 cm^{-1}	51 612.012–53 387.334	1–3	2.48+05	3.54−01	6.57+01	−0.451	B	2
73		$^1S-^3D^{\circ}$										
				2 573.252 cm^{-1}	51 612.012–54 185.264	1–3	2.77+04	1.88−02	2.40+00	−1.726	C+	2
74	$3p4p-3p5s$	$^1P-^1P^{\circ}$	13 176.889	13 180.492	47 284.061–54 871.031	3–3	1.18+07	3.07−01	4.00+01	−0.036	C+	1
75		$^3D-^3P^{\circ}$	*15 960.32*	*15 964.67*	*48 161.46–54 425.29*	15–9	9.81+06	2.25−01	1.77+02	0.528	C+	4
			15 960.063	15 964.424	48 264.292–54 528.220	7–5	8.24+06	2.25−01	8.28+01	0.197	C+	LS
			16 094.787	16 099.184	48 102.323–54 313.818	5–3	7.16+06	1.67−01	4.43+01	−0.078	C+	LS
			16 060.009	16 0.64.396	48 020.074–54 245.020	3–1	9.62+06	1.24−01	1.97+01	−0.429	C	LS
			15 557.779	15 562.030	48 102.323–54 528.220	5–5	1.59+06	5.77−02	1.48+01	−0.540	C	LS
			15 884.454	15 888.794	48 020.074–54 313.818	3–3	2.49+06	9.43−02	1.48+01	−0.548	C	LS
			15 361.161	15 365.359	48 020.074–54 528.220	3–5	1.10+05	6.50−03	9.86+01	−1.710	D	LS
76		$^3P-^3P^{\circ}$	*18 872.9*	*18 878.0*	*49 128.13–54 425.29*	9–9	5.64+06	3.02−01	1.69+02	0.434	C	1
			18 722.87	18 727.98	49 188.617–54 528.220	5–5	4.34+06	2.28−01	7.03+01	0.057	C+	LS
			19 030.76	19 035.95	49 060.601–54 313.818	3–3	1.38+06	7.47−02	1.40+01	−0.650	C	LS
			19 506.10	19 511.43	49 188.617–54 313.818	5–3	2.13+06	7.29−02	2.34+01	−0.438	C	LS
			19 283.30	19 288.56	49 060.601–54 245.020	3–1	5.29+06	9.83−02	1.87+01	−0.530	C	LS
			18 284.50	18 289.50	49 060.601–54 528.220	3–5	1.56+06	1.30−01	2.35+01	−0.409	C	LS
			18 914.44	18 919.60	49 028.294–54 313.818	1–3	1.87+06	3.01−01	1.87+01	−0.521	C	LS
77		$^3S-^3P^{\circ}$	*19 892.6*	*19 898.0*	*49 399.670–54 425.29*	3–9	1.29+06	2.29−01	4.50+01	−0.163	C	1
			19 493.37	19 498.69	49 399.670–54 528.220	3–5	1.37+06	1.30−01	2.50+01	−0.409	C	LS
				4 914.148 cm^{-1}	49 399.670–54 313.818	3–3	1.20+06	7.47−02	1.50+01	−0.650	C	LS
				4 845.50 cm^{-1}	49 399.670–54 245.020	3–1	1.15+06	2.45−02	4.99+00	−1.134	D+	LS
78		$^1D-^1P^{\circ}$		4 681.642 cm^{-1}	50 189.389–54 871.031	5–3	6.07+06	2.49−01	8.75−01	0.095	C+	1
79		$^1S-^1P^{\circ}$		3 259.019 cm^{-1}	51 612.012–54 871.031	1–3	1.45+05	6.15−02	6.21−00	−1.211	D+	1
80	$3p4p-3p4d$	$^1P-^1D^{\circ}$	10 843.858	10 846.828	47 284.061–56 503.346	3–5	1.88+07	5.53−01	5.92+01	0.220	C+	1
81		$^3D-^3F^{\circ}$	*10 718.03*	*10 720.97*	*48 161.46–57 488.97*	15–21	1.71+07	4.12−01	2.18+02	−0.791	C+	1
			10 727.406	10 730.345	48 264.292–57 583.657	7–9	1.70+07	3.78−01	9.35+01	−0.423	B	LS
			10 694.252	10 697.181	48 102.323–57 450.580	5–7	1.53+07	3.67−01	6.46+01	−0.264	C+	LS
			10 689.716	10 692.645	48 020.074–57 372.297	3–5	1.45+07	4.13−01	4.36+01	0.093	C+	LS
			10 882.809	10 885.790	48 264.292–57 450.580	7–7	1.82+06	3.23−02	8.10+00	−0.646	D+	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
			10 784.563	10 787.517	48 102.323–57 372.297	5–5	2.61+06	4.56−02	8.10+00	−0.642	D+	LS
			10 976.346	10 979.353	48 264.292–57 372.297	7–5	7.00+04	9.04−04	2.29−01	−2.199	E+	LS
82		$^3P-^3P^\circ$	*13 205.37*	*13 208.98*	*49 128.13–56 698.74*	9–9	7.30+06	1.91−01	7.47+01	0.235	D+	1
			13 325.626	13 329.271	49 188.617–56 690.903	5–5	5.33+06	1.42−01	3.12+01	−0.149	C	LS
			13 086.03	13 089.61	49 060.601–56 700.25	3–3	1.88+06	4.82−02	6.23+00	−0.840	D	LS
			13 309.04	13 312.68	49 188.617–56 700.25	5–3	2.97+06	4.73−02	1.04+01	−0.626	D+	LS
			13 029.52	13 033.09	49 060.601–56 733.38	3–1	7.60+06	6.45−02	8.30+00	−0.713	D	LS
			13 102.058	13 105.641	49 060.601–56 590.903	3–5	1.87+06	8.02−02	1.04+01	−0.619	D+	LS
			13 030.92	13 034.49	49 028.294–56 700.25	1–3	2.53+06	1.93−01	8.28+00	−0.714	D	LS
83		$^3P-^3D^\circ$	*10 048.5*	*10 051.3*	*49 128.13–59 077.1*	9–15	1.50+06	3.79−02	1.13+01	−0.467	D	1
			10 068.33	10 071.09	49 188.617–59 118.03	5–7	1.49+06	3.18−02	5.27+00	−0.799	D+	LS
			10 025.74	10 028.49	49 060.601–59 032.19	3–5	1.13+06	2.85−02	2.82+00	−1.068	D	LS
			9 969.132	9 971.865	49 028.294–59 056.508	1–3	8.54+05	3.82−02	1.25+00	−1.418	D	LS
			10 156.13	10 158.91	49 188.617–59 032.19	5–5	3.63+05	5.62−03	9.40−01	−1.551	D	LS
			10 001.353	10 004.095	49 060.601–59 056.508	3–3	6.34+05	9.51−03	9.40−01	−1.545	D	LS
			10 131.101	10 133.878	49 188.617–59 056.508	5–3	4.07+04	3.76−04	6.27−02	−2.726	E	LS
84		$^3S-^3P^\circ$	*13 696.63*	*13 700.38*	49 399.670–*56 698.74*	3–9	9.27+06	7.82−01	1.06+02	0.370	C	1
			13 711.352	13 715.101	49 399.670–56 690.903	3–5	9.23+06	4.34−01	5.88+01	0.115	C	LS
			13 693.80	13 697.54	49 399.670–56 700.25	3–3	9.28+06	2.61−01	3.53+01	−0.106	C	LS
			13 631.94	13 635.66	49 399.670–56 733.38	3–1	9.40+06	8.73−02	1.18+01	−0.582	D+	LS
85		$^1D-^1D^\circ$	15 833.603	15 837.929	50 189.389–56 503.346	5–5	4.44+06	1.67−01	4.35+01	−0.078	C+	1
86		$^1D-^1F^\circ$	11 485.81	11 488.96	50 189.389–58 893.40	5–7	5.34+06	1.48−01	2.80+01	−0.131	C	1
87		$^1S-^1P^\circ$	13 905.338	13 909.140	51 612.012–58 801.529	1–3	4.57+06	3.98−01	1.82+01	−0.400	C	1
88	$3p4p-3pnd$	$^3S-u\,^3P^\circ$	*9 464.76*	*9 467.36*	49 399.670–*59 962.28*	3–9	8.74+05	3.52−02	3.30+00	−0.976	D	1
			9 505.205	9 507.813	49 399.670–59 917.336	3–5	8.63+05	1.95−02	1.83+00	−1.233	D	LS
			9 421.786	9 424.371	49 399.670–60 010.458	3–3	8.86+05	1.18−02	1.10+00	−1.451	D	LS
			9 393.42	9 396.00	49 399.670–60 042.50	3–1	8.95+05	3.95−03	3.67−01	−1.926	E+	LS
89	$3p4p-3p5d$	$^1P-^1D^\circ$	7 680.266	7 582.380	47 284.061–60 300.860	3–5	4.62+06	6.81−02	5.16+00	−0.690	C+	5
90		$^3D-^3F^\circ$				15–21						5
			7 944.001	7 946.186	48 264.292–60 848.946	7–9	5.75+06	7.00−02	1.28+01	−0.310	B	5
			7 932.348	7 934.530	48 102.323–60 705.464	5–7	5.13+06	6.78−02	8.85+00	−0.470	C+	5
			7 918.384	7 920.562	48 020.074–60 645.441	3–5	5.22+06	8.18−02	6.40+00	−0.610	C+	5
			8 035.618	8 037.828	48 264.292–60 705.464	7–7	8.11+05	7.86−03	1.46+00	−1.259	D	LS
			7 970.307	7 972.499	48 102.323–60 545.441	5–5	7.11+05	6.78−03	8.89−01	−1.470	C	5
			8 074.574	8 076.795	48 264.292–60 645.441	7–5	3.16+04	2.21−04	4.11−02	−2.811	E	LS
91		$^3P-^3D^\circ$	*8 067.7*	*8 069.9*	*49 128.13–61 519.9*	9–15	1.72+06	2.80−02	6.69+00	−0.599	D	1
			8 071.284	8 073.503	49 188.617–61 574.814	5–7	1.72+06	2.35−02	3.12+00	−0.930	D	LS
			8 070.59	8 072.81	49 060.601–61 447.86	3–5	1.29+06	2.10−02	1.67+00	−1.201	D	LS
			8 008.39	8 010.59	49 028.294–61 511.77	1–3	9.77+05	2.82−02	7.44−01	−1.550	E+	LS
			8 154.87	8 157.11	49 188.617–61 447.86	5–5	4.16+05	4.15−03	5.57−01	−1.683	E+	LS
			8 029.17	8 031.37	49 060.601–61 511.77	3–3	7.26+05	7.02−03	5.57−01	−1.677	E	LS
			8 112.58	8 114.81	49 188.617–61 511.77	5–3	4.69+04	2.78−04	3.71−02	−2.857	E	LS
92		$^1D-^1D^\circ$	9 887.047	9 889.758	50 189.389–60 300.860	5–5	5.67+05	8.32−03	1.35+00	−1.381	D	1
93		$^1D-^1F^\circ$	8 899.23	8 901.67	50 189.389–61 423.23	5–7	3.42+06	5.69−02	8.34+00	−0.546	D+	1

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
94		$^1S-^1P^\circ$	10 313.20	10 316.02	51 612.012–61 305.67	1–3	2.32+06	1.11−01	3.77+00	−0.955	D+	1
94	$3p4p-3p6d$	$^3D-^3F^\circ$	*7 002.7*	*7 004.6*	*48 161.46–62 437.8*	15–21	3.84+06	3.96−02	1.37+01	−0.226	D	1
			7 005.88	7 007.81	48 264.292–62 534.08	7–9	3.83+06	3.63−02	5.86+00	−0.595	D+	LS
			7 003.569	7 005.501	48 102.323–62 376.820	5–7	3.42+06	3.52−02	4.06+00	−0.754	D+	LS
			6 976.51	6 978.44	48 020.074–62 349.93	3–5	3.26+06	3.97−02	2.74+00	−0.924	D	LS
			7 083.950	7 085.903	48 264.292–62 376.820	7–7	4.13+05	3.11−03	5.08−01	−1.662	E+	LS
			7 016.79	7 018.72	48 102.323–62 349.93	5–5	5.96+05	4.40−03	5.08−01	−1.658	E	LS
			7 097.47	7 099.43	48 264.292–62 349.93	7–5	1.62+04	8.76−05	1.43−02	−3.212	E	LS
96		$^3P-^3D^\circ$	*7 269.5*	*7 271.5*	*49 128.13–62 880.4*	9–15	1.25+06	1.66−02	3.57+00	−0.826	E+	1
			7 272.03	7 274.04	49 188.617–62 936.14	5–7	1.25+06	1.39−02	1.66+00	−1.158	D	LS
			7 289.60	7 291.61	49 060.601–62 774.99	3–5	9.33+05	1.24−02	8.93−01	−1.429	E+	LS
			7 193.55	7 195.54	49 028.294–62 925.80	1–3	7.17+05	1.67−02	3.96−01	−1.777	E+	LS
			7 358.29	7 360.32	49 188.617–62 774.99	5–5	3.02+05	2.45−03	2.97−01	−1.912	E	LS
			7 210.31	7 212.30	49 060.601–62 925.80	3–3	5.35+05	4.17−03	2.97−01	−1.903	E	LS
			7 277.51	7 279.51	49 188.617–62 925.80	5–3	3.46+04	1.65−04	1.98−02	−3.084	E	LS
97		$^1D-^1D^\circ$	8 353.719	8 356.015	50 189.389–62 156.816	5–5	3.40+05	3.56−03	4.89−01	−1.750	D	5
98		$^1D-^1F^\circ$	7 925.85	7 928.03	50 189.389–62 802.86	5–7	2.08+06	2.75−02	3.59+00	−0.862	D	1
99	$3p3d-3p4p$	$^1D^\circ-^3D$										
				750.769 cm^{-1}	47 351.554–48 102.323	5–5	1.32+01	3.52−05	7.72−02	−3.754	D	2
				668.520 cm^{-1}	47 351.554–48 020.074	5–3	3.96+01	7.97−05	1.96−01	−3.400	D	2
				912.738 cm^{-1}	47 351.554–48 264.292	5–7	8.59+02	2.17−07	3.91−04	−5.965	E	2
100		$^1D^\circ-^3P$										
				1 709.047 cm^{-1}	47 351.554–49 060.601	5–3	8.75+01	2.69−05	2.59−02	−3.871	E+	2
				1 837.063 cm^{-1}	47 351.554–49 188.617	5–5	2.16+02	9.58−05	8.59−02	−3.320	D	2
101		$^1D^\circ-^1D$		2 837.835 cm^{-1}	47 351.554–50 189.389	5–5	1.35+05	2.52−02	1.46+01	−0.900	E+	2
102	$3p3d-3p5p$	$^3F^\circ-^3D$	*14 025.34*	*14 029.16*	*49 965.89–57 093.90*	21–15	5.49+05	1.16−02	1.12+01	−0.613	D	1
			13 995.45	13 999.28	50 054.80–57 198.027	9–7	5.08+05	1.16−02	4.81+00	−0.981	D+	LS
			14 113.004	14 116.862	49 933.775–57 017.502	7–5	4.78+05	1.02−02	3.32+00	−1.146	D+	LS
			14 026.486	14 030.320	49 850.830–56 978.251	5–3	5.49+05	9.72−03	2.24+00	−1.313	D	LS
			13 762.279	13 766.042	49 933.775–57 198.027	7–7	4.61+04	1.31−03	4.16−01	−2.038	E+	LS
			13 949.664	13 953.478	49 850.830–57 017.502	5–5	6.20+04	1.81−03	4.16−01	−2.043	E+	LS
			13 606.912	13 610.633	49 850.830–57 198.027	5–7	1.35+03	5.25−05	1.18−02	−3.581	E	LS
103		$^1F^\circ-^1D$		4 435.84 cm^{-1}	53 362.24–57 798.080	7–5	1.17+06	6.38−02	3.31+01	−0.350	C	1
104		$^1P^\circ-^1D$		4 410.746 cm^{-1}	53 387.334–57 798.080	3–5	7.23+05	9.29−02	2.08+01	−0.555	C	1
105		$^1P^\circ-^1S$		4 924.333 cm^{-1}	53 387.334–58 311.667	3–1	1.97+06	4.07−02	8.16+00	−0.913	D+	1
106		$^3D^\circ-^3D$		*2 868.28* cm^{-1}	*54 225.62–57 093.90*	15–15	2.12+05	3.86−02	6.64+01	−0.237	C	1
				2 940.445 cm^{-1}	54 257.582–57 198.027	7–7	2.02+05	3.51−02	2.75+01	−0.610	C	LS
				2 812.412 cm^{-1}	54 205.090–57 017.502	5–5	1.39+05	2.63−02	1.54+01	−0.881	C	LS
				2 792.987 cm^{-1}	54 185.264–56 978.251	3–3	1.47+05	2.82−02	9.97+00	−1.073	C	LS
				2 759.920 cm^{-1}	54 257.582–57 017.502	7–5	2.94+04	4.13−03	3.45+00	−1.539	D+	LS
				2 773.161 cm^{-1}	54 205.090–56 978.251	5–	4.78+04	5.59−03	3.32+00	−1.554	D+	LS
				2 992.937 cm^{-1}	54 205.090–57 198.027	5–7	2.68+04	6.28−03	3.45+00	−1.503	D+	LS
				2 832.238 cm^{-1}	54 185.264–57 017.502	3–5	3.06+04	9.52−03	3.32+00	−1.544	D+	LS
107		$^3D^\circ-^3P$		*3 176.99* cm^{-1}	*54 225.62–57 402.61*	15–9	1.10+06	9.82−02	1.53+02	0.168	C+	1
				3 210.662 cm^{-1}	54 257.582–57 468.244	7–5	9.55+05	9.92−02	7.12+01	−0.158	C+	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				3 123.699 cm^{-1}	54 205.090–57 328.789	5–3	7.85+05	7.24−02	3.82+01	−0.441	C+	LS
				3 110.617 cm^{-1}	54 185.264–57 295.881	3–1	1.03+06	5.34−02	1.70+01	−0.795	C	LS
				3 263.154 cm^{-1}	54 205.090–57 468.244	5–5	1.79+05	2.52−02	1.27+01	−0.900	C	LS
				3 143.525 cm^{-1}	54 185.264–57 328.789	3–3	2.67+05	4.05−02	1.27+01	−0.915	C	LS
				3 282.980 cm^{-1}	54 185.264–57 468.244	3–5	1.2+04	2.82−03	8.48−01	−2.073	E+	LS
108	$3p3d$–$3p(^2P^\circ_{3/2})4f$	$^3P^\circ$–$^2[3/2]$										1
			11 540.94	11 644.13	50 602.44–59 190.46	1–3	5.35+06	3.26−01	1.25+01	−0.487	C	LS′
			11 592.29	11 595.46	50 566.397–59 190.46	3–3	4.06+06	8.19−02	9.38+00	−0.610	C	LS′
			11 503.51	11 506.66	50 499.838–59 190.46	5–3	2.77+05	3.30−03	6.25−01	−1.783	E+	LS′
109		$^3D^\circ$–$^2[3/2]$										1
			19 973.8	19 979.2	54 185.264–59 190.46	3–3	1.25+06	7.47−02	1.47+01	−0.650	C	LS′
				4 985.37 cm^{-1}	54 205.090–59 190.46	5–3	4.12+05	1.49−02	4.92+00	−1.128	D+	LS′
110	$3p3d$–$3p(^2P^\circ_{3/2})6p_{3/2}$	$^3D^\circ$–$(3/2,3/2)$										1
			15 381.74	15 385.94	54 205.090–60 704.53	5–7	1.21+04	5.99−04	1.52−01	−2.524	E	LS′
			15 506.98	15 511.22	54 257.582–60 704.53	7–7	9.37+04	3.38−03	1.21+00	−1.626	D	LS′
111	$3p3d$–$3p(^2P^\circ_{3/2})5f$	$^3P^\circ$–$^2[3/2]$										1
			9 051.03	9 053.51	50 602.44–61 647.875	1–3	3.01+06	1.11−01	3.31+00	−0.955	D+	LS′
			9 021.591	9 024.067	50 566.397–61 647.875	3–3	2.29+06	2.79−02	2.49+00	−1.077	D	LS′
			8 967.727	8 970.189	50 499.838–61 647.875	5–3	1.55+05	1.12−03	1.65−01	−2.252	E	LS′
112		$^3D^\circ$–$^2[3/2]$										1
			13 396.472	13 400.136	54 185.264–61 647.875	3–3	3.70+05	9.95−03	1.32+00	−1.525	D	LS′
			13 432.158	13 435.831	54 205.090–61 647.875	5–3	1.23+05	1.99−03	4.40−01	−2.002	E+	LS′
113		$^3F^\circ$–$^2[9/2]$										1
			8 648.45	8 650.83	50 054.80–61 614.385	9–11	9.12+06	1.25−01	3.20+01	0.051	C	LS′
114	$3p3d$–$3p(^2P^\circ_{3/2})6f$	$^3P^\circ$–$^2[3/2]$										1
			8 073.03	8 075.25	50 602.44–62 985.96	1–3	1.80+06	5.27−02	1.40+00	−1.278	D	LS′
			8 049.60	8 051.81	50 566.397–62 985.96	3–3	1.36+06	1.32−02	1.05+00	−1.402	D	LS′
			8 006.69	8 008.89	50 499.838–62 985.96	5–3	9.20+04	5.31−04	7.00−02	−2.576	E	LS′
115		$^3F^\circ$–$^2[9/2]$										1
			7 742.70	7 744.83	50 054.80–62 966.64	9–11	5.34+06	5.87−02	1.35+01	−0.277	C	LS′
116	$3p5s$–$3p5p$	$^3P^\circ$–^3D		*2 668.61* cm^{-1}	*54 425.29–57 093.90*	9–15	2.54+06	8.93−01	9.91+02	0.905	B	1
				2 669.807 cm^{-1}	54 528.220–57 198.027	5–7	2.55+06	7.50−01	4.62+02	0.574	B+	LS
				2 703.684 cm^{-1}	54 313.818–57 017.502	3–5	1.98+06	6.78−01	2.48+02	0.308	B	LS
				2 733.231 cm^{-1}	54 245.020–56 978.251	1–3	1.52+06	9.14−01	1.10+02	−0.039	B	LS
				2 489.282 cm^{-1}	54 528.220–57 017.502	5–5	5.17+05	1.25−01	8.27+01	−0.204	C+	LS
				2 664.433 cm^{-1}	54 313.818–56 978.251	3–3	1.06+06	2.23−01	8.27+01	−0.175	C+	LS
				2 450.031 cm^{-1}	54 528.220–56 978.251	5–3	5.47+04	8.20−03	5.51+00	−1.387	D+	LS
117		$^3P^\circ$–^3P		*2 977.32* cm^{-1}	*54 425.29–57 402.61*	9–9	3.30+06	5.57−01	5.55+02	0.700	B	1
				2 940.024 cm^{-1}	54 528.220–57 468.244	5–5	2.38+06	4.13−01	2.31+02	0.315	B	LS
				3 014.971 cm^{-1}	54 313.818–57 328.789	3–3	8.55+05	1.41−01	4.62+01	−0.374	C+	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				2 800.569 cm^{-1}	54 528.220–57 328.789	5–3	1.14+06	1.31−01	7.70+01	−0.184	C+	LS
				2 982.063 cm^{-1}	54 313.818–57 295.881	3–1	3.31+06	1.86−01	6.16+01	−0.253	C+	LS′
				3 154.426 cm^{-1}	54 313.818–57 468.244	3–5	9.80+05	2.46−01	7.70+01	−0.132	C+	LS
				3 083.769 cm^{-1}	54 245.020–57 328.789	1–3	1.22+06	5.78−01	6.17+01	−0.238	C+	LS
118		$^3P^\circ-{}^3S$		*3 116.63* cm^{-1}	*54 425.29*–57 541.915	9–3	3.48+06	1.79−01	1.70+02	0.207	C+	1
				3 013.695 cm^{-1}	54 528.220–57 541.915	5–3	1.75+06	1.73−01	9.45+01	−0.063	B	LS
				3 228.097 cm^{-1}	54 313.818–57 541.915	3–3	1.29+06	1.85−01	5.66+01	−0.256	C+	LS
				3 296.895 cm^{-1}	54 245.020–57 541.915	1–3	4.57+05	1.89−01	1.89+01	−0.724	C	LS
119		$^1P^\circ-{}^1P$		1 909.398 cm^{-1}	54 871.031–56 780.429	3–3	1.32+06	5.43−01	2.81+02	0.212	B	1
120		$^1P^\circ-{}^1D$		2 927.049 cm^{-1}	54 871.031–57 798.080	3–5	2.61+06	7.60−01	2.56+02	0.358	B	1
121		$^1P^\circ-{}^1S$		3 440.636 cm^{-1}	54 871.031–58 311.667	3–1	1.96+06	8.27−02	2.37+01	−0.605	C	1
122	$3p5s$–$3p(^2P^\circ_{3/2})6p_{3/2}$	$^3P^\circ$–(3/2,3/2)										1
			16 186.48	16 190.90	54 528.220–60 704.53	5–7	2.09+05	1.15−02	3.06+00	−1.240	D	LS′
123	$3p4d-3p5p$	$^1D^\circ-{}^1P$		277.083 cm^{-1}	56 503.346–56 780.429	5–3	4.17+03	4.88−02	2.90+02	−0.613	B	1
124		$^1D^\circ-{}^1D$		1 294.734 cm^{-1}	56 503.346–57 798.080	5–5	6.44+04	5.76−02	7.32+01	−0.541	C+	1
125		$^3P^\circ-{}^3D$		*395.16* cm^{-1}	*56 698.74–57 093.90*	9–15	1.65+02	2.64−03	1.98+01	−1.624	D	1
				507.124 cm^{-1}	56 690.903–57 198.027	5–7	3.49+02	2.85−03	9.25+00	−1.846	D+	LS
				317.25 cm^{-1}	56 700.25–57 017.502	3–5	6.40+01	1.59−03	4.95+00	−2.321	D	LS
				244.87 cm^{-1}	56 733.38–56 978.251	1–3	2.19+01	1.64−03	2.20+00	−2.785	E+	LS
				326.599 cm^{-1}	56 690.903–57 017.502	5–5	2.33+01	3.27−04	1.65+00	−2.786	E+	LS
				278.00 cm^{-1}	56 700.25–56 978.251	3–3	2.39+01	4.64−04	1.65+00	−2.856	E+	LS
				287.348 cm^{-1}	56 690.903–56 978.251	5–3	1.76+00	1.92−05	1.10+01	−4.018	E	LS
126		$^3P^\circ-{}^3P$		*703.87* cm^{-1}	*56 698.74–57 402.61*	9–9	1.56+04	4.71−02	1.98+02	−0.373	C	1
				777.341 cm^{-1}	56 690.903–57 468.244	5–5	1.57+04	3.90−02	8.26+01	−0.710	C+	LS
				628.54 cm^{-1}	56 700.25–57 328.789	3–3	2.77+03	1.05−02	1.65+01	−1.502	D+	LS
				637.886 cm^{-1}	56 690.903–57 328.789	5–3	4.84+03	1.07−02	2.76+01	−1.272	C	LS
				595.63 cm^{-1}	56 700.25–57 295.881	3–1	9.44+03	1.33−02	2.21+01	−1.399	C	LS
				767.99 cm^{-1}	56 700.25–57 468.244	3–5	5.05+03	2.14−02	2.75+01	−1.192	C	LS
				595.41 cm^{-1}	56 733.38–57 328.789	1–3	3.14+03	3.98−02	2.20+01	−1.400	D+	LS
127		$^3P^\circ-{}^3S$		*843.18* cm^{-1}	*56 698.74*–57 541.915	9–3	1.19+05	8.34−02	2.93+02	−0.125	C+	1
				851.012 cm^{-1}	56 690.903–57 541.915	5–3	6.78+04	8.42−02	1.63+02	−0.376	C+	LS
				841.67 cm^{-1}	56 700.25–57 541.915	3–3	3.94+04	8.33−02	9.77+01	−0.602	C+	LS
				808.54 cm^{-1}	56 733.38–57 541.915	1–3	1.16+04	8.00−02	3.26+01	−1.097	C	LS
128	$3p3d$–$3p(^2P^\circ_{3/2})4f$	$^3P^\circ$–^{2}[3/2]										1
				2 457.08 cm^{-1}	56 733.38–59 190.46	1–3	1.13+06	8.41−01	1.13+02	−0.075	C+	LS′
				2 490.21 cm^{-1}	56 700.25–59 190.46	3–3	8.81+05	2.13−01	8.45+01	−0.194	C+	LS′
				2 499.56 cm^{-1}	56 690.903–59 190.46	5–3	5.95+04	8.56−03	5.64+00	−1.369	D	LS′
129		$^3D^\circ$–^{2}[3/2]										1
				133.95 cm^{-1}	59 056.508–59 190.46	3–3	6.28+01	5.25−03	3.87+01	−1.803	C+	LS′
				158.27 cm^{-1}	59 032.19–59 190.46	5–3	3.45+01	1.24−03	1.29+01	−2.208	C	LS′
130	$3p3d$–$3p(^2P^\circ_{3/2})6p_{3/2}$	$^3F^\circ$–(3/2,3/2)										1

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				3 332.23 cm^{-1}	57 372.297–60 704.53	5–7	7.83+02	1.48−04	7.31−02	−3.131	E	LS′
				3 253.95 cm^{-1}	57 450.580–60 704.53	7–7	2.59+04	3.67−03	2.60+00	−1.590	D	LS′
				3 120.87 cm^{-1}	57 583.657–60 704.53	9–7	2.64+05	3.16−02	300+01	−0.546	C	LS′
131		$^3D^\circ$–(3/2,3/2)										1
				1 672.34 cm^{-1}	59 032.19–60 704.53	5–7	1.52+04	1.14−02	1.12+01	−1.244	C	LS′
				1 586.50 cm^{-1}	59 118.03–60 704.53	7–7	1.04+05	6.17−02	8.96+01	−0.365	C+	LS′
132	$3p3d$–$3p(^2P^\circ_{3/2})5f$	$^3D^\circ$–$^2[3/2]$										1
				2 591.367 cm^{-1}	59 056.508–61 547.875	3–3	3.19+05	7.12−02	2.71+01	−0.670	C	LS′
				2 615.68 cm^{-1}	59 032.19–61 647.875	5–3	1.10+05	1.44−02	9.06+00	−1.143	C	LS′
133		$^3F^\circ$–$^2[9/2]$										1
				4 030.728 cm^{-1}	57 583.657–61 614.385	9–11	7.40+05	8.35−02	6.14+01	−0.124	C+	LS′
134	$3p3d$–$3p(^2P^\circ_{3/2})6f$	$^3D^\circ$–$^2[3/2]$										1
				3 929.45 cm^{-1}	59 0.56.508–62 985.96	3–3	1.58+05	1.53−02	3.85+00	−1.338	D+	LS′
				3 953.77 cm^{-1}	59 032.19–62 985.96	5–3	5.34+04	3.07−03	1.28+00	−1.814	D	LS′
135		$^3F^\circ$–$^2[9/2]$										1
			18 572.0	18 577.1	57 583.657–62 966.64	9–11	7.72+05	4.88−02	2.69+01	−0.357	C	LS′
136	$3p4d$–$3p(^2P^\circ_{3/2})7f$	$^3F^\circ$–$^2[9/2]$										1
			16 129.02	16 133.42	57 583.657–63 781.97	9–11	5.89+05	2.81−02	1.34+01	−0.597	D	LS′
137	$3p5p-3p4d$	$^1P-^1P^\circ$		2 021.100 cm^{-1}	56 780.429–58 801.529	3–3	2.52+05	9.24−02	4.52+01	−0.557	C+	1
138		$^3D-^3F^\circ$		*395.07* cm^{-1}	*57 093.90–57 488.97*	15–21	1.33+04	1.79−01	2.23+03	0.429	B+	1
				385.630 cm^{-1}	57 198.027–57 583.657	7–9	1.23+04	1.60−01	9.56+02	0.049	B+	LS
				433.078 cm^{-1}	57 017.502–57 450.580	5–7	1.55+04	1.74−01	6.61+02	−0.060	B+	LS
				394.046 cm^{-1}	56 978.251–57 372.297	3–5	1.11+04	1.78−01	4.46+02	−0.272	B+	LS
				252.553 cm^{-1}	57 198.027–57 450.580	7–7	3.88+02	9.11−03	8.31+01	−1.195	+	LS
				354.795 cm^{-1}	57 017.502–57 372.297	5–5	1.50+03	1.79−02	8.30+01	−1.048	C+	LS
				174.270 cm^{-1}	57 198.027–57 372.297	7–5	5.02+00	1.77−04	2.34+00	−2.907	D	LS
139		$^3D-^3D^\circ$		*1 983.2* cm^{-1}	*57 093.90–59 077.1*	15–15	5.06+05	1.93−01	4.80+02	0.462	C+	1
				1 920.00 cm^{-1}	57 198.027–59 118.03	7–7	4.08+05	1.66−01	1.99+02	0.065	B	LS
				2 014.69 cm^{-1}	57 017.502–59 032.19	5–5	3.68+05	1.36−01	1.11+02	−0.167	B	LS
				2 078.257 cm^{-1}	56 978.251–59 056.508	3–3	4.35+05	1.51−01	7.18+01	−0.344	C+	LS
				1 834.16 cm^{-1}	57 198.027–59 032.19	7–5	6.22+04	1.98−02	2.49+01	−0.858	C	LS
				2 039.006 cm^{-1}	57 017.502–59 056.508	5–3	1.37+05	2.97−02	2.40+01	−0.828	C	LS
				2 100.53 cm^{-1}	57 017.502–59 118.03	5–7	6.68+04	3.18−02	2.49+01	−0.799	C	LS
				2 053.94 cm^{-1}	56 978.251–59 032.19	3–5	8.42+04	4.99−02	2.40+01	−0.825	C	LS
140		$^3P-^3D^\circ$		*1 674.5* cm^{-1}	*57 402.61–59 077.1*	9–15	0.99+05	8.90−01	1.57+03	0.904	B	1
				1 649.79 cm^{-1}	57 468.244–59 118.03	5–7	9.54+05	7.36−01	7.34+02	0.566	B+	LS
				1 703.40 cm^{-1}	57 328.789–59 032.19	3–5	7.88+05	6.79−01	3.94+02	0.309	B+	LS
				1 760.627 cm^{-1}	57 295.881–59 056.508	1–3	6.45+05	9.36−01	1.75+02	−0.029	B	LS
				1 563.95 cm^{-1}	57 463.244–59 032.19	5–5	2.04+05	1.25−01	1.32+02	−0.204	B	LS
				1 727.719 cm^{-1}	57 328.789–59 056.508	3–3	4.58+05	2.30−01	1.31+02	−0.161	B	LS
				1 588.264 cm^{-1}	57 468.244–59 056.508	5–3	2.37+04	8.44−03	8.75+00	−1.375	D+	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
141		$^1D-^1P^\circ$		1 003.449 cm^{-1}	57 798.080–58 801.529	5–3	9.27+04	8.28−02	1.36+02	−0.383	B	1
142		$^1D-^1F^\circ$		1 095.32 cm^{-1}	57 798.080–58 893.40	5–7	4.20+05	7.34−01	1.10+03	0.565	B+	1
143		$^1S-^1P^\circ$		489.862 cm^{-1}	58 311.667–58 801.529	1–3	3.10+04	5.81−01	3.90+02	−0.236	B+	1
144	$3p5p-3p(^2P^\circ_{1/2})6s_{1/2}$	$^3D-(1/2,1/2)^\circ$										1
				2 295.324 cm^{-1}	56 978.251–59 273.575	3–3	5.20+05	1.48−01	6.37+01	−0.353	D	LS′
				2 256.073 cm^{-1}	57 017.502–59 273.575	5–3	1.48+06	2.62−01	1.91+02	0.117	C	LS′
				2 242.86 cm^{-1}	56 978.251–59 21.11	3–1	1.94+06	1.93−01	8.50+01	−0.237	D+	LS′
145		$^3P-(1/2,1/2)^\circ$										1
				1 977.694 cm^{-1}	57 295.881–59 273.575	1–3	3.59+05	4.13−01	6.87+01	−0.384	D+	LS′
				1 944.786 cm^{-1}	57 328.789–59 273.575	3–3	2.57+05	1.02−01	5.18+01	−0.514	D	LS′
				1 805.331 cm^{-1}	57 468.244–59 273.575	5–3	3.42+05	9.43−02	8.60+01	−0.327	D+	LS′
				1 892.32 cm^{-1}	57 328.789–59 221.11	3–1	9.46+05	1.32−01	6.89+01	−0.402	D+	LS′
146		$^3S-(1/2,1/2)^\circ$										1
				1 731.660 cm^{-1}	57 541.915–59 273.575	3–3	2.42+05	1.21−01	6.90+01	−0.440	D+	LS′
				1 679.19 cm^{-1}	57 541.915–59 221.11	3–1	2.20+05	3.90−02	2.29+01	−0.932	E+	LS′
147	$3p5p-3p(^2P^\circ_{3/2})6s_{1/2}$	$^1P-(3/2,1/2)^\circ$										1
				2 856.238 cm^{-1}	56 780.429–59 636.667	3–3	2.67+06	4.90−01	1.69+02	0.167	C	LS′
148		$^3D-(3/2,1/2)^\circ$										1
				2 528.108 cm^{-1}	56 978.251–59 506.359	3–5	2.79+04	1.09−02	4.26+00	−1.485	E	LS′
				2 488.857 cm^{-1}	57 017.502–59 506.359	5–5	3.97+05	9.62−02	6.36+01	−0.318	D	LS′
				2 308.332 cm^{-1}	57 198.027–59 506.359	7–5	1.78+06	3.57−01	3.56+02	−0.398	C	LS′
149		$^3P-(3/2,1/2)^\circ$										1
				2 177.570 cm^{-1}	57 328.789–59 506.359	3–5	3.61+05	1.90−01	8.62+01	−0.244	D+	LS
				2 038.115 cm^{-1}	57 468.244–59 506.359	5–5	8.84+05	3.19−01	2.58+02	0.203	C	LS′
150		$^3S-(3/2,1/2)^\circ$										1
				1 964.444 cm^{-1}	57 541.915–59 506.359	3–5	3.52+05	2.28−01	1.15+02	−0.165	D+	LS′
151		$^1D-(3/2,1/2)^\circ$										1
				1 838.587 cm^{-1}	57 798.080–59 636.667	5–3	1.32+06	3.50−01	3.13+02	0.243	C	LS′
152	$3p5p-3pnd$	$^3D-u\,^3P^\circ$		*2 868.38 cm^{-1}*	*57 093.90–59 962.28*	15–9	9.05+04	9.89−03	1.70+01	−0.829	D+	1
				2 719.309 cm^{-1}	57 198.027–59 917.336	7–5	6.48+04	9.38−03	7.95+00	−1.183	D+	LS
				2 992.956 cm^{-1}	57 017.502–60 010.458	5–3	7.71+04	7.74−03	4.26+00	−1.412	D+	LS
				3 064.25 cm^{-1}	56 978.251–60 042.50	3–1	1.10+05	5.87−03	1.89+00	−1.754	D	LS
				2 899.834 cm^{-1}	57 017.502–59 917.336	5–5	1.40+04	2.50−03	1.42+00	−1.903	D	LS
				3 032.207 cm^{-1}	56 978.251–60 010.458	3–3	2.67+04	4.36−03	1.42+00	−1.883	D	LS
				2 939.085 cm^{-1}	56 978.251–59 917.336	3–5	9.75+02	2.82−04	9.48−02	−3.073	E	LS
153		$^3P-u\,^3P^\circ$		*2 559.67 cm^{-1}*	*57 402.61–59 962.28*	9–9	1.40+06	3.20−01	3.70+02	0.459	C+	1
				2 449.092 cm^{-1}	57 468.244–59 917.336	5–5	9.16+05	2.29−01	1.54+02	0.059	B	LS
				2 681.669 cm^{-1}	57 328.789–60 010.458	3–3	4.01+05	8.37−02	3.08+01	−0.600	C	LS
				2 542.214 cm^{-1}	57 468.244–60 010.458	5–3	5.70+05	7.94−02	5.14+01	−0.401	C+	LS
				2 713.71 cm^{-1}	57 328.789–60 042.50	3–1	1.67+06	1.13−01	4.11+01	−0.470	C+	LS
				2 588.547 cm^{-1}	57 328.789–59 917.336	3–5	3.62+05	1.35−01	5.15+01	−0.393	C+	LS

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				2 714.577 cm^{-1}	57 295.881–60 010.458	1–3	5.55+05	3.39−01	4.11+01	−0.470	C+	LS
154		$^3S-u\,^3P^\circ$		*2 420.36* cm^{-1}	57 541.915–*59 962.28*	3–9	1.56+06	1.20−00	4.90+02	0.556	B	1
				2 375.421 cm^{-1}	57 541.915–59 917.336	3–5	1.48+06	6.55−01	2.72+02	0.293	B	LB
				2 468.543 cm^{-1}	57 541.915–60 010.458	3–3	1.66+06	4.08−01	1.63+02	0.088	B	LS
				2 500.58 cm^{-1}	57 541.915–60 042.50	3–1	1.73+06	1.38−01	5.45+01	−0.383	C+	LS
155	$3p5p-3p5d$	$^1P-{}^1D^\circ$		3 520.431 cm^{-1}	56 780.429–60 300.860	3–5	3.27+06	6.60−01	1.85+02	0.297	B	1
156		$^3D-{}^3F^\circ$		*3 658.77* cm^{-1}	*57 093.90–60 752.67*	15–21	2.68+06	4.20−01	5.67+02	0.799	B	1
				3 650.919 cm^{-1}	57 198.027–60 848.946	7–9	2.66+06	3.85−01	2.43+02	0.431	B	LS
				3 687.962 cm^{-1}	57 017.502–60 705.464	5–7	2.44+06	3.76−01	1.68+02	0.274	B	LS
				3 667.190 cm^{-1}	56 978.251–60 645.441	3–5	2.27+06	4.21−01	1.13+02	1.101	B	LS
				3 507.437 cm^{-1}	57 198.027–60 705.464	7–7	2.63+05	3.21−02	2.11+01	−0.648	C	LS
				3 627.939 cm^{-1}	57 017.502–60 645.441	5–5	4.07+05	4.64−02	2.11+01	−0.635	C	LS
				3 447.414 cm^{-1}	57 198.027–60 645.441	7–5	9.87+03	8.89−04	5.94−01	−2.206	E+	LS
157		$^3P-{}^3D^\circ$		*4 117.3* cm^{-1}	*57 402.61–61 519.9*	9–15	1.17+05	1.73−02	1.25+01	−0.808	D	1
				4 106.570 cm^{-1}	57 468.244–61 574.814	5–7	1.17+05	1.45−02	5.81+00	−1.140	D+	LS
				4 119.07 cm^{-1}	57 328.789–61 447.86	3–5	8.83+04	1.30−02	3.12+00	−1.409	D	LS
				4 215.89 cm^{-1}	57 295.881–61 511.77	1–3	6.99+04	1.77−02	1.38+00	−1.752	E+	LS
				3 979.62 cm^{-1}	57 468.244–61 447.86	5–5	2.65+04	2.51−03	1.04+00	−1.901	D	LS
				4 182.98 cm^{-1}	57 328.789–61 511.77	3–3	5.12+04	4.39−03	1.04+00	−1.880	E+	LS
				4 043.53 cm^{-1}	57 468.244–61 511.77	5–3	3.09+03	1.70−04	6.92−02	−3.071	E	LS
158		$^3P-{}^3P^\circ$		*4 483.9* cm^{-1}	*57 402.61–61 886.5*	9–9	1.65+05	1.23−02	8.13+00	−0.956	D	1
				4 373.70 cm^{-1}	57 468.244–61 841.94	5–5	1.15+05	9.00−03	3.39+00	−1.347	D+	LS
				4 607.34 cm^{-1}	57 328.789–61 936.13	3–3	4.47+04	3.16−03	6.77−01	−2.023	E+	LS
				4 467.89 cm^{-1}	57 468.244–61 936.13	5–3	6.81+04	3.07−03	1.13+00	−1.814	D	LS
				4 631.47 cm^{-1}	57 328.789–61 960.26	3–1	1.82+05	4.24−03	9.04−01	−1.896	E+	LS
				4 513.15 cm^{-1}	57 328.789–61 841.94	3–5	4.21+04	5.16−03	1.13+00	−1.810	D	LS
				4 640.25 cm^{-1}	57 295.881–61 936.13	1–3	6.08+04	1.27−02	9.01−01	−1.896	E+	LS
159		$^3S-{}^3P^\circ$		*4 344.6* cm^{-1}	57 541.915–*61 886.5*	3–9	1.59+05	3.79−02	8.61+00	−0.944	D+	1
				4 300.03 cm^{-1}	57 541.915–61 841.94	3–5	1.54+05	2.08−02	4.78+00	−1.205	D+	LS
				4 394.21 cm^{-1}	57 541.915–61 936.13	3–3	1.65+05	1.28−02	2.88+00	−1.416	D	LS
				4 418.35 cm^{-1}	57 541.915–61 960.26	3–1	1.67+05	4.28−03	9.57−01	−1.891	D	LS
160		$^1D-{}^1D^\circ$		2 502.780 cm^{-1}	57 798.080–60 300.860	5–5	8.77+05	2.10−01	1.38+02	0.021	B	1
161		$^1D-{}^1F^\circ$		3 625.15 cm^{-1}	57 798.080–61 423.23	5–7	5.70+05	9.10−02	4.13+01	−0.342	C+	1
162		$^1S-{}^1P^\circ$		2 994.00 cm^{-1}	58 311.667–61 305.67	1–3	7.49+05	3.76−01	4.13+01	−0.425	C+	1
163	$3p5p-3p6d$	$^1P-{}^1D^\circ$	18 594.77	18 599.85	56 780.429–62 156.816	3–5	1.37+06	1.18−01	2.17+01	−0.451	D+	1
164		$^3D-{}^3F^\circ$	*18 708*	*18 713*	*57 093.90–62 437.8*	15–21	1.50+06	1.10−01	1.02+02	0.217	C	1
			18 735.3	18 740.4	57 198.027–62 534.08	7–9	1.49+06	1.01−01	4.36+01	−0.151	C+	LS
			18 654.00	18 659.09	57 017.502–62 376.820	5–7	1.34+06	9.80−02	3.01+01	−0.310	C	LS
			18 611.1	18 616.2	56 978.251–62 349.93	3–5	1.28+06	1.11−01	2.04+01	−0.478	C	LS
			19 304.25	19 309.52	57 198.027–62 376.820	7–7	1.52+05	8.48−03	3.77+00	−1.227	D+	LS
			18 748.1	18 753.2	57 017.502–62 349.93	5–5	2.31+05	1.22−02	3.77+00	−1.215	D	LS
			19 405.0	19 410.3	57 198.027–62 349.93	7–5	5.90+03	2.38−04	1.06−01	−2.778	E	LS
165		$^3P-{}^3D^\circ$	*18 251*	*18 256*	*57 402.61–62 880.4*	9–15	1.88+05	1.56−02	8.46+00	−0.853	D	1

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
			18 283.6	18 288.6	57 468.244–62 936.14	5–7	1.87+05	1.31−02	3.94+00	−1.184	D+	LS
			18 356.4	18 361.4	57 328.789–62 774.99	3–5	1.39+05	1.17−02	2.12+00	−1.455	D	LS
			17 757.40	17 762.24	57 295.881–62 925.80	1–3	1.13+05	1.61−02	9.41−01	−1.793	E+	LS
			18 838.8	18 843.9	57 468.244–62 774.99	5–5	4.26+04	2.27−03	7.04−01	−1.945	E+	LS
			17 861.8	17 866.7	57 328.789–62 925.80	3–3	8.34+04	3.99−03	7.04−01	−1.922	E+	LS
			18 318.2	18 323.2	57 468.244–62 925.80	5–3	5.17+03	1.56−04	4.71−02	−3.108	E	LS
166		$^1D-^1D^\circ$		4 358.736 cm^{-1}	57 798.080–62 156.816	5–5	1.96+05	1.55−02	5.85+00	−1.111	D	1
167		$^1D-^1F^\circ$	19 975.4	19 980.9	57 798.080–62 802.86	5–7	4.83+05	4.05−02	1.33+01	−0.694	D+	1
168		$^1S-^1P^\circ$		4 354.58 cm^{-1}	58 311.667–62 666.25	1–3	4.72+05	1.12−01	8.47+00	−0.951	D+	1
169	$3p5p-3p7d$	$^3D-^3F^\circ$	*15 896.5*	*15 900.8*	*57 093.90–63 382.9*	15–21	8.84+05	4.69−02	3.68+01	−0.153	E+	1
			15 827.213	15 831.537	57 198.027–63 514.533	7–9	8.96+05	4.33−02	1.58+01	−0.518	D	LS
			15 810.46	15 814.78	57 017.502–63 340.70	5–7	7.98+05	4.19−02	1.09+01	−0.679	D	LS
			16 055.64	16 060.03	56 978.251–63 204.89	3–5	7.20+05	4.64−02	7.36+00	−0.856	E+	LS
			16 275.11	16 279.56	57 198.027–63 340.70	7–7	9.19+04	3.65−03	1.37+00	−1.593	E	LS
			16 157.49	16 161.91	57 017.502–63 204.89	5–5	1.31+05	5.14−03	1.37+00	−1.590	E	LS
			16 643.08	16 647.62	57 198.027–63 204.89	7–5	3.40+03	1.01−04	3.87−02	−3.151	E	LS
170	$3p(^2P^\circ_{3/2})4f-3p\ nd$	$^2[3/2]-u\ ^3P^\circ$										1
				852.04 cm^{-1}	59 190.46–60 042.50	3–1	1.13+05	7.77−02	9.01+01	−0.632	C+	LS′
				820.00 cm^{-1}	59 190.46–60 010.458	3–3	2.52+04	5.61−02	6.76+01	−0.774	C+	LS′
				726.88 cm^{-1}	59 190.46–59 917.336	3–5	7.00+02	3.31−03	4.50+00	−2.003	D+	LS′
171	$3p(^2P^\circ_{3/2})6s_{1/2}-3p(^2P^\circ_{3/2})6p_{3/2}$	$(3/2,1/2)^\circ-(3/2,3/2)$										1
				1 198.17 cm^{-1}	59 506.359–60 704.53	5–7	6.58+05	9.62−01	1.32+03	0.682	C+	LS′
172	$3p\ nd-3p(^2P^\circ_{3/2})6p_{3/2}$	$u\ ^3P^\circ-(3/2,3/2)$										1
				787.19 cm^{-1}	59 917.336–60 704.53	5–7	3.42+03	1.16−02	2.43+01	−1.237	C	LS′
173	$3p\ nd-3p(^2P^\circ_{3/2})5f$	$u\ ^3P^\circ-^2[3/2]$										1
				1 605.38 cm^{-1}	60 042.50–61 647.875	1–3	7.33+05	1.28−00	2.62+02	0.107	B	LS′
				1 637.417 cm^{-1}	60 010.458–61 647.875	3–3	5.85+05	3.27−01	1.97+02	−0.008	B	LS′
				1 730.539 cm^{-1}	59 917.336–61 647.875	5–3	4.59+04	1.38−02	1.31+01	−1.161	C	LS′
174	$3p\ nd-3p(^2P^\circ_{3/2})6f$	$u\ ^3P^\circ-^2[3/2]$										1
				2 943.46 cm^{-1}	60 042.50–62 985.96	1–3	1.61+05	8.34−02	9.33+00	−1.079	C	LS′
				2 975.50 cm^{-1}	60 010.458–62 985.96	3–3	1.25+05	2.11−02	7.00+00	−1.199	D+	LS′
				3 068.62 cm^{-1}	59 917.336–62 985.96	5–3	9.11+03	8.70−04	4.67−01	−2.362	E+	LS′
175	$3p\ 5d-3p(^2P^\circ_{3/2})5f$	$^3F^\circ-^2[3/2]$										1
				1 002.434 cm^{-1}	60 645.441–61 647.875	5–3	1.53+03	1.37−03	2.25+00	−2.164	D	LS′
176		$^3D^\circ-^2[3/2]$										1
				136.11 cm^{-1}	61 511.77–61 647.875	3–3	2.48+02	2.01−02	1.46+02	−1.220	C+	LS′
				200.01 cm^{-1}	61 447.86–61 647.875	5–3	2.63+02	5.91−03	4.86+01	−1.529	C+	LS′
177		$^3F^\circ-^2[9/2]$										1
				765.439 cm^{-1}	60 848.946–61 614.385	9–11	3.26+05	1.02+00	3.95+03	0.963	B+	LS′

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
178	$3p\,5d-3p(^2P^\circ_{3/2})7p_{3/2}$	$^3F^\circ-(3/2,3/2)$										1
				1 775.59 cm^{-1}	60 645.441–62 421.03	5–7	4.06+02	2.70−04	2.50−01	−2.870	E	LS′
				1 715.57 cm^{-1}	60 705.464–62 421.03	7–7	1.30+04	6.62−03	8.89+00	−1.334	E+	LS′
				1 572.08 cm^{-1}	60 848.946–62 421.03	9–7	1.15+05	5.44−02	1.03+02	−0.310	C	LS′
179		$^3D^\circ-(3/2,3/2)$										1
				973.17 cm^{-1}	61 447.86–62 421.03	5–7	7.63+03	1.69−02	2.86+01	−1.073	D+	LS′
				846.22 cm^{-1}	61 574.814–62 421.03	7–7	4.01+04	8.39−02	2.28+02	−0.231	C+	LS′
180		$^3P^\circ-(3/2,3/2)$										1
				579.09 cm^{-1}	61 841.94–62 421.03	5–7	8.69+02	5.44−03	1.55+01	−1.565	D	LS′
181	$3p\,5d-3p(^2P^\circ_{3/2})6f$	$^3D^\circ-^2[3/2]$										1
				1 474.19 cm^{-1}	61 511.77–62 985.96	3–3	9.39+04	6.48−02	4.34+01	−0.711	C	LS′
				1 538.10 cm^{-1}	61 447.86–62 985.96	5–3	3.55+04	1.35−02	1.44+01	−1.171	C	LS′
182		$^3P^\circ-^2[3/2]$										1
				1 025.70 cm^{-1}	61 960.26–62 985.96	1–3	3.25+05	1.39+00	4.46+02	0.143	B+	LS′
				1 049.83 cm^{-1}	61 936.13–62 985.96	3–3	2.61+05	3.55−01	3.34+02	0.027	B	LS′
				1 144.02 cm^{-1}	61 841.94–62 985.96	5–3	2.26+04	1.55−02	2.23+01	−1.111	C	LS′
183		$^3F^\circ-^2[9/2]$										1
				2 117.69 cm^{-1}	60 848.946–62 966.64	9–11	6.29+04	2.57−02	3.60+01	−0.636	C+	LS′
184	$3p\,5d-3p(^2P^\circ_{3/2})7f$	$^3F^\circ-^2[9/2]$										1
				2 933.02 cm^{-1}	60 848.946–63 781.97	9–11	1.08+05	2.31−02	2.33+01	−0.682	D+	LS′
185		$^3P^\circ-^2[3/2]$										1
				1 833.26 cm^{-1}	61 960.26–63 793.52	1–3	1.27+05	1.70−01	3.05+01	−0.770	D+	LS′
				1 857.39 cm^{-1}	61 936.13–63 793.52	3–3	9.94+04	4.32−02	2.30+01	−0.887	D	LS′
				1 951.58 cm^{-1}	61 841.94–63 793.52	5–3	7.66+03	1.81−03	1.53+00	−2.043	E	LS′
186	$3p(^2P^\circ_{3/2})6p_{3/2}-3p\,5d$	$(3/2,3/2)-^3F^\circ$										1
				144.42 cm^{-1}	60 704.53–60 848.946	7–9	2.01+03	1.86−01	2.97+03	0.115	B+	LS′
187		$(3/2,3/2)-^3D^\circ$										1
				743.33 cm^{-1}	60 704.53–61 447.86	7–5	1.10+04	2.13−02	6.60+01	−0.827	C+	LS′
				870.28 cm^{-1}	60 704.53–61 574.814	7–7	1.01+05	1.99−01	5.27+02	0.144	B+	LS′
188		$(3/2,3/2)-^3P^\circ$										1
				1 137.41 cm^{-1}	60 704.53–61 841.94	7–5	7.97+03	6.60−03	1.34+01	−1.335	C	LS′
189	$3p(^2P^\circ_{3/2})6p_{3/2}-3p\,6d$	$(3/2,3/2)-^3F^\circ$										1
				1 645.40 cm^{-1}	60 704.53–62 349.93	7–5	2.19+03	8.68−04	1.22+00	−2.216	E+	LS′
				1 672.29 cm^{-1}	60 704.53–62 376.820	7–7	5.84+04	3.13−02	4.31+01	−0.659	C+	LS′
				1 829.55 cm^{-1}	60 704.53–62 534.08	7–9	6.86+05	3.95−01	4.98+02	0.442	B+	LS′

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
190	$3p(^2P^\circ_{3/2})6p_{3/2}$ $-3p7d$	$(3/2,3/2)-^3F^\circ$										1
				2 500.36 cm^{-1}	60 704.53–63 204.89	7–5	1.35+03	2.32−04	2.14−01	−2.789	E	LS′
				2 636.17 cm^{-1}	60 704.53–63 340.70	7–7	4.02+04	8.68−03	7.59+00	−1.216	E+	LS′
				2 810.00 cm^{-1}	60 704.53–63 514.533	7–9	4.38+05	1.07−01	8.78+01	−0.126	C	LS′
191	$3p(^2P^\circ_{3/2})6p_{3/2}$ $-3p\,8d$	$(3/2,3/2)-^3F^\circ$										1
				3 155.91 cm^{-1}	60 704.53–63 860.44	7–5	9.86+02	1.06−04	7.74−02	−3.130	E	LS′
				3 240.57 cm^{-1}	60 704.53–63 945.10	7–7	2.70+04	3.85−03	2.74+00	−1.569	E	LS′
				3 429.40 cm^{-1}	60 704.53–64 133.93	7–9	2.87+05	4.70−02	3.16+01	−0.483	D+	LS′
192	$3p(^2P^\circ_{3/2})5f-$ $3p\,5d$	$^2[3/2]-^3P^\circ$										1
				312.39 cm^{-1}	61 647.875–61 960.26	3–1	2.50+04	1.28−01	4.05+02	−0.416	B+	LS′
				288.25 cm^{-1}	61 647.875–61 936.13	3–3	4.92+03	8.87−02	3.04+02	−0.575	B	LS′
				194.07 cm^{-1}	61 647.875–61 841.94	3–5	6.01+01	3.99−03	2.03+01	−1.922	C	LS′
193	$3p(^2P^\circ_{3/2})5f-$ $3p\,6d$	$^2[3/2]-^3D^\circ$										1
				1 277.93 cm^{-1}	61 647.875–62 925.80	3–3	6.10+03	5.60−03	4.33+00	−1.775	D	LS′
				1 127.11 cm^{-1}	61 647.875–62 774.99	3–5	8.39+02	1.65−03	1.45+00	−2.305	D	LS′
194		$^2[9/2]-^3F^\circ$										1
				919.69 cm^{-1}	61 614.385–62 534.08	11–9	1.87+05	2.71−01	1.07+03	0.474	B+	LS′
195	$3p(^2P^\circ_{3/2})5f-$ $3p7d$	$^2[9/2]-^3F^\circ$										1
				1 900.148 cm^{-1}	61 614.385–63 514.533	11–9	7.74+04	2.63−02	5.01+01	−0.539	D+	LS′
196	$3p(^2P^\circ_{3/2})5f-$ $3p\,8d$	$^2[9/2]-^3F^\circ$										1
				2 519.54 cm^{-1}	61 614.385–64 133.93	11–9	4.34+04	8.39−03	1.21+01	−1.035	D	LS′
197	$3p\,6d-$ $3p(^2P^\circ_{3/2})6f$	$^3F^\circ-^2[3/2]$										1
				636.03 cm^{-1}	62 349.93–62 985.96	5–3	9.04+02	2.01−03	2.50+00	−1.998	D	LS′
198		$^3D^\circ-^2[3/2]$										1
				210.97 cm^{-1}	62 774.99–62 985.96	5–3	7.62+02	1.54−02	1.20+02	−1.114	B	LS′
199		$^3F^\circ-^2[9/2]$										1
				432.56 cm^{-1}	62 534.08–62 966.64	9–11	1.35+05	1.32+00	9.04+03	1.075	B+	LS′
200	$3p\,6d-$ $3p(^2P^\circ_{3/2})7f$	$^3F^\circ-^2[9/2]$										1
				1 247.89 cm^{-1}	62 534.08–63 781.97	9–11	6.50+03	7.65−03	1.82+01	−1.162	D	LS′
201		$^3F^\circ-^2[3/2]$										1
				1 443.59 cm^{-1}	62 349.93–63 793.52	5–3	1.02+02	4.42−05	5.04−02	−3.656	E	LS′
				1 018.53 cm^{-1}	62 774.99–63 793.52	5–3	1.56+04	1.35−02	2.18+01	−1.171	D	LS′
202		$^3P^\circ-^2[3/2]$										1

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				670.16 cm^{-1}	63 123.36–63 793.52	1–3	1.35+05	1.35+00	6.63+02	0.130	B	LS′
				696.16 cm^{-1}	63 097.36–63 793.52	3–3	1.13+05	3.51−01	4.98+02	0.022	C+	LS′
				773.10 cm^{-1}	63 020.42–63 793.52	5–3	1.04+04	1.56−02	3.32+01	−1.108	D	LS′
203	$3p(^2P^\circ_{3/2})7p_{3/2}$ $-3p\,6d$	$(3/2,3/2)-^3F^\circ$										1
				113.05 cm^{-1}	62 421.03–62 534.08	7–9	2.28+03	3.44−01	7.01+03	0.382	B	LS′
204		$(3/2,3/2)-^3D^\circ$										1
				353.96 cm^{-1}	62 421.03–62 774.99	7–5	2.59+03	2.21−02	1.44+02	−0.811	C	LS′
				515.11 cm^{-1}	62 421.03–62 936.14	7–7	4.53+04	2.56−01	1.15+03	0.253	B	LS′
205	$3p(^2P^\circ_{3/2})7p_{3/2}$ $-3p\,7d$	$(3/2,3/2)-^3F^\circ$										1
				783.86 cm^{-1}	62 421.03–63 204.89	7–5	4.29+02	7.48−04	2.20+00	−2.281	E	LS′
				919.67 cm^{-1}	62 421.03–63 340.70	7–7	1.75+04	3.11−02	7.79+01	−0.662	C	LS′
206	$3p(^2P^\circ_{3/2})7p_{3/2}$ $-3p\,8d$	$(3/2,3/2)-^3F^\circ$										1
				1 439.41 cm^{-1}	62 421.03–63 860.44	7–5	4.57+02	2.36−04	3.78−01	−2.782	E	LS′
				1 524.07 cm^{-1}	62 421.03–63 945.10	7–7	1.37+04	8.87−03	1.34+01	−1.207	D	LS′
				1 712.90 cm^{-1}	62 421.03–64 133.93	7–9	1.75+05	1.15−01	1.55+02	−0.094	C	LS′
207	$3p(^2P^\circ_{3/2})6f-$ $3p\,6d$	$^2[3/2]-^3P^\circ$										1
				137.40 cm^{-1}	62 985.96–63 123.36	3–1	5.59+03	1.48−01	1.06+03	−0.353	B+	LS′
				111.40 cm^{-1}	62 985.96–63 097.36	3–3	7.43+02	8.97−02	7.95+02	−0.570	B+	LS′
208	$3p(^2P^\circ_{3/2})6f-$ $3p\,7d$	$^2[9/2]-^3F^\circ$										1
				547.89 cm^{-1}	62 966.64–63 514.533	11–9	1.03+05	4.19−01	2.77+03	0.664	B	LS′
209	$3p\,7d-$ $3p(^2P^\circ_{3/2})7f$	$^3F^\circ-^2[9/2]$										1
				267.44 cm^{-1}	63 514.533–63 781.97	9–11	6.21+04	1.59+00	1.76+04	1.156	B	LS′
210		$^3D^\circ-^2[3/2]$										1
				218.17 cm^{-1}	63 575.35–63 793.52	5–3	1.70+03	3.22−02	2.43+02	−0.793	C	LS′
211	$3p(^2P^\circ_{3/2})6f-$ $3p\,8d$	$^2[9/2]-^3F^\circ$										1
				1 167.29 cm^{-1}	62 966.64–64 133.93	11–9	4.62+04	4.16−02	1.29+02	−0.340	C	LS′
212	$3p(^2P^\circ_{3/2})6f-$ $3p\,9d$	$^2[9/2]-^3F^\circ$										1
				[1 583.7]	62 966.64–64 550.37	11–9	2.74+04	1.34−02	3.06+01	−0.832	D	LS′
213	$3p(^2P^\circ_{1/2})9s_{1/2}$ $-3p(^2P^\circ_{3/2})7f$	$(1/2,1/2)^\circ-$ $^2[3/2]$										1
				216.67 cm^{-1}	63 576.85–63 793.52	1–3	4.53+03	4.34−01	6.59+02	−0.363	D+	LS′
				1 093.50 cm^{-1}	62 421.03–63 514.533	7–9	2.65+05	4.27−01	9.00+02	−0.476	B	LS′
214	$3p\,6d-$ $3p(^2P^\circ_{3/2})7f$	$^3D^\circ-^2[3/2]$										1

TABLE 4. Transition probabilities of allowed lines for Si I (references for this table are as follows: 1=Nahar and Pradhan,[79] 2=Froese Fischer,[35] 3=O'Brian and Lawler,[83] 4=Smith *et al.*,[96] and 5=Garz[40])—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
				867.77 cm^{-1}	62 925.753–63 793.52	3–3	2.88+04	5.74−02	6.53+01	−0.764	D+	LS′
215	$3p(^2P^\circ_{3/2})7f$–$3p\,9d$	$^2[9/2]$–$^3F^\circ$										1
				[768.40]	63 781.97–64 550.37	11–9	2.75+04	5.72−02	2.70+02	−0.201	D	LS′
216	$3p(^2P^\circ_{3/2})7f$–$3p\,8d$	$^2[9/2]$–$^3F^\circ$										1
				351.96 cm^{-1}	63 781.97–64 133.93	11–9	5.77+04	5.71−01	5.88+03	0.798	B	LS′

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

4.1.3. Forbidden Transitions of Si I

Froese Fischer[35] has performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. The calculations only extend to transitions from energy levels up to $3p4p$. Mendoza and Zeippen[70] used the SUPERSTRUCTURE code with configuration interaction (CI), relativistic effects, and semiempirical energy corrections. Wilson[115] used nonrelative Hartree-Fock radial wave function; the usual Hartree-Fock potential is augmented by including an approximate correlation potential based on a free electron energy expression.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references.[35,70] No overlap occurred with the lines of Wilson,[115] and hence the uncertainties for these transitions constitute rough estimates.

4.1.4. References for Forbidden Transitions of Si I

[35]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).

[70]C. Mendoza and C. J. Zeippen, Mon. Not. R. Astron. Soc. **199**, 1025 (1982).

[115]M. Wilson, Z. Phys. D: At. Mol. Clusters **21**, 7 (1991).

TABLE 5. Wavelength finding list for forbidden lines of Si I

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
1 689.44	11	1 693.972	10	1 698.173	9	1 893.508	13
1 691.648	11	1 695.837	11	1 700.338	8	1 893.541	13
1 691.665	11	1 695.855	11	1 890.637	15	1 896.233	12
1 691.74	9	1 696.126	8	1 890.659	15	1 905.124	12
1 693.945	9	1 698.146	9	1 892.754	14		
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
2 207.128	6	2 218.916	6	2 999.781	5	15 871.577	2
2 209.513	6	2 282.572	17	3 006.739	5	16 068.297	2
2 210.892	6	2 286.759	16	3 020.004	5	16 454.533	2
2 211.745	6	2 561.823	7	6 526.782	3		
2 216.669	6	2 563.677	7	6 589.611	3		
2 218.057	6	2 564.825	7	10 991.413	4		
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**
223.157	1	77.115	1	28.219	18		
146.042	1	45.660	18	17.441	18		

TABLE 6. Transition probabilities of forbidden lines for Si I (references for this table are as follows: 1=Froese Fischer,[35] 2=Mendoza and Zeippen,[70] and 3 =Wilson[115])

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
1	$3p^2-3p^2$	$^3P-^3P$									
				146.042 cm^{-1}	77.115–223.157	3–5	M1	4.21−05	2.50+00	B+	1,2
				146.042 cm^{-1}	77.115–223.157	3–5	E2	1.21−10	8.11+01	D+	1,2
				77.115 cm^{-1}	0.000–77.115	1–3	M1	8.25−06	2.0+00	B+	1,2
				223.157 cm^{-1}	0.000–223.157	1–5	E2	3.49−10	2.82+01	D+	1
2		$^3P-^1D$									
			15 871.577	15 875.914	0.000–6 298.850	1–5	E2	3.97−07	1.79−03	D	1,2
			16 068.297	16 072.687	77.115–62 298.850	3–5	M1	7.10−04	5.46−04	D	1,2
			16 068.297	16 072.687	77.115–6 298.850	3–5	E2	4.02−06	1.92−02	D	1,2
			16 454.533	16 459.028	223.157–6 298.850	5–5	M1	1.99−03	1.65−03	D	1,2
			16 454.533	16 459.028	223.157–6 298.850	5–5	E2	2.32−05	1.25−01	D+	1,2
3		$^3P-^1S$									
			6 589.611	6 591.431	223.157–15 394.370	5–1	E2	7.75−04	8.61−03	D	1,2
			6 526.782	6 528.585	77.115–15 394.370	3–1	M1	2.74−02	2.83−04	D	1,2
4		$^1D-^1S$									
			10 991.413	10 994.424	6 298.850–15 394.370	5–1	E2	1.00+00	1.44+02	C	1,2
5	$3s^23p^2-3s3p^3$	$^3P-^5S^\circ$									
			3 020.004	3 020.884	223.157–33 326.053	5–5	M2	1.09−03	9.24+01	D	1
			3 006.739	3 007.615	77.115–33 326.053	3–5	M2	1.45−03	1.20+02	D	1
			2 999.781	3 000.655	0.000–33 326.053	1–5	M2	6.57−04	5.36+01	D	1
6		$^3P-^3D^\circ$									
			2 209.513	2 210.202	77.115–45 321.848	3–7	M2	4.58−03	1.14+02	D	1
			2 207.128	2 207.816	0.000–45 293.629	1–5	M2	4.68−03	8.24+01	D	1
			2 216.669	2 217.359	223.157–45 321.848	5–7	M2	1.51−02	3.80+02	D	1
			2 210.892	2 211.581	77.115–45 293.629	3–5	M2	6.89−03	1.22+02	D	1
			2 218.057	2 218.748	223.157–45 293.629	5–5	M2	9.33−05	1.68+00	E	1
			2 211.745	2 212.435	77.115–45 276.188	3–3	M2	1.40−03	1.49+01	E+	1
			2 218.916	2 219.606	223.157–45 276.188	5–3	M2	1.24−03	1.35+01	E+	1
7		$^1D-^3D^\circ$									
			2 563.677	2 564.446	6 298.850–45 293.629	5–5	M2	4.20−03	1.56+02	D	1
			2 564.825	2 565.593	6 298.850–45 276.188	5–3	M2	1.78−03	3.99+01	E+	1
			2 561.823	2 562.591	6 298.850–45 321.848	5–7	M2	4.62−03	2.40+02	D	1
8	$3p^2-3p(^2P^\circ_{3/2})4f$	$^3P-^2[7/2]$									
				1 696.126	77.115–59 034.988	3–7	E2	1.97+01	1.73+00	D	3
				1 700.338	223.157–59 034.988	5–7	E2	9.65+00	8.58−01	D	3
9		$^3P-^2[5/2]$									
				1 691.74	0–59 110.892	1–5	E2	1.31−02	8.09−04	E+	3
				1 698.173	223.157–59 119.959	5–7	E2	1.04+02	9.20+00	D+	3
				1 693.945	77.115–59 110.892	3–5	E2	3.20+01	1.99+00	D+	3
				1 698.146	223.157–59 110.892	5–5	E2	4.09+01	2.58+00	D+	3
10		$^3P-^2[7/2]$									
				1 693.972	77.115–59 109.959	3–7	E2	4.31+00	3.76−01	D	3
11		$^3P-^2[3/2]$									

TABLE 6. Transition probabilities of forbidden lines for Si I (references for this table are as follows: 1=Froese Fischer,[35] 2=Mendoza and Zeippen,[70] and 3 =Wilson[115])—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
				1 689.44	0–59 191.072	1–5	E2	2.20+01	1.35+00	D	3
				1 691.648	77.115–59 191.072	3–5	E2	4.38+00	2.71−01	D	3
				1 695.837	223.157–59 191.072	5–5	E2	3.55+01	2.22+00	D+	3
				1 691.665	77.115–59 190.46	3–3	E2	8.62+01	3.20+00	D+	3
				1 695.855	223.157–59 190.46	5–3	E2	2.84+01	1.07+00	D	3
12		$^1D-^2[7/2]$									
				1 905.124	6 298.850–58 788.880	5–9	E2	3.40+01	6.86+00	D+	3
				1 896.233	6 298.850–59 034.988	5–7	E2	3.03+01	4.65+00	D+	3
13		$^1D-^2[5/2]$									
				1 893.541	6 298.850–59 109.959	5–7	E2	1.09+02	1.66+01	D+	3
				1 893.508	6 298.850–59 110.892	5–5	E2	4.66+00	5.06−01	D	3
14		$^1D-^2[9/2]$									
				1 892.754	6 298.850–59 131.912	5–9	E2	9.32+01	1.82+01	D+	3
15		$^1D-^2[3/2]$									
				1 890.637	6 298.850–59 191.072	5–5	E2	4.45+00	4.80−01	D	3
				1 890.659	6 298.850–59 190.46	5–3	E2	2.28−03	1.47−04	E	3
16		$^1S-^2[5/2]$									
			2 286.759	22 87.465	15 394.370–59 110.892	1–5	E2	1.83+01	5.12+00	D+	3
17		$^1S-^2[3/2]$									
			2 282.572	2 283.277	15 394.370–59 191.072	1–5	E2	1.99+01	5.53+00	D+	3
18	$3s3p^3-3s3p^3$	$^3D^\circ-^3D^\circ$									
				28.219 cm^{-1}	45 293.629–45 321.848	5–7	M1	4.04−07	4.67+00	D+	1
				28.219 cm^{-1}	45 293.629–45 321.848	5–7	E2	2.43−15	8.48+00	D+	1
				17.441 cm^{-1}	45 276.188–45 293.629	3–5	M1	1.29−07	4.50+00	D+	1
				17.441 cm^{-1}	45 276.188–45 293.629	3–5	E2	3.46−16	9.58+00	D+	1
				45.660 cm^{-1}	45 276.188–45 321.848	3–7	E2	2.34−15	7.37+01	D	1

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

4.2. Si II

Aluminum isoelectronic sequence
Ground state: $1s^22s^22p^63s^23p\ ^2P^\circ_{1/2}$
Ionization energy: 16.345 845 eV (131 838.14 cm^{-1})

4.2.1. Allowed Transitions for Si II

Only OP (Ref. 69) results were available for energy levels above the 4p. Wherever available we have used the data of Froese Fischer,[35] which result from extensive MCHF calculations with Breit-Pauli corrections to order α^2. Matheron *et al.*[67] observed emission from a laser-produced plasma and used local thermal equilibrium diagnostics. Bergeson and Lawler[7] measured branching ratios and lifetimes, with net uncertainties of about 10%. Charro and Martín[19] computed their results using the relativistic quantum defect orbital method. Blanco *et al.*[9] obtained branching ratios in a laser-produced plasma, converting to absolute values with published lifetimes. Hofmann[51] used a wall-stabilized arc and applied a known Si I transition probability. Curtis and Smith[24] made lifetime measurements using an electron-beam phase-shift apparatus. Nahar[77] performed close-coupling R-matrix computations. Calamai *et al.*[15] performed lifetime measurements using an ion-trapping technique. Dufton *et al.*[26] applied Hibbert's CIV3 code (configuration interaction, version 3).

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[7,9,15,19,24,26,35,51,67,69,77] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. OP lines constituted a third group and have been used only when more accurate sources were not available, because spin-orbit effects are sometimes significant for this spectrum. To estimate the accuracy of line strengths, we isoelectronically averaged the "logarithmic quality factors" observed for lines of Al I and Si II using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying lines and intercombination lines, we scaled the logarithmic quality factor of the lower, lying lines. The agreement of line strengths between Cavalcanti *et al.*[16] and Froese Fischer[35] is somewhat better than for Si I, but we were still unable to assign accuracies to values from Cavalcanti *et al.*[16] that are consistent with the requirements for the present compilation.

4.2.2. References for Allowed Transitions for Si II

[7]S. D. Bergeson and J. E. Lawler, Astrophys. J. **414**, L137 (1993).
[9]F. Blanco, B. Botho, and J. Campos, Phys. Scr. **52**, 628 (1995).
[15]A. G. Calamai, P. L. Smith, and S. D. Bergeson, Astrophys. J. **415**, L59 (1993).
[16]G. H. Cavalcanti, F. O. Borges, A. J. Mania, R. V. Orloski, and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **90**, 291 (2005).
[19]E. Charro and I. Martín, Astrophys. J., Suppl. Ser. **126**, 551 (2000).
[24]L. J. Curtis and W. H. Smith, Phys. Rev. A **9**, 1537 (1974).
[26]P. L. Dufton, F. P. Keenan, A. Hibbert, R. P. Stafford, P. B. Byrne, and D. Agnew, Mon. Not. R. Astron. Soc. **253**, 474 (1991).
[35]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).
[51]W. Hofmann, Z. Naturforsch. A **24**, 990 (1969).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[67]P. Matheron, A. Escarguel, R. Redon, A. Lesage, and J. Richou, J. Quant. Spectrosc. Radiat. Transf. **69**, 535 (2001).
[68]C. Mendoza, W. Eissner, M. Le Dourneuf, C. J. Zeippen, J. Phys. B **28**, 3485 (1995).
[69]C. Mendoza, W. Eissner, M. Le Dourneuf, and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Mendoza *et al.* (Ref. 68).
[77]S. N. Nahar, At. Data Nucl. Data Tables **68**, 183 (1998).

TABLE 7. Wavelength finding list for allowed lines of Si II

Wavelength (vac) (Å)	Mult. No.
843.719	11
845.768	11
845.769	11
889.723	10
892.001	10
892.002	10
899.406	9
901.736	9
989.873	8
992.683	8
992.696	8
1 020.699	7
1 023.700	7
1 190.416	4
1 193.290	4
1 194.500	4
1 197.394	4
1 222.276	16
1 222.624	16
1 223.896	16
1 224.245	16
1 224.968	16
1 226.798	15
1 226.878	16
1 226.979	15
1 227.604	16
1 228.431	15
1 228.612	15
1 228.739	15
1 229.383	15
1 231.263	15
1 231.391	15
1 246.740	23
1 248.426	23
1 251.164	23
1 260.422	6
1 264.738	6
1 265.002	6
1 304.370	3
1 309.276	3
1 346.884	19
1 348.543	19
1 350.072	19
1 350.516	19
1 350.656	19
1 352.635	19
1 353.721	19
1 409.053	17
1 409.899	17
1 410.214	17
1 508.732	20
1 509.092	20
1 512.064	20
1 526.707	5
1 533.431	5
1 782.858	28
1 787.513	28
1 808.013	2
1 816.928	2
1 817.451	2
Wavelength (air) (Å)	**Mult. No.**
2 004.16	24
2 004.95	24
2 014.92	18

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavelength (air) (Å)	Mult. No.
2 016.66	18
2 062.207	27
2 062.830	27
2 225.248	21
2 232.507	21
2 308.53	44
2 311.73	44
2 328.517	1
2 334.407	1
2 334.605	1
2 344.202	1
2 350.172	1
2 439.943	43
2 443.517	43
2 443.521	43
2 500.945	35
2 501.979	35
2 501.988	35
2 503.295	34
2 504.331	34
2 505.089	34
2 601.557	12
2 604.421	26
2 605.625	12
2 606.085	26
2 608.913	12
2 613.003	12
2 620.903	12
2 645.538	22
2 655.805	22
2 659.779	22
2 670.156	22
2 677.906	42
2 682.211	42
2 682.216	42
2 722.249	41
2 726.702	41
2 886.138	33
2 887.358	33
2 887.515	33
2 904.283	32
2 905.678	32
2 905.692	32
3 203.872	40
3 210.026	40
3 210.042	40
3 333.139	39
3 339.818	39
3 853.665	13
3 856.018	13
3 862.595	13
4 072.709	31
4 075.452	31
4 076.780	31
4 128.054	30
4 130.872	30
4 130.894	30

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavelength (air) (Å)	Mult. No.
4 200.658	53
4 200.887	53
4 200.898	53
4 621.418	52
4 621.696	52
4 621.722	52
4 673.256	59
4 673.284	59
5 041.024	38
5 055.984	38
5 056.317	38
5 185.520	58
5 185.555	58
5 462.145	64
5 466.461	51
5 466.849	51
5 466.894	51
5 469.451	64
5 469.469	64
5 477.702	50
5 478.092	50
5 486.296	50
5 605.352	65
5 632.97	65
5 641.01	65
5 660.65	65
5 669.56	65
5 681.44	65
5 688.82	65
5 701.37	65
5 706.4	65
5 957.56	37
5 978.93	37
6 239.61	57
6 239.66	57
6 347.11	25
6 371.37	25
6 660.53	90
6 665.03	90
6 671.84	90
6 679.57	56
6 679.62	56
6 679.66	56
6 699.4	90
6 716.97	90
6 750.34	90
6 751.9	90
6 808.31	90
6 818.41	63
6 829.80	63
6 829.83	63
7 113.42	62
7 125.85	62
7 717.70	49
7 718.47	49
7 726.43	49
7 848.82	48

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavelength (air) (Å)	Mult. No.
7 849.62	48
7 849.72	48
7 911.52	81
7 911.63	81
8 044.41	74
8 044.51	74
8 044.55	74
8 935.50	80
8 935.63	80
9 412.7	55
9 412.8	55
9 490.8	86
9 504.0	86
9 743.15	73
9 743.30	73
9 743.41	73
11 016.29	79
11 016.50	79
11 310.80	54
11 310.96	54
11 311.17	54
11 714.87	61
11 748.40	61
11 748.62	61
11 896.70	78
11 896.94	78
11 897.03	78
12 189.70	85
12 211.41	85
12 211.50	85
12 310.64	110
12 310.87	110
12 731.64	84
12 742.9	66
12 755.42	84
12 846.72	100
12 846.83	100
12 961.9	66
13 032.3	66
13 046.6	66
13 163.1	67
13 250.1	66
13 261.5	66
13 264.9	66
13 286.1	66
13 401.9	66
13 423.5	66
13 472.2	67
13 560.3	67
13 650.53	60
13 696.37	60
13 705.2	67
13 796.3	67
13 840.8	67
13 944.6	67
13 990.0	67
14 109.91	109

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavelength (air) (Å)	Mult. No.
14 110.21	109
14 453.64	72
14 453.98	72
14 454.29	72
14 532.50	71
14 532.83	71
14 593.14	71
15 870.49	99
15 870.67	99
15 870.82	99
16 906.81	45
16 977.18	45
17 183.11	77
17 183.61	77
17 734.43	108
17 734.90	108
19 041	103
19 064.5	112
19 064.8	112
19 137.7	93
19 145	103
19 283	107
19 284	107
19 289.2	93
19 472	87

Wavenumber (cm^{-1})	Mult. No.
4 762.78	76
4 762.61	76
4 762.54	76
4 615.81	98
4 615.74	98
4 585.97	14
4 574.77	98
4 560.78	83
4 546.21	83
4 546.14	83
4 525.99	14
4 132.51	97
4 132.44	97
4 132.32	97
3 952.72	82
3 938.08	82
3 741.22	120
3 741.10	120
3 675.39	91
3 529.32	91
3 523.94	106
3 523.79	106
3 077.14	111
3 077.02	111
3 067.33	94
3 067.26	94
2 921.26	94
2 918.26	102
2 889.73	102

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavenumber (cm^{-1})	Mult. No.
2 889.67	102
2 867.8	129
2 862.20	47
2 860.90	47
2 852.35	105
2 852.20	105
2 852.14	105
2 837.69	47
2 812.92	36
2 792.26	68
2 777.62	68
2 752.94	36
2 658.66	116
2 658.60	116
2 658.54	116
2 610.61	36
2 609.94	132
2 609.88	132
2 569.16	101
2 550.63	36
2 540.57	101
2 533.11	46
2 531.81	46
2 531.68	46
2 293.15	119
2 293.03	119
2 268.7	125
2 249.1	125
1 987.01	121
1 986.95	121
1 912.82	29
1 896.30	29
1 852.84	29
1 840.4	118
1 840.3	118
1 809.1	128
1 582.16	70
1 582.00	70
1 574.39	131
1 574.33	131
1 567.52	70
1 398.1	123
1 365.76	69

TABLE 7. Wavelength finding list for allowed lines of Si II—Continued

Wavenumber (cm^{-1})	Mult. No.
1 365.60	69
1 365.43	69
1 359.01	92
1 357.0	123
1 356.42	133
1 330.42	92
1 324.29	113
1 283.25	113
1 179.1	122
1 138.0	122
1 127.20	134
975.19	115
975.13	115
967.03	135
934.15	115
788.48	96
788.41	96
788.26	96
757.0	124
750.95	95
750.88	95
748.2	124
722.36	95
719.36	89
573.35	89
573.29	89
538.0	127
529.2	127
491.89	114
491.83	114
491.71	114
417.0	75
416.8	75
370.26	88
326.4	126
267.04	104
266.89	104
224.19	88
179.88	117
179.76	117
126.32	130
126.26	130

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])

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
1	$3s^2(^1S)3p-3s3p^2$	$^2P^\circ-^4P$										
			2 344.202	2 344.920	287.24–42 932.62	4–4	1.31−05	1.08−06	3.33−05	−5.365	D	2,10,11
			2 334.407	2 335.123	0.00–42 824.29	2–2	5.51−05	4.50−06	6.92−05	−5.046	D+	2,10,11
			2 350.172	2 350.892	287.24–42 824.29	4–2	4.70−05	1.95−06	6.02−05	−5.108	D+	2,10,11
			2 334.605	2 335.321	287.24–43 107.91	4–6	2.44−05	2.99−06	9.21−05	−4.922	D+	2,10,11
			2 328.517	2 329.231	0.00–42 932.62	2–4	2.35−07	3.83−08	5.87−07	−7.116	E	2,10,11

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
2		$^2P^\circ$–^2D		*1 813.98*	*191.5–55 318.8*	6–10	2.73−02	2.25−03	8.06−02	−1.870	C	2,4
				1 816.928	287.24–55 325.18	4–6	2.65−02	1.97−03	4.71−02	−2.103	C	2,4
				1 808.013	0.00–55 309.35	2–4	2.54−02	2.49−03	2.97−02	−2.303	C	2,4
				1 817.451	287.24–55 309.35	4–4	3.23−03	1.60−04	3.82−03	−3.194	C	2,4
3		$^2P^\circ$–^2S		*1 307.64*	*191.5*–76 665.35	6–2	9.86+00	8.43−02	2.18+00	−0.296	C+	2
				1 309.276	287.24–76 665.35	4–2	6.23+00	8.00−02	1.38+00	−0.495	C+	2
				1 304.370	0.00–76 665.35	2–2	3.64+00	9.28−02	7.97−01	−0.731	C+	2
4		$^2P^\circ$–^2P		*1 194.10*	*191.5–83 936.8*	6–6	4.10+01	8.76−01	2.07+01	0.721	B	2
				1 194.500	287.24–84 004.26	4–4	3.45+01	7.37−01	1.16+01	0.470	B	2
				1 193.290	0.00–83 801.95	2–2	2.69+01	5.75−01	4.52+00	0.061	B	2
				1 197.394	287.24–83 801.95	4–2	1.40+01	1.50−01	2.37+00	−0.222	C+	2
				1 190.416	0.00–84 004.26	2–4	6.53+00	2.77−01	2.17+00	−0.256	C+	2
5	$3p$–$4s$	$^2P^\circ$–^2S		*1 531.18*	*191.5*–65 500.47	6–2	1.13+01	1.33−01	4.02+00	−0.098	C+	2
				1 533.431	287.24–65 500.47	4–2	7.52+00	1.33−01	2.68+00	−0.274	C+	2
				1 526.707	0.00–65 500.47	2–2	3.81+00	1.33−01	1.34+00	−0.575	C+	2
6	$3p$–$3d$	$^2P^\circ$–^2D		*1 263.31*	*191.5–79 348.4*	6–10	3.04+01	1.21+00	3.02+01	0.861	B	2
				1 264.738	287.24–79 355.02	4–6	3.04+01	1.09+00	1.82+01	0.639	B	2
				1 260.422	0.00–79 338.50	2–4	2.57+01	1.22+00	1.02+01	0.387	B	2
				1 265.002	287.24–79 338.50	4–4	4.73+00	1.13−01	1.89+00	−0.345	C+	2
7	$3p$–$5s$	$^2P^\circ$–^2S		*1 022.70*	*191.5*–97 972.09	6–2	2.67+00	1.39−02	2.81−01	−1.079	D+	5
				1 023.700	287.24–97 972.09	4–2	1.77+00	1.39−02	1.88−01	−1.255	D+	5
				1 020.699	0.00–97 972.09	2–2	8.91−01	1.39−02	9.35−02	−1.556	D	5
8	$3p$–$4d$	$^2P^\circ$–^2D		*991.75*	*191.5–101 023.8*	6–10	7.46+00	1.83−01	3.59+00	0.041	C+	5
				992.683	287.24–101 024.35	4–6	7.11+00	1.57−01	2.06+00	−0.202	C+	5
				989.873	0.00–101 023.05	2–4	6.81+00	2.00−01	1.30+00	−0.398	C+	8
				992.696	287.24–101 023.05	4–4	1.18+00	1.75−02	2.29−01	−1.155	D+	5
9	$3p$–$6s$	$^2P^\circ$–^2S		*900.96*	*191.5*–111 184.46	6–2	1.39+00	5.62−03	1.00−01	−1.472	D	5
				901.736	287.24–111 184.46	4–2	9.23−01	5.62−03	6.68−02	−1.648	D	5
				899.406	0.00–111 184.46	2–2	4.63−01	5.62−03	3.33−02	−1.949	D	5
10	$3p$–$5d$	$^2P^\circ$–^2D		*891.24*	*191.5–112 394.7*	6–10	1.72+00	3.42−02	6.02−01	−0.688	D+	5
				892.001	287.24–112 394.72	4–6	1.73+00	3.09−02	3.63−01	−0.908	D+	5
				889.723	0.00–112 394.56	2–4	1.43+00	340−02	1.99−01	−1.167	D+	5
				892.002	287.24–112 394.56	4–4	2.88−01	3.43−03	4.03−02	−1.863	D	5
11	$3p$–$6d$	$^2P^\circ$–^2D		*845.08*	*191.5–118 522.9*	6–10	8.49−01	1.51−02	2.53−01	−1.043	D	5
				845.768	287.24–118 522.93	4–6	8.50−01	1.37−02	1.52−01	−1.261	D+	5
				843.719	0.00–118 522.86	2–4	7.05−01	1.50−02	8.36−02	−1.523	D	5
				845.769	287.24–118 522.86	4–4	1.42−01	1.52−03	1.69−02	−2.216	E+	5
12	$3s3p^2$–$3s^2(^1S)4p$	^4P–$^2P^\circ$										
			2 608.913	2 609.692	42 932.62–81 251.32	4–4	2.29−07	2.34−08	8.04−07	−7.029	E	2
			2 605.625	2 606.403	42 824.29–81 191.34	2–2	2.51−06	2.56−07	4.39−06	−6.291	E	2
			2 620.903	2 621.685	43 107.91–81 251.32	6–4	4.47−05	3.07−06	1.59−04	−4.735	D	2
			2 613.003	2 613.783	42 932.62–81 191.34	4–2	9.22−06	4.72−07	1.62−05	−5.724	E	2
			2 601.557	2 602.335	42 824.29–81 251.32	2–4	1.56−06	3.18−07	5.44−06	−6.197	E	2

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
13		$^2D-^2P^\circ$	*3 858.05*	*3 859.14*	*55 318.8–81 231.3*	10–6	4.57−01	6.13−02	7.79+00	−0.213	C+	2,3
			3 856.018	3 857.111	55 325.18–81 251.32	6–4	4.40−01	6.54−02	4.98+00	−0.406	C+	2,3
			3 862.595	3 863.691	55 309.35–81 191.34	4–2	3.91−01	4.37−02	2.23+00	−0.757	C+	2,3
			3 853.665	3 854.757	55 309.35–81 251.32	4–4	5.11−02	1.14−02	5.78−01	−1.341	C	2,3
14		$^2S-^2P^\circ$		*4 566* cm^{-1}	76 665.35–*81 231.3*	2–6	1.40−04	3.03−03	4.37−01	−2.218	C+	2
				4 585.97 cm^{-1}	76 665.35–81 251.32	2–4	1.42−04	2.02−03	2.90−01	−2.394	C+	2
				4 525.99 cm^{-1}	76 665.35–81 191.34	2–2	1.38−04	1.01−03	1.46−01	−2.695	C+	2
15	$3s3p^2-3s3p(^3P^\circ)3d$	$^4P-^4D^\circ$		*1 228.93*	*43 002.2–124 373*	12–20	2.89+01	1.09+00	5.30+01	1.117	C+	1,7
				1 229.383	43 107.91–124 449.5	6–8	2.25+01	6.80−01	1.65+01	0.611	B	7
				1 228.739	42 932.62–124 316.9	4–6	2.32+01	7.88−01	1.28+01	0.499	C+	LS
				1 226.979	42 824.29–124 325.3	2–4	1.39+01	6.26−01	5.06+00	0.098	C	LS
				1 231.391	43 107.91–124 316.9	6–6	9.90+00	2.25−01	5.47+00	0.130	C	LS
				1 228.612	42 932.62–124 325.3	4–4	1.77+01	4.00−01	6.47+00	0.204	C	LS
				1 226.798	42 824.29–124 337.3	2–2	2.77+01	6.26−01	5.06+00	0.098	C	LS
				1 231.263	43 107.91–124 325.3	6–4	1.65+00	2.50−02	6.08−01	−0.824	D	LS
				1 228.431	42 932.62–124 337.3	4–2	5.53+00	6.25−02	1.01+00	−0.602	D+	LS
16		$^4P-^4P^\circ$		*1 225.59*	*43 002.2–124 595*	12–12	1.84+00	4.15−01	2.01+01	0.697	C+	1,7
				1 227.604	43 107.91–124 567.4	6–6	1.46+01	3.30−01	800+00	0.297	B	7
				1 224.245	42 932.62–124 615.6	4–4	6.72+00	1.51−01	2.43+00	−0.219	C+	7
				1 222.276	42 824.29–124 638.9	2–2	2.45+00	5.49−02	4.42−01	−0.959	D	LS
				1 226.878	43 107.91–124 615.6	6–4	6.55+00	9.85−02	2.39+00	−0.228	C	LS
				1 223.896	42 932.62–124 638.9	4–2	1.24+01	1.39−01	2.24+00	−0.255	C+	7
				1 224.968	42 932.62–124 567.4	4–6	4.39+00	1.48−01	2.39+00	−0.228	C	LS
				1 222.624	42 824.29–124 615.6	2–4	6.14+00	2.75−01	2.21+00	−0.260	C	LS
17		$^2D-^2P^\circ$		*1 409.81*	*55 318.8–126 251*	10–6	3.86+00	6.90−02	3.20+00	−0.161	D+	1
				1 410.214	55 325.18–126 236.4	6–4	3.47+00	6.90−02	1.92+00	−0.383	D+	LS
				1 409.053	55 309.35–126 279.0	4–2	3.87+00	5.76−02	1.07+00	−0.638	D+	LS
				1 409.899	55 309.35–126 236.4	4–4	3.86−01	1.15−02	2.14−01	−1.337	D	LS
18		$^2S-^2P^\circ$	*2 016.1*	*2 016.7*	76 665.35–*126 251*	2–6	3.36−01	6.16−02	8.17−01	−0.909	C	9
			2 016.66	2 017.31	76 665.35–126 236.4	2–4	3.39−01	4.14−02	5.50−01	−1.082	C	9
			2 014.92	2 015.57	76 665.35–126 279.0	2–2	3.31−01	2.02−02	2.68−01	−1.394	D+	9
19	$3s3p^2-3s3p(^3P^\circ)4s$	$^4P-^4P^\circ$		*1 350.32*	*43 002.2–117 058.9*	12–12	1.38+01	3.77−01	1.17+01	0.655	C	1
				1 350.072	43 107.91–117 178.06	6–6	5.34+00	1.46−01	3.89+00	−0.057	C+	7
				1 350.516	42 932.62–116 978.38	4–4	1.61+00	4.41−02	7.84−01	−0.754	D+	LS
				1 350.656	42 824.29–116 862.38	2–2	2.02+00	5.52−02	4.91−01	−0.957	D	LS
				1 353.721	43 107.91–116 978.38	6–4	3.22+00	5.90−02	1.58+00	−0.451	C	7
				1 352.635	42 932.62–116 862.38	4–2	6.12+00	8.40−02	1.50+00	−0.474	C	7
				1 346.884	42 932.62–117 178.06	4–6	2.50+00	1.02−01	1.81+00	−0.389	C	7
				1 348.543	42 824.29–116 978.38	2–4	3.36+00	1.83−01	1.62+00	−0.437	C	7
20		$^2D-^2P^\circ$		*1 510.06*	*55 318.8–121 541.5*	10–6	3.16+00	6.49−02	3.22+00	−0.188	D+	1
				1 509.092	55 325.18–121 599.19	6–4	2.85+00	6.49−02	1.93+00	−0.410	D+	LS
				1 512.064	55 309.35–121 444.12	4–2	3.15+00	5.40−02	1.08+00	−0.666	D+	LS
				1 508.732	55 309.35–121 590.19	4–4	3.16−01	1.08−02	2.15−01	−1.365	D	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
21		$^2S-^2P^\circ$	*2 227.66*	*2 228.36*	76 665.35–*121 541.5*	2–6	2.43−01	5.43−02	7.96−01	−0.964	C	9
			2 225.248	2 225.940	76 665.35–121 590.19	2–4	2.44−01	3.62−02	5.31−01	−1.140	C	9
			2 232.507	2 233.201	76 665.35–121 444.12	2–2	2.41−01	1.80−02	2.65−01	−1.444	D+	9
22		$^2P-^2P^\circ$	*2 658.45*	*2 659.24*	*83 936.8–121 541.5*	6–6	5.02−01	5.32−02	2.79+00	−0.496	D+	1
			2 659.779	2 660.570	84 004.26–121 590.19	4–4	4.17−01	4.43−02	1.55+00	−0.752	D+	LS
			2 655.805	2 656.595	83 801.95–121 444.12	2–2	3.36−01	3.55−02	6.21−01	−1.149	D+	LS
			2 670.156	2 670.950	84 004.26–121 444.12	4–2	1.65−01	8.82−03	3.10−01	−1.452	D	LS
			2 645.538	2 646.326	83 801.95–121 590.19	2–4	8.48−02	1.78−02	3.10−01	−1.449	D	LS
23	$3s3p^2-3p^3$	$^4P-^4S^\circ$		*1 249.51*	*43 002.2*–123 033.5	12–4	2.53+01	1.98−01	9.75+00	0.376	C+	7
				1 251.164	43 107.91–123 033.5	6–4	1.30+01	2.03−01	5.02+00	0.086	C+	7
				1 248.426	42 932.62–123 033.5	4–4	8.30+00	1.94−01	3.19+00	−0.110	C+	7
				1 246.740	42 824.29–123 033.5	5–4	4.03+00	1.88−01	1.54+00	−0.425	C	7
24	$3s3p^2$ $-3s^2(^1S)10p$	$^2S-^2P^\circ$	*2 004.7*	*2 005.3*	76 665.35–*126 532*	2–6	4.76−02	8.60−03	1.14−01	−1.764	D	9
			2 004.95	2 005.60	76.665.35–126 525.8	2–4	4.75−02	5.73−03	7.57−02	−1.941	D	9
			2 004.16	2 004.81	76 665.35–126 545.4	2–2	4.76−02	2.87−03	3.79−02	−2.241	D	9
25	$4s-4p$	$^2S-^2P^\circ$	*6 355.2*	*6 356.9*	65 500.47–*81 231.3*	2–6	6.16−01	1.12+00	4.69+01	0.350	B	2,3
			6 347.11	6 348.86	65 500.47–81 251.32	2–4	5.84−01	7.05−01	2.95+01	0.149	B+	2,3
			6 371.37	6 373.13	65 500.47–81 191.34	2–2	6.80−01	4.14−01	1.74+01	−0.082	C+	2,3
26	$4s-5p$	$^2S-^2P^\circ$	*2 604.98*	*2 605.75*	65 500.47–*103 877.1*	2–6	1.33−02	4.06−03	6.96−02	−2.090	D	9
			2 604.421	2 605.199	65 500.47–103 885.25	2–4	1.33−02	2.71−03	4.64−02	−2.266	D	9
			2 606.085	2 606.864	65 500.47–103 860.74	2–2	1.33−02	1.35−03	2.32−02	−2.569	E+	9
27	$4s-6p$	$^2S-^2P^\circ$	*2 062.41*	*2 063.08*	65 500.47–*113 971.8*	2–6	4.59−02	8.80−03	1.19−01	−1.754	D	9
			2 062.207	2 062.866	65 500.47–113 976.72	2–4	4.60−02	5.86−03	7.97−02	−1.931	D	9
			2 062.830	2 063.489	65 500.47–113 962.08	2–2	4.59−02	2.93−03	3.98−02	−2.232	D	9
28	$3s^2(^1S)4s-$ $3s3p(^3P^\circ)4s$	$^2S-^2P^\circ$		*1 784.41*	65 500.47–*121 541.5*	2–6	8.65−02	1.24−02	1.46−01	−1.606	D	9
				1 782.858	65 500.47–121 590.19	2–4	8.67−02	8.27−03	9.70−02	−1.781	D	9
				1 787.513	65 500.47–121 444.12	2–2	8.61−02	4.12−03	4.85−02	−2.084	D	9
29	$3d-4p$	$^2D-^2P^\circ$		*1 883* cm^{-1}	*79 348.4–81 231.3*	10–6	9.99−04	2.53−02	4.43+01	−0.597	B	2
				1 896.30 cm^{-1}	79 355.02–81 251.32	6–4	9.07−04	2.52−02	2.63+01	−0.820	B	2
				1 852.84 cm^{-1}	79 338.50–81 191.34	4–2	9.69−04	2.11−02	1.50+01	−1.074	B	2
				1 912.82 cm^{-1}	79 338.50–81 251.32	4–4	1.07−04	4.36−03	3.00+00	−1.758	C+	2
30	$3d-4f$	$^2D-^2F^\circ$	*4 129.76*	*4 130.92*	*79 348.4–103 556.1*	10–14	1.68+00	6.02−01	8.14+01	0.779	C+	1,3
			4 130.894	4 132.059	79 355.02–103 556.03	6–8	1.74+00	5.94−01	4.85+01	0.552	B	3
			4 128.054	4 129.218	79 338.50–103 556.16	4–6	1.49+00	5.71−01	3.11+01	0.359	B	3
			4 130.872	4 132.037	79 355.02–103 556.16	6–6	1.07−01	2.75−02	2.24+00	−0.783	D+	LS
31	$3d-5p$	$^2D-^2P^\circ$	*4 075.71*	*4 076.86*	*79 348.4–103 877.1*	10–6	4.13−02	6.18−03	8.29−01	−1.209	C+	3
			4 075.452	4 076.603	79 355.02–103 885.25	6–4	400−02	6.64−03	5.35−01	−1.400	C+	3
			4 076.780	4 077.931	79 338.50–103 860.74	4–2	4.00−02	4.99−03	2.68−01	−1.700	C+	3
			4 072.709	4 073.859	79 338.50–103 885.25	4–4	200−03	4.98−04	2.67−02	−2.701	C	3

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
32	$3d-5f$	$^2D-^2F^\circ$	*2 905.13*	*2 905.98*	*79 348.4–113 760.2*	10–14	3.83−01	6.79−02	6.50+00	−0.168	C	1
			2 905.692	2 906.543	79 355.02–113 760.15	6–8	3.83−01	6.47−02	3.71+00	−0.411	C	LS
			2 904.283	2 905.134	79 338.50–113 760.32	4–6	3.58−01	6.79−02	2.60+00	−0.566	C	LS
			2 905.678	2 906.529	79 355.02–113 760.32	6–6	2.55−02	3.23−03	1.85−01	−1.713	D	LS
33	$3d-6p$	$^2D-^2P^\circ$	*2 887.37*	*2 888.22*	*793 484.1–113 971.2*	10–6	7.52−02	5.64−03	5.37−01	−1.248	D	1,5
			2 887.515	2 888.362	79 355.02–113 976.72	6–4	6.39−02	5.33−03	3.04−01	−1.495	D+	5
			2 887.358	2 888.205	79 338.50–113 962.08	4–2	8.38−02	5.24−03	1.99−01	−1.679	D	LS
			2 886.138	2 886.984	79 338.50–113 976.72	4–4	7.08−03	8.84−04	3.36−02	−2.451	D	5
34	$3d-7p$	$^2D-^2P^\circ$	*2 504.51*	*2 505.27*	*79 348.4–119 264.3*	10–6	5.43−01	3.07−02	2.53+00	−0.513	D	5
			2 504.331	2 505.086	79 355.02–119 273.81	6–4	4.92−01	3.09−02	1.53+00	−0.732	D+	5
			2 505.0889	2 505.844	79 338.50–119 245.22	4–2	5.36−01	2.52−02	8.32−01	−0.997	D	5
			2 503.295	2 504.050	79 338.50–119 273.81	4–4	5.48−02	5.15−03	1.70−01	−1.686	E+	5
35	$3d-6f$	$^2D-^2F^\circ$	*2 501.57*	*2 502.32*	*79 348.4–119 311.3*	10–14	1.21−01	1.59−02	1.31+00	−0.799	D	1
			2 501.988	2 502.742	79 355.02–119 311.19	6–8	1.21−01	1.52−02	7.51−01	−1.040	D+	LS
			2 500.945	2 501.699	79 338.50–119 311.34	4–6	1.13−01	1.59−02	5.24−01	−1.197	D	LS
			2 501.979	2 502.733	79 355.02–119 311.84	6–6	8.07−03	7.58−04	3.75−02	−2.342	E+	LS
36	$3s^2(^1S)4p-3s3p^2$	$^2P^\circ-^2P$		*2 706 cm^{-1}*	*81 231.3–83 936.8*	6–6	4.88−07	1.00−05	7.30−03	−4.222	C	2
				2 752.94 cm^{-1}	81 251.32–84 004.26	4–4	8.00−08	1.58−06	7.57−04	−5.199	C	2
				2 610.61 cm^{-1}	81 191.34–83 801.95	2–2	2.03−07	4.47−06	1.13−03	−5.049	C	2
				2 550.63 cm^{-1}	81 251.32–83 801.95	4–2	6.78−08	7.81−07	4.03−04	−5.505	C	2
				2 812.92 cm^{-1}	81 191.34–84 004.26	2–4	5.65−07	2.14−05	5.01−03	−4.369	C	2
37	$4p-5s$	$^2P^\circ-^2S$	*5 971.8*	*5 973.4*	*81 231.3*–97 972.09	6–2	1.69+00	3.01−01	3.56+01	0.257	B+	6
			5 978.93	5 980.59	81 251.32–97 972.09	4–2	1.13+00	3.03−01	2.39+01	0.084	B+	6
			5 957.56	5 959.21	81 191.34–97 972.09	2–2	5.60−01	2.98−01	1.17+01	−0.225	B+	6
38	$4p-4d$	$^2P^\circ-^2D$				6–10						3
			5 055.984	5 057.394	81 251.32–101 024.35	4–6	1.45+00	8.34−01	5.55+01	0523	B	3
			5 041.024	5 042.430	81 191.34–101 023.05	2–4	7.00−01	5.34−01	1.77+01	0.029	B	3
			5 056.317	5 057.726	81 251.32–101 023.05	4–4	2.10−01	8.05−02	5.36+00	−0.492	B	6
39	$4p-6s$	$^2P^\circ-^2S$	*3 337.59*	*3 338.55*	*81 231.3*–111 184.46	6–2	3.00−01	1.67−02	1.10+00	−0.999	C	6
			3 339.818	3 340.779	81 251.32–111 184.46	4–2	2.00−01	1.67−02	7.36−01	−1.175	C+	6
			3 333.139	3 334.098	81 191.34–111 184.46	2–2	1.00−01	1.67−02	3.66−01	−1.476	C	6
40	$4p-5d$	$^2P^\circ-^2D$	*3 207.97*	*3 208.89*	*81 231.3–112 394.7*	6–10	5.31−01	1.37−01	8.66+00	−0.085	C+	5
			3 210.026	3 210.953	81 251.32–112 394.72	4–6	5.29−01	1.23−01	5.19+00	−0.308	C+	5
			3 203.872	3 204.797	81 191.34–112 394.56	2–4	4.45−01	1.37−01	2.89+00	−0.562	C+	5
			3 210.042	3 210.970	81 251.32–112 394.56	4–4	8.82−02	1.36−02	5.76−01	−1.264	C	5
41	$4p-7s$	$^2P^\circ-^2S$	*2 725.22*	*2 726.02*	*81 231.3*–117 914.80	6–2	4.73−01	1.76−02	9.46−01	−0.976	D	5
			2 726.702	2 726.510	81 251.32–117 914.80	4–2	3.17−01	1.77−02	6.36−01	−1.150	D	5
			2 722.249	2 723.055	81 191.34–117 914.80	2–2	1.56−01	1.73−02	3.11−01	−1.461	E+	5
42	$4p-6d$	$^2P^\circ-^2D$	*2 680.77*	*2 681.57*	*81 231.3–118 522.9*	6–10	2.11−01	3.78−02	2.00+00	−0.644	C	5
			2 682.211	2 683.007	81 251.32–118 522.93	4–6	2.10−01	3.39−02	1.20+00	−0.868	C	5
			2 677.906	2 678.702	81 191.34–118 522.86	2–4	1.77−01	3.81−02	6.72−01	−1.118	C	5
			2 682.216	2 683.012	81 251.32–118 522.86	4–4	3.49−02	3.77−03	1.33−01	−1.822	D+	5

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
43	$4p-7d$	$^2P^\circ-^2D$	*2 442.32*	*2 443.06*	*81 231.3–122 163.5*	6–10	2.10−01	3.13−02	1.51+00	−0.726	D	5
			2 443.517	2 444.257	81 251.32–122 163.54	4–6	1.07−01	1.44−02	4.63−01	−1.240	D	5
			2 439.943	2 440.683	81 191.34–122 163.48	2–4	3.47−01	6.20−02	9.97−01	−0.907	D	5
			2 443.521	2 444.261	81 251.32–122 163.48	4–4	1.79−02	1.60−03	5.15−02	−2.194	E	5
44	$4p-8d$	$^2P^\circ-^2D$	*2 310.7*	*2 311.4*	*81 231.3–124 495.7*	6–10	3.47−01	4.62−02	2.11+00	−0.556	D	1,5
			2 311.73	2 312.44	81 251.32–124 495.7	4–6	5.01−01	6.02−02	1.83+00	−0.618	D+	5
			2 308.53	2 309.24	81 191.34–124 495.7	2–4	4.02−02	6.43−03	9.78−02	−1.891	E	LS
			2 311.73	2 312.44	81 251.32–124 495.7	4–4	7.65−02	6.13−03	1.87−01	−1.610	E+	5
45	$5s-5p$	$^2S-^2P^\circ$	*16 930.2*	*16 934.8*	97 972.09–*103 877.1*	2–6	1.30−01	1.68+00	1.87+02	0.526	B	1
			16 906.81	16 911.43	97 972.09–103 885.25	2–4	1.31−01	1.12+00	1.25+02	0.350	B	LS
			16 977.18	16 981.82	97 972.09–103 860.74	2–2	1.29−01	5.58−01	6.24+01	0.048	B	LS
46	$4d-4f$	$^2D-^2F^\circ$		*2 532* cm^{-1}	*101 023.8–103 556.1*	10–14	8.40−03	2.75−01	3.58+02	0.439	B	1
				2 531.68 cm^{-1}	101 024.35–103 556.03	6–8	8.40−03	2.62−01	2.04+02	0.196	B+	LS
				2 533.11 cm^{-1}	101 023.05–103 556.16	4–6	7.85−03	2.75−01	1.43+02	0.041	B	LS
				2 531.81 cm^{-1}	101 024.35–103 556.16	6–6	5.60−04	1.31−02	1.02+01	−1.105	C	LS
47	$4d-5p$	$^2D-^2P^\circ$		*2 853* cm^{-1}	*101 023.8–103 877.1*	10–6	2.16−02	2.39−01	2.76+02	0.378	B	1
				2 860.90 cm^{-1}	101 024.35–103–385.25	6–4	1.97−02	2.40−01	1.66+02	0.158	B	LS
				2 837.69 cm^{-1}	101 023.05–103 860.74	4–2	2.13−02	1.98−01	9.19+01	−0.101	B	LS
				2 862.20 cm^{-1}	101 023.05–103 885.25	4–4	2.19−03	4.00−02	1.84+01	−0.796	C+	LS
48	$4d-5f$	$^2D-^2F^\circ$	*7 849.4*	*7 851.5*	*101 023.8–113 760.2*	10–14	3.99−01	5.17−01	1.34+02	0.713	B	1
			7 849.72	7 851.88	101 024.35–113 760.15	6–8	3.99−01	4.92−01	7.63+01	0.470	B	LS
			7 848.82	7 850.98	101 023.05–113 760.32	4–6	3.73−01	5.17−01	5.35+01	0.316	B	LS
			7 849.62	7 851.78	101 024.35–113 760.32	6–6	2.66−02	2.46−02	3.82+00	−0.831	C	LS
49	$4d-6p$	$^2D-^2P^\circ$	*7 721.1*	*7 723.2*	*101 023.8–113 971.8*	10–6	1.63−03	8.74−04	2.22−01	−2.059	D	1,5
			7 718.47	7 720.59	101 024.35–113 976.72	6–4	1.89−03	1.12−03	1.72−01	−2.173	D+	5
			7 726.43	7 728.55	101 023.05–113 962.08	4–2	6.75−04	3.02−04	3.07−02	−2.918	E+	LS
			7 717.70	7 719.82	101 023.05–113 976.72	4–4	2.10−04	1.88−04	1.91−02	−3.124	E+	5
50	$4d-7p$	$^2D-^2P^\circ$	*5 480.80*	*5 482.31*	*101 023.8–119 264.3*	10–6	4.34−02	1.17−02	2.12+00	−0.932	D	5
			5 478.092	5 479.614	101 024.35–119 273.81	6–4	3.87−02	1.16−02	1.26+00	−1.157	D+	5
			5 486.296	5 487.821	101 023.05–119 245.22	4–2	4.41−02	9.96−03	7.20−01	−1.400	D	5
			5 477.702	5 479.224	101 023.05–119 273.81	4–4	4.30−03	1.94−03	1.40−01	−2.110	E+	5
51	$4d-6f$	$^2D-^2F^\circ$	*5 466.72*	*5 468.22*	*101 023.8–119 311.3*	10–14	2.31−01	1.45−01	2.61+01	0.161	C+	1
			5 466.894	5 468.413	101 024.35–119 311.19	6–8	2.31−01	1.38−01	1.49+01	−0.082	C+	LS
			5 466.461	5 467.980	101 023.05–119 311.34	4–6	2.16−01	1.45−01	1.04+01	−0.237	C	LS
			5 466.849	5 468.368	101 024.35–119 311.34	6–6	1.54−02	6.90−03	7.45−01	−1.383	D+	LS
52	$4d-7f$	$^2D-^2F^\circ$	*4 621.60*	*4 622.89*	*101 023.8–122 655.3*	10–14	1.37−01	6.17−02	9.38+00	−0.210	D	1
			4 621.722	4 623.016	101 024.35–122 655.25	6–8	1.37−01	5.87−02	5.36+00	−0.453	D	LS
			4 621.418	4 622.713	101 023.05–122 655.37	4–6	1.28−01	6.17−02	3.76+00	−0.608	D	LS
			4 621.696	4 622.991	101 024.35–122 655.37	6–6	9.18−03	2.94−03	2.68−01	−1.754	E	LS
53	$4d-8f$	$^2D-^2F^\circ$	*4 200.80*	*4 201.98*	*101 023.8–124 822.1*	10–14	8.72−02	3.23−02	4.47+00	−0.491	E+	1
			4 200.898	4 202.081	101 024.35–124 822.08	6–8	8.73−02	3.08−02	2.56+00	−0.733	D	LS
			4 200.658	4 201.841	101 023.05–124 822.14	4–6	8.14−02	3.23−02	1.79+00	−0.889	E+	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
			4 200.887	4 202.071	101 024.35–124 822.14	6–6	5.82−03	1.54−03	1.28−01	−2.034	E	LS
54	$4f-5d$	$^2F^\circ-^2D$	*11 310.9*	*11 314.0*	*103 556.1–112 394.7*	14–10	2.97−02	4.07−02	2.12+01	−0.244	C	1
			11 310.80	11 313.89	103 556.03–112 394.72	8–6	2.83−02	4.07−02	1.21+01	−0.487	C+	LS
			11 311.17	11 314.27	103 556.16–112 394.56	6–4	2.97−02	3.80−02	8.49+00	−0.642	C	LS
			11 310.96	11 314.06	103 556.16–112 394.72	6–6	1.41−03	2.71−03	6.06−01	−1.789	D	LS
55	$4f-5g$	$^2F^\circ-^2G$	*9 413*	*9 415*	*103 556.1–114 177*	14–18	7.24−01	1.24+00	5.37−02	1.240	B+	1
			9 412.7	9 415.2	103 556.03–114 177.1	8–10	7.46−01	1.24+00	3.07+02	0.997	B+	LS
			9 412.8	9 415.4	103 556.16–114 177.1	6–8	6.49−01	1.15+00	2.14+02	0.839	B+	LS
			9 412.7	9 415.2	103 556.03–114 177.1	8–8	4.65−02	6.18−02	1.53+01	−0.306	C+	LS
56	$4f-6d$	$^2F^\circ-^2D$	*6 679.6*	*6 681.5*	*103 556.1–118 522.9*	14–10	1.30−02	6.21−03	1.91+00	−1.061	D+	1
			6 679.57	6 681.41	103 556.03–118 522.93	8–6	1.24−02	6.21−03	1.09+00	−1.304	D+	LS
			6 679.66	6 681.50	103 556.16–118 522.86	6–4	1.30−02	5.80−03	7.65−01	−1.458	D+	LS
			6 679.62	6 681.47	103 556.16–118 522.93	6–6	6.19−04	4.14−04	5.46−02	−2.605	E+	LS
57	$4f-6g$	$^2F^\circ-^2G$	*6 239.6*	*6 241.4*	*103 556.1–119 578.2*	14–18	2.50−01	1.88−01	5.40+01	0.420	C+	1
			6 239.61	6 241.34	103 556.03–119 578.23	8–10	2.58−01	1.88−01	3.09+01	0.177	C+	LS
			6 239.66	6 241.39	103 556.16–119 578.23	6–8	2.25−01	1.75−01	2.16+01	0.021	C+	LS
			6 239.61	6 241.34	103 556.03–119 578.23	8–8	1.61−02	9.39−03	1.54+00	−1.124	D+	LS
58	$4f-7g$	$^2F^\circ-^2G$	*5 185.53*	*5 186.99*	*103 556.1–122 835.1*	14–18	1.20−01	6.24−02	1.49+01	−0.059	D	1
			5 185.520	5 186.964	103 556.03–122 835.13	8–10	1.24−01	6.24−02	8.52+00	−0.302	D+	LS
			5 185.555	5 186.999	103 556.16–122 835.13	6–8	1.08−01	5.83−02	5.97+00	−0.456	D	LS
			5 185.520	5 186.964	103 556.03–122 835.13	8–8	7.74−03	3.12−03	4.26−01	−1.603	E	LS
59	$4f-8g$	$^2F^\circ-^2G$	*4 673.27*	*4 674.58*	*103 556.1–124 948.4*	14–18	6.85−02	2.89−02	6.22+00	−0.393	D	1
			4 673.256	4 674.564	103 566.03–124 948.40	8–10	7.06−02	2.89−02	3.56+00	−0.636	D	LS
			4 673.284	4 674.592	103 556.16–124 948.40	6–8	6.16−02	2.69−02	2.48+00	−0.792	D	LS
			4 673.256	4 674.564	103 556.03–124 948.40	8–8	4.40−03	1.44−03	1.77−01	−1.939	E	LS
60	$5p-6s$	$^2P^\circ-^2S$	*13 681.1*	*13 684.8*	*103 877.1*–111 184.46	6–2	3.67−01	3.43−01	9.28+01	0.313	B	1
			13 696.37	13 700.11	103 885.25–111 184.46	4–2	2.44−01	3.43−01	6.19+01	0.137	B	LS
			13 650.53	13 654.26	103 860.74–111 184.46	2–2	1.23−01	3.44−01	3.09+01	−0.162	C+	LS
61	$5p-5d$	$^2P^\circ-^2D$	*11 737.2*	*11 740.4*	*103 877.1–112 394.7*	6–10	3.42−01	1.18+00	2.73+02	0.850	B	1
			11 748.40	11 751.61	103 885.25–112 394.72	4–6	3.41−01	1.06+00	1.64+02	0.627	B	LS
			11 714.87	11 718.08	103 860.74–112 394.56	2–4	2.87−01	1.18+00	9.10+01	0.373	B	LS
			11 748.62	11 751.83	103 885.25–112 394.56	4–4	5.70−02	1.18−01	1.83+01	−0.326	C+	LS
62	$5p-7s$	$^2P^\circ-^2S$	*7 121.7*	*7 123.7*	*103 877.1*–914.80	6–2	1.61−01	4.07−02	5.73+00	−0.612	D	1
			7 125.85	7 127.81	103 885.25–117 914.80	4–2	1.07−01	4.07−02	3.82+00	−0.788	D	LS
			7 113.42	7 115.38	103 860.74–117 914.80	2–2	5.38−02	4.08−02	1.91+00	−1.088	E+	LS
63	$5p-6d$	$^2P^\circ-^2D$	*6 826.0*	*6 827.9*	*103 877.1–118 522.9*	6–10	1.30−01	1.51−01	2.04+01	−0.043	C	1
			6 829.80	6 831.68	103 885.25–118 522.92	4–6	1.30−01	1.36−01	1.22+01	−0.264	C+	LS
			6 818.41	6 820.30	10 860.74–118 522.86	2–4	1.08−01	1.51−01	6.78+00	−0.520	C	LS
			6 829.83	6 831.72	103 885.25–118 522.86	4–4	2.16−02	1.51−02	1.36+00	−1.219	D+	LS
64	$5d-7d$	$^2P^\circ-^2D$	*5 467.01*	*5 468.54*	*103 877.1–122 163.5*	6–10	6.42−02	4.80−02	5.18+00	−0.541	D	1
			5 469.451	5 470.971	103 885.25–122 163.54	4–6	6.42−02	4.32−02	3.11+00	−0.762	D	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
			5 462.145	5 463.663	103 860.74–122 163.48	2–4	5.36−02	4.80−02	1.73+00	−1.018	E+	LS
			5 469.469	5 470.989	103 885.25–122 163.48	4–4	1.07−02	4.80−03	3.46−01	−1.717	E	LS
65	$3s3p(^3P^\circ)3d$–$3s3p(^3P^\circ)4p$	$^4F^\circ$–^4D	*5 681.3*	*5 682.9*	*114 415.5–132 012.2*	28–20	5.49−01	1.90−01	9.94+01	0.725	B	1,6
			5 669.56	5 671.14	114 529.14–132 162.29	10–8	5.00−01	1.93−01	3.60+01	0.286	B+	6
			5 688.82	5 690.40	114 414.58–131 988.05	8–6	4.60−01	1.67−01	2.51+01	0.126	B	6
			5 701.37	5 702.95	114 327.15–131 861.93	6–4	4.50−01	1.46−01	1.65+01	−0.057	B	6
			5 706.4	5 708.0	114 265.64–131 784.9	4–2	6.10−01	1.49−01	1.12+01	−0.225	B	6
			5 632.97	5 634.53	114 414.58–132 162.29	8–8	4.00−02	1.90−02	2.83+00	−0.818	C+	6
			5 660.65	5 662.23	114 327.15–131 988.05	6–6	7.00−02	3.36−02	3.76+00	−0.696	C+	6
			5 681.44	5 683.02	114 265.64–131 861.93	4–4	1.00−01	4.84−02	3.62+00	−0.713	C+	6
			5 605.352	5 606.909	114 327.15–132 162.29	6–8	2.36−03	1.48−03	1.64−01	−2.052	D	LS
			5 641.01	5 642.57	114 265.64–131 988.05	4–6	4.26−03	3.05−03	2.27−01	−1.914	D	LS
66		$^4D^\circ$–^4D	*13 088*	*13 092*	*124 374–132 012.2*	20–20	1.07−02	2.74−02	2.37+01	−0.261	C	1
			12 961.9	12 965.5	124 449.5–132 162.29	8–8	9.44−03	2.38−02	8.13+00	−0.720	C	LS
			13 032.3	13 035.9	124 316.9–131 988.05	6–6	6.20−03	1.58−02	4.07+00	−1.023	C	LS
			13 264.9	13 268.5	124 325.3–131 861.93	4–4	4.09−03	1.08−02	1.89+00	−1.365	D+	LS
			13 423.5	13 427.1	124 337.3–131 784.9	2–2	4.96−03	1.34−02	1.18+00	−1.572	D+	LS
			13 261.5	13 265.2	124 449.5–131 988.05	8–6	1.96−03	3.87−03	1.35+00	−1.509	D+	LS
			13 250.1	13 253.8	124 316.9–131 861.93	6–4	3.61−03	6.34−03	1.66+00	−1.420	D+	LS
			13 401.9	13 405.5	124 325.3–131 784.9	4–2	4.98−03	6.71−03	1.18+00	−1.571	D+	LS
			12 742.9	12 746.3	124 316.9–132 162.29	6–8	1.65−03	5.36−03	1.35+00	−1.493	D+	LS
			13 046.6	13 050.1	124 325.3–131 988.05	4–6	2.52−03	9.65−03	1.66+00	−1.413	D+	LS
			13 286.1	13 289.7	124 337.3–131 861.93	2–4	2.55−03	1.35−02	1.18+00	−1.569	D+	LS
67		$^4P^\circ$–^4D	*13 479*	*13 482*	*124 595–132 012.2*	12–20	4.02−03	1.83−02	9.73+00	−0.658	D+	1
			13 163.1	13 166.7	124 567.4–132 162.29	6–8	4.33−03	1.50−02	3.90+00	−1.046	C	LS
			13 560.3	13 564.0	124 615.6–131 988.05	4–6	2.76−03	1.14−02	2.04+00	−1.341	D+	LS
			13 840.8	13 844.6	124 638.9–131 861.93	2–4	1.55−03	8.90−03	8.11−01	−1.750	D+	LS
			13 472.2	13 475.9	124 567.4–131 988.05	6–6	1.21−03	3.29−03	8.76−01	−1.705	D+	LS
			13 796.3	13 800.1	124 615.6–131 861.93	4–4	2.00−03	5.71−03	1.04+00	−1.641	D+	LS
			13 990.0	13 993.8	124 638.9–131 784.9	2–2	3.00−03	8.80−03	8.11−01	−1.754	D+	LS
			13 705.2	13 708.9	124 567.4–131 861.93	6–4	1.91−04	3.59−04	9.72−02	−2.667	E+	LS
			13 944.6	13 948.4	124 615.6–131 784.9	4–2	6.05−04	8.83−04	1.62−01	−2.452	D	LS
68	$6s$–$6p$	^2S–$^2P^\circ$		*2 787* cm^{-1}	111 184.46–*113 971.8*	2–6	3.49−02	2.02+00	4.77+02	0.606	B+	1
				2 792.26 cm^{-1}	111 184.46–113 976.72	2–4	3.51−02	1.35+00	3.18+02	0.431	B+	LS
				2 777.62 cm^{-1}	111 184.46–113 962.08	2–2	3.44−02	6.69−01	1.59+02	0.126	B	LS
69	$5d$–$5f$	^2D–$^2F^\circ$		*1 366* cm^{-1}	*112 394.7–113 760.2*	10–14	4.79−03	5.39−01	1.30+03	0.732	B+	1
				1 365.43 cm^{-1}	112 894.72–113 760.15	6–8	4.78−03	5.13−01	7.42+02	0.488	B+	LS
				1 365.76 cm^{-1}	112 394.56–113 760.32	4–6	4.47−03	5.39−01	5.20+02	0.344	B+	LS
				1 365.60 cm^{-1}	112 394.72–113 760.32	6–6	3.20−04	2.57−02	3.72+01	−0.812	B	LS
70	$5d$–$6p$	^2D–$^2P^\circ$		*1 577* cm^{-1}	*112 394.7–113 971.8*	10–6	1.03−02	3.74−01	7.81+02	0573	B+	1
				1 582.00 cm^{-1}	112 394.72–113 976.72	6–4	3.39−03	3.75−01	4.68+02	0.352	B+	LS
				1 567.52 cm^{-1}	112 394.56–113 962.08	4–2	1.02−02	3.10−01	2.60+02	0.093	B+	LS
				1 582.16 cm^{-1}	112 394.56–113 976.72	4–4	1.04−03	6.25−02	5.20+01	−0.602	B	LS
71	$5d$–$7p$	^2D–$^2P^\circ$	*14 552.9*	*14 556.9*	*112 394.7–119 264.3*	10–6	4.89−03	9.33−03	4.47+00	−1.030	E+	1
			14 532.83	14 536.81	112 394.72–119 273.81	6–4	4.42−03	9.34−03	2.68+00	−1.252	D	LS
			14 593.14	14 597.13	112 394.56–119 245.22	4–2	4.85−03	7.75−03	1.49+00	−1.509	E+	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
			14 532.50	14 536.47	112 394.56–119 273.81	4–4	4.92−04	1.56−03	2.99−01	−2.205	E	LS
72	$5d-6f$	$^2D-^2F°$	*14 454.0*	*14 458.0*	*112 394.7–119 311.3*	10–14	9.00−02	3.95−01	1.88+02	0.597	B	1
			14 454.29	14 458.24	112 394.72–119 311.19	6–8	9.00−02	3.76−01	1.07+02	0.353	B	LS
			14 453.64	14 457.59	112 394.56–119 311.34	4–6	8.40−02	3.95−01	7.52+01	0.199	B	LS
			14 453.98	14 457.93	112 394.72–119 311.34	6–6	6.00−03	1.88−02	5.37+00	−0.948	C	LS
73	$5d-7f$	$^2D-^2F°$	*9 743.3*	*9 746.0*	*112 394.7–122 655.3*	10–14	6.81−02	1.36−01	4.35+01	0.134	C	1
			9 743.41	9 746.09	112 394.72–122 655.25	6–8	6.79−02	1.29−01	2.48+01	−0.111	C	LS
			9 743.15	9 745.82	112 394.56–122 655.37	4–6	6.37−02	1.36−01	1.75+01	−0.264	D+	LS
			9 743.30	9 745.97	112 394.72–122 655.37	6–6	4.53−03	6.45−03	1.24+00	−1.412	E+	LS
74	$5d-8f$	$^2D-^2F°$	*8 044.5*	*8 046.7*	*112 394.7–124 822.1*	10–14	4.73−02	6.42−02	1.70+01	−0.192	D+	1
			8 044.55	8 046.76	112 394.72–124 822.08	6–8	4.73−02	6.12−02	9.73+00	−0.435	D+	LS
			8 044.41	8 046.62	112 394.56–124 822.14	4–6	4.41−02	6.42−02	6.80+00	−0.590	D+	LS
			8 044.51	8 046.72	112 394.72–124 822.14	6–6	3.15−03	3.06−03	4.86−01	−1.736	E	LS
75	$5f-5g$	$^2F°-^2G$		*417* cm^{-1}	*113 760.2–114 177*	14–18	8.53−05	9.46−02	1.05+03	0.122	B+	1
				417.0 cm^{-1}	113 760.15–114 177.1	8–10	8.78−05	9.46−02	5.98+02	−0.121	B+	LS
				416.8 cm^{-1}	113 760.32–114 177.1	6–8	7.66−05	8.82−02	4.18+02	−0.276	B+	LS
				417.0 cm^{-1}	113 760.15–114 177.1	8–8	5.48−06	4.73−03	2.99+01	−1.422	C+	LS
76	$5f-6d$	$^2F°-^2D$		*4 763* cm^{-1}	*113 760.2–118 522.9*	14–10	2.08−02	9.82−02	9.50+01	0.138	B	1
				4 762.78 cm^{-1}	113 760.15–118 522.93	8–6	1.98−02	9.82−02	5.43+01	−0.105	B	LS
				4 762.54 cm^{-1}	113 760.32–118 522.86	6–4	2.08−02	9.16−02	3.80+01	−0.260	B	LS
				4 762.61 cm^{-1}	113 760.32–118 522.93	6–6	9.89−04	6.54−03	2.71+00	−1.406	C	LS
77	$5f-6g$	$^2F°-^2G$	*17 183.3*	*17 188.0*	*113 760.2–119 578.2*	14–18	1.79−01	1.02+00	8.07+02	1.155	B+	1
			17 183.11	17 187.80	113 760.15–119 578.23	8–10	1.84−01	1.02+00	4.62+02	0.912	B+	LS
			17 183.61	17 188.30	113 760.32–119 578.23	6–8	1.61−01	9.48−01	3.22+02	0.755	B+	LS
			17 183.11	17 187.80	113 760.15–119 578.23	8–8	1.15−02	5.08−02	2.30+01	−0.391	C+	LS
78	$5f-7d$	$^2F°-^2D$	*11 896.8*	*11 900.1*	*113 760.2–122 163.5*	14–10	1.02−02	1.55−02	8.51+00	−0.664	D	1
			11 896.70	11 899.96	113 760.15–122 163.54	8–6	9.73−03	1.55−02	4.86+00	−0.907	D	LS
			11 897.03	11 900.29	113 760.32–122 163.48	6–4	1.02−02	1.45−02	3.41+00	−1.060	D	LS
			11 896.94	11 900.20	113 760.32–122 163.54	6–6	4.85−04	1.03−03	2.42−01	−2.209	E	LS
79	$5f-7g$	$^2F°-^2G$	*11 016.4*	*11 019.4*	*113 760.2–122 835.1*	14–18	9.74−02	2.28−01	1.16+02	0.504	C	1
			11 016.29	11 019.31	113 760.15–122 835.13	8–10	1.00−01	2.28−01	6.62+01	0.261	C	LS
			11 016.50	11 019.51	113 760.32–122 835.13	6–8	8.78−02	2.13−01	4.64+01	0.107	C	LS
			11 016.29	11 0.1931	113 760.15–122 835.13	8–8	6.26−03	1.14−02	3.31+00	−1.040	D	LS
80	$5f-8g$	$^2F°-^2G$	*8 935.6*	*8 938.0*	*113 760.2–124 948.4*	14–18	5.80−02	8.94−02	3.68+01	0.097	D+	1
			8 935.50	8 937.95	113 760.15–124 948.40	8–10	5.97−02	8.94−02	2.10+01	−0.146	C	LS
			8 935.63	8 938.08	113 760.32–124 948.40	6–8	5.22−02	8.34−02	1.47+01	−0.301	D+	LS
			8 935.50	8 937.95	113 760.15–124 948.40	8–8	3.73−03	4.47−03	1.05+00	−1.447	E+	LS
81	$5f-9g$	$^2F°-^2G$	*7 911.6*	*7 913.7*	*113 760.2–126 396.5*	14–18	3.74−02	4.52−02	1.65+01	−0.199	E+	1
			7 911.52	7 913.70	113 760.15–126 396.47	8–10	3.85−02	4.52−02	9.42+00	−0.442	D	LS
			7 911.63	7 913.80	113 760.32–126 396.47	6–8	3.37−02	4.22−02	6.60+00	−0.597	E+	LS
			7 911.52	7 913.70	113 760.15–126 396.47	8–8	2.41−03	2.26−03	4.71−01	−1.743	E	LS
82	$6p-7s$	$^2P°-^2S$		*3 943.0* cm^{-1}	*113 971.8–117 914.80*	6–2	1.34−01	4.32−01	2.16+02	0.413	C+	1,5

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11=Dufton *et al.*[26])—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
				3 938.08 cm^{-1}	113 976.72–117 914.80	4–2	8.94−02	4.32−01	1.45+02	0.238	B	5
				3 952.72 cm^{-1}	113 962.08–117 914.80	2–2	4.46−02	4.28−01	7.13+01	−0.068	C	LS
83	$6p-6d$	$^2P^\circ-^2D$		*4 551.1* cm^{-1}	*113 971.8–118 522.9*	6–10	1.19−01	1.44+00	6.25+02	0.935	B+	1,5
				4 546.21 cm^{-1}	113 976.72–118 522.93	4–6	1.24−01	1.35+00	3.91+02	0.732	B+	5
				4 560.78 cm^{-1}	113 962.08–118 522.86	2–4	9.16−02	1.32+00	1.91+02	0.422	B+	LS
				4 546.14 cm^{-1}	113 976.72–118 522.86	4–4	2.07−02	1.50−01	4.34+01	−0.222	B+	5
84	$6p-8s$	$^2P^\circ-^2S$	*127 747.5*	*12 750.9*	*113 971.8–121 814.38*	6–2	3.38−01	2.75−01	6.91+01	0.217	C+	5
			12 755.42	12 758.91	113 976.72–121 814.38	4–2	2.27−01	2.77−01	4.65+01	0.045	C+	5
			12 731.64	12 735.12	113 962.08–121 814.38	2–2	1.11−01	2.70−01	2.27+01	−0.268	C+	5
85	$6p-7d$	$^2P^\circ-^2D$	*12 204.1*	*12 207.5*	*113 971.8–122 163.5*	6–10	2.86−02	1.06−01	2.57+01	−0.195	D+	1,5
			12 211.41	12 214.75	113 976.72–122 163.54	4–6	1.80−02	6.02−02	9.69+00	−0.618	C	5
			12 189.70	12 193.04	113 962.08–122 163.48	2–4	4.15−02	1.85−01	1.49+01	−0.432	D+	LS
			12 211.50	12 214.84	113 976.72–122 163.48	4–4	2.99−03	6.69−03	1.08+00	−1.573	D	5
86	$6p-8d$	$^2P^\circ-^2D$	*9 500*	*9 502*	*113 971.8–124 496*	6–10	2.83−02	6.38−02	1.20+01	−0.417	D	1
			9 504.0	9 506.6	113 976.72–124 495.7	4–6	2.82−02	5.74−02	7.19+00	−0.639	D+	LS
			9 490.8	9 493.4	113 962.08–124 495.7	2–4	2.36−02	6.39−02	3.99+00	−0.893	D	LS
			9 504.0	9 506.6	113 976.72–124 495.7	4–4	4.71−03	6.38−03	7.99−01	−1.593	E+	LS
87	$5g-6f$	$^2G-^2F^\circ$	*19 470*	*19 477*	*114 177–119 311.3*	18–14	3.59−03	1.59−02	1.83+01	−0.543	C	1
			19 472	19 478	114 177.1–119 311.19	10–8	3.58−03	1.63−02	1.05+01	−0.788	C	LS
			19 472	19 477	114 177.1–119 311.34	8–6	3.35−03	1.43−02	7.34+00	−0.942	C	LS
			19 472	19 478	114 177.1–119 311.19	8–8	1.79−04	1.02−03	5.23−01	−2.088	D	LS
88	$3s3p(^3P^\circ)4s-3s^2(^1S)8s$	$^2P^\circ-^2S$		*273* cm^{-1}	*121 541.5*–121 814.38	6–2	1.21−04	8.10−02	5.86+02	−0.313	D+	1
				224.19 cm^{-1}	121 590.19–121 814.38	4–2	4.46−05	6.65−02	3.91+02	−0.575	D+	LS
				370.26 cm^{-1}	121 444.12–121 814.38	2–2	1.01−04	1.10−01	1.96+02	−0.658	D+	LS
89	$3s3p(^3P^\circ)4s-3s^2(^1S)7d$	$^2P^\circ-^2D$		*622* cm^{-1}	*121 541.5–122 163.5*	6–10	5.96−04	3.85−01	1.22+03	0.364	D+	1
				573.35 cm^{-1}	121 590.19–122 163.54	4–6	4.66−04	3.19−01	7.33+02	0.106	D+	LS
				719.36 cm^{-1}	121 444.12–122 163.48	2–4	7.68−04	4.45−01	4.07+02	−0.051	D+	LS
				573.29 cm^{-1}	121 590.19–122 163.48	4–4	7.78−05	3.55−02	8.15+01	−0.848	D	LS
90	$3s3p(^3P^\circ)4s-3s3p(^3P^\circ)4p$	$^4P^\circ-^4D$	6 685.6	6 687.7	117 058.9–132 012.2	12–20	4.98−01	5.57−01	1.47+02	0.825	C+	1,6
			6 671.84	6 673.86	117 178.06–132 162.29	6–8	4.80−01	4.27−01	5.63+01	0.409	B+	6
			6 660.53	6 662.37	116 978.38–131 988.05	4–6	3.64−01	3.63−01	3.18+01	0.162	C+	LS
			6 665.03	6 666.87	116 862.38–131 861.93	2–4	2.16−01	2.88−01	1.26+01	−0.240	C+	LS
			6 750.34	6 752.20	117 178.06–131 988.05	6–6	1.49−01	1.02−01	1.36+01	−0.213	C+	LS
			6 716.97	6 718.83	116 978.38–131 861.93	4–4	2.70−01	1.83−01	1.62+01	−0.135	B	6
			6 699.4	6 701.3	116 862.38–131 784.9	2–2	4.20−01	2.83−01	1.25+01	−0.247	B	6
			6 808.31	6 810.19	117 178.06–131 861.93	6–4	2.44−02	1.13−02	1.52+00	−1.169	D+	LS
			6 751.9	6 753.8	116 978.38–131 784.9	4–2	8.31−02	2.84−02	2.53+00	−0.945	C	LS
91	$3s^2(^1S)7s-3s3p(^3P^\circ)4s$	$^2S-^2P^\circ$		*3 627* cm^{-1}	117 914.80–*121 541.5*	2–6	3.51−02	1.20+00	2.18+02	0.380	D	1
				3 675.39 cm^{-1}	117 914.80–121 590.19	2–4	3.65−02	8.11−01	1.45+02	0.210	D	LS
				3 529.32 cm^{-1}	117 914.80–121 444.12	2–2	3.23−02	3.89−01	7.26+01	−0.109	D	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
92	$7s-7p$	$^2S-^2P^\circ$		*1 350* cm^{-1}	117 914.80–*119 264.3*	2–6	6.81−03	1.68+00	8.21+02	0.526	B	1
				1 359.01 cm^{-1}	117 914.80–119 273.81	2–4	6.96−03	1.13+00	5.47+02	0.354	B	LS
				1 330.42 cm^{-1}	117 914.80–119 245.22	2–2	6.53−03	5.53−01	2.74+02	0.044	C+	LS
93	$7s-8p$	$^2S-^2P^\circ$	*19 188*	*19 193*	117 914.80–*123 125.0*	2–6	3.14−03	5.21−02	6.58+00	−0.982	D	1
			19 137.7	19 142.9	117 914.80–123 138.67	2–4	3.17−03	3.48−02	4.39+00	−1.157	D	LS
			19 289.2	19 294.5	117 914.80–123 097.63	2–2	3.10−03	1.73−02	2.20+00	−1.461	D	LS
94	$3s^2(^1S)6d$ $-3s3p(^3P^\circ)4s$	$^2D-^2P^\circ$		*3 019* cm^{-1}	*118 522.9–121 541.5*	10–6	3.51−02	3.46−01	3.78+02	0.539	C	1
				3 067.26 cm^{-1}	118 522.93–121 590.19	6–4	3.31−02	3.52−01	2.27+02	0.325	C	LS
				2 921.26 cm^{-1}	118 522.86–121 444.12	4–2	3.18−02	2.79−01	1.26+02	0.048	C	LS
				3 067.33 cm^{-1}	118 522.86–121 590.19	4–4	3.68−03	5.86−02	2.52+01	−0.630	D+	LS
95	$6d-7p$	$^2D-^2P^\circ$		*741* cm^{-1}	*118 522.9–119 264.3*	10–6	2.01−03	3.29−01	1.46+03	0.517	B	1
				750.88 cm^{-1}	118 522.93–119 273.81	6–4	1.88−03	3.33−01	8.76+02	0.301	B	LS
				722.36 cm^{-1}	118 522.86–119 245.22	4–2	1.86−03	2.67−01	4.87+02	0.029	B	LS
				750.95 cm^{-1}	118 522.86–119 273.81	4–4	2.09−04	5.56−02	9.75+01	−0.653	C+	LS
96	$6d-6f$	$^2D-^2F^\circ$		*788* cm^{-1}	*118 522.9–119 311.3*	10–14	2.23−03	7.53−01	3.14+03	0.877	B+	1
				788.26 cm^{-1}	118 522.93–119 311.19	6–8	2.23−03	7.17−01	1.80+03	0.634	B+	LS
				788.48 cm^{-1}	118 522.86–119 311.34	4–6	2.08−03	7.53−01	1.26+03	0.479	B+	LS
				788.41 cm^{-1}	118 522.93–119 311.34	6–6	1.49−04	3.59−02	8.99+01	−0.667	B	LS
97	$6d-7f$	$^2D-^2F^\circ$		*4 132* cm^{-1}	*118 522.9–122 655.3*	10–14	2.67−02	3.28−01	2.61+02	0.516	C+	1
				4 132.32 cm^{-1}	118 522.93–122 655.25	6–8	2.67−02	3.12−01	1.49+02	0.272	C+	LS
				4 132.51 cm^{-1}	118 522.86–122 655.37	4–6	2.49−02	3.28−01	1.05+02	0.118	C+	LS
				4 132.44 cm^{-1}	118 522.93–122 655.37	6–6	1.78−03	1.56−02	7.46+00	−1.029	D+	LS
98	$6d-8p$	$^2D-^2P^\circ$		*4 602* cm^{-1}	*118 522.9–123 125.0*	10–6	2.39−03	1.01−02	7.26+00	−0.996	D	1
				4 615.74 cm^{-1}	118 522.93–123 138.67	6–4	2.17−03	1.02−02	4.37+00	−1.213	D	LS
				4 574.77 cm^{-1}	118 522.86–123 097.63	4–2	2.34−03	8.38−03	2.41+00	−1.475	D	LS
				4 615.81 cm^{-1}	118 522.86–123 138.67	4–4	2.40−04	1.69−03	4.82−01	−2.170	E	LS
99	$6d-8f$	$^2D-^2F^\circ$	*15 870.7*	*15 875.0*	*118 522.9–124 822.1*	10–14	2.28−02	1.21−01	6.32+01	0.083	C	1
			15 870.82	15 875.16	118 522.93–124 822.08	6–8	2.28−02	1.15−01	3.61+01	−0.161	C	LS
			15 870.49	15 874.83	118 522.86–124 822.14	4–6	2.14−02	1.21−01	2.53+01	−0.315	C	LS
			15 870.67	15 875.01	118 522.93–124 822.14	6–6	1.53−03	5.77−03	1.81+00	−1.461	E+	LS
100	$6d-9f$	$^2D-^2F^\circ$	*12 846.8*	*12 850.3*	*118 522.9–126 304.8*	10–14	1.74−02	6.02−02	2.55+01	−0.220	D	1
			12 846.83	12 850.35	118 522.93–126 304.82	6–8	1.74−02	5.73−02	1.45+01	−0.464	D	LS
			12 846.72	12 850.23	118 522.86–126 804.82	4–6	1.62−02	6.02−02	1.02+01	−0.618	D	LS
			12 846.83	12 850.35	118 522.93–126 304.82	6–6	1.16−03	2.86−03	7.26−01	−1.765	E	LS
101	$7p-8s$	$^2P^\circ-^2S$		*2 550* cm^{-1}	*119 264.3–121 814.38*	6–2	3.49−02	2.68−01	2.08+02	0.206	C+	1
				2 540.57 cm^{-1}	119 273.81–121 814.38	4–2	2.30−02	2.67−01	1.38+02	0.029	C+	LS
				2 569.16 cm^{-1}	119 245.22–121 814.38	2–2	1.19−02	2.70−01	6.92+01	−0.268	C	LS
102	$7p-7d$	$^2P^\circ-^2D$		*2 899* cm^{-1}	*119 264.3–122 163.5*	6–10	2.28−02	6.77−01	4.61+02	0.609	B	5
				2 889.73 cm^{-1}	119 273.81–122 163.54	4–6	2.28−02	6.14−01	2.80+02	0.390	B	5
				2 918.26 cm^{-1}	119 245.22–122 163.48	2–4	1.89−02	6.66−01	1.50+02	0.125	B	5
				2 889.67 cm^{-1}	119 273.81–122 163.48	4–4	3.80−03	6.82−02	3.11+01	−0.564	C+	5

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
103	$7p-8d$	$^2P^\circ-^2D$	*19 110*	*19 114*	*119 264.3–124 496*	6–10	1.36−02	1.24−01	4.67+01	−0.128	C+	5
			19 145	19 150	119 273.81–124 495.7	4–6	1.32−02	1.09−01	2.75+01	−0.361	C+	5
			19 041	19 046	119 245.22–124 495.7	2–4	1.19−02	1.29−01	1.62+01	−0.588	C+	5
			19 145	19 150	119 273.81–124 495.7	4–4	2.20−03	1.21−02	3.05+00	−1.315	D+	5
104	$6f-6g$	$^2F^\circ-^2G$		*267* cm^{-1}	*119 311.3–119 578.2*	14–18	7.14−05	1.93−01	3.33+03	0.432	B+	1
				267.04 cm^{-1}	119 311.19–119 578.23	8–10	7.34−05	1.93−01	1.90+03	0.189	B+	LS
				266.89 cm^{-1}	119 311.34–119 578.23	6–8	6.41−05	1.80−01	1.33+03	0.033	B+	LS
				267.04 cm^{-1}	119 311.19–119 578.23	8–8	4.60−06	9.67−03	9.54+01	−1.111	B	LS
105	$6f-7d$	$^2F^\circ-^2D$		*2 852* cm^{-1}	*119 311.3–122 163.5*	14–10	1.24−02	1.63−01	2.63+02	0.358	C+	1
				2 852.35 cm^{-1}	119 311.19–122 163.54	8–6	1.18−02	1.63−1	1.51+02	0.115	C+	LS
				2 852.14 cm^{-1}	119 311.34–122 163.48	6–4	1.24−02	1.52−01	1.05+02	−0.040	C+	LS
				2 852.20 cm^{-1}	119 311.34–122 163.54	6–6	5.91−04	1.09−02	7.55+00	−1.184	D+	LS
106	$6f-7g$	$^2F^\circ-^2G$		*3 524* cm^{-1}	*119 311.3–122 835.1*	14–18	5.67−02	8.81−01	1.15+03	1.091	B	1
				3 523.94 cm^{-1}	119 311.19–122 835.13	8–10	5.84−02	8.81−01	6.58+02	0.848	B	LS
				3 523.79 cm^{-1}	119 311.34–122 835.13	6–8	5.11−02	8.22−01	4.61+02	0.693	B	LS
				3 523.94 cm^{-1}	119 311.19–122 835.13	8–8	3.64−03	4.40−02	3.29+01	−0.453	C	LS
107	$6f-8d$	$^2F^\circ-^2D$	*19 280*	*19 288*	*119 311.3–124 496*	14–10	6.58−03	2.62−02	2.33+01	−0.436	D+	1
			19 283	19 288	119 311.19–124 495.7	8–6	6.26−03	2.62−02	1.33+01	−0.679	D+	LS
			19 284	19 289	119 311.34–124 495.7	6–4	6.59−03	2.45−02	9.33+00	−0.833	D+	LS
			19 284	19 289	119 311.34–124 495.7	6–6	3.14−04	1.75−03	6.67−01	−1.979	E+	LS
108	$6f-8g$	$^2F^\circ-^2G$	*17 1734.6*	*17 739.6*	*119 311.3–124 948.4*	14–18	3.79−02	2.30−01	1.88+02	0.508	C	1
			17 734.43	17 739.27	119 311.19–124 948.40	8–10	3.90−02	2.30−01	1.07+02	0.265	C+	LS
			17 734.90	17 739.74	119 311.34–124 948.40	6–8	3.42−02	2.15−01	7.53+01	0.111	C	LS
			17 734.43	17 739.27	119 311.19–124 948.40	8–8	2.44−03	1.15−02	5.37+00	−1.036	D	LS
109	$6f-9g$	$^2F^\circ-^2G$	*14 110.0*	*14 113.9*	*119 311.3–126 396.5*	14–18	2.55−02	9.80−02	6.37+01	0.137	D+	1
			14 109.91	14 113.77	119 311.19–126 396.47	8–10	2.63−02	9.80−02	3.64+01	−0.106	D+	LS
			14 110.21	14 114.07	119 311.34–126 396.47	6–8	2.30−02	9.14−02	2.55+01	−0.261	D+	LS
			14 109.91	14 113.77	119 311.19–126 396.47	8–8	1.64−03	4.90−03	1.82+00	−1.407	E	LS
110	$6f-10g$	$^2F^\circ-^2G$	*12 310.7*	*12 314.2*	*119 311.3–127 432.0*	14–18	1.78−02	5.20−02	2.95+01	−0.138	D	1
			12 310.64	12 314.01	119 311.19–127 432.02	8–10	1.83−02	5.20−02	1.69+01	−0.381	D	LS
			12 310.87	12 314.24	119 311.34–127 432.02	6–8	1.60−02	4.85−02	1.18+01	−0.536	D	LS
			12 310.64	12 314.01	119 311.19–127 432.02	8–8	1.14−03	2.60−03	8.43−01	−1.682	E	LS
111	$6g-7f$	$^2G-^2F^\circ$		*3 077* cm^{-1}	*119 578.2–122 655.3*	18–14	3.39−03	4.17−02	8.03+01	−0.125	C	1
				3 077.02 cm^{-1}	119 578.23–122 655.25	10–8	3.39−03	4.29−02	4.59+01	−0.368	C	LS
				3 077.14 cm^{-1}	119 578.23–122 655.37	8–6	3.16−03	3.75−02	3.21+01	−0.523	C	LS
				3 077.02 cm^{-1}	119 578.23–122 655.25	8–8	1.69−04	2.68−03	2.29+00	−1.669	D	LS
112	$6g-8f$	$^2G-^2F^\circ$	*19 065*	*19 070*	*119 578.2–124 822.1*	18–14	1.65−03	7.00−03	7.91+00	−0.900	D	1
			19 064.8	19 070.0	119 578.23–124 822.08	10–8	1.65−03	7.20−03	4.52+00	−1.143	D	LS
			19 064.5	19 069.7	119 578.23–124 822.14	8–6	1.54−03	6.30−03	3.16+00	−1.298	D	LS
			19 064.8	19 070.0	119 578.23–124 822.08	8–8	8.25−05	4.50−04	2.26−01	−2.444	E	LS
113	$8s-8p$	$^2S-^2P^\circ$		*1 311* cm^{-1}	121 814.38–*123 125.0*	2–6	1.23−02	3.21+00	1.61+03	0.808	B	1
				1 324.29 cm^{-1}	121 814.38–123 138.67	2–4	1.26−02	2.16+00	1.07+03	0.635	B	LS

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
				1 283.25 cm^{-1}	121 814.38–123 097.63	2–2	1.15–02	1.05+00	5.39+02	0.322	B	LS
114	$7d$–$7f$	^2D–$^2F^\circ$		*492* cm^{-1}	*122 163.5–122 655.3*	10–14	1.09–03	9.42–01	6.31+03	0.974	B	1
				491.71 cm^{-1}	122 163.54–122 655.25	6–8	1.08–03	8.97–01	3.60+03	0.731	B	LS
				491.89 cm^{-1}	122 163.48–122 655.37	4–6	1.01–03	9.43–01	2.52+03	0.577	B	LS
				491.83 cm^{-1}	122 1633.54–122 655.37	6–6	7.24–05	4.49–02	1.80+02	−0.570	C+	LS
115	$7d$–$8p$	^2D–$^2P^\circ$		*962* cm^{-1}	*122 163.5–123 125.0*	10–6	8.83–03	8.59–01	2.94+03	0.934	B	1
				975.13 cm^{-1}	122 163.54–123 138.67	6–4	8.29–03	8.71–01	1.76+03	0.718	B	LS
				934.15 cm^{-1}	122 163.48–123 097.63	4–2	8.10–03	6.96–01	9.81+02	0.445	B	LS
				975.19 cm^{-1}	122 163.48–123 138.67	4–4	9.20–04	1.45–01	1.96+02	−0.237	C+	LS
116	$7d$–$8f$	^2D–$^2F^\circ$		*2 659* cm^{-1}	*122 163.5–124 822.1*	10–14	9.76–03	2.90–01	3.59+02	0.462	C+	1
				2 658.54 cm^{-1}	122 163.54–124 822.08	6–8	9.76–03	2.76–01	2.05+02	0.219	C+	LS
				2 658.66 cm^{-1}	122 163.48–124 822.14	4–6	9.12–03	2.90–01	1.44+02	0.064	C+	LS
				2 658.60 cm^{-1}	122 163.54–124 822.14	6–6	6.51–04	1.38–02	1.03+01	−1.082	D+	LS
117	$7f$–$7g$	$^2F^\circ$–^2G		*180* cm^{-1}	*122 655.3–122 835.1*	14–18	4.88–05	2.91–01	7.45+03	0.610	B	1
				179.88 cm^{-1}	122 655.25–122 835.13	8–10	5.02–05	2.91–01	4.26+03	0.367	B	LS
				179.76 cm^{-1}	122 655.37–122 835.13	6–8	4.38–05	2.71–01	2.98+03	0.211	B	LS
				1.79.88 cm^{-1}	122 655.25–122 835.13	8–8	3.13–06	1.45–02	2.12+02	−0.936	C+	LS
118	$7f$–$8d$	$^2F^\circ$–^2D		*1 841* cm^{-1}	*122 655.3–124 496*	14–10	7.34–03	2.32–01	5.82+02	0.512	C+	1
				1 840.4 cm^{-1}	122 655.25–124 495.7	8–6	6.99–03	2.32–01	3.32+02	0.269	C+	LS
				1 840.3 cm^{-1}	122 655.37–124 495.7	6–4	7.35–03	2.17–01	2.33+02	0.115	C+	LS
				1 840.3 cm^{-1}	122 655.37–124495.7	6–6	3.50–04	1.55–02	1.66+01	−1.032	D+	LS
119	$7f$–$8g$	$^2F^\circ$–^2G		*2 293* cm^{-1}	*122 655.3–124 948.4*	14–18	2.21–02	8.09–01	1.63+03	1.054	B	1
				2 293.15 cm^{-1}	122 655.25–124 948.40	8–10	2.27–02	8.09–01	9.29+02	0.811	B	LS
				2 293.03 cm^{-1}	122 655.37–124 948.40	6–8	1.99–02	7.55–01	6.50+02	0.656	B	LS
				2 293.15 cm^{-1}	122 655.25–124 948.40	8–8	1.42–03	4.05–02	4.65+01	−0.489	C	LS
120	$7f$–$9g$	$^2F^\circ$–^2G		*3 741* cm^{-1}	*122 655.3–126 396.5*	14–18	1.63–02	2.25–01	2.77+02	0.498	D	1
				3 741.22 cm^{-1}	122 655.25–126 396.47	8–10	1.68–02	2.25–01	1.58+02	0.255	D	LS
				3 741.10 cm^{-1}	122 655.37–126 396.47	6–8	1.47–02	2.10–01	1.11+02	0.100	D	LS
				3 741.22 cm^{-1}	122 655.25–126 396.47	8–8	1.05–03	1.13–02	7.95+00	−1.044	E	LS
121	$7g$–$8f$	^2G–$^2F^\circ$		*1 987* cm^{-1}	*122 835.1–124 822.1*	18–14	2.52–03	7.44–02	2.22+02	0.127	C+	1
				1 986.95 cm^{-1}	122 835.13–124 822.08	10–8	2.52–03	7.65–02	1.27+02	−0.116	C+	LS
				1 987.01 cm^{-1}	122 835.13–124 822.14	8–6	2.35–03	6.69–02	8.87+01	−0.271	C+	LS
				1 986.95 cm^{-1}	122 835.13–124 822.08	8–8	1.26–04	4.78–03	6.34+00	−1.417	D	LS
122	$8p$–$9s$	$^2P^\circ$–^2S		*1 152* cm^{-1}	*123 125.0–124 276.7*	6–2	1.80–02	6.79–01	1.17+03	0.610	D+	1
				1 138.0 cm^{-1}	123 138.67–124 276.7	4–2	1.16–02	6.71–01	7.76+02	0.429	D+	LS
				1 179.1 cm^{-1}	123 097.63–124 276.7	2–2	6.45–03	6.96–01	3.89+02	0.144	D+	LS
123	$8p$–$8d$	$^2P^\circ$–^2D		*1 371* cm^{-1}	*123 125.0–124 496*	6–10	1.49–02	1.99+00	2.86+03	1.077	B	5
				1 357.0 cm^{-1}	123 138.67–124 495.7	4–6	1.48–02	1.80+00	1.75+03	0.857	B	5
				1 398.1 cm^{-1}	123 097.63–124 495.7	2–4	1.28–02	1.96+00	9.22+02	0.593	B	5
				1 357.0 cm^{-1}	123 138.67–124 495.7	4–4	2.46–03	2.00–01	1.94+02	−0.097	B	5
124	$9s$–$9p$	^2S–$^2P^\circ$		*754* cm^{-1}	124 276.7–125 031	2–6	4.40–03	3.48+00	3.04+03	0.843	C+	1

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
				757.0 cm^{-1}	124 276.7–125 033.7	2–4	4.45−03	2.33+00	2.03+03	0.668	C+	LS
				748.2 cm^{-1}	124 276.7–125 024.9	2–2	4.29−03	1.15+00	1.01+03	0.362	C+	LS
125	$9s-10p$	$^2S-^2P^\circ$		*2 255* cm^{-1}	*124 276.7–126 532*	2–6	1.33−03	1.18−01	3.43+01	−0.627	D	1
				2 249.1 cm^{-1}	124 276.7–126 525.8	2–4	1.32−03	7.82−02	2.29+01	−0.806	D+	LS
				2 268.7 cm^{-1}	124 276.7–126 545.4	2–2	1.35−03	3.94−02	1.14+01	−1.103	D	LS
126	$8d-8f$	$^2D-^2F^\circ$		*326* cm^{-1}	*124 496–124 822.1*	10–14	5.72−04	1.13+00	1.14+04	1.053	B	1
				326.4 cm^{-1}	124 495.7–124 822.08	6–8	5.70−04	1.07+00	6.48+03	0.808	B	LS
				326.4 cm^{-1}	124 495.7–124 822.14	4–6	5.35−04	1.13+00	4.56+03	0.655	B	LS
				326.4 cm^{-1}	124 495.7–124 822.14	6–6	3.81−05	5.36−02	3.24+02	−0.493	C+	LS
127	$8d-9p$	$^2D-^2P^\circ$		*535* cm^{-1}	*124 496–125 031*	10–6	2.96−03	9.30−01	5.72+03	0.968	C	1
				538.0 cm^{-1}	124 495.7–125 033.7	6–4	2.71−03	9.35−01	3.43+03	0.749	C	LS
				529.2 cm^{-1}	124 495.7–125 024.9	4–2	2.87−03	7.67−01	1.91+03	0.487	C	LS
				538.0 cm^{-1}	124 495.7–125 033.7	4–4	3.01−04	1.56−01	3.82+02	−0.205	D+	LS
128	$8d-9f$	$^2D-^2F^\circ$		*1 809* cm^{-1}	*124 496–126 304.8*	10–14	4.15−03	2.66−01	4.84+02	0.425	D+	1
				1 809.1 cm^{-1}	124 495.7–126 304.82	6–8	4.14−03	2.53−01	2.76+02	0.181	D+	LS
				1 809.1 cm^{-1}	124 495.7–126 304.82	4–6	3.87−03	2.66−01	1.94+02	0.027	D+	LS
				1 809.1 cm^{-1}	124 495.7–126 304.82	6–6	2.77−04	1.27−02	1.39+01	−1.118	E	LS
129	$8d-10f$	$^2D-^2F^\circ$		*2 868* cm^{-1}	*124 496–127 363.5*	10–14	4.07−03	1.04−01	1.19+02	0.017	E+	1
				2 867.8 cm^{-1}	124 495.7–127 363.50	6–8	4.06−03	9.88−02	6.81+01	−0.227	D	LS
				2 867.8 cm^{-1}	124 495.7–127 363.50	4–6	3.80−03	1.04−01	4.78+01	−0.381	E+	LS
				2 867.8 cm^{-1}	124 495.7–127 363.50	6–6	2.71−04	4.94−03	3.40+00	−1.528	E	LS
130	$8f-8g$	$^2F^\circ-^2G$		*126* cm^{-1}	*124 822.1–124 948.4*	14–18	3.20−05	3.87−01	1.41+04	0.734	B	1
				126.32 cm^{-1}	124 822.08–124 948.40	8–10	3.30−05	3.87−01	8.07+03	0.491	B	LS
				126.26 cm^{-1}	124 822.14–124 948.40	6–8	2.88−05	3.61−01	5.65+03	0.336	B	LS
				126.32 cm^{-1}	124 822.08–124 948.40	8–8	2.05−06	1.93−02	4.02+02	−0.811	B	LS
131	$8f-9g$	$^2F^\circ-^2G$		*1 574* cm^{-1}	*124 822.1–126 396.5*	14–18	9.76−03	7.59−01	2.22+03	1.026	D+	1
				1 574.39 cm^{-1}	124 822.08–126 396.47	8–10	1.00−02	7.59−01	1.27+03	0.783	C	LS
				1 574.33 cm^{-1}	124 822.14–126 396.47	6–8	8.79−03	7.09−01	8.90+02	0.629	D+	LS
				1 574.39 cm^{-1}	124 822.08–126 396.47	8–8	6.28−04	3.80−02	6.36+01	−0.517	D	LS
132	$8f-10g$	$^2F^\circ-^2G$		*2 610* cm^{-1}	*124 822.1–127 432.0*	14–18	7.81−03	2.21−01	3.90+02	0.491	D	1
				2 609.94 cm^{-1}	124 822.08–127 432.02	8–10	8.03−03	2.21−01	2.23+02	0.247	D+	LS
				2 609.88 cm^{-1}	124 822.14–127 432.02	6–8	7.02−03	2.06−01	1.56+02	0.092	D	LS
				2 609.94 cm^{-1}	124 822.08–127 432.02	8–8	5.04−04	1.11−02	1.12+01	−1.052	E	LS
133	$8g-9f$	$^2G-^2F^\circ$		*1 356* cm^{-1}	*124 948.4–126 304.8*	18–14	1.77−03	1.12−01	4.89+02	0.304	D+	1
				1 356.42 cm^{-1}	124 948.40–126 304.82	10–8	1.76−03	1.15−01	2.79+02	0.061	D+	LS
				1 356.42 cm^{-1}	124 948.40–126 304.82	8–6	1.65−03	1.01−01	1.96+02	−0.093	D+	LS
				1 356.42 cm^{-1}	124 948.40–126 304.82	8–8	8.84−05	7.20−03	1.40+01	−1.240	E	LS
134	$9f-10g$	$^2F^\circ-^2G$		*1 127* cm^{-1}	*126 304.8–127 432.0*	14–18	4.77−03	7.23−01	2.96+03	1.005	C+	1
				1 127.20 cm^{-1}	126 304.82–127 432.02	8–10	4.90−03	7.23−01	1.69+03	0.762	C+	LS
				1 127.20 cm^{-1}	126 304.82–127 432.02	6–8	4.29−03	6.75−01	1.18+03	0.607	C+	LS
				1 127.20 cm^{-1}	126 304.82–127 432.02	8–8	3.07−04	3.62−02	8.46+01	−0.538	C	LS
135	$9g-10f$	$^2G-^2F^\circ$		*967* cm^{-1}	*126 396.5–127 363.5*	18–14	1.23−03	1.53−01	9.41+02	0.440	C+	1

TABLE 8. Transition probabilities of allowed lines for Si II (references for this table are as follows: 1, Mendoza *et al.*,[69] 2=Froese Fischer,[35] 3=Matheron *et al.*,[67] 4=Bergeson and Lawler,[7] 5=Charro and Martin,[19] 6=Blanco *et al.*,[9] 7=Hofmann,[51] 8=Curtis and Smith,[24] 9=Nahar,[77] 10=Calamai *et al.*,[15] and 11 =Dufton *et al.*[26])—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
				967.03 cm^{-1}	126 396.47–127 363.50	10–8	1.23−03	1.58−01	5.38+02	0.199	C+	LS
				967.03 cm^{-1}	126 396.47–127 363.50	8–6	1.15−03	1.38−01	3.76+02	0.043	C+	LS
				967.03 cm^{-1}	126 396.47–127 363.50	8–8	6.16−05	9.87−03	2.69+01	−1.103	D+	LS

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

4.2.3. Forbidden Transitions for Si II

Froese Fischer[35] has performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. The calculations only extend to transitions from energy levels up to 4*p*.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references.[26,35,39,112] Next we isoelectronically averaged the logarithmic quality factors observed for allowed lines from the lower-lying levels of Al I and Si II and applied the result to forbidden lines of Si II using the method described in the introduction to Kelleher and Podobedova.[53]

4.2.4. References for Forbidden Transitions for Si II

[26] P. L. Dufton, F. P. Keenan, A. Hibbert, R. P. Stafford, P. B. Byrne, and D. Agnew, Mon. Not. R. Astron. Soc. **253**, 474 (1991).

[35] C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).

[39] R. H. Garstang, *Planetary Nebulae* edited by D. E. Osterbrock and C. R. O'Dell, (Reidel, Dordrecht 1968), pp. 143–152.

[53] D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[112] B. Warner, Z. Astrophys. **69**, 399 (1968).

TABLE 9. Wavelength finding list for forbidden lines of Si II

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
1230.749	2	1231.658	2	1235.116	2	1 236.031	2
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
2427.628	6	2736.611	11	3485.864	8	8 067.14	4
2434.032	6	2737.850	11	3508.680	8	8 077.46	4
2439.614	6	2954.127	5	7215.86	12	8 182.88	4
2444.465	6	2963.614	5	7224.47	12	8 193.50	4
2446.081	6	2979.096	5	7997.23	4	13 622.28	9
2456.619	6	3483.941	8	8007.37	4	14 008.44	9
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**
287.24	1	202.31	10	108.33	3		
283.62	3	175.29	3	59.98	14		

TABLE 10. Transition probabilities of forbidden lines for Si II (references for this table are as follows: 1=Froese Fischer,[35] 2=Dufton *et al.*,[26] 3=Garstang,[39] and 4=Warner[112])

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
1	$3p-3p$	$^2P^\circ-^2P^\circ$									
				287.24 cm^{-1}	0.00–287.24	2–4	M1	2.10−04	1.31+00	B+	1,2,3,4
				287.24 cm^{-1}	0.00–287.24	2–4	E2	1.60−09	2.92+01	B	1,4
2	$3p-4p$	$^2P^\circ-^2P^\circ$									
				1 235.116	287.24–81 251.32	4–4	M1	4.82−05	1.35−08	E	1
				1 235.116	287.24–81 251.32	4–4	E2	2.12+03	2.18+01	B	1

TABLE 10. Transition probabilities of forbidden lines for Si II (references for this table are as follows: 1=Froese Fischer,[35] 2=Dufton *et al.*,[26] 3=Garstang,[39] and 4=Warner[112])—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
				1 231.658	0.00–81 191.34	2–2	M1	7.17−06	9.93−10	E	1
				1 236.031	287.24–81 191.34	4–2	M1	2.49−02	3.49−06	E+	1
				1 236.031	287.24–81 191.34	4–2	E2	4.30+03	2.22+01	B	1
				1 230.749	0.00–81 251.32	2–4	M1	1.18−02	3.27−06	E+	1
				1 230.749	0.00–81 251.32	2–4	E2	2.15+03	2.17+01	B	1
3	$3s3p^2 - 3s3p^2$	$^4P - ^4P$									
				175.29 cm^{-1}	42 932.62–43 107.91	4–6	M1	8.15−05	3.36+00	C+	1
				175.29 cm^{-1}	42 932.62–43 107.91	4–6	E2	1.41−10	4.58+01	B	1
				108.33 cm^{-1}	42 824.29–42 932.62	2–4	M1	2.76−05	3.22+00	C+	1
				108.33 cm^{-1}	42 824.29–42 932.62	2–4	E2	5.38−13	1.29+00	C+	1
				283.62 cm^{-1}	42 824.29–43 107.91	2–6	E2	3.81−10	1.11+01	C+	1
4		$^4P - ^2D$									
			7 997.23	7 999.43	42 824.29–55 325.18	2–6	E2	1.48−02	2.59+00	C+	1
			8 067.14	8 069.36	42 932.62–55 325.18	4–6	M1	1.35−03	1.58−04	D	1
			8 067.14	8 069.35	42 932.62–55 325.18	4–6	E2	3.13−05	5.74−03	D+	1
			8 007.37	8 009.57	42 824.29–55 309.35	2–4	M1	6.56−04	5.00−05	D	1
			8 007.37	8 009.57	42 824.29–55 309.35	2–4	E2	1.49−02	1.75+00	C+	1
			8 182.88	8 185.13	43 107.91–55 325.18	6–6	M1	6.65−03	8.11−04	D+	1
			8 182.88	8 185.13	43 107.91–55 325.18	6–6	E2	1.98−04	3.89−02	C	1
			8 077.46	8 079.68	42 932.62–55 309.35	4–4	M1	2.52+00	1.97−01	C	1
			8 077.46	8 079.68	42 932.62–55 309.35	4–4	E2	8.18−06	1.01−03	D+	1
			8 193.50	8 195.75	43 107.91–55 309.35	6–4	M1	7.52−04	6.14−05	D	1
			8 193.50	8 195.75	43 107.91–55 309.35	6–4	E2	8.35−05	1.10−02	C	1
5		$^4P - ^2S$									
			2 979.096	2 979.965	43 107.91–76 665.35	6–2	E2	5.44+01	2.28+01	B	1
			2 963.614	2 964.480	42 932.62–76 665.35	4–2	M1	7.13−02	1.38−04	D	1
			2 963.614	2 964.480	42 932.62–76 665.35	4–2	E2	6.15+00	2.51+00	C+	1
			2 954.127	2 954.990	42 824.29–76 665.35	2–2	M1	1.47−02	2.80−05	D	1
6		$^4P - ^2P$									
			2 434.032	2 434.770	42 932.62–84 004.26	4–4	M1	2.84−03	6.07−06	E+	1
			2 439.614	2 440.354	42 824.29–83 801.95	2–2	M1	5.22−03	5.63−06	E+	1
			2 456.619	2 457.362	43 107.91–83 801.95	6–2	E2	2.58+01	4.13+00	C+	1
			2 444.465	2 445.206	43 107.91–84 004.26	6–4	M1	3.56−03	7.73−06	D	1
			2 446.081	2 446.823	42 932.62–83 801.95	4–2	E2	3.00+00	4.70−01	C	1
			2 427.628	2 428.365	42 824.29–84 004.26	2–4	M1	1.36−03	2.88−06	E+	1
			2 427.628	2 428.365	42 824.29–84 004.26	2–4	E2	1.36+01	4.12+00	C+	1
7		$^2D - ^2D$									
				15.83 cm^{-1}	55 309.35–55 325.18	4–6	M1	7.97−08	4.47+00	C+	1
8		$^2D - ^2P$									
			3 485.864	3 486.862	55 325.18–84 004.26	6–4	M1	5.64−0.3	3.54−05	D	1
			3 508.680	3 509.683	55 309.35–83 801.95	4–2	M1	6.22−03	1.99−05	D	1
			3 483.941	3 484.939	55 309.35–84 004.26	4–4	M1	9.93−03	6.23−05	D	1
9		$^2S - ^2P$									
			13 622.28	13 626.00	76 665.35–84 004.26	2–4	M1	1.64−03	6.15−04	D+	1
			13 622.28	13 626.00	76 665.35–84 004.26	2–4	E2	8.98−03	1.51+01	B	1
			14 008.44	14 012.27	76 665.35–83 801.95	2–2	M1	6.05−03	1.23−03	D+	1
10		$^2P - ^2P$									
				202.31 cm^{-1}	83 801.95–84 004.26	2–4	M1	7.07−05	1.27+00	C+	1

TABLE 10. Transition probabilities of forbidden lines for Si II (references for this table are as follows: 1=Froese Fischer,[35] 2=Dufton *et al.*,[26] 3=Garstang,[39] and 4=Warner[112])—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
11	$3s3p^2-3s^2(^1S)3d$	$^4P-^2D$									
			2 736.611	2 737.421	42 824.29–79 355.02	2–6	E2	1.30+00	1.07+00	D+	1
			2 737.850	2 738.660	42 824.29–79 338.50	2–4	E2	1.28+00	7.04−01	D+	1
12	$4s-3d$	$^2S-^2D$									
			7 215.86	7 217.85	65 500.47–79 335.02	2–6	E2	6.20+00	6.51+02	B+	1
			7 224.47	7 226.46	65 500.47–79 338.50	2–4	E2	6.18+00	4.35+02	B+	1
13	$3d-3d$	$^2D-^2D$									
				16.52 cm^{-1}	79 338.50–79 355.02	4–6	M1	3.99−06	1.97+02	B	1
14	$4p-4p$	$^2P^\circ-^2P^\circ$									
				59.98 cm^{-1}	81 191.34–81 251.32	2–4	M1	1.85−06	1.27+00	C+	1

^{a}Wavelength (Å) are always given unless cm^{-1} is indicted.

4.3. Si III

Magnesium isoelectronic sequence
Ground state: $1s^22s^22p^63s^2\ ^1S_0$
Ionization energy: 33.493 00 eV (270 139.3 cm^{-1})

4.3.1. Allowed Transitions for Si III

Only OP (Ref. 13) results were available for energy levels above the $3s4d$. Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. Safronova *et al.*[90] used relativistic second-order many body perturbation theory (MBPT) calculations. Almaraz *et al.*[3] and Hibbert[47] applied the CIV3 code. Nussbaumer[82] used a multiconfiguration approach with an adjustable Thomas-Fermi potential. Livingston *et al.*[58,59] and Berry *et al.*[8] performed beam-foil lifetime measurements. Hibbert[47] applied his CIV3 code. Kwong *et al.*[56] measured the lifetime of a metastable energy level in a radio-frequency ion trap.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[3,8,13,47,56,58,59,82,90,101] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately, the former divided into two energy groups above and below 150 000 cm^{-1}. OP lines constituted a fourth group. We then isoelectronically averaged the logarithmic quality factors observed for Mg-like lines of Mg I, Al II, and Si III using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying intercombination lines and those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines.

The energy levels labeled $3p^2\ ^1D_2$ and $3s3d\ ^1D_2$ each also have a substantial character of the other, and as a result associated transition rates generally fell outside the cluster of RSDM's for the other transitions.

4.3.2. References for Allowed Transitions for Si III

[3]M. A. Almaraz, A. Hibbert, C. Lavin, I. Martin, and K. L. Bell, J. Phys. B **33**, 3277 (2000).
[8]H. G. Berry, J. Bromander, L. J. Curtis, and R. Buchta, Phys. Scr. **3**, 125 (1971).
[12]K. Butler, C. Mendoza, and C. J. Zeippen, J. Phys. B **26**, 4409 (1993).
[13]K. Butler, C. Mendoza, and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Butler *et al.* (Ref. 12).
[47]A. Hibbert, Phys. Scr. **39**, 574 (1989).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[56]H. S. Kwong, B. C. Johnson, P. L. Smith, and W. H. Parkinson, Phys. Rev. A **27**, 3040 (1983).
[58]A. E. Livingston, P. D. Dumont, Y. Baudinet-Robinet, H. P. Garnir, E. Biémont, and N. Grevesse, *Beam-Foil Spectroscopy*, edited by I. A. Sellin and D. J. Pegg (Plenum, New York, 1976), Vol. 1, pp. 339–346.
[59]A. E. Livingston, J. A. Kernahan, D. J. G. Irwin, and E. H. Pinnington, J. Phys. B **9**, 389 (1976).
[82]V. H. Nussbaumer, Astron. Astrophys. **155**, 205 (1986).
[90]U. I. Safronova, W. R. Johnson, and H. G. Berry, Phys. Rev. A **61**, 052503 (2000). A complete list of data was obtained by private communication from Safronova.
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).

TABLE 11. Wavelength finding list for allowed lines of Si III

Wavelength (vac) (Å)	Mult. No.
466.131	3
520.799	19
520.800	19
520.910	19

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (vac) (Å)	Mult. No.
521.149	19
521.510	19
521.861	19
533.226	18
533.530	18
533.592	18
534.189	18
534.276	18
534.339	18
565.296	16
565.707	16
566.546	16
566.613	2
624.997	20
651.672	13
652.219	13
653.334	13
671.713	11
672.292	11
672.294	11
673.471	11
673.477	11
673.479	11
678.058	17
690.700	15
800.066	14
822.004	37
823.409	12
879.225	24
883.397	23
895.946	62
895.949	62
895.951	62
895.966	62
895.968	62
895.987	62
936.056	60
936.058	60
936.060	60
936.077	60
936.079	60
936.100	6
939.097	33
967.944	32
993.519	9
994.790	9
997.386	9
1 005.349	58
1 005.353	58
1 005.357	58
1 005.374	58
1 005.378	58
1 005.403	58
1 031.158	34
1 032.855	34
1 033.915	34
1 034.282	34
1 035.647	34
1 037.055	34
1 083.216	29
1 092.915	56
1 092.940	56
1 092.969	56
1 093.105	56
1 093.133	56
1 093.293	56
1 108.358	7
1 109.940	7
1 109.970	7
1 113.174	7
1 113.204	7
1 113.230	7
1 122.455	63
1 140.546	26
1 141.579	26
1 142.285	26
1 144.309	26
1 144.959	26
1 145.122	52
1 145.149	52
1 145.161	52
1 145.177	52
1 145.189	52
1 145.220	52
1 145.669	26
1 154.998	25
1 155.959	25
1 156.782	25
1 158.101	25
1 160.252	25
1 161.579	25
1 172.523	30
1 174.350	30
1 174.361	30
1 174.435	30
1 177.938	30
1 178.012	30
1 182.016	61
1 192.228	54
1 192.258	54
1 192.293	54
1 196.436	54
1 196.470	54
1 198.297	54
1 206.500	1
1 206.555	8
1 207.517	22
1 210.455	28
1 212.020	27
1 212.247	94
1 235.431	36
1 277.473	97

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (vac) (Å)	Mult. No.
1 280.352	59
1 294.545	4
1 296.726	4
1 298.892	4
1 298.946	4
1 300.703	69
1 301.149	4
1 303.323	4
1 312.591	10
1 327.703	74
1 328.806	35
1 341.458	444
1 341.496	44
1 342.351	44
1 342.389	44
1 342.432	44
1 343.365	44
1 343.409	44
1 348.629	96
1 353.849	95
1 354.265	95
1 354.456	95
1 355.291	95
1 355.608	95
1 355.799	95
1 359.751	91
1 360.364	91
1 361.596	72
1 361.719	91
1 362.361	43
1 363.459	43
1 363.504	43
1 365.253	43
1 365.292	43
1 365.337	43
1 367.047	72
1 369.432	72
1 371.649	90
1 373.027	90
1 375.068	90
1 375.694	90
1 377.080	90
1 377.248	90
1 387.948	50
1 387.979	50
1 387.994	50
1 388.011	50
1 388.052	50
1 388.098	50
1 399.615	93
1 417.237	6
1 424.784	46
1 433.685	89
1 435.772	45
1 436.160	73
1 436.721	89

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (vac) (Å)	Mult. No.
1 438.232	89
1 438.706	89
1 439.391	89
1 440.908	89
1 457.245	57
1 494.431	87
1 495.171	87
1 496.808	87
1 500.241	47
1 501.150	47
1 501.197	47
1 501.780	47
1 501.827	47
1 501.881	47
1 506.067	92
1 513.987	88
1 537.698	85
1 537.960	85
1 538.481	85
1 538.974	85
1 539.693	85
1 540.215	85
1 560.974	86
1 587.977	68
1 588.947	55
1 589.531	68
1 592.022	68
1 622.892	70
1 622.913	70
1 623.055	70
1 636.984	31
1 673.323	53
1 778.715	42
1 783.079	42
1 783.146	42
1 786.371	42
1 786.438	42
1 786.515	42
1 796.57	134
1 799.91	134
1 803.018	71
1 804.349	134
1 804.38	134
1 838.466	83
1 839.585	83
1 842.064	83
1 842.548	21
1 856.070	84
1 888.242	157
1 888.254	157
1 888.262	157
1 888.283	157
1 888.297	157
1 888.305	157
1 928.596	81
1 929.716	81

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (vac) (Å)	Mult. No.
1 929.828	81
1 932.275	81
1 932.444	81
1 932.556	81
1 953.968	82
1 964.862	131
1 968.839	131
1 968.859	131
1 974.145	131
1 974.187	131
1 974.208	131
1 979.233	158
1 992.112	126
1 992.796	126
1 993.21	126
1 996.221	126
1 996.908	126
Wavelength (air) (Å)	**Mult. No.**
2 001.072	126
2 009.14	171
2 009.899	132
2 049.903	51
2 075.028	155
2 075.042	155
2 075.052	155
2 075.082	155
2 075.094	155
2 075.104	155
2 165.537	114
2 170.396	114
2 171.559	156
2 175.933	114
2 176.901	114
2 180.839	114
2 182.066	114
2 191.939	127
2 218.90	172
2 220.27	172
2 222.031	169
2 222.220	172
2 222.27	172
2 249.199	191
2 295.477	112
2 300.927	112
2 300.937	112
2 306.331	153
2 306.360	153
2 306.424	153
2 306.860	153
2 306.889	153
2 307.107	153
2 308.188	112
2 308.238	112
2 308.249	112
2 319.079	167

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
2 329.945	116
2 415.222	104
2 416.994	104
2 418.281	104
2 421.268	104
2 423.049	104
2 429.365	104
2 449.449	151
2 449.458	151
2 449.482	151
2 449.505	151
2 449.530	151
2 449.554	151
2 465.912	154
2 481.508	170
2 483.197	170
2 483.229	170
2 485.623	170
2 485.689	170
2 485.722	170
2 528.471	152
2 541.818	5
2 559.196	49
2 640.788	115
2 655.520	165
2 768.929	195
2 798.593	163
2 811.702	168
2 813.912	168
2 814.433	105
2 817.113	168
2 829.251	168
2 830.017	197
2 831.489	168
2 839.628	168
2 874.627	198
2 875.072	198
2 875.138	198
2 928.956	196
2 930.436	196
2 930.899	196
2 931.33	196
2 931.79	196
2 931.86	196
2 959.153	194
2 959.624	194
2 959.695	194
2 980.525	39
2 980.739	39
2 992.851	190
3 013.098	193
3 013.586	193
3 032.691	193
3 033.186	193
3 033.261	193
3 034.731	166
3 037.288	166

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
3 037.306	166
3 040.754	193
3 040.930	166
3 041.018	166
3 041.036	166
3 043.769	149
3 043.820	149
3 043.931	149
3 045.046	149
3 045.097	149
3 046.283	149
3 068.229	119
3 077.528	119
3 083.373	119
3 086.236	38
3 086.436	38
3 086.666	38
3 093.424	38
3 093.654	38
3 096.826	38
3 126.263	118
3 135.918	118
3 147.361	118
3 157.147	118
3 161.610	140
3 163.298	118
3 165.347	118
3 185.121	80
3 186.018	103
3 196.501	103
3 196.546	103
3 210.557	103
3 210.628	103
3 210.673	103
3 216.249	139
3 230.496	79
3 233.954	79
3 241.626	79
3 247.585	164
3 247.686	121
3 250.534	164
3 250.790	164
3 251.07	244
3 251.39	244
3 251.87	244
3 253.118	164
3 253.410	121
3 253.745	164
3 254.807	164
3 258.667	121
3 270.461	121
3 276.265	121
3 279.261	121
3 294.131	245
3 301.678	225
3 321.600	192
3 326.072	150

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
3 346.119	192
3 346.722	192
3 360.643	192
3 361.251	192
3 361.343	192
3 439.260	76
3 440.38	211
3 447.938	76
3 459.655	117
3 486.825	145
3 486.927	145
3 486.97	145
3 487.04	145
3 487.073	145
3 487.19	145
3 498.273	117
3 502.031	117
3 514.151	117
3 521.773	117
3 525.939	189
3 536.796	179
3 538.521	179
3 540.191	179
3 549.420	99
3 549.988	99
3 550.369	99
3 560.617	174
3 562.491	99
3 563.064	99
3 569.672	187
3 580.047	99
3 590.465	78
3 616.042	120
3 622.538	120
3 624.01	213
3 624.13	213
3 624.40	213
3 637.936	120
3 638.524	242
3 638.894	242
3 638.924	242
3 639.441	242
3 639.491	242
3 639.522	242
3 645.119	120
3 651.719	120
3 655.111	120
3 662.362	120
3 676.731	243
3 681.402	188
3 682.132	188
3 682.242	188
3 770.585	180
3 791.439	75
3 796.124	75
3 796.203	75
3 806.526	75

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
3 806.700	75
3 806.779	75
3 835.180	229
3 842.462	185
3 851.751	110
3 866.417	110
3 875.646	110
3 924.468	161
3 947.494	186
3 952.230	186
3 953.071	186
3 955.671	186
3 956.513	186
3 956.640	186
3 963.585	147
3 963.671	147
3 963.860	147
3 981.178	77
3 981.265	77
4 010.148	147
4 010.236	147
4 030.750	147
4 065.377	257
4 102.423	148
4 111.17	212
4 111.33	212
4 111.512	212
4 111.67	212
4 115.487	208
4 144.014	106
4 149.234	106
4 153.026	106
4 166.258	106
4 170.081	106
4 180.819	106
4 211.15	210
4 211.316	210
4 211.678	210
4 211.8	210
4 211.9	210
4 212.1	210
4 278.484	228
4 301.944	228
4 325.888	65
4 341.400	125
4 356.851	228
4 365.869	107
4 370.068	107
4 370.412	107
4 376.218	107
4 377.623	159
4 379.903	107
4 380.437	107
4 385.735	107
4 403.830	241
4 405.31	226
4 405.352	240

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
4 405.895	240
4 405.938	240
4 406.717	240
4 406.771	240
4 406.814	240
4 428.145	226
4 430.19	226
4 461.229	205
4 468.447	222
4 482.874	226
4 486.342	226
4 488.44	226
4 494.043	222
4 552.622	64
4 553.997	222
4 557.273	227
4 565.47	135
4 567.840	64
4 574.757	64
4 619.646	221
4 638.278	221
4 665.862	221
4 683.022	221
4 683.794	221
4 716.654	146
4 730.521	221
4 800.427	178
4 813.333	162
4 819.712	162
4 819.814	162
4 828.950	162
4 829.111	162
4 829.214	162
4 842.623	177
4 905.616	264
4 912.310	177
4 943.260	177
5 104.0	265
5 107.0	265
5 107.5	265
5 109.666	265
5 110.6	265
5 111.1	265
5 113.76	209
5 113.866	209
5 114.005	209
5 114.117	209
5 114.400	209
5 114.538	209
5 133.685	251
5 133.759	251
5 133.801	251
5 133.817	251
5 133.875	251
5 133.983	251
5 197.236	224
5 302.60	207

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
5 302.855	207
5 303.429	207
5 307.45	207
5 307.709	207
5 310.38	207
5 313.244	133
5 451.455	220
5 451.960	220
5 473.042	220
5 490.111	220
5 539.926	220
5 579.851	220
5 596.886	238
5 597.832	238
5 599.246	238
5 600.005	238
5 600.953	238
5 601.461	238
5 690.2	274
5 694.05	160
5 695.51	160
5 696.49	160
5 697.4	274
5 703.12	160
5 704.59	160
5 707.2	274
5 716.29	160
5 724.61	275
5 739.73	67
5 810.19	239
5 898.79	203
6 152.56	261
6 169.83	237
6 173.61	66
6 291.05	138
6 291.52	138
6 310.51	138
6 310.73	138
6 311.21	138
6 314.46	183
6 332.16	138
6 332.38	138
6 473.8	290
6 473.9	290
6 474.1	290
6 512.38	263
6 518.04	263
6 521.49	236
6 522.61	236
6 522.77	236
6 523.90	263
6 524.34	236
6 524.53	236
6 524.69	236
6 537.36	128
6 654.43	201
6 662.7	288

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
6 662.9	288
6 663.1	288
6 746.3	206
6 746.70	206
6 747.63	206
6 776.63	137
6 805.03	137
6 805.28	137
6 807.58	129
6 810.59	262
6 810.8	262
6 812.20	262
6 817.0	262
6 818.60	262
6 823.4	262
6 831.55	184
6 834.07	184
6 834.44	184
6 848.2	206
6 848.63	206
6 850.94	137
6 851.20	137
6 851.76	137
6 909.3	206
6 962.94	260
6 969.41	260
6 976.11	260
6 988.32	273
6 993.65	272
7 004.31	272
7 004.43	272
7 019.05	272
7 019.24	272
7 019.35	272
7 047.48	223
7 086.63	304
7 151.1	289
7 189.07	130
7 211.83	217
7 224.38	219
7 267.10	217
7 276.21	259
7 278.74	217
7 283.51	259
7 369.07	250
7 379.27	256
7 384.24	259
7 391.52	259
7 399.06	259
7 408.47	217
7 425.17	217
7 436.62	259
7 437.32	217
7 442.33	102
7 461.90	143
7 462.35	143
7 462.65	143

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
7 465.35	143
7 465.65	143
7 466.32	143
7 497.28	102
7 532.06	102
7 612.36	181
7 634.7	301
7 710.7	301
7 844.2	301
7 984.09	122
8 190.5	204
8 190.95	204
8 191.08	204
8 191.68	204
8 192.32	204
8 192.45	204
8 211.94	286
8 212.0	286
8 212.3	286
8 212.6	286
8 255.04	249
8 255.33	249
8 255.34	249
8 255.60	249
8 255.63	249
8 255.81	249
8 262.57	182
8 265.65	182
8 267.71	182
8 269.33	182
8 271.39	182
8 271.95	182
8 273.15	294
8 273.28	294
8 273.41	294
8 273.54	294
8 273.56	294
8 273.93	294
8 341.96	124
8 436.49	218
8 620.85	284
8 621.14	284
8 621.46	284
8 623	284
8 624	284
8 625	284
9 173.07	100
9 173.27	285
9 176.87	100
9 179.42	100
9 260.56	100
9 263.15	100
9 316.30	100
9 323.89	41
9 329.2	287
9 392.03	258
9 578.07	258

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
9 590.74	258
9 685.52	258
9 698.04	258
9 711.03	258
9 799.91	144
9 826.11	173
9 885.93	173
9 919.90	302
9 950.6	202
9 951.47	202
9 953.49	202
9 980.7	202
9 981.63	202
9 983.12	173
10 002.7	202
10 103.06	310
10 180.41	299
10 184.19	271
10 308.11	101
10 311.32	101
10 315.80	299
10 316.05	299
10 361.14	101
10 365.99	101
10 369.24	101
10 414.65	101
10 419.54	101
10 445.08	40
10 509.94	270
10 525.54	40
10 534.06	270
10 534.30	270
10 555.59	299
10 556.01	299
10 556.27	299
10 567.54	270
10 567.85	270
10 568.10	270
11 018	311
11 022	311
11 024	311
11 029.43	311
11 034	311
11 036	311
11 335.56	175
11 336.60	175
11 343.52	175
11 441.3	315
11 454.9	315
11 477.6	315
11 764.73	255
12 065.25	231
12 374.2	323
12 374.5	323
12 375.0	323
12 496.24	141
12 557.72	141

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
12 559.61	141
12 601.06	141
12 601.93	141
12 603.84	141
12 667.67	293
12 901.63	230
12 933.02	254
12 955.36	254
12 978.54	254
13 083.5	321
13 083.9	321
13 084.4	321
13 361.3	322
13 496.63	282
13 497.82	282
13 498.07	282
13 498.60	282
13 498.78	282
13 499.57	282
13 581.42	234
13 586.99	234
13 595.32	234
13 606.89	234
13 612.48	234
13 631.62	234
13 692.41	292
13 692.78	292
13 692.93	292
13 693.31	292
13 693.35	292
13 694.57	292
14 159.75	113
14 417.31	123
14 446.86	300
14 771.27	281
14 841.24	235
14 898.48	280
14 899.35	280
14 900.30	280
14 936.86	280
14 937.73	280
14 960.1	280
15 015.24	176
15 177.59	111
16 223.72	252
16 803.71	283
17 024.02	253
17 072.19	253
17 097.50	253
17 112.46	253
17 136.57	253
17 177.14	253
17 341.08	306
17 895.0	246
18 298	313
18 332.3	313
18 333.1	313

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
18 389.2	313
18 390.5	313
18 391.2	313
19 465.7	108
19 556.8	248
19 845.5	297
19 845.8	326

Wavenumber (cm^{-1})	Mult. No.
4 985.79	308
4 908.65	297
4 908.43	297
4 837.47	309
4 832.83	309
4 822.88	309
4 818.99	247
4 810.77	319
4 810.3	319
4 810.1	319
4 809.8	319
4 805.21	247
4 791.88	247
4 775.68	200
4 740.32	325
4 739.94	325
4 739.79	325
4 739.71	325
4 739.41	325
4 738.71	325
4 688.40	297
4 688.12	297
4 687.90	297
4 681.03	268
4 671.08	268
4 666.44	268
4 659.03	268
4 649.08	268
4 628.68	268
4 598.68	109
4 400.53	318
4 321.70	269
4 233.00	317
4 232.78	317
4 232.50	317
4 230	317
4 229	317
4 228	317
4 218.87	317
4 218.4	320
4 177.83	307
4 170.54	307
4 164.8	307
4 160.59	307
4 160.1	307
4 150.2	307
4 066.89	279

TABLE 11. Wavelength finding list for allowed lines of Si III—Continued

Wavenumber (cm^{-1})	Mult. No.
3 844.14	305
3 839.50	305
3 829.55	305
3 829	328
3 827	328
3 823.9	328
3 431.36	136
3 430.81	136
3 429.61	136
3 428.8	334
3 318.73	267
3 296.6	332
3 296.3	332
3 296.0	332
3 246.62	329
3 246.6	335
3 245.6	335
3 223.19	215
3 186.5	232
3 184.41	232
3 183.5	232
3 181.94	232
3 179.90	232
3 179.0	232
3 095.77	215
3 063.92	303
2 993.1	331
2 858.6	330
2 858.3	330
2 858.0	330
2 802.91	215
2 798.21	276
2 788.26	276
2 783.62	276
2 676.33	98
2 675.70	278
2 675.31	278
2 675.13	98
2 674.88	278
2 674.58	98
2 572.99	98
2 571.79	98
2 455.17	278
2 454.78	278
2 435.38	98
2 430.83	298
2 333.52	277
2 326.05	278
2 148.60	266
2 138.76	199
2 126.99	266
2 126.60	266
2 097.07	266
2 096.64	266
2 096.25	266
1 986.17	295
1 664.71	216
1 394.23	291
1 034.66	233
681.19	214
681.0	312
670.80	312
670.58	312
653.84	312
653.56	312
653.34	312
556.79	214
555	327
553.77	214
553	327
550.16	327
549.78	327
549.55	327
548.28	324
497.27	142
415.8	336
270.8	333
270.33	316
268.44	214
263.93	214
260.91	214
206.38	296
196.43	296
191.79	296
164.9	337

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])

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
1	$3s^2-3s3p$	$^1S-^1P^\circ$		1 206.500	0.00–82 884.41	1–3	2.55+09	1.67+00	6.63+00	0.223	A	2,3,4,5,6,8
2	$3s^2-3s4p$	$^1S-^1S^\circ$		566.613	0.00–176 487.19	1–3	1.21+08	1.74−02	3.25−02	−1.759	D+	2,4,5
3	$3s^2-3s5p$	$^1S-^1P^\circ$		466.131	0.00–214 532.17	1–3	1.46+08	1.43−02	2.19−02	−1.845	D	4
4	$3s3p-3p^2$	$^3P^\circ-^3P$		*1 298.93*	*52 984.4–129 970.8*	9–9	2.12+09	5.35−01	2.06+01	0.683	B+	2,3

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				1 298.946	53 115.01–130 100.52	5–5	1.59+09	4.01−01	8.58+00	0.302	A	2,3
				1 298.892	52 853.28–129 841.97	3–3	5.29+08	1.34−01	1.72+00	−0.396	B+	2,3
				1 303.323	53 115.01–129 841.97	5–3	8.71+08	1.33−01	2.86+00	−0.177	B+	2,3
				1 301.149	52 853.28–129 708.45	3–1	2.11+09	1.78−01	2.29+00	−0.272	B+	2,3
				1 294.545	52 853.28–130 100.52	3–5	5.35+08	2.24−01	2.87+00	−0.173	B+	2,3
				1 296.726	52 724.69–129 841.97	1–3	7.10+08	5.37−01	2.29+00	−0.270	B+	2,3
5		$^1P^\circ-^1D$	2 541.818	2 542.581	82 884.41–122 214.52	3–5	3.22+07	5.20−02	1.30+00	−0.807	B	2,5,8
6		$^1P^\circ-^1S$		1 417.237	82 884.41–153 444.23	3–1	2.17+09	2.18−01	3.05+00	−0.184	B	2,3,5,7
7	$3s3p-3s3d$	$^3P^\circ-^3D$		*1 111.59*	*52 984.4–142 945.3*	9–15	2.75+09	8.48−01	2.79+01	0.883	B+	2,3
				1 113.230	53 115.01–142 943.74	5–7	2.74+09	7.12−01	1.31+01	0.551	A	2,3
				1 109.970	52 853.28–142 945.84	3–5	2.07+09	6.36−01	6.97+00	0.281	B+	2,3
				1 108.358	52 724.69–142 948.25	1–3	1.54+09	8.49−01	3.10+00	−0.071	B+	2,3
				1 113.204	53 115.01–142 945.84	5–5	6.85+08	1.27−01	2.33+00	−0.197	B+	2,3
				1 109.940	52 853.28–142 948.25	3–3	1.15+09	2.12−01	2.33+00	−0.197	B+	2,3
				1 113.174	53 115.01–142 948.25	5–3	7.63+07	8.50−03	1.56+01	−1.372	B	2,3
8		$^1P^\circ-^1D$		1 206.555	82 884.41–165 765.00	3–5	417+09	1.52+00	1.81+01	0.659	B	2,3,5
9	$3s3p-3s4s$	$^3P^\circ-^3S$		*996.09*	*52 984.4*–153 377.05	9–3	2.42+09	1.20−01	3.54+00	0.033	C+	2
				997.386	53 115.01–153 377.05	5–3	1.35+09	1.21−01	1.98+00	−0.218	C+	2
				994.790	52 853.28–153 377.05	3–3	8.05+08	1.19−01	1.17+00	−0.447	C+	2
				993.519	52 724.69–153 377.05	1–3	2.68+08	1.19−01	3.89−01	−0.924	C	2
10		$^1P^\circ-^1S$		1 312.591	82 884.41–159 069.61	3–1	666+08	5.74−02	7.43−01	−0.764	D+	2,5
11	$3s3p-3s4d$	$^3P^\circ-^3D$		*672.88*	*52 984.4–201 598.7*	9–15	3.49+07	3.94−03	7.86−02	−1.450	D	2
				673.471	53 115.01–201 599.48	5–7	3.40+07	3.24−03	3.59−02	−1.790	D	2
				672.292	52 853.28–201 598.28	3–5	2.68+07	3.03−03	2.01−02	−2.041	D	2
				671.713	52 724.69–201 597.73	1–3	2.03+07	4.13−03	9.12−03	−2.384	D	2
				673.477	53 115.01–201 598.28	5–5	8.44+06	5.74−04	6.36−03	−2.542	E+	2
				672.294	52 853.28–201 597.73	3–3	1.48+07	1.00−03	6.67−03	−2.523	E+	2
				673.479	53 115.01–201 597.73	5–3	9.33+05	3.81−05	4.22−04	−3.720	E	2
12		$^1P^\circ-^1D$		823.409	82 884.41–204 330.79	3–5	5.85+08	9.91−02	8.06−01	−0.527	C	2,5
13	$3s3p-3s5s$	$^3P^\circ-^3S$		*652.78*	*52 984.4–206 176.08*	9–3	7.96+08	1.69−02	3.28−01	−0.818	D+	1
				653.334	53 115.01–206 176.08	5–3	4.40+08	1.69−02	1.82−01	−1.073	D+	LS
				652.219	52 853.28–206 176.08	3–3	2.67+08	1.70−02	1.10−01	−1.292	D+	LS
				651.672	52 724.69–206 176.08	1–3	8.90+07	1.70−02	3.65−02	−1.770	D	LS
14		$^1P^\circ-^1S$		800.066	82 884.41–207 874.09	3–1	4.13+08	1.32−02	1.04−01	−1.402	D+	1
15	$3s3p-3s5d$	$^1P^\circ-^1D$		690.700	82 884.41–227 665.09	3–5	6.97+07	8.31−03	5.67−02	−1.603	D	1
16	$3s3p-3s6s$	$^3P^\circ-^3S$		*566.13*	*52 984.4*–229 623.19	9–3	3.99+08	6.39−03	1.07−01	−1.240	D	1
				566.546	53 115.01–229 623.19	5–3	2.21+08	6.39−03	5.96−02	−1.496	D	LS
				565.707	52 853.28–229 623.19	3–3	1.33+08	6.40−03	3.58−02	−1.717	D	LS
				565.296	85 724.69–229 623.19	1–3	4.45+07	6.40−03	1.19−02	−2.194	E+	LS
17		$^1P^\circ-^1S$		678.058	82 884.41–230 364.46	3–1	1.98+08	4.55−03	3.05−02	−1.865	D	1
18	$3s3p-3s6d$	$^3P^\circ-^3D$		*533.88*	*52 984.4–240 294.0*	9–15	2.99+07	2.13−03	3.37−02	−1.717	E+	1
				534.189	53 115.01–240 314.63	5–7	2.99+07	1.79−03	1.57−02	−2.048	D	LS
				533.530	52 853.28–240 284.28	3–5	2.25+07	1.60−03	8.43−03	−2.319	E+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				533.226	54 724.69–240 262.28	1–3	1.67+07	2.13−03	3.74−03	−2.672	E+	LS
				534.276	53 115.01–240 284.28	5–5	7.45+06	3.19−04	2.81−03	−2.797	E+	LS
				533.592	52 853.28–240 262.28	3–3	1.25+07	5.33−04	2.81−03	−2.796	E+	LS
				534.339	53 115.01–240 262.28	5–3	8.29+05	2.13−05	1.87−04	−3.973	E	LS
19	$3s3p-3p4p$	$^3P^\circ-^3D$		*520.95*	*52 984.4–244 943.1*	9–15	1.26+08	8.52−03	1.31−01	−1.115	D	1
				520.910	53 115.01–245 086.58	5–7	1.26+08	7.15−03	6.13−02	−1.447	D	LS
				520.799	52 853.28–244 866.05	3–5	9.43+07	6.39−03	3.29−02	−1.717	D	LS
				520.800	52 724.69–244 736.93	1–3	6.98+07	8.52−03	1.46−02	2.070−	D	LS
				521.510	53 115.01–244 866.05	5–5	3.14+07	1.28−03	1.10−02	−2.194	E+	LS
				521.149	52 853.28–244 736.93	3–3	5.23+07	2.13−03	1.10−02	−2.194	E+	LS
				521.861	53 115.01–244 736.93	5–3	3.47+06	8.50−05	7.30−04	−3.372	E	LS
20		$^1P^\circ-^1P$		624.997	82 884.41–242 885.30	3–3	1.34+08	7.83−03	4.83−02	−1.629	D	1
21	$3p^2-3s4p$	$^1D-^1P^\circ$		1 842.548	122 214.52–176 487.19	5–3	2.99+08	9.12−02	2.77+00	−0.341	B	2,5
22	$3p^2-3p3d$	$^1D-^1D^\circ$		1 207.517	122 214.52–205 029.09	5–5	2.43+09	5.30−01	1.05+01	0.423	B+	2,3,5
23		$^1D-^1F^\circ$		883.397	122 214.52–235 413.93	5–7	5.79+10	9.49+00	1.38+02	1.676	C+	3
24		$^1D-^1P^\circ$		879.225	122 214.52–235 951.09	5–3	2.25+08	1.56−02	2.26−01	−1.108	D+	3
25		$^3P-^3P^\circ$		*1 159.15*	*129 970.8–216 240.8*	9–9	2.21+09	4.46−01	1.53+01	0.604	B	3
				1 161.579	130 100.52–216 190.24	5–5	1.42+09	2.88−01	5.51+00	0.158	B	3
				1 156.782	129 841.97–216 288.69	3–3	4.22+08	8.46−02	9.67−01	−0.596	C+	3
				1 160.252	130 100.52–216 288.69	5–3	8.65+08	1.05−01	2.00+00	−0.280	B	3
				1 155.959	129 841.97–216 850.26	3–1	2.22+09	1.48−01	1.69+00	−0.353	C+	3
				1 158.101	129 841.97–216 190.24	3–5	7.88+08	2.64−01	3.02+00	−0.101	B	3
				1 154.998	129 708.45–216 288.69	1–3	9.34+08	5.60−01	2.13+00	−0.252	B	3
26		$^3P-^3D^\circ$		*1 143.10*	*129 970.8–217 452.2*	9–15	3.86+09	1.26+00	4.27+01	1.055	B+	3
				1 144.309	130 100.52–217 489.49	5–7	3.86+09	1.06+00	2.00+01	0.724	B+	3
				1 141.579	129 841.97–217 439.92	3–5	2.67+09	8.68−01	9.79+00	0.416	B+	3
				1 140.546	129 708.45–217 385.77	1–3	1.96+09	1.15+00	4.31+00	0.061	B	3
				1 144.959	130 100.52–217 439.92	5–5	1.19+09	2.34−01	4.41+00	0.068	B	3
				1 142.285	129 841.97–217 385.77	3–3	1.75+09	3.42−01	3.86+00	0.011	B	3
				1 145.669	130 100.52–217 385.77	5–3	1.58+08	1.86−02	3.51−01	−1.032	C	3
27		$^1S-^1P^\circ$		1 212.020	153 444.23–235 951.09	1–3	2.18+09	1.44+00	5.74+00	0.158	B	3
28	$3p^2-3s4f$	$^1D-^1F^\circ$		1 210.455	122 214.52–204 828.6	5–7	1.60+09	4.91−01	9.78+00	0.390	B	2,5
29	$3p^2-3s5p$	$^1D-^1P^\circ$		1 083.216	122 214.52–214 532.17	5–3	3.65+08	3.85−02	6.86−01	−0.716	C	1
30		$^3P-^3P^\circ$		*1 176.18*	*129 970.8–214 991.8*	9–9	3.98+08	8.26−02	2.88+00	−0.129	C	1
				1 178.012	130 100.52–214 989.27	5–5	2.98+08	6.19−02	1.20+00	−0.509	C+	LS
				1 174.361	129 841.97–214 994.65	3–3	1.00+08	2.07−02	2.40−01	−1.207	C	LS
				1 177.938	130 100.52–214 994.65	5–3	1.65+08	2.06−02	3.99−01	−0.987	C	LS
				1 174.350	129 841.97–214 995.46	3–1	4.00+08	2.76−02	3.20−01	−1.082	C	LS
				1 174.435	129 841.97–214 989.27	3–5	1.00+08	3.45−02	4.00−01	−0.985	C	LS
				1 172.523	129 708.45–214 994.65	1–3	1.34+08	8.29−02	3.20−01	−1.081	C	LS
31		$^1S-^1P^\circ$		1 636.984	153 444.23–214 532.17	1–3	2.43+07	2.93−02	1.58−01	−1.533	D+	1
32	$3p^2-3s5f$	$^1D-^1F^\circ$		967.944	122 214.52–225 526.33	5–7	4.68+08	9.20−02	1.47+00	−0.337	C	8
33	$3p^2-3p4s$	$^1D-^1P^\circ$		939.097	122 214.52–228 699.75	5–3	1.11+09	8.77−02	1.36+00	−0.358	C	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
34		^3P–$^3P^\circ$		*1 034.07*	*129 97.8–226 676.0*	9–9	1.08+09	1.73−01	5.30+00	0.192	C	1
				1 033.915	130 100.52–226 820.28	5–5	8.11+08	1.30−01	2.21+00	−0.187	C+	LS
				1 034.282	129 841.97–226 527.42	3–3	2.69+08	4.32−02	4.41−01	−0.887	C	LS
				1 037.055	130 100.52–226 527.42	5–3	4.46+08	4.31−02	7.36−01	−0.667	C	LS
				1 035.647	129 841.97–226 400.00	3–1	1.07+09	5.75−02	5.88−01	−0.763	C	LS
				1 031.158	129 841.97–226 820.28	3–5	2.72+08	7.22−02	7.35−01	−0.664	C	LS
				1 032.855	129 708.45–226 527.42	1–3	3.61+08	1.73−01	5.88−01	−0.762	C	LS
35		^1S–$^1P^\circ$		1 328.806	153 444.23–228 699.75	1–3	2.38+08	1.89−01	8.27−01	−0.724	C	1
36	$3p^2$–$3s6p$	^1S–$^1P^\circ$		1 235.431	153 444.23–234 387.64	1–3	2.77+09	1.90+00	7.73+00	0.279	B	1
37	$3p^2$–$3s6f$	^1D–$^1F^\circ$		822.004	122 214.52–243 868.50	5–7	1.61+07	2.28−03	3.08−02	−1.943	D	1
38	$3s3d$–$3s4p$	^3D–$^3P^\circ$	*3 089.84*	*3 090.73*	*14 2945.3–175 300.1*	15–9	1.74+08	1.49−01	2.28+01	0.349	B	2
			3 086.236	3 087.132	142 943.74–175 336.26	7–5	1.46+08	1.49−01	1.06+01	0.018	B+	2
			3 093.424	3 094.322	142 945.84–175 263.10	5–3	1.30+08	1.12−01	5.69+00	−0.252	B	2
			3 096.826	3 097.725	142 948.25–175 230.01	3–1	1.73+08	8.30−02	2.54+00	−0.604	B	2
			3 086.436	3 087.333	142 945.84–175 336.26	5–5	2.61+07	3.73−02	1.90+00	−0.729	C+	2
			3 093.654	3 094.553	142 948.25–175 263.10	3–3	4.33+07	6.21−02	1.90+00	−0.730	C+	2
			3 086.666	3 087.562	142 948.25–175 336.26	3–5	1.74+06	4.15−03	1.26−01	−1.905	C	2
39		^3D–$^1P^\circ$										
			2 980.525	2 981.395	142 945.84–176 487.19	5–3	2.37+05	1.90−04	9.30−03	−3.022	D	2
			2 980.739	2 981.609	142 948.25–176 487.19	3–3	8.24+04	1.10−04	3.24−03	−3.481	E+	2
40		^1D–$^3P^\circ$										
			10 525.54	10 528.42	165 765.00–175 263.10	5–3	1.11+04	1.10−04	1.91−02	−3.260	D	2
			10 445.08	10 447.95	165 765.00–175 336.26	5–5	9.00−03	1.47−10	2.53−08	−9.134	E	2
41		^1D–$^1P^\circ$	9 323.89	9 326.45	165 765.00–176 487.19	5–3	8.34+06	6.53−02	1.00+01	−0.486	B+	2,5
42	$3s3d$–$3p3d$	^3D–$^3F^\circ$		*1 782.04*	*142 945.3–199 060.9*	15–21	3.85+07	2.56−02	2.26+00	−0.416	C	3
				1 778.715	142 943.74–199 164.10	7–9	3.76+07	2.30−02	9.41−01	−0.793	C+	3
				1 783.146	142 945.84–199 026.49	5–7	3.39+07	2.27−02	6.65−01	−0.945	C+	3
				1 786.515	142 948.25–198 923.15	3–5	3.28+07	2.61−02	4.61−01	−1.106	C	3
				1 783.079	142 943.74–199 026.49	7–7	4.81+06	2.29−03	9.43−02	−1.795	D+	3
				1 786.438	142 945.84–198 923.15	5–5	6.60+06	3.16−03	9.28−02	−1.801	D+	3
				1 786.371	142 943.74–198 923.15	7–5	2.08+05	7.09−05	2.92−03	−3.304	E+	3
43		^3D–$^3P^\circ$		*1 364.34*	*142 945.3–216 240.8*	15–9	1.05+09	1.76−01	1.19+01	0.422	B	3
				1 365.253	142 943.74–216 190.24	7–5	9.40+08	1.88−01	5.90+00	0.119	B	3
				1 363.459	142 945.84–216 288.69	5–3	8.53+08	1.43−01	3.20+00	−0.146	B	3
				1 362.361	142 948.25–216 350.26	3–1	1.06+09	9.81−02	1.32+00	−0.531	C+	3
				1 365.292	142 945.84–216 190.24	5–5	1.05+08	2.94−02	6.60−01	−0.833	C+	3
				1 363.504	142 948.25–216 288.69	3–3	2.02+08	5.64−02	7.60−01	−0.772	C+	3
				1 365.337	142 948.25–216 190.24	3–5	4.78+06	2.22−03	3.00−02	−2.177	D	3
44		^3D–$^3D^\circ$		*1 342.16*	*142 945.3–217 452.2*	15–15	1.01+09	2.72−01	1.80+01	0.611	B	3
				1 341.458	142 943.74–217 489.49	7–7	8.96+08	2.42−01	7.47+00	0.229	B	3
				1 342.389	142 945.84–217 439.92	5–5	7.54+08	2.04−01	4.50+00	0.009	B	3
				1 343.409	142 948.25–217 385.77	3–3	8.16+08	2.21−01	2.93+00	−0.178	B	3
				1 342.351	142 943.74–217 439.92	7–5	9.58+07	1.85−02	5.72−01	−0.888	C	3
				1 343.365	142 945.84–217 385.77	5–3	1.87+08	3.03−02	6.71−01	−0.820	C+	3
				1 341.496	142 945.84–217 489.49	5–7	1.11+08	4.20−02	9.27−01	−0.678	C+	3

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				1 342.432	142 948.25–217 439.92	3–5	1.56+08	7.03−02	9.32−01	−0.676	C+	3
45		$^1D-^1F^\circ$		1 435.772	165 765.00–235 413.93	5–7	4.22+08	1.83−01	4.32+00	−0.039	D+	3
46		$^1D-^1P^\circ$		1 424.784	165 765.00–235 951.09	5–3	5.07+08	9.25−02	2.17+00	−0.335	C	3
47	$3s3d-3s4f$	$^3D-^3F^\circ$		1 500.95	142 945.3–209 570.0	15–21	2.94+09	1.39+00	1.03+02	1.319		1
				1 500.241	142 943.74–209 599.70	7–9	2.10+09	9.11−01	3.15+01	0.805	B+	LS
				1 501.197	142 945.84–209 559.33	5–7	1.86+09	8.81−01	2.18+01	0.644	B+	LS
				1 501.881	142 948.25–209 531.40	3–5	1.76+09	9.91−01	1.47+01	0.473	B	LS
				1 501.150	142 943.74–209 559.33	7–7	2.75+09	9.30−01	3.22+01	0.814	B+	7
				1 501.827	142 945.84–209 531.40	5–5	3.25+08	1.10−01	2.72+00	−0.260	C+	LS
				1 501.780	142 943.74–209 531.40	7–5	9.19+06	2.22−03	7.68−02	−1.809	D+	LS
49		$^1D-^1F^\circ$	2 559.196	2 559.963	165 765.00–204 828.06	5–7	1.63+08	2.24−01	9.45+00	0.049	C+	2,5
50	$3s3d-3s5p$	$^3D-^3P^\circ$		*1 387.99*	*142 945.3–214 991.8*	15–9	8.37+07	1.45−02	9.95−01	−0.663	C	1
				1 388.011	142 943.74–214 989.27	7–5	7.03+07	1.45−02	4.64−01	−0.994	C	LS
				1 387.948	142 945.84–214 994.65	5–3	6.29+07	1.09−02	2.49−01	−1.264	C	LS
				1 387.979	142 948.25–214 995.46	3–1	8.37+07	8.06−03	1.10−01	−1.617	D+	LS
				1 388.052	142 945.84–214 989.27	5–5	1.26+07	3.63−03	8.29−02	−1.741	D+	LS
				1 387.994	142 948.25–214 994.65	3–3	2.09+07	6.05−03	8.29−02	−1.741	D+	LS
				1 388.098	142 948.25–214 989.27	3–5	8.37+05	4.03−04	5.52−03	−2.918	E+	LS
51		$^1D-^1P^\circ$	2 049.903	2 050.560	165 765.00–214 532.17	5–3	2.49+07	9.40−03	3.17−01	−1.328	D+	1
52	$3s3d-3s5f$	$^3D-^3F^\circ$		*1 145.16*	*142 945.3–230 269.3*	15–21	8.83+08	2.43−01	1.37+01	0.562	C+	1
				1 145.122	142 943.74–230 270.66	7–9	8.82+08	2.23−01	5.88+00	0.193	B	LS
				1 145.177	142 945.84–230 268.62	5–7	7.85+08	2.16−01	4.07+00	0.033	B	LS
				1 145.220	142 948.25–230 267.7	3–5	7.42+08	2.43−01	2.75+00	−0.137	C+	LS
				1 145.149	142 943.74–230 268.62	7–7	9.82+07	1.93−02	5.09−01	−0.869	C	LS
				1 145.189	142 945.84–230 267.7	5–5	1.38+08	2.71−02	5.11−01	−0.868	C	LS
				1 145.161	142 943.74–230 267.7	7–5	3.88+06	5.45−04	1.44−02	−2.419	D	LS
53		$^1D-^1F^\circ$		1 673.323	165 765.00–225 526.33	5–7	6.70+08	3.94−01	1.09+01	0.294	C+	1
54	$3s3d-3p4s$	$^3D-^3P^\circ$		*1 194.31*	*142 945.3–226 676.0*	15–9	3.03+07	3.89−03	2.29−01	−1.234	D	1
				1 192.228	142 943.74–226 820.28	7–5	2.56+07	3.89−03	1.07−01	−1.565	D+	LS
				1 196.436	142 945.84–226 527.42	5–3	2.26+07	2.91−03	5.73−02	−1.837	D	LS
				1 198.297	142 948.25–226 400.00	3–1	3.00+07	2.15−03	2.54−02	−2.190	D	LS
				1 192.258	142 945.84–226 820.28	5–5	4.57+06	9.73−04	1.91−02	−2.313	D	LS
				1 196.470	142 948.25–226 527.42	3–3	7.55+06	1.62−03	1.91−02	−2.313	D	LS
				1 192.293	142 948.25–226 820.28	3–5	3.04+05	1.08−04	1.27−03	−3.489	E	LS
55		$^1D-^1P^\circ$		1 588.947	165 765.00–228 699.75	5–3	2.02+08	4.59−02	1.20+00	−0.639	C	1
56	$3s3d-3s6p$	$^3D-^3P^\circ$		*1 093.02*	*142 945.3–234 434.6*	15–9	3.55+07	3.81−03	2.06−01	−1.243	D	1
				1 092.915	142 943.74–234 442.18	7–5	2.98+07	3.81−03	9.60−02	−1.574	D+	LS
				1 093.105	142 945.84–234 428.40	5–3	2.66+07	2.86−03	5.15−02	−1.845	D	LS
				1 093.293	142 948.25–234 415.07	3–1	3.55+07	2.12−03	2.29−02	−2.197	D	Ls
				1 092.940	142 945.84–234 442.18	5–5	5.32+06	9.53−04	1.71−02	−2.322	D	LS
				1 093.133	142 948.25–234 428.40	3–3	8.88+06	1.59−03	1.72−02	−2.321	D	LS
				1 092.969	142 948.25–234 442.18	3–5	3.55+05	1.06−04	1.14−03	−3.498	E	LS
57		$^1D-^1P^\circ$		1 457.245	165 765.00–234 387.64	5–3	1.07+09	2.04−01	4.89+00	0.009	C	1
58	$3s3d-3s6f$	$^3D-^3F^\circ$		*1 005.37*	*142 945.3–242 411.4*	15–21	4.52+08	9.59−02	4.76+00	0.158	C+	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				1 005.349	142 943.74–242 411.70	7–9	4.52+08	8.80−02	2.04+00	−0.210	C+	LS
				1 005.374	142 945.84–242 411.27	5–7	4.02+08	8.52−02	1.41+00	−0.371	C+	LS
				1 005.403	142 948.25–242 410.88	3–5	3.80+08	9.59−02	9.52−01	−0.541	C	LS
				1 005.353	142 943.74–242 411.27	7–7	5.04+07	7.63−03	1.77−01	−1.272	D+	LS
				1 005.378	142 945.84–242 410.88	5–5	7.06+07	1.07−02	1.77−01	−1.272	D+	LS
				1 005.357	142 943.74–242 410.88	7–5	1.99+06	2.15−04	4.98−03	−2.822	E+	LS
59		$^1D-^1F^\circ$		1 280.352	165 765.00–243 868.50	5–7	1.04+09	3.58−01	7.54+00	0.253	B	1
60	$3s3d-3s7f$	$^3D-^3F^\circ$		*936.07*	*142 945.3–249 774.8*	15–21	2.66+08	4.89−02	2.26+00	−0.135	D	1
				936.056	142 943.74–249 774.98	7–9	2.66+08	4.49−02	9.69−01	−0.503	D+	LS
				936.077	142 945.84–249 774.70	5–7	2.36+08	4.34−02	6.69−01	−0.664	D	LS
				936.100	142 948.25–249 774.48	3–5	2.23+08	4.89−02	4.52−01	−0.834	D	LS
				936.058	142 943.74–249 774.70	7–7	2.96+07	3.89−03	8.39−02	−1.565	E+	LS
				936.079	142 945.84–249 774.48	5–5	4.14+07	5.44−03	8.38−02	−1.565	E+	LS
				936.060	142 943.74–249 774.48	7–5	1.17+06	1.10−04	2.37−03	−3.114	E	LS
61		$^1D-^1F^\circ$		1 182.016	165 765.00–250 866.22	5–7	4.67+08	1.37−01	2.67+00	−0.164	D+	1
62	$3s3d-3s8f$	$^3D-^3F^\circ$		*895.96*	*142 945.3–254 557.4*	15–21	1.71+08	2.89−02	1.28+00	−0.363	D	1
				895.946	142 943.74–254 557.64	7–9	1.71+08	2.65−02	5.47−01	−0.732	D	LS
				895.966	142 945.84–254 557.26	5–7	1.53+08	2.57−02	3.79−01	−0.891	D	LS
				895.987	142 948.25–254 557.03	3–5	1.44+08	2.89−02	2.56−01	−1.062	D	LS
				895.949	142 943.74–254 557.26	7–7	1.91+07	2.30−03	4.75−02	−1.793	E	LS
				895.968	142 945.84–254 557.03	5–5	2.68+07	3.22−03	4.75−02	−1.793	E	LS
				895.951	142 943.74–254 557.03	7–5	7.55+05	6.49−05	1.34−03	−3.343	E	LS
63		$^1D-^1F^\circ$		1 122.455	165 765.00–254 855.42	5–7	2.49+08	6.59−02	1.22+00	−0.482	D+	1
64	$3s4s-3s4p$	$^3S-^3P^\circ$	*4 560.14*	*4 561.41*	153 377.05–*175 300.1*	3–9	1.25+08	1.17−00	5.28+01	0.545	B+	2
			4 552.622	4 553.898	153 377.05–175 336.26	3–5	1.26+08	6.53−01	2.94+01	0.292	B+	2
			4 567.840	4 569.121	153 377.05–175 263.10	3–3	1.25+08	3.90−01	1.76+01	0.068	B+	2
			4 574.757	4 576.039	153 377.05–175 230.01	3–1	1.24+08	1.30−01	5.88+00	−0.409	B	2
65		$^3S-^1P^\circ$										
			4 325.888	4 327.105	153 377.05–176 487.19	3–3	2.55+05	7.16−04	3.06−02	−2.668	D+	2
66		$^1S-^3P^\circ$										
			6 173.61	6 175.32	159 069.61–175 263.10	1–3	8.11+04	1.39−03	2.83−02	−2.857	D+	2
67		$^1S-^1P^\circ$	5 739.73	5 741.33	159 069.61–176 487.19	1–3	5.41+07	8.02−01	1.52+01	−0.096	B+	2,5
68	$3s4s-3p3d$	$^3S-^3P^\circ$		*1 590.74*	153 377.05–*216 240.08*	3–9	1.65+07	1.87−02	2.95−01	−1.251	D+	1
				1 592.022	153 377.05–216 190.24	3–5	1.64+07	1.04−02	1.64−01	−1.506	D+	LS
				1 589.531	153 377.05–216 288.69	3–3	1.65+07	6.26−03	9.83−02	−1.726	D+	LS
				1 587.977	153 377.05–216 350.26	3–1	1.66+07	2.09−03	3.28−02	−2.203	D	LS
69		$^1S-^1P^\circ$		1 300.703	159 069.61–235 951.09	1–3	1.43+08	1.09−01	4.67−01	−0.963	C	1
70	$3s4s-3s5p$	$^3S-^3P^\circ$		*1 622.99*	153 377.05–*214 991.8*	3–9	9.57+06	1.13−02	1.82−01	−1.470	D+	1
				1 623.055	153 377.05–214 989.27	3–5	9.57+06	6.30−03	1.01−01	−1.724	D+	LS
				1 622.913	153 377.05–214 994.65	3–3	9.57+06	3.78−03	6.06−02	−1.945	D	LS
				1 622.892	153 377.05–214 995.46	3–1	9.57+06	1.26−03	2.02−02	−2.423	D	LS
71		$^1S-^1P^\circ$		1 803.018	159 069.61–214 532.17	1–3	1.27+08	1.85−01	1.10+00	−0.733	C	1
72	$3s4s-3p4s$	$^3S-^3P^\circ$		*1 364.28*	153 377.05–*226 676.0*	3–9	1.05+09	8.82−01	1.19+01	0.423	B	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				1 361.596	153 377.05–226 820.28	3–5	1.06+09	4.91−01	6.60+00	0.168	B	LS
				1 367.047	153 377.05–226 527.42	3–3	1.05+09	2.93−01	3.96+00	−0.056	B	LS
				1 369.432	153 377.05–226 400.00	3–1	1.04+09	9.76−02	1.32+00	−0.533	C+	LS
73		$^1S-^1P^{\circ}$		1 436.160	159 069.61–228 699.75	1–3	7.79+08	7.23−01	3.42+00	−0.141	C+	1
74	$3s4s-3s6p$	$^1S-^1P^{\circ}$		1 327.703	159 069.61–234 387.64	1–3	9.19+07	7.29−02	3.19−01	−1.137	C	1
75	$3s4p-3s4d$	$^3P^{\circ}-^3D$	*3 801.40*	*3 802.48*	*175 300.1–201 598.7*	9–15	3.14+08	1.14−00	1.28+02	−1.011	B+	2
			3 806.526	3 807.606	175 336.26–201 599.48	5–7	3.14+08	9.55−01	5.98+01	0.679	B+	2
			3 796.124	3 797.202	175 263.10–201 598.28	3–5	2.36+08	8.51−01	3.19+01	0.407	B+	2
			3 791.439	3 792.516	175 230.01–201 597.73	1–3	1.76+08	1.14+00	1.42+01	0.057	B+	2
			3 806.700	3 807.780	175 336.26–201 598.28	5–5	7.84+07	1.70−01	1.07+01	−0.071	B+	2
			3 796.203	3 797.281	175 263.10–201 597.73	3–3	1.31+08	2.84−01	1.06+01	−0.070	B+	2
			3 806.779	3 807.860	175 336.26–201 597.73	5–3	8.70+06	1.14−02	7.12−01	−1.244	C+	2
76		$^3P^{\circ}-^1D$										
			3 439.260	3 440.246	175 263.10–204 330.79	3–5	6.54+05	1.93−03	6.57−02	−2.237	D+	2
			3 447.938	3 448.926	175 336.26–204 330.79	5–5	2.80+02	4.99−07	2.83−05	−5.603	E	2
77		$^1P^{\circ}-^3D$										
			3 981.178	3 982.304	176 487.19–201 598.28	3–5	3.94+05	1.56−03	6.14−02	−2.330	D+	2
			3 981.265	3 982.391	176 487.19–201 597.73	3–3	2.09+05	4.97−04	1.96−02	−2.827	D	2
78		$^1P^{\circ}-^1D$	3 590.465	3 591.490	176 487.19–204 330.79	3–5	2.53+08	8.17−01	2.90+01	0.389	C	2,5,8
79	$3s4p-3s5s$	$^3P^{\circ}-^3S$	*3 237.83*	*3 238.76*	*175 3001.1*–206 176.08	9–3	4.24+08	2.22−01	2.13+01	0.301	B	1
			3 241.626	3 242.561	175 336.26–206 176.08	5–3	2.35+08	2.22−01	1.18+01	0.045	B	LS
			3 233.954	3 234.887	175 263.10–206 176.08	3–3	1.42+08	2.22−01	7.09+00	−0.177	B	LS
			3 230.496	3 231.428	175 230.01–206 176.08	1–3	4.75+07	2.23−01	2.37+00	−0.652	C+	LS
80		$^1P^{\circ}-^1S$	3 185.121	3 186.043	176 487.19–207 874.09	3–1	4.04+08	2.05−01	6.45+00	−0.211	B	1
81	$3s4p-3s5d$	$^3P^{\circ}-^3D$		*1 931.04*	*175 300.1–227 085.7*	9–15	5.53+06	5.16−03	2.95−01	−1.333	D+	1
				1 932.275	175 336.26–227 088.72	5–7	5.53+06	4.33−03	1.38−01	−1.665	D+	LS
				1 929.716	175 263.10–227 084.21	3–5	4.16+06	3.87−03	7.38−02	−1.935	D+	LS
				1 928.596	175 230.01–227 081.19	1–3	3.08+06	5.16−03	3.28−02	−2.287	D	LS
				1 932.444	175 336.26–227 084.21	5–5	1.38+06	7.73−04	2.46−02	−2.413	D	LS
				1 929.828	175 263.10–227 081.19	3–3	2.31+06	1.29−03	2.46−02	−2.412	D	LS
				1 932.556	175 336.26–227 081.19	5–3	1.53+05	5.15−05	1.64−03	−3.589	E	LS
82		$^1P^{\circ}-^1D$		1 953.968	176 487.19–227 665.09	3–5	7.80+06	7.44−03	1.44−01	−1.651	D+	1
83	$3s4p-3s6s$	$^3P^{\circ}-^1S$		*1 840.84*	*175 300.1*–229 623.19	9–3	2.05+08	3.46−02	1.89+00	−0.507	C	1
				1 842.064	175 336.26–229 623.19	5–3	1.13+08	3.46−02	1.05+00	−0.762	C	LS
				1 839.585	175 263.10–229 623.19	3–3	6.84+07	3.47−02	6.30−01	−0.983	C	LS
				1 838.466	175 230.01–229 623.19	1–3	2.28+07	3.47−02	2.10−01	−1.460	D+	LS
84		$^1P^{\circ}-^1S$		1 856.070	176 487.19–230 364.46	3–1	2.06+08	3.54−02	6.49−01	−0.974	C	1
85	$3s4p-3s6d$	$^3P^{\circ}-^3D$		*1 538.60*	*175 300.1–240 294.0*	9–15	6.04+07	3.57−02	1.63+00	−0.493	C	1
				1 538.974	175 336.26–240 314.63	5–7	6.03+07	3.00−02	7.60−01	−0.824	C	LS
				1 537.960	175 263.10–240 284.28	3–5	4.53+07	2.68−02	4.07−01	−1.095	C	LS
				1 537.698	175 230.01–240 262.28	1–3	3.36+07	3.57−02	1.81−01	−1.447	D+	LS
				1 539.693	175 336.26–240 284.28	5–5	1.51+07	5.35−03	1.36−01	−1.573	D+	LS
				1 538.481	175 263.10–240 262.28	3–3	2.51+07	8.92−03	1.36−01	−1.573	D+	LS
				1 540.215	175 336.26–240 262.28	5–3	1.67+06	3.56−04	9.03−03	−2.750	E+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
86		$^1P^{\circ}-^1D$		1 560.974	176 487.19–240 549.77	3–5	1.68+07	1.02−02	1.57−01	−1.514	D+	1
87	$3s4p-3s7s$	$^3P^{\circ}-^3S$		*1 496.00*	*175 300.1*–242 145.10	9–3	1.40+08	1.56−02	6.93−01	−0.583	D	1
				1 496.808	175 336.26–242 145.10	5–3	7.74+07	1.56−02	3.84−01	−1.108	D	LS
				1 495.171	175 263.10–242 145.10	3–3	4.68+07	1.57−02	2.32−01	−1.327	D	LS
				1 494.431	175 230.01–242 145.10	1–3	1.56+07	1.57−02	7.72−02	−1.804	E+	LS
88		$^1P^{\circ}-^1S$		1 513.987	176 487.19–242 537.95	3–1	1.31+08	1.50−02	2.24−01	−1.347	D	1
89	$3s4p-3p4p$	$^3P^{\circ}-^3D$		*1 435.89*	*175 300.1–244 943.1*	9–15	8.63+08	4.44−01	1.89+01	0.602	B	1
				1 433.685	175 336.26–245 086.58	5–7	8.67+08	3.74−01	8.83+00	0.272	B	LS
				1 436.721	175 263.10–244 866.05	3–5	6.46+08	3.33−01	4.73+00	−0.000	B	LS
				1 438.706	175 230.01–244 736.93	1–3	4.76+08	4.43−01	2.10+00	−0.354	C+	LS
				1 438.232	175 336.26–244 866.05	5–5	2.14+08	6.65−02	1.57+00	−0.478	C+	LS
				1 439.391	175 263.10–244 736.93	3–3	3.57+08	1.11−01	1.58+00	−0.478	C+	LS
				1 440.908	175 336.26–244 736.93	5–3	2.37+07	4.43−03	1.05−01	−1.655	D+	LS
90		$^3P^{\circ}-^3P$		*1 374.31*	*175 300.1–248 063.7*	9–9	1.06+09	3.01−01	1.23+01	0.433	C+	1
				1 373.027	175 336.26–248 168.04	5–5	8.00+08	2.26−01	5.11+00	0.053	B	LS
				1 375.694	175 263.10–247 953.69	3–3	2.65+08	7.52−02	1.02+00	−0.647	C	LS
				1 377.080	175 336.26–247 953.69	5–3	4.41+08	7.52−02	1.70+00	−0.425	C+	LS
				1 377.248	175 263.10–247 871.66	3–1	1.05+09	1.00−01	1.36+00	−0.523	C+	LS
				1 371.649	175 263.10–248 168.04	3–5	2.68+08	1.26−01	1.71+00	−0.423	C+	LS
				1 375.068	175 230.01–247 953.69	1–3	3.54+08	3.01−01	1.36+00	−0.521	C+	LS
91		$^3P^{\circ}-^3S$		*1 361.05*	*175 300.1*–248 772.86	9–3	7.54+08	6.98−02	2.82+00	−0.202	C	1
				1 361.719	175 336.26–248 772.86	5–3	4.18+08	6.98−02	1.56+00	−0.457	C+	LS
				1 360.364	175 263.10–248 772.86	3–3	2.52+08	6.99−02	9.39−01	−0.678	C	LS
				1 359.751	175 230.01–248 772.86	1–3	8.41+07	6.99−02	3.13−01	−1.156	C	LS
92		$^1P^{\circ}-^1P$		1 506.067	176 487.19–242 885.30	3–3	1.24+09	4.21−01	6.26+00	0.101	B	1
93		$^1P^{\circ}-^1D$		1 399.615	176 487.19–247 935.39	3–5	4.17+08	2.04−01	2.82+00	−0.213	C+	1
94		$^1P^{\circ}-^1S$		1 212.247	176 487.19–258 978.66	3–1	2.42+08	1.78−02	2.13−01	−1.272	D+	1
95	$3s4p-3s7d$	$^3P^{\circ}-^3D$		*1 354.83*	*175 300.1–249 109.9*	9–15	1.09+08	5.00−02	2.01+00	−0.347	D	1
				1 355.291	175 336.26–249 121.14	5–7	1.09+08	4.20−02	9.37−01	−0.678	D+	LS
				1 354.265	175 263.10–249 103.90	3–5	8.18+07	3.75−02	5.02−01	−0.949	D	LS
				1 353.849	175 230.01–249 093.5	1–3	6.07+07	5.00−02	2.23−01	−1.301	D	LS
				1 355.608	175 336.26–249 103.90	5–5	2.72+07	7.50−03	1.67−01	−1.426	E+	LS
				1 354.456	175 263.10–249 093.5	3–3	4.54+07	1.25−02	1.67−01	−1.426	E+	LS
				1 355.799	175 336.26–249 093.5	5–3	3.02+06	5.00−04	1.12−02	−2.602	E	LS
96		$^1P^{\circ}-^1D$		1 348.629	176 487.19–250 636.55	3–5	1.77+08	8.05−02	1.07+00	−0.617	D+	1
97	$3s4p-3s8d$	$^1P^{\circ}-^1D$		1 277.473	176 487.19–254 766.75	3–5	2.50+08	1.02−01	1.29+00	−0.514	D+	1
98	$3p3d-3s4d$	$^3F^{\circ}-^3D$		*2 537.8* cm^{-1}	*199 060.9–201 598.7*	21–15	1.26+05	2.09−02	5.70+01	−0.358	B+	2
				2 435.38 cm^{-1}	199 164.10–201 599.48	9–7	1.04+05	2.05−02	2.49+01	−0.734	B+	2
				2 571.79 cm^{-1}	199 026.49–201 598.28	7–5	1.16+05	1.87−02	1.68+01	−0.883	B+	2
				2 674.58 cm^{-1}	198 923.15–201 597.73	5–3	1.44+05	1.81−02	1.11+01	−1.043	B+	2
				2 572.99 cm^{-1}	199 026.49–201 599.48	7–7	1.03+04	2.34−03	2.09+00	−1.786	B	2
				2 675.13 cm^{-1}	198 923.15–201 598.28	5–5	1.59+04	3.34−03	2.06+00	−1.777	B	2
				2 676.33 cm^{-1}	198 923.15–201 599.48	5–7	3.25+02	9.53−05	5.86−02	−3.322	D+	2
99	$3p3d-3s5d$	$^3F^{\circ}-^3D$	*3 567.24*	*3 568.27*	*199 060.9–227 085.7*	21–15	7.75+05	1.06−03	2.61−01	−1.652	D+	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			3 580.047	3 581.069	199 164.10–227 088.72	9–7	7.02+05	1.05−03	1.11−01	−2.025	D+	LS
			3 563.064	3 564.081	199 026.49–227 084.21	7–5	6.92+05	9.41−04	7.73−02	−2.181	D+	LS
			3 550.369	3 551.384	198 923.15–227 081.19	5–3	7.87+05	8.93−04	5.22−02	−2.350	D	LS
			3 562.491	3 563.509	199 026.49–227 088.72	7–7	6.20+04	1.18−04	9.69−03	−3.083	E+	LS
			3 549.988	3 551.003	198 923.15–227 084.21	5–5	8.78+04	1.66−04	9.70−03	−3.081	E+	LS
			3 549.420	3 550.434	198 923.15–227 088.72	5–7	1.77+03	4.68−06	2.74−04	−4.631	E	LS
100		$^3P^\circ-^3D$	*9 218.4*	*9 220.9*	*216 240.8–227 085.7*	9–15	1.51+07	3.21−01	8.76+01	0.461	B+	1
			9 173.07	9 175.59	216 190.24–227 088.72	5–7	1.53+07	2.71−01	4.09+01	0.132	B+	LS
			9 260.56	9 263.10	216 288.69–227 084.21	3–5	1.11+07	2.39−01	2.19+01	−0.144	B+	LS
			9 316.30	9 318.86	216 350.26–227 081.19	1–3	8.12+06	3.17−01	9.73+00	−0.499	B	LS
			9 176.87	9 179.39	216 190.24–227 084.21	5–5	3.82+06	4.83−02	7.30+00	−0.617	B	LS
			9 263.15	9 265.69	216 288.69–227 081.19	3–3	6.20+06	7.98−02	7.30+00	−0.621	B	LS
			9 179.42	9 181.94	216 190.24–227 081.19	5–3	4.25+05	3.22−03	4.87−01	−1.793	C	LS
101		$^3D^\circ-^3D$	*10 377.6*	*10 380.4*	*217 452.2–227 085.7*	15–15	9.17+03	1.48−04	7.60−02	−2.654	D	1
			10 414.65	10 417.50	217 489.49–227 088.72	7–7	8.05+03	1.31−04	3.14−02	−3.038	D	LS
			10 365.99	10 368.83	217 439.92–227 084.21	5–5	6.39+03	1.03−04	1.76−02	−3.288	D	LS
			10 311.32	10 314.15	217 385.77–227 081.19	3–3	7.02+03	1.12−04	1.14−02	−3.474	E+	LS
			10 419.54	10 422.40	217 489.49–227 0.84.21	7–5	1.42+03	1.65−05	3.96−03	−3.937	E+	LS
			10 369.24	10 372.08	217 439.92–227 081.19	5–3	2.30+03	2.23−05	3.81−03	−3.953	E+	LS
			10 361.14	10 363.98	217 439.92–227 088.72	5–7	1.03+03	2.32−05	3.96−03	−3.936	E+	LS
			10 308.11	10 310.94	217 385.77–227 084.21	3–5	1.41+03	3.74−05	3.81−03	−3.950	E+	LS
102	$3p3d-3s6s$	$^3P^\circ-^3S$	*7 470.5*	*7 472.5*	*216 240.8–229 623.19*	9–3	2.85+07	7.95−02	1.76+01	−0.145	B	1
			7 442.33	7 444.38	216 190.24–229 623.19	5–3	1.60+07	7.98−02	9.78+00	−0.399	B	LS
			7 497.28	7 499.34	216 288.69–229 623.19	3–3	9.39+06	7.92−02	5.87+00	−0.624	B	LS
			7 532.06	7 534.13	216 350.26–229 623.19	1–3	3.09+06	7.88−02	1.95+00	−1.103	C+	LS
103	$3p3d-3s5g$	$^3F^\circ-^3G$	*3 200.00*	*3 200.93*	*199 060.9–230 301.8*	21–27	1.21+08	2.39−01	5.29+01	0.701	B	1
			3 210.557	3 211.484	199 164.10–230 302.35	9–11	1.20+08	2.27−01	2.16+01	0.310	B+	LS
			3 196.501	3 197.425	199 026.49–230 301.66	7–9	1.14+08	2.24−01	1.65+01	0.195	B	LS
			3 186.018	3 186.939	198 923.15–230 301.22	5–7	1.13+08	2.40−01	1.26+01	0.079	B	LS
			3 210.628	3 211.555	199 164.10–230 301.66	9–9	7.50+06	1.16−02	1.10+00	−0.981	C+	LS
			3 196.546	3 197.470	199 026.49–230 301.22	7–7	9.79+06	1.50−02	1.11+00	−0.979	C+	LS
			3 210.673	3 211.601	199 164.10–230 301.22	9–7	1.47+05	1.77−04	1.68−02	−2.798	D	LS
104	$3p3d-3s6d$	$^3F^\circ-^3D$	*2 424.49*	*2 425.24*	*199 060.9–240 294.0*	21–15	2.04+07	1.28−02	2.15+00	−0.571	C	1
			2 429.365	2 430.102	199 164.10–240 314.63	9–7	1.86+07	1.28−02	9.22−01	−0.939	C	LS
			2 423.049	2 423.785	199 026.49–240 284.28	7–5	1.81+07	1.14−02	6.37−01	−1.098	C	LS
			2 418.281	2 419.016	198 923.15–240 262.28	5–3	2.05+07	1.08−02	4.30−01	−1.268	C	LS
			2 421.268	2 422.003	199 026.49–240 314.63	7–7	1.64+06	1.44−03	8.04−02	−1.997	D+	LS
			2 416.994	2 417.729	198 923.15–240 284.28	5–5	2.29+06	2.01−03	8.00−02	−1.998	D+	LS
			2 415.222	2 415.956	198 923.15–240 314.63	5–7	4.64+04	5.68−05	2.26−03	−3.547	E	LS
105		$^1D^\circ-^1D$	2 814.433	2 815.261	205 029.09–240 549.77	5–5	1.20+06	1.43−03	6.63−02	−2.146	D+	1
106		$^3P^\circ-^3D$	*4 156.28*	*4 157.45*	*216 240.8–240 294.0*	9–15	5.66+05	2.45−03	3.01−01	−1.657	D+	1
			4 144.014	4 145.183	216 190.24–240 314.63	5–7	5.71+05	2.06−03	1.41−01	−1.987	D+	LS
			4 166.258	4 167.432	216 288.69–240 284.28	3–5	4.22+05	1.83−03	7.53−02	−2.260	D+	LS
			4 180.819	4 181.997	216 350.26–240 262.28	1–3	3.09+05	2.43−03	3.35−02	−2.614	D	LS
			4 149.234	4 150.404	216 190.24–240 284.28	5–5	1.42+05	3.68−04	2.51−02	−2.735	D	LS
			4 170.081	4 171.257	216 288.69–240 262.28	3–3	2.34+05	6.10−04	2.51−02	−2.738	D	LS
			4 153.026	4 154.197	216 190.24–240 262.28	5–3	1.58+04	2.45−05	1.68−03	−3.912	E	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
107		$^3D^\circ-^3D$	*4 376.70*	*4 377.94*	*217 452.2–240 294.0*	15–15	9.69+05	2.78−03	6.02−01	−1.380	D+	1
			4 379.903	4 381.134	217 489.49–240 314.63	7–7	8.58+05	2.47−03	2.49−01	−1.762	C	LS
			4 376.218	4 377.448	217 439.92–240 284.28	5–5	6.75+05	1.94−03	1.40−01	−2.013	D+	LS
			4 370.068	4 371.296	217 385.77–240 262.28	3–3	7.30+05	2.09−03	9.02−02	−2.203	D+	LS
			4 385.735	4 386.967	217 489.49–240 284.28	7–5	1.50+05	3.09−04	3.12−02	−2.665	D	LS
			4 380.437	4 381.668	217 439.92–240 262.28	5–3	2.41+05	4.17−04	3.01−02	−2.681	D	LS
			4 370.412	4 371.640	217 439.92–240 314.63	5–7	1.08+05	4.35−04	3.13−02	−2.663	D	LS
			4 365.869	4 367.096	217 385.77–240 284.28	3–5	1.46+05	6.97−04	3.01−02	−2.680	D	LS
108		$^1F^\circ-^1D$	19 465.7	19 471.0	235 413.93–240 549.77	7–5	8.57+06	3.48−01	1.56+02	0.387	B	1
109		$^1P^\circ-^1D$		4 598.68 cm^{-1}	235 951.09–240 549.77	3–5	1.07+07	1.27+00	2.73+02	0.581	B+	1
110	$3p3d-3s7s$	$^3P^\circ-^3S$	*3 859.27*	*3 860.36*	*216 240.8*–242 145.10	9–3	1.70+07	1.27−02	1.45+00	−0.942	D	1
			3 851.751	3 852.843	216 190.24–242 145.10	5–3	9.51+06	1.27−02	8.05−01	−1.197	D+	LS
			3 866.417	3 867.513	216 288.69–242 145.10	3–3	5.66+06	1.27−02	4.85−01	−1.419	D	LS
			3 875.646	3 876.744	216 350.26–242 145.10	1–3	1.86+06	1.26−02	1.61−01	−1.900	E+	LS
111		$^1P^\circ-^1S$	15 177.59	15 181.74	235 951.09–242 537.95	3–1	4.01+07	4.62−01	6.93+01	0.142	B	1
112	$3p3d-3s6g$	$^3F^\circ-^3G$	*2 302.73*	*2 303.44*	*199 060.9–242 474.2*	21–27	7.21+07	7.37−02	1.17+01	0.190	C+	1
			2 308.188	2 308.898	199 164.10–242 474.81	9–11	7.16+07	6.99−02	4.78+00	−0.201	B	LS
			2 300.927	2 301.635	199 026.49–242 473.86	7–9	6.77+07	6.91−02	3.67+00	−0.315	B	LS
			2 295.477	2 296.184	198 923.15–242 473.66	5–7	6.69+07	7.40−02	2.80+00	−0.432	C+	LS
			2 308.238	2 308.948	199 164.10–242 473.86	9–9	4.48+06	3.58−03	2.45−01	−1.492	C	LS
			2 300.937	2 301.646	199 026.49–242 473.66	7–7	5.80+06	4.61−03	2.45−01	−1.491	C	LS
			2 308.249	2 308.959	199 164.10–242 473.66	9–7	8.77+04	5.45−05	3.73−03	−3.309	E+	LS
113		$^1F^\circ-^1G$	14 159.75	14 163.62	235 413.93–242 474.27	7–9	3.03+07	1.17+00	3.82+02	0.913	B	1
114	$3p3d-3p4p$	$^3F^\circ-^3D$	*2 178.81*	*2 179.49*	*199 060.9–244 943.1*	21–15	1.95+08	9.94−02	1.50+01	0.320	B	1
			2 176.901	2 177.583	199 164.10–245 086.58	9–7	1.80+08	9.95−02	6.42+00	−0.048	B	LS
			2 180.839	2 181.522	199 026.49–244 866.05	7–5	1.73+08	8.82−02	4.43+00	−0.209	B	LS
			2 182.066	2 182.749	198 923.15–244 736.93	5–3	1.95+08	8.34−02	3.00+00	−0.380	C+	LS
			2 170.396	2 171.077	199 026.49–245 086.58	7–7	1.57+07	1.11−02	5.55−01	−1.110	C	LS
			2 175.933	2 176.615	198 923.15–244 866.05	5–5	2.18+07	1.55−02	5.55−01	−1.111	C	LS
			2 165.537	2 166.217	198 923.15–245 086.58	5–7	4.47+05	4.40−04	1.57−02	−2.658	D	LS
115		$^1D^\circ-^1P$	2 640.788	2 641.575	205 029.09–242 885.30	5–3	1.83+08	1.15−01	5.00+00	−0.240	B	1
116		$^1D^\circ-^1D$	2 329.945	2 330.660	205 029.09–247 935.39	5–5	3.16+07	2.57−02	9.86−01	−0.891	C	1
117		$^3P^\circ-^3D$	*3 483.04*	*3 484.04*	*216 240.8–244 943.1*	9–15	4.82+05	1.46−03	1.51−01	−1.881	D	1
			3 459.655	3 460.646	216 190.24–245 086.58	5–7	4.93+05	1.24−03	7.06−02	−2.208	D+	LS
			3 498.273	3 499.274	216 288.69–244 866.05	3–5	3.56+05	1.09−03	3.77−02	−2.485	D	LS
			3 521.773	3 522.780	216 350.26–244 736.93	1–3	2.58+05	1.44−03	1.67−02	−2.842	D	LS
			3 486.262	3 487.260	216 190.24–244 866.05	5–5	1.20+05	2.19−04	1.26−02	−2.961	E+	LS
			3 514.151	3 515.156	216 288.69–244 736.93	3–3	1.95+05	3.62−04	1.26−02	−2.964	E+	LS
			3 502.031	3 503.033	216 190.24–244 736.93	5–3	1.31+04	1.45−05	8.36−04	−4.140	E	LS
118		$^3P^\circ-^3P$	*3 141.49*	*3 142.39*	*216 240.8–248 063.7*	9–9	6.13+07	9.07−02	8.45+00	−0.088	C+	1
			3 126.263	3 127.169	216 190.24–248 168.04	5–5	4.67+07	6.84−02	3.52+00	−0.466	C+	LS
			3 157.147	3 158.061	216 288.69–247 953.69	3–3	1.51+07	2.26−02	7.05−01	−1.169	C	LS
			3 147.361	3 148.273	216 190.24–247 953.69	5–3	2.53+07	2.26−02	1.17+00	−0.947	C+	LS
			3 165.347	3 166.263	216 288.69–247 871.66	3–1	5.99+07	3.00−02	9.38−01	−1.046	C	LS
			3 135.918	3 136.827	216 288.69–248 168.04	3–5	1.54+07	3.79−02	1.17+00	−0.944	C+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			3 163.298	3 164.214	216 350.26–247 953.69	1–3	2.00+07	9.01−02	9.39−01	−1.045	C	LS
119		$^3P^\circ-^3S$	*3 073.00*	*3 073.89*	*216 240.8*–248 772.86	9–3	9.22+07	4.35−02	3.97+00	−0.407	C+	1
			3 068.229	3 069.121	216 190.24–248 772.86	5–3	5.15+07	4.36−02	2.20+00	−0.662	C+	LS
			3 077.528	3 078.423	216 288.69–248 772.86	3–3	3.06+07	4.35−02	1.32+00	−0.884	C+	LS
			3 083.373	3 084.268	216 350.26–248 772.86	1–3	1.01+07	4.34−02	4.41−01	−1.363	C	LS
120		$^3D^\circ-^3D$	*3 636.53*	*3 637.57*	*217 452.2–244 943.1*	15–15	1.39+07	2.76−02	4.95+00	−0.383	C	1
			3 622.538	3 623.570	217 489.49–245 086.58	7–7	1.25+07	2.46−02	2.05+00	−0.764	C+	LS
			3 645.119	3 646.158	217 439.92–244 866.05	5–5	9.58+06	1.91−02	1.15+00	−1.020	C+	LS
			3 655.111	3 656.152	217 385.77–244 736.93	3–3	1.02+07	2.05−02	7.40−01	−1.211	C	LS
			3 651.719	3 652.760	217 489.49–244 866.05	7–5	2.14+06	3.06−03	2.58−01	−1.669	C	LS
			3 662.362	3 663.405	217 439.92–244 736.93	5–3	3.40+06	4.10−03	2.47−01	−1.688	C	LS
			3 616.042	3 617.073	217 439.92–245 086.58	5–7	1.57+06	4.32−03	2.57−01	−1.666	C	LS
			3 637.936	3 638.973	217 385.77–244 866.05	3–5	2.08+06	6.88−03	2.47−01	−1.685	C	LS
121		$^3D^\circ-^3P$	*3 265.81*	*3 266.75*	*217 452.2–248 063.7*	15–9	1.20+08	1.15−01	1.85+01	0.237	B	1
			3 258.667	3 259.606	217 48.49–248 168.04	7–5	1.01+08	1.15−01	8.64+00	−0.094	B	LS
			3 276.265	3 277.209	217 439.92–247 953.69	5–3	8.91+07	8.61−02	4.64+00	−0.366	B	LS
			3 279.261	3 280.206	217 385.77–247 871.66	3–1	1.18+08	6.37−02	2.06+00	−0.719	C+	LS
			3 253.410	3 254.348	217 439.92–248 168.04	5–5	1.82+07	2.89−02	1.55+00	−0.840	C+	LS
			3 270.461	3 271.403	217 385.77–247 953.69	3–3	2.99+07	4.79−02	1.55+00	−0.843	C+	LS
			3 247.686	3 248.623	217 385.77–248 168.04	3–5	1.22+06	3.22−03	1.03−01	−2.015	D+	LS
122		$^1F^\circ-^1D$	7 984.09	7 986.29	235 413.93–247 935.39	7–5	6.24+05	4.26−03	7.84−01	−1.525	D+	1
123		$^1P^\circ-^1P$	14 417.31	14 421.25	235 951.09–242 885.30	3–3	8.88+05	2.77−02	3.95+00	−1.080	B	1
124		$^1P^\circ-^1D$	8 341.96	8 344.25	235 951.09–247 935.39	3–5	1.02+07	1.77−01	1.46+01	−0.275	B	1
125		$^1P^\circ-^1S$	4 341.400	4 342.621	235 951.09–258 978.66	3–1	5.25+05	4.95−04	2.12−02	−2.828	D	1
126	$3p3d-3s7d$	$^3F^\circ-^3D$		*1 998.04*	*199 060.9–249 109.9*	21–15	2.09+07	8.94−03	1.23+00	−0.726	D	1
			2 001.072	2 001.720	199 164.10–249 121.14	9–7	1.91+07	8.92−03	5.29−01	−1.095	D	LS
				1 996.908	199 026.49–249 103.90	7–5	1.86+07	7.94−03	3.65−01	−1.255	D	LS
				1 993.21	198 923.15–249 093.5	5–3	2.10+07	7.52−03	2.47−01	−1.425	D	LS
				1 996.221	199 026.49–249 121.14	7–7	1.67+06	9.97−04	4.59−02	−2.156	E	LS
				1 992.796	198 923.15–249 103.90	5–5	2.35+06	1.40−03	4.59−02	−2.155	E	LS
				1 992.112	198 923.15–249 121.14	5–7	4.73+04	3.94−05	1.29−03	−3.706	E	LS
127		$^1D^\circ-^1D$	2 191.939	2 192.624	205 029.09–250 636.55	5–5	1.30+07	9.38−03	3.39−01	−1.329	D	1
128		$^1F^\circ-^1D$	6 567.36	6 569.17	235 413.93–250 636.55	7–5	5.86+06	2.71−02	4.10+00	−0.722	D	1
129		$^1P^\circ-^1D$	6 807.58	6 809.46	235 951.09–250 636.55	3–5	7.47+06	8.65−02	5.82+00	−0.586	C	1
130	$3p3d-3s8s$	$^1P^\circ-^1S$	7 189.07	7 194.05	235 951.09–249 857.26	3–1	1.87+07	4.84−02	3.44+00	−0.838	C	1
131	$3p3d-3s7g$	$^3F^\circ-^3G$		*1 970.16*	*199 060.9–249 818.2*	21–27	4.68+07	3.50−02	4.77+00	−0.134	D+	1
				1 974.145	199 164.10–249 818.93	9–11	4.65+07	3.32−02	1.94+00	−0.525	C	LS
				1 968.839	199 026.49–249 817.85	7–9	4.39+07	3.28−02	1.49+00	−0.639	D+	LS
				1 964.862	198 923.15–249 817.32	5–7	4.33+07	3.51+02	1.14+00	−0.756	D+	LS
				1 974.187	199 164.10–249 817.85	9–9	2.91+06	1.70−03	9.94−02	−1.815	E+	LS
				1 968.859	199 026.49–249 817.32	7–7	3.77+06	2.19−03	9.94−02	−1.814	E+	LS
				1 974.208	199 164.10–249 817.32	9–7	5.70+04	2.59−05	1.51−03	−3.632	E	LS
132	$3p3d-3s8d$	$^1D^\circ-^1D$	2 009.899	2 010.549	205 029.09–254 766.75	5–5	2.61+07	1.58−02	5.23−01	−1.102	D	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
133		$^1P^\circ-^1D$	5 313.244	5 314.722	235 951.09–254 766.75	3–5	1.30+07	9.16−02	4.81+00	−0.561	C	1
134	$3p3d-3s8g$	$^3F^\circ-^3G$		*1 801.0*	*199 060.9–254 585*	21–27	3.27+07	2.05−02	2.55+00	−0.366	D+	1
				1 804.349	199 164.10–254 585.75	9–11	3.25+07	1.94−02	1.04+00	−0.758	D+	LS
				1 799.91	199 026.49–254 584.8	7–9	3.07+07	1.92−02	7.96−01	−0.872	D+	LS
				1 796.57	198 923.15–254 584.8	5–7	3.03+07	2.05−02	6.06−01	−0.989	D	LS
				1 804.38	199 164.10–254 584.8	9–9	2.04+06	9.95−04	5.32−02	−2.048	E	LS
				1 799.91	199 026.49–254 584.8	7–7	2.64+06	1.28−03	5.31−02	−2.048	E	LS
				1 804.38	199 164.10–254 584.8	9–7	3.98+04	1.51−05	8.07−04	−3.867	E	LS
135	$3p3d-3s9d$	$^1P^\circ-^1D$	4 565.47	4 566.75	235 951.09–257 848.5	3–5	3.76+06	1.96−02	8.84−01	−1.231	D	1
136	$3s4d-3p3d$	$^3D-^1D^\circ$										
				3 430.81 cm^{-1}	201 598.28–205 029.09	5–5	6.35+01	8.08−06	3.88−03	−4.394	E+	2
				3 429.61 cm^{-1}	201 599.48–205 029.09	7–5	8.07−01	7.34−08	4.93−05	−6.289	E	2
				3 431.36 cm^{-1}	201 597.73–205 029.09	3–5	3.28+02	6.96−05	2.00−02	−3.680	D	2
137		$^3D-^3P^\circ$	*6 827.7*	*6 829.6*	*201 598.7–216 240.8*	15–9	1.73+07	7.28−02	2.45+01	0.038	B	1
			6 851.76	6 853.65	201 599.48–216 190.24	7–5	1.44+07	7.25−02	1.15+01	−0.295	B	LS
			6 805.28	6 807.16	201 598.28–216 288.69	5–3	1.31+07	5.48−02	6.14+00	−0.562	B	LS
			6 776.63	6 778.50	201 597.73–216 350.26	3–1	1.77+07	4.07−02	2.72+00	−0.913	C+	LS
			6 851.20	6 853.09	201 598.28–216 190.24	5–5	2.57+06	1.81−02	2.04+00	−1.043	C+	LS
			6 805.03	6 806.91	201 597.73–216 288.69	3–3	4.38+06	3.04−02	2.04+00	−1.040	C+	LS
			6 850.94	6 852.83	201 597.73–216 190.24	3–5	1.71+05	2.01−03	1.36−01	−2.220	D+	LS
138		$^3D-^3D^\circ$	*6 306.0*	*6 307.8*	*201 598.7–217 452.2*	15–15	2.61+04	1.56−04	4.85−02	−2.631	E+	1
			6 291.52	6 293.26	201 599.48–217 489.49	7–7	2.34+04	1.39−04	2.02−02	−3.012	D	LS
			6 310.73	6 812.48	201 598.28–217 439.92	5–5	1.81+04	1.08−04	1.12−02	−3.268	E+	LS
			6 332.16	6 333.91	201 597.73–217 385.77	3–3	1.93+04	1.16−04	7.26−03	−3.458	E+	LS
			6 311.21	6 312.96	201 599.48–217 439.92	7–5	4.05+03	1.73−05	2.52−03	−3.917	E+	LS
			6 332.38	6 334.13	201 598.28–217 385.77	5–3	6.46+03	2.33−05	2.43−03	−3.934	E+	LS
			6 291.05	6 292.79	201 598.28–217 489.49	5–7	2.94+03	2.44−05	2.53−03	−3.914	E+	LS
			6 310.51	6 312.26	201 597.73–217 439.92	3–5	3.91+03	3.89−05	2.43−03	−3.933	E+	LS
139		$^1D-^1F^\circ$	3 216.249	3 217.178	204 330.79–235 413.93	5–7	1.90+07	4.12−02	2.18+00	−0.686	D+	1
140		$^1D-^1P^\circ$	3 161.610	3 162.525	204 330.79–235 951.09	5–3	4.91+07	4.42−02	2.30+00	−0.656	C+	1
141	$3s4d-3s4f$	$^3D-^3F^\circ$	*12 541.7*	*12 545.0*	*201 598.7–209 570.0*	15–21	1.03+07	3.41−01	2.11+02	0.709	B+	1
			12 496.24	12 499.66	201 599.48–209 599.70	7–9	1.04+07	3.14−01	9.04+01	0.342	B+	LS
			12 557.72	12 561.16	201 598.28–209 559.33	5–7	9.12+06	3.02−01	6.24+01	0.179	B+	LS
			12 601.06	12 604.51	201 597.73–209 531.40	3–5	8.54+06	3.39−01	4.22+01	0.007	B+	LS
			12 559.61	12 563.05	201 599.48–209 559.33	7–7	1.14+06	2.70−02	7.82+00	−0.724	B	LS
			12 601.93	12 605.38	201 598.28–209 531.40	5–5	1.58+06	3.77−02	7.82+00	−0.725	B	LS
			12 603.84	12 607.29	201 599.48–209 531.40	7–5	4.47+04	7.60−04	2.21−01	−2.274	C	LS
142		$^1D-^1F^\circ$		497.27 cm^{-1}	204 330.79–204 828.06	5–7	2.18+03	1.85−02	6.14+01	−1.034	B+	2
143	$3s4d-3s5p$	$^3D-^3P^\circ$	*7 464.5*	*7 466.5*	*201 598.7–214 991.8*	15–9	4.99+07	2.50−01	9.22+01	0.574	B+	1
			7 466.32	7 468.38	201 599.48–214 989.27	7–5	4.19+07	2.50−01	4.30+01	0.243	B+	LS
			7 462.65	7 464.71	201 598.28–214 994.65	5–3	3.75+07	1.88−01	2.31+01	−0.027	B+	LS
			7 461.90	7 463.95	201 597.73–214 995.46	3–1	4.99+07	1.39−01	1.02+01	−0.380	B	LS
			7 465.65	7 467.71	201 598.28–214 989.27	5–5	7.49+06	6.26−02	7.69+00	−0.504	B	LS
			7 462.35	7 464.40	201 597.73–214 994.65	3–3	1.25+07	1.04−01	7.67+00	−0.506	B	LS
			7 465.35	7 467.40	201 597.73–214 989.27	3–5	4.99+05	6.95−03	5.13−01	−1.681	C	LS
144		$^1D-^1P^\circ$	9 799.91	9 802.60	204 330.79–214 532.17	5–3	3.12+07	2.70−01	4.36+01	0.130	B+	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
145	$3s4d-3s5f$	$^3D-^3F^°$	*3 486.90*	*3 487.89*	*201 598.7–230 269.3*	15–21	1.73+08	4.41−01	7.60+01	0.821	B+	1
			3 486.825	3 487.823	201 599.48–230 270.66	7–9	1.73+08	4.05−01	3.26+01	0.453	B+	LS
			3 486.927	3 487.925	201 598.28–230 268.62	5–7	1.54+08	3.92−01	2.25+01	0.292	B+	LS
			3 486.97	3 487.97	201 597.73–230 267.7	3–5	1.45+08	4.42−01	1.52+01	0.123	B	LS
			3 487.073	3 488.071	201 599.48–230 268.62	7–7	1.92+07	3.51−02	2.82+00	−0.610	C+	LS
			3 487.04	3 488.04	201 598.28–230 267.7	5–5	2.70+07	4.92−02	2.82+00	−0.609	C+	LS
			3 487.19	3 488.18	201 599.48–230 267.7	7–5	7.61+05	9.91−04	7.97−02	−2.159	D+	LS
146		$^1D-^1F^°$	4 716.654	4 717.974	204 330.79–225 526.33	5–7	1.32+08	6.19−01	4.81+01	0.491	B	1
147	$3s4d-3p4s$	$^3D-^3P^°$	*3 986.55*	*3 987.67*	*201 598.7–226 676.0*	15–9	4.25+06	6.08−03	1.20+00	−1.040	C	1
			3 963.860	3 964.981	201 599.48–226 820.28	7–5	3.63+06	6.11−03	5.58−01	−1.369	C	LS
			4 010.236	4 011.370	201 598.28–226 527.42	5–3	3.13+06	4.53−03	2.99−01	−1.645	C	LS
			4 030.750	4 031.889	201 597.73–226 400.00	3–1	4.11+06	3.34−03	1.33−01	−1.999	D+	LS
			3 963.671	3 964.793	201 598.28–226 820.28	5–5	6.49+05	1.53−03	9.99−02	−2.116	D+	LS
			4 010.148	4 011.281	201 597.73–226 527.42	3–3	1.04+06	2.52−03	9.98−02	−2.121	D+	LS
			3 963.585	3 964.706	201 597.73–226 820.28	3–5	4.33+04	1.70−04	6.66−03	−3.292	E+	LS
148		$^1D-^1P^°$	4 102.423	4 103.581	204 330.79–228 699.75	5–3	2.46+07	3.73−02	2.52+00	−0.729	C+	1
149	$3s4d-3s6p$	$^3D-^3P^°$	*3 044.57*	*3 045.45*	*201 598.7–234 434.6*	15–9	2.99+07	2.49−02	3.75+00	−0.428	C	1
			3 043.931	3 044.817	201 599.48–234 442.18	7–5	2.51+07	2.49−02	1.75+00	−0.759	C+	LS
			3 045.097	3 045.983	201 598.28–234 428.40	5–3	2.24+07	1.87−02	9.38−01	−1.029	C	LS
			3 046.283	3 047.170	201 597.73–234 415.07	3–1	2.97+07	1.38−02	4.15−01	−1.383	C	LS
			3 043.820	3 044.705	201 598.28–234 442.18	5–5	4.48+06	6.22−03	3.12−01	−1.507	C	LS
			3 045.046	3 045.932	201 597.73–234 428.40	3–3	7.48+06	1.04−02	3.13−01	−1.506	C	LS
			3 043.769	3 044.654	201 597.73–234 442.18	3–5	2.99+05	6.92−04	2.08−02	−2.683	D	LS
150		$^1D-^1P^°$	3 326.072	3 327.029	204 330.79–234 387.64	5–3	1.89+06	1.88−03	1.03−01	−2.027	D	1
151	$3s4d-3s6f$	$^3D-^3F^°$	*2 449.48*	*2 450.22*	*201 598.7–242 411.4*	15–21	1.16+08	1.46−01	1.77+01	0.340	B	1
			2 449.505	2 450.247	201 599.48–242 411.70	7–9	1.16+08	1.34−01	7.57+00	−0.028	B	LS
			2 449.458	2 450.220	201 598.28–242 411.27	5–7	1.03+08	1.30−01	5.24+00	−0.187	B	LS
			2 449.449	2 450.191	201 597.73–242 410.88	3–5	9.73+07	1.46−01	3.53+00	−0.359	C+	LS
			2 449.530	2 450.272	201 599.48–242 411.27	7–7	1.29+07	1.16−02	6.55−01	−1.090	C	LS
			2 449.482	2 450.224	201 598.28–242 410.88	5–5	1.81+07	1.63−02	6.57−01	−1.089	C	LS
			2 449.554	2 450.296	201 599.48–242 410.88	7–5	5.12+05	3.29−04	1.86−02	−2.638	D	LS
152		$^1D-^1F^°$	2 528.471	2 529.231	204 330.79–243 868.50	5–7	9.16+07	1.23−01	5.12+00	−0.211	B	1
153	$3s4d-3s7p$	$^3D-^3P^°$	*2 306.65*	*2 307.35*	*201 598.7–244 938.4*	15–9	1.60+07	7.67−03	8.74−01	−0.939	E+	1
			2 306.424	2 307.133	201 599.48–244 943.31	7–5	1.35+07	7.67−03	4.08−01	−1.270	D	LS
			2 306.889	2 307.599	201 598.28–244 933.36	5–3	1.20+07	5.75−03	2.18−01	−1.541	D	LS
			2 307.107	2 307.817	201 597.73–244 928.72	3–1	1.60+07	4.26−03	9.71−02	−1.893	E+	LS
			2 306.360	2 307.070	201 598.28–244 943.31	5–5	2.41+06	1.92−03	7.29−02	−2.018	E+	LS
			2 306.860	2 307.570	201 597.73–244 933.36	3–3	4.00+06	3.19−03	7.27−02	−2.019	E+	LS
			2 306.331	2 307.040	201 597.73–244 943.31	3–5	1.60+05	2.13−04	4.85−03	−3.194	E	LS
154		$^1D-^1P^°$	2 465.912	2 466.658	204 330.79–244 871.47	5–3	1.99+07	1.09−2	4.43−01	−1.264	D	1
155	$3s4d-3s7f$	$^3D-^3F^°$	*2 075.06*	*2 075.72*	*201 598.7–249 774.8*	15–21	7.09+07	6.41−02	6.57+00	−0.017	D+	1
			2 075.082	2 075.744	201 599.48–249 774.98	7–9	7.09+07	5.89−02	2.82+00	−0.385	C	LS
			2 075.042	2 075.704	201 598.28–249 774.70	5–7	6.30+07	5.70−02	1.95+00	−0.545	C	LS
			2 0.75.028	2 075.690	201 597.73–249 774.48	3–5	5.95+07	6.41−02	1.31+00	−0.716	D+	LS
			2 075.094	2 075.756	201 599.48–249 774.70	7–7	7.90+06	5.10−03	2.44−01	−1.447	D	LS
			2 075.052	2 075.714	201 598.28–249 774.48	5–5	1.11+07	7.15−03	2.44−01	−1.447	D	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			2 075.104	2 075.765	201 599.48–249 774.48	7–5	3.12+05	1.44−04	6.89−03	−2.997	E	LS
156		^1D–$^1F°$	2 171.559	2 172.240	204 330.79–250 366.22	5–7	7.01+07	6.94−02	2.48+00	−0.460	C	1
157	$3s4d$–$3s8f$	^3D–$^3F°$		*1 888.27*	*201 598.7–254 557.4*	15–21	4.49+07	3.36−02	3.14+00	−0.298	D+	1
				1 888.283	201 599.48–254 557.64	7–9	4.50+07	3.09−02	1.34+00	−0.665	D+	LS
				1 888.254	201 598.28–254 557.26	5–7	4.00+07	2.99−02	9.29−01	−0.825	D+	LS
				1 888.242	201 597.73–254 557.03	3–5	3.77+07	3.36−02	6.27−01	−0.997	D	LS
				1 888.297	201 599.48–254 557.26	7–7	4.99+06	2.67−03	1.16−01	−1.728	E+	LS
				1 888.262	201 598.28–254 557.03	5–5	7.00+06	3.74−03	1.16−01	−1.728	E+	LS
				1 888.305	201 599.48–254 557.03	7–5	1.97+05	7.54−05	3.28−03	−3.278	E	LS
158		^1D–$^1F°$		1 979.233	204 330.79–254 855.42	5–7	4.48+07	3.68−02	1.20+00	−0.735	D+	1
159	$3s4f$–$3s5d$	$^1F°$–^1D	4 377.623	4 378.853	204 828.06–227 665.09	7–5	4.14+06	8.50−03	8.58−01	−1.225	C	1
160		$^3F°$–^3D	*5 707.6*	*5 709.2*	*209 570.0–227 085.7*	21–15	2.09+07	7.28−02	2.87+01	0.184	B	1
			5 716.29	5 717.87	209 599.70–227 088.72	9–7	1.91+07	7.27−02	1.23+01	−0.184	B	LS
			5 704.59	5 706.17	209 559.33–227 084.21	7–5	1.86+07	6.47−02	8.51+00	−0.344	B	LS
			5 696.49	5 698.07	209 531.40–227 081.19	5–3	2.10+07	6.13−02	5.75+00	−0.514	B	LS
			5 703.12	5 704.71	209 559.33–227 088.72	7–7	1.66+06	8.12−03	1.07+00	−1.245	C	LS
			5 695.51	5 697.09	209 531.40–227 084.21	5–5	2.34+06	1.14−02	1.07+00	−1.244	C	LS
			5 694.05	5 695.63	209 531.40–227 088.72	5–7	4.71+04	3.21−04	3.01−02	−2.795	D	LS
161	$3s4f$–$3s5g$	$^1F°$–^1G	3 924.468	3 925.579	204 828.06–230 302.01	7–9	3.47+08	1.03+00	9.32+01	0.858	B+	1
162		$^3F°$–^3G	*4 822.15*	*4 823.51*	*209 570.0–230 301.8*	21–27	2.26+08	1.01+00	3.38+02	1.327	B+	1
			4 828.950	4 830.300	209 599.70–230 302.35	9–11	2.25+08	9.62−01	1.38+02	0.937	B+	LS
			4 819.712	4 821.059	209 559.33–230 301.66	7–9	2.12+08	9.50−01	1.06+02	0.823	B+	LS
			4 813.333	4 814.678	209 531.40–230 301.22	5–7	2.10+08	1.02+00	8.08+01	0.708	B+	LS
			4 829.111	4 830.460	209 599.70–230 301.66	9–9	1.41+07	4.92−02	7.04+00	−0.354	B	LS
			4 819.814	4 821.161	209 559.33–230 301.22	7–7	1.82+07	6.34−02	7.04+00	−0.353	B	LS
			4 829.214	4 830.563	209 599.70–230 301.22	9–7	2.76+05	7.50−04	1.07−01	−2.171	D+	LS
163	$3s4f$–$3s6d$	$^1F°$–^1D	2 798.593	2 799.418	204 828.06–240 549.77	7–5	8.21+05	6.89−04	4.44−02	−2.317	D	1
164		$^3F°$–^3D	*3 253.84*	*3 254.78*	*209 570.0–240 294.0*	21–15	1.97+07	2.24−02	5.04+00	−0.328	C+	1
			3 254.807	3 255.746	209 599.70–240 314.63	9–7	1.81+07	2.24−02	2.16+00	−0.696	C+	LS
			3 253.745	3 254.684	209 559.33–240 284.28	7–5	1.75+07	1.99−02	1.49+00	−0.856	C+	LS
			3 253.118	3 254.056	209 531.40–240 262.28	5–3	1.97+07	1.88−02	1.01+00	−1.027	C	LS
			3 250.534	3 251.472	209 559.33–240 314.63	7–7	1.58+06	2.50−03	1.87−01	−1.757	D+	LS
			3 250.790	3 251.728	209 531.40–240 284.28	5–5	2.21+06	3.50−03	1.87−01	−1.757	D+	LS
			3 247.585	3 248.522	209 531.40–240 314.63	5–7	4.46+04	9.88−05	5.28−03	−3.306	E+	LS
165	$3s4f$–$3s6g$	$^1F°$–^1G	2 655.520	2 656.310	204 828.06–242 474.27	7–9	1.35+08	1.83−01	1.12+01	0.108	B	1
166		$^3F°$–^3G	*3 038.24*	*3 039.13*	*209 570.0–242 474.2*	21–27	4.88+07	8.70−02	1.83+01	0.262	B	1
			3 040.930	3 041.815	209 599.70–242 474.81	9–11	4.87+07	8.26−02	7.44+00	−0.129	B	LS
			3 037.288	3 038.172	209 559.33–242 473.86	7–9	4.58+07	8.15−02	5.71+00	−0.244	B	LS
			3 034.731	3 035.614	209 531.40–242 473.66	5–7	4.50+07	8.71−02	4.35+00	−0.361	B	LS
			3 041.018	3 041.903	209 599.70–242 473.86	9–9	3.05+06	4.23−03	3.81−01	−1.419	C	LS
			3 037.306	3 038.190	209 559.33–242 473.66	7–7	3.93+06	5.44−03	3.81−01	−1.419	C	LS
			3 041.036	3 041.921	209 599.70–242 473.66	9–7	5.97+04	6.44−05	5.80−03	−3.237	E+	LS
167	$3s4f$–$3p4p$	$^1F°$–^1D	2 319.079	2 319.791	204 828.06–247 935.39	7–5	4.32+06	2.49−03	1.33−01	−1.759	D+	1
168		$^3F°$–^3D	*2 826.17*	*2 827.01*	*209 570.0–244 943.1*	21–15	2.40+07	2.05−02	4.01+00	−0.366	C	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			2 817.113	2 817.943	209 599.70–245 086.58	9–7	2.22+07	2.06−02	1.72+00	−0.732	C+	LS
			2 831.489	2 832.322	209 559.33–244 866.05	7–5	2.12+07	1.82−02	1.19+00	−0.895	C+	LS
			2 839.628	2 840.463	209 531.40–244 736.93	5–3	2.37+07	1.72−02	8.04−01	−1.066	C	LS
			2 813.912	2 814.741	209 559.33–245 086.58	7–7	1.94+06	2.30−03	1.49−01	−1.793	D+	LS
			2 829.251	2 830.083	209 531.40–244 866.05	5–5	2.66+06	3.20−03	1.49−01	−1.796	D+	LS
			2 811.702	2 812.530	209 531.40–245 086.58	5–7	5.47+04	9.08−05	4.20−03	−3.343	E+	LS
169	$3s4f-3s7g$	$^1F^\circ-^1G$	2 222.031	2 222.722	204 828.06–249 817.94	7–9	6.50+07	6.19−02	3.17+00	−0.363	C	1
170		$^3F^\circ-^3G$	*2 483.84*	*2 484.58*	*209 570.0–249 818.2*	21–27	1.42+07	1.69−02	2.90+00	−0.450	D+	1
			2 485.623	2 486.373	209 599.70–249 818.93	9–11	1.41+07	1.60−02	1.18+00	−0.842	D+	LS
			2 483.197	2 483.946	209 559.33–249 817.85	7–9	1.33+07	1.58−02	9.04−01	−0.956	D+	LS
			2 481.508	2 482.257	209 531.40–249 817.32	5–7	1.31+07	1.69−02	6.91−01	−1.073	D+	LS
			2 485.689	2 486.440	209 599.70–249 817.85	9–9	8.86+05	8.21−04	6.05−02	−2.131	E	LS
			2 483.229	2 483.979	209 559.33–249 817.32	7–7	1.15+06	1.06−03	6.07−02	−2.130	E	LS
			2 485.722	2 486.472	209 599.70–249 817.32	9–7	1.73+04	1.25−05	9.21−04	−3.949	E	LS
171	$3s4f-3s8g$	$^1F^\circ-^1G$	2 009.14	2 009.79	204 828.06–254 584.6	7–9	3.60+07	2.80−02	1.30+00	−0.708	D+	1
172		$^3F^\circ-^3G$	*2 220.8*	*2 221.5*	*209 570.0–254 585*	21–27	4.85+06	4.36−03	6.69−01	−1.038	E+	1
			2 222.220	2 222.911	209 599.70–254 585.75	9–11	4.57+06	4.14−03	2.73−01	−1.429	D	LS
			2 220.27	2 220.97	209 559.33–254 584.8	7–9	4.29+06	4.08−03	2.09−01	−1.544	E+	LS
			3 218.90	2 219.59	209 531.40–254 584.8	5–7	4.22+06	4.36−03	1.59−01	−1.662	E+	LS
			2 222.27	2 222.96	209 599.70–254 584.8	9–9	2.86+05	2.12−04	1.40−02	−2.719	E	LS
			2 220.27	2 220.97	209 559.33–254 584.8	7–7	3.68+05	2.72−04	1.39−02	−2.720	E	LS
			2 222.27	2 222.96	209 599.70–254 584.8	9–7	5.59+03	3.22−06	2.12−04	−4.538	E	LS
173	$3s5s-3p3d$	$^3S-^3P^\circ$	*9 932.9*	*9 935.7*	206 176.08–*216–240.8*	3–9	8.60+06	3.82−01	3.75+01	0.059	B	1
			9 983.12	9 985.86	206 176.08–216 190.24	3–5	8.47+06	2.11−01	2.08+01	−0.199	B+	LS
			9 885.93	9 888.64	206 176.08–216 288.69	3–3	8.73+06	1.28−01	1.25+01	−0.416	B	LS
			9 826.11	9 828.80	206 176.08–216 350.26	3–1	8.87+06	4.28−02	4.15+00	−0.891	B	LS
174		$^1S-^1P^\circ$	3 560.617	3 561.634	207 874.09–235 951.09	1–3	9.71+05	5.54−03	6.50−02	−2.256	D	1
175	$3s5s-3s5p$	$^3S-^3P^\circ$	*11 340.3*	*11 343.4*	206 176.08–*214 991.8*	3–9	2.19+07	1.27+00	1.42+02	0.581	B+	1
			11 343.52	11 346.63	206 176.08–214 989.27	3–5	2.19+07	7.03−01	7.88+01	0.324	B+	LS
			11 336.60	11 339.71	206 176.08–214 994.65	3–3	2.19+07	4.22−01	4.73+01	0.102	B+	LS
			11 335.56	11 338.67	206 176.08–214 995.46	3–1	2.19+07	1.41−01	1.58+01	−0.374	B	LS
176		$^1S-^1P^\circ$	15 015.24	15 019.34	207 874.09–214 532.17	1–3	1.16+07	1.18+00	5.83+01	0.072	B+	1
177	$3s5s-3p4s$	$^3S-^3P^\circ$	*4 876.71*	*4 878.07*	206 176.08–*226 676.0*	3–9	1.97+06	2.11−02	1.02+00	−1.199	C	1
			4 842.623	4 843.976	206 176.08–226 820.28	3–5	2.01+06	1.18−02	5.65−01	−1.451	C	LS
			4 912.310	4 913.681	206 176.08–226 527.42	3–3	1.93+06	6.97−03	3.38−01	−1.680	C	LS
			4 943.260	4 944.640	206 176.08–226 400.00	3–1	1.89+06	2.31−03	1.13−01	−2.159	D+	LS
178		$^1S-^1P^\circ_0$	4 800.427	4 801.769	207 874.09–228 699.75	1–3	2.76+07	2.86−01	4.52+00	−0.544	B	1
179	$3s5s-3s6p$	$^3S-^3P^\circ$	*3 537.75*	*3 538.76*	206 176.08–*234 434.6*	3–9	1.57+05	8.82−04	3.08−02	−2.577	E+	1
			3 536.796	3 537.807	206 176.08–234 442.18	3–5	1.57+05	4.90−04	1.71−02	−2.833	D	LS
			3 538.521	3 539.532	206 176.08–234 428.40	3–3	1.57+05	2.94−04	1.03−02	−3.055	E+	LS
			3 540.191	3 541.203	206 176.08–234 415.07	3–1	1.56+05	9.79−05	3.42−03	−3.532	E+	LS
180		$^1S-^1P^\circ$	3 770.585	3 771.656	207 874.09–234 387.64	1–3	4.42+05	2.83−03	3.51−02	−2.548	D	1
181	$3s5p-5s5d$	$^1P^\circ-^1D$	7 612.36	7 614.45	214 532.17–227 665.05	3–5	9.94+07	1.44+00	1.08+02	0.635	B+	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
182		$^3P^\circ-{}^3D$	*8 266.3*	*8 268.6*	*214 991.8–227 085.7*	9–15	7.17+07	1.22+00	3.00+02	1.041	B+	1
			8 262.57	8 264.84	214 989.27–227 088.72	5–7	7.18+07	1.03+00	1.40+02	0.712	B+	LS
			8 269.33	8 271.60	214 994.65–227 084.21	3–5	5.36+07	9.17−01	7.49+01	0.439	B+	LS
			8 271.95	8 274.22	214 995.46–227 081.19	1–3	3.96+07	1.22+00	3.32+01	0.086	B+	LS
			8 265.55	8 267.92	214 989.27–227 084.21	5–5	1.80+07	1.84−01	2.50+01	−0.036	B+	LS
			8 271.39	8 273.67	214 994.65–227 081.19	3–3	2.98+07	3.06−01	2.50+01	−0.037	B+	LS
			8 267.71	8 269.99	214 989.27–227 081.19	5–3	1.98+06	1.22−02	1.66+00	−1.215	C+	LS
183	$3s5p-3s6s$	$^1P^\circ-{}^1S$	6 314.46	6 316.21	214 532.17–230 364.46	3–1	1.18+08	2.35−01	1.47+01	−0.152	B	1
184		$^3P^\circ-{}^3S$	*6 832.7*	*6 834.6*	*214 991.8*–229 623.19	9–3	1.05+08	2.45−01	4.96±01	0.343	B+	1
			6 831.55	6 833.44	214 989.27–229 623.19	5–3	5.83+07	2.45−01	2.76+01	0.088	B+	LS
			6 834.07	6 835.95	214 994.65–229 623.19	3–3	3.50+07	2.45−01	1.65+01	−0.134	B	LS
			6 834.44	6 836.33	214 995.46–229 623.19	1–3	1.17+07	2.45−01	5.51+00	−0.611	B	LS
185	$3s5p-3s6d$	$^1P^\circ-{}^1D$	3 842.462	3 843.552	214 532.17–240 549.77	3–5	1.73+07	6.39−02	2.43+00	−0.717	C+	1
186		$^3P^\circ-D^3$	*3 951.09*	*3 952.23*	*214 991.8–240 294.0*	9–15	5.57+06	2.18−02	2.55+00	−0.707	C	1
			3 947.494	3 948.611	214 989.27–240 314.63	5–7	5.59+06	1.83−02	1.19+00	−1.039	C+	LS
			3 953.071	3 954.190	214 994.65–240 284.28	3–5	4.17+06	1.63−02	6.37−01	−1.311	C	LS
			3 956.640	3 957.760	214 995.46–240 262.28	1–3	3.08+06	2.17−02	2.83−01	−1.664	C	LS
			3 952.230	3 953.349	214 989.27–240 284.28	5–5	1.39+06	3.26−03	2.12−01	−1.788	D+	LS
			3 956.513	3 957.633	214 994.65–240 262.28	3–3	2.31+06	5.43−03	2.12−01	−1.788	D+	LS
			3 955.671	3 956.790	214 989.27–240 262.28	5–3	1.54+05	2.17−04	1.41−02	−2.965	E+	LS
187	$3s5p-3s7s$	$^1P^\circ-S^1$	3 569.672	3 570.691	214 532.17–242 537.95	3–1	5.78+07	3.68−02	1.30+00	−0.957	D+	1
188		$^3P^\circ-{}^3S$	*3 681.74*	*3 682.79*	*214 991.8*–242 145.10	9–3	4.51+07	3.06−02	3.34+00	−0.560	D+	1
			3 681.402	3 682.451	214 989.27–242 145.10	5–3	2.51+07	3.06−02	1.85+00	−0.815	D+	LS
			3 682.132	3 683.180	214 994.65–242 145.10	3–3	1.50+07	3.06−02	1.11+00	−1.037	D+	LS
			3 682.242	3 683.290	214 995.46–242 145.10	1–3	5.00+06	3.05−02	3.70−01	−1.516	D	LS
189	$3s5p-3p4p$	$^1P^\circ-{}^1P$	3 525.939	3 526.947	214 532.17–242 885.30	3–3	2.48+07	4.62−02	1.61+00	−0.858	C+	1
190		$^1P^\circ-{}^1D$	2 992.851	2 993.723	214 532.17–247 935.39	3–5	4.15+05	9.30−04	2.75−02	−2.554	D	1
191		$^1P^\circ-{}^1S$	2 249.199	2 249.896	214 532.17–258 978.66	3–1	8.70+07	2.20−02	4.89−01	−1.180	C	1
192		$^3P^\circ-{}^3D$	*3 337.78*	*3 338.75*	*214 991.8–244 943.1*	9–15	4.94+06	1.37−02	1.36+00	−0.909	C	1
			3 321.600	3 322.556	214 989.27–245 086.58	5–7	5.01+06	1.16−02	6.34−01	−1.237	C	LS
			3 846.722	3 347.684	214 994.65–244 866.05	3–5	3.68+06	1.03−02	3.41−01	−1.510	C	LS
			3 361.343	3 362.309	214 995.46–244 736.93	1–3	2.67+06	1.36−02	1.51−01	−1.866	D+	LS
			3 346.119	3 347.081	214 989.27–244 866.05	5–5	1.23+06	2.06−03	1.13−01	−1.987	D+	LS
			3 361.251	3 362.217	214 994.65–244 736.93	3–3	2.01+06	3.41−03	1.13−01	−1.990	D+	LS
			3 360.643	3 361.609	214 989.27–244 736.93	5–3	1.35+05	1.37−04	7.58−03	−3.164	E+	LS
193		$^3P^\circ-{}^3P$	*3 022.83*	*3 023.71*	*214 991.8–248 063.7*	9–9	7.49+06	1.03−02	9.19−01	−1.033	D+	1
			3 013.098	3 013.976	214 989.27–248 168.04	5–5	5.67+06	7.72−03	3.83−01	−1.413	C	LS
			3 033.186	3 034.069	214 994.65–247 953.69	3–3	1.85+06	2.56−03	7.67−02	−2.115	D+	LS
			3 032.691	3 033.574	214 989.27–247 953.69	5–3	3.09+06	2.56−03	1.28−01	−1.893	D+	LS
			3 040.754	3 041.639	214 994.65–247 871.66	3–1	7.35+06	3.40−03	1.02−01	−1.991	D+	LS
			3 013.586	3 014.464	214 994.65–248 168.04	3–5	1.89+06	4.29−03	1.28−01	−1.890	D+	LS
			3 033.261	3 034.144	214 995.46–247 953.69	1–3	2.46+06	1.02−02	1.02−01	−1.991	D+	LS
194		$^3P^\circ-{}^3S$	*2 959.37*	*2 960.24*	*214 991.8*–248 772.86	9–3	2.67+07	1.17−02	1.03+00	−0.978	C	1
			2 959.153	2 960.017	214 989.27–248 772.86	5–3	1.48+07	1.17−02	5.70−01	−1.233	C	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			2 959.624	2 960.488	214 994.65–248 772.86	3–3	8.90+06	1.17−02	3.42−01	−1.455	C	LS
			2 959.695	2 960.559	214 995.46–248 772.86	1–3	2.97+06	1.17−02	1.14−01	−1.932	D+	LS
195	$3s5p-3s7d$	$^1P^\circ-^1D$	2 768.929	2 769.747	214 532.17–250 636.55	3–5	6.16+06	1.18−02	3.23−01	−1.451	D	1
196		$^3P^\circ-^3D$	*2 930.14*	*2 931.00*	*214 991.8–249 109.9*	9–15	4.88+06	1.05−2	9.11−01	−1.025	E+	1
			2 928.956	2 929.813	214 989.27–249 121.14	5–7	4.89+06	8.81−03	4.25−01	−1.356	D	LS
			2 930.899	2 931.756	214 994.65–249 103.90	3–5	3.66+06	7.86−03	2.28−01	−1.627	D	LS
			2 931.86	2 932.72	214 995.46–249 093.5	1–3	2.71+06	1.05−02	1.01−01	−1.979	E+	LS
			2 930.436	2 931.294	214 989.27–249 103.90	5–5	1.22+06	1.57−03	7.58−02	−2.105	E+	LS
			2 931.79	2 932.65	214 994.65–249 093.5	3–3	2.03+06	2.62−03	7.59−02	−2.105	E+	LS
			2 931.33	2 932.19	214 989.27–249 093.5	5–3	1.36+05	1.05−04	5.07−03	−3.280	E	LS
197	$3s5p-3s8s$	$^1P^\circ-^1S$	2 830.017	2 830.849	214 532.17–249 857.26	3–1	3.07+07	1.23−02	3.44−01	−1.433	D	1
198		$^3P^\circ-^3S$	*2 874.83*	*2 875.68*	*214 991.8*–249 766.19	9–3	7.24+07	2.99−02	2.55+00	−0.570	D+	1
			2 874.627	2 875.470	214 989.27–249 766.19	5–3	4.02+07	2.99−02	1.42+00	−0.825	D+	LS
			2 875.072	2 875.915	214 994.65–249 766.19	3–3	2.41+07	2.99−02	8.49−01	−1.047	D+	LS
			2 875.138	2 875.982	214 995.46–249 766.19	1–3	8.04+06	2.99−02	2.83−01	−1.524	D	LS
199	$3s5f-3s5d$	$^1F^\circ-^1D$		2 138.76 cm^{-1}	225 526.33–227 665.09	7–5	5.85+05	1.37−01	1.48+02	−0.018	B+	1
200	$3s5f-3s5g$	$^1F^\circ-^1G$		4 775.68 cm^{-1}	225 526.33–230 302.01	7–9	4.57+06	3.86−01	1.86+02	0.432	B+	1
201	$3s5f-3s6d$	$^1F^\circ-^1D$	6 654.43	6 556.27	225 526.33–240 549.77	7–5	8.81+04	4.18−04	6.41−02	−2.534	D	1
202		$^3F^\circ-^3D$	*9 972.6*	*9 975.4*	*230 269.3–240 294.0*	21–15	1.25+07	1.33−01	9.16+01	0.446	B+	1
			9 953.49	9 956.22	230 270.66–240 314.63	9–7	1.15+07	1.33−01	3.92+01	0.078	B+	LS
			9 981.63	9 984.36	230 268.62–240 284.28	7–5	1.11+07	1.18−01	2.72+01	−0.083	B+	LS
			10 002.7	10 005.4	230 267.7–240 262.28	5–3	1.23+07	1.11−01	1.83+01	−0.256	B+	LS
			9 951.47	9 954.20	230 268.62–240 31463	7–7	9.96+05	1.48−02	3.40+00	−0.985	C+	LS
			9 980.7	9 983.4	230 267.7–240 284.28	5–5	1.39+06	2.07−02	3.40+00	−0.985	C+	LS
			9 950.6	9 953.3	230 267.7–240 314.63	5–7	2.81+04	5.85−04	9.58−02	−2.534	D+	LS
203	$3s5f-3s6g$	$^1F^\circ-^1G$	5 898.79	5 900.42	225 526.33–242 474.27	7–9	4.86+07	3.26−01	4.43+01	0.358	B	1
204		$^3F^\circ-^3G$	*8 191.2*	*8 193.4*	*230 269.3–242 474.2*	21–27	8.77+07	1.14+00	6.43+02	1.379	B+	1
			8 191.68	8 193.93	230 270.66–242 474.81	9–11	8.78+07	1.08+00	2.62+02	0.988	B+	LS
			8 190.95	8 193.20	230 268.62–242 473.86	7–9	8.19+07	1.06+00	2.00+02	0.870	B+	LS
			8 190.5	8 192.7	230 267.7–242 473.66	5–7	8.09+07	1.14+00	1.54+02	0.756	B+	LS
			8 192.32	8 194.57	230 270.66–242 473.86	9–9	5.48+06	5.52−02	1.34+01	−0.304	B	LS
			8 191.08	8 193.34	230 268.62–242 473.66	7–7	7.05+06	7.10−02	1.34+01	−0.304	B	LS
			8 192.45	8 194.71	230 270.66–242 473.66	9–7	1.07+05	8.41−04	2.04−01	−2.121	D+	LS
205	$3s5f-3p4p$	$^1F^\circ-^1D$	4 461.229	4 462.481	225 526.33–247 935.39	7–5	1.52+06	3.25−03	3.34−01	−1.643	D+	1
206		$^3F^\circ-^3D$	*6 813.0*	*6 814.9*	*230 269.3–244 943.1*	21–15	7.96+05	3.96−03	1.87+00	−1.080	C	1
			6 747.63	6 749.50	230 270.66–245 086.58	9–7	7.53+05	4.00−03	8.00−01	−1.444	C	LS
			6 848.63	6 850.52	230 268.62–244 866.05	7–5	6.96+05	3.50−03	5.53−01	−1.611	C	LS
			6 909.3	6 911.2	230 267.7–244 736.93	5–3	7.63+05	3.28−03	3.73−01	−1.785	C	LS
			6 746.70	6 748.57	230 268.62–245 086.58	7–7	6.52+04	4.45−04	6.92−02	−2.507	D+	LS
			6 848.2	6 850.1	230 267.7–244 866.05	5–5	8.73+04	6.14−04	6.92−02	−2.513	D+	LS
			6 746.3	6 748.1	230 267.7–245 086.58	5–7	1.84+03	1.76−05	1.95−03	−4.056	E	LS
207	$3s5f-3s7d$	$^3F^\circ-^3D$	*5 306.21*	*5 307.69*	*230 269.3–249 109.9*	21–15	3.22+0.6	9.70−03	3.56+00	−0.691	D+	1
			5 303.429	5 304.905	230 270.66–249 121.14	9–7	2.96+06	9.71−03	1.53+00	−1.059	D+	LS
			5 307.709	5 309.186	230 268.62–249 103.90	7–5	2.86+06	8.62−03	1.05+00	−1.219	D+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			5 310.38	5 311.86	230 267.7–249 093.5	5–3	3.21+06	8.14−03	7.12−01	−1.390	D+	LS
			5 302.855	5 304.331	230 268.62–249 121.14	7–7	2.56+05	1.08−03	1.32−01	−2.121	E+	LS
			5 307.45	5 308.93	230 267.7–249 103.90	5–5	3.57+05	1.51−03	1.32−01	−2.122	E+	LS
			5 302.60	5 304.07	230 267.7–249 121.14	5–7	7.23+03	4.27−05	3.73−03	−3.671	E	LS
208	$3s5f-3s7g$	$^1F^\circ-^1G$	4 115.487	4 116.648	225 526.33–249 817.94	7–9	4.07+07	1.33−01	1.26+01	−0.031	C	1
209		$^3F^\circ-^3G$	*5 113.96*	*5 115.38*	*230 2369.3–249 818.2*	21–27	4.17+07	2.10−01	7.43+01	0.644	C+	1
			5 114.117	5 115.542	230 270.66–249 818.93	9–11	4.17+07	2.00−01	3.03+01	0.255	C+	LS
			5 113.866	5 115.291	230 268.62–249 817.85	7–9	3.91+07	1.97−01	2.32+01	0.140	C+	LS
			5 113.76	5 115.19	230 267.7–249 817.32	5–7	3.82+07	2.10−01	1.77+01	0.021	C+	LS
			5 114.400	5 115.825	230 270.66–249 817.85	9–9	2.60+06	1.02−02	1.55+00	−1.037	D+	LS
			5 114.005	5 115.430	230 268.62–249 817.32	7–7	3.36+06	1.32−02	1.56+00	−1.034	D+	LS
			5 114.538	5 115.964	230 270.66–249 817.32	9–7	5.11+04	1.56−04	2.36−02	−2.853	E	LS
210	$3s5f-3s8d$	$^3F^\circ-^3D$	*4 211.8*	*4 213.1*	*230 269.3–254 005*	21–15	2.47+06	4.69−03	1.37+00	−1.007	D	1
			4 211.678	4 212.864	230 270.66–254 007.48	9–7	2.27+06	4.69−03	5.85−01	−1.375	D	LS
			4 211.9	4 213.1	230 268.62–254 004	7–5	2.19+06	4.17−03	4.05−01	−1.535	D	LS
			4 212.1	4 213.3	230 267.7–254 002	5–3	2.47+06	3.94−03	2.73−01	−1.706	D	LS
			4 211.316	4 212.502	230 268.62–254 007.48	7–7	1.97+05	5.23−04	5.08−02	−2.436	E	LS
			4 211.8	4 213.0	230 267.7–254 004	5–5	2.75+05	7.32−04	5.08−02	−2.437	E	LS
			4 211.15	4 212.34	230 267.7–254 007.48	5–7	5.56+03	2.07−05	1.44−03	−3.985	E	LS
211	$3s5f-3s8g$	$^1F^\circ-^1G$	3 440.38	3 441.36	225 526.33–254 584.6	7–9	3.01+07	6.86−2	5.44+00	−319	C	1
212		$^3F^\circ-^3G$	*4 111.4*	*4 112.6*	*230 269.3–254 585*	21–27	2.25+07	7.33−02	2.08+01	0.187	C	1
			4 111.512	4 112.672	230 270.66–254 585.75	9–11	2.25+07	6.97−02	8.49+00	−0.203	C+	LS
			4 111.33	4 112.49	230 268.62–254 584.8	7–9	2.11+07	6.87−02	6.51+00	−0.318	C	LS
			4 111.17	4 112.33	230 267.7–254 584.8	5–7	2.07+07	7.34−02	4.97+00	−0.435	C	LS
			4 111.67	4 112.83	230 270.66–254 584.8	9–9	1.41+06	3.57−03	4.35−01	−1.493	D	LS
			4 111.33	4 112.49	230 268.62–254 584.8	7–7	1.81+06	4.59−03	4.35−01	−1.493	D	LS
			4 111.67	4 112.83	230 270.66–254 584.8	9–7	2.75+04	5.43−05	6.62−03	−3.311	E	LS
213	$3s5f-3s9g$	$^3F^\circ-^3G$	*3 624.2*	*3 625.2*	*230 269.3–257 854*	21–27	1.34+07	3.40−02	8.52+00	−0.146	D+	1
			3 624.40	3 625.43	230 270.66–257 853.6	9–11	1.34+07	3.23−02	3.47+00	−0.537	D+	LS
			3 624.13	3 625.16	230 268.62–257 853.6	7–9	1.26+07	3.19−02	2.66+00	−0.651	D+	LS
			3 624.01	3 625.04	230 267.7–257 853.6	5–7	1.23+07	3.40−02	2.03+00	−0.770	D	LS
			3 624.40	3 625.43	230 270.66–257 853.6	9–9	8.37+05	1.65−03	1.77−01	−1.828	E	LS
			3 624.13	3 625.16	230 268.62–257 853.6	7–7	1.08+06	2.13−03	1.78−01	−1.827	E	LS
			3 624.40	3 625.43	230 270.66–257 853.6	9–7	1.64+04	2.52−05	2.71−03	−3.644	E	LS
214	$3p4s-3s5d$	$^3P^\circ-^3D$		*409.7* cm^{-1}	*226 676.0–227 085.7*	9–15	7.10+01	1.06−03	7.64+00	−2.020	C+	1
				268.44 cm^{-1}	226 820.28–227 088.72	5–7	1.99+01	5.81−04	3.56+00	−2.537	C+	LS
				556.79 cm^{-1}	226 527.42–227 084.21	3–5	1.34+02	1.08−03	1.92+00	−2.489	C+	LS
				681.19 cm^{-1}	226 400.00–227 081.19	1–3	1.82+02	1.76−03	8.51−01	−2.754	C	LS
				263.93 cm^{-1}	226 320.28–227 084.21	5–5	4.74+00	1.02−04	6.36−01	−3.292	C	LS
				553.77 cm^{-1}	226 527.42–227 081.19	3–3	7.30+01	3.57−04	6.37−01	−2.970	C	LS
				260.91 cm^{-1}	226 820.28–227 081.19	5–3	5.09−01	6.73−06	4.25−02	−4.473	D	LS
215	$3p4s-3s6s$	$^3P^\circ-^3S$		*2 947.2* cm^{-1}	*226 676.0*–229 623.19	9–3	1.60+05	9.21−03	9.26+00	−1.081	C+	1
				2 802.91 cm^{-1}	226 820.28–229 623.19	5–3	7.65+04	8.76−03	5.14−00	−1.359	B	LS
				3 095.77 cm^{-1}	226 527.42–229 623.19	3–3	6.18+04	9.67−03	3.08−00	−1.537	C+	LS
				3 223.19 cm^{-1}	226 400.00–229 623.19	1–3	2.33+04	1.01−02	1.03−00	−1.996	C	LS
216		$^1P^\circ-^1S$		1 664.71 cm^{-1}	228 699.75–230 364.46	3–1	4.34+05	7.83−02	4.65+01	−0.629	B+	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
217	$3p4s-3s6d$	$^3P^\circ-^3D$	*7 341.2*	*7 343.2*	*226 676.0–240 294.0*	9–15	7.97+06	1.07+01	2.34+01	−0.016	B	1
			7 408.47	7 410.51	226 320.28–240 314.63	5–7	7.76+06	8.95−02	1.09+01	−0.349	B	LS
			7 267.10	7 269.10	226 527.42–240 284.28	3–5	6.17+06	8.14−02	5.84+00	−0.612	B	LS
			7 211.83	7 213.82	226 400.00–240 262.28	1–3	4.66+06	1.09−01	2.59+00	−0.963	C+	LS
			7 425.17	7 427.21	226 820.28–240 284.28	5–5	1.92+06	1.59−02	1.94+00	−1.100	C+	LS
			7 278.74	7 280.74	226 527.42–240 262.28	3–3	3.41+06	2.71−02	1.95+00	−1.090	C+	LS
			7 437.32	7 439.37	226 820.28–240 262.28	5–3	2.13+05	1.06−03	1.30−01	−2.276	D+	LS
218		$^1P^\circ-^1D$	8 436.49	8 438.80	228 699.75–240 549.77	3–5	2.93+07	5.21−01	4.34+01	0.194	B+	1
219	$3p4s-3s7s$	$^1P^\circ-^1S$	7 224.38	7 226.37	228 699.75–242 537.95	3–1	3.04+06	7.93−03	5.66−01	−1.624	D	1
220	$3p4s-3p4p$	$^3P^\circ-^3D$	*5 472.78*	*5 474.32*	*226 676.0–244 943.1*	9–15	6.07+07	4.54−01	7.37+01	0.611	B	1
			5 473.042	5 474.562	226 820.28–245 086.58	5–7	6.07+07	3.82−01	3.44+01	0.281	B+	LS
			5 451.455	5 452.970	226 527.42–244 866.05	3–5	4.60+07	3.42−01	1.84+01	0.011	B+	LS
			5 451.960	5 453.476	226 400.00–244 736.93	1–3	3.41+07	4.56−01	8.19+00	−0.341	B	LS
			5 539.926	5 541.465	226 820.28–244 866.05	5–5	1.46+07	6.74−02	6.15+00	−0.472	B	LS
			5 490.111	5 491.636	226 527.42–244 736.93	3–3	2.50+07	1.13−01	6.13+00	−0.470	B	LS
			5 579.851	5 581.401	226 820.28–244 736.93	5–3	1.59+06	4.46−03	4.10−01	−1.652	C	LS
221		$^3P^\circ-^3P$	*4 674.28*	*4 675.58*	*226 676.0–248 063.7*	9–9	1.11+08	3.65−01	5.05+01	0.517	B	1
			4 683.022	4 584.332	226 820.28–248 168.04	5–5	8.30+07	2.73−01	2.11+01	0.135	B+	LS
			4 665.862	4 667.168	226 527.42–247 953.69	3–3	2.79+07	9.12−02	4.20+00	−0.563	B	LS
			4 730.521	4 731.844	226 820.28–247 953.69	5–3	4.47+07	9.00−02	7.01+00	−0.347	B	LS
			4 683.794	4 685.105	226 527.42–247 871.66	3–1	1.10+08	1.21−01	5.60+00	−0.440	B	LS
			4 619.646	4 620.940	226 527.42–248 168.04	3–5	2.89+07	1.54−01	7.03+00	−0.335	B	LS
			4 638.278	4 639.577	226 400.00–247 953.69	1–3	3.79+07	3.67−01	5.61+00	−0.435	B	LS
222		$^3P^\circ-^3S$	*4 524.25*	*4 525.53*	*226 676.0*–248 772.86	9–3	1.24+08	1.27−01	1.70+01	0.058	B	1
			4 553.997	4 555.273	226 820.28–248 772.86	5–3	6.75+07	1.26−01	9.45+00	−0.201	B	LS
			4 494.043	4 495.303	226 527.42–248 772.86	3–3	4.19+07	1.27−01	5.64+00	−0.419	B	LS
			4 468.447	4 469.701	226 400.00–248 772.86	1–3	1.42+07	1.28−01	1.88+00	−0.893	C+	LS
223		$^1P^\circ-P^1$	7 047.48	7 049.43	228 699.75–242 885.30	3–3	2.63+07	1.96−01	1.36+01	−0.231	B	1
224		$^1P^\circ-^1D$	5 197.236	5 198.683	228 699.75–247 935.39	3–5	2.47+07	1.67−01	8.57+00	−0.300	B	1
225		$^1P^\circ-^1S$	3 801.678	3 302.629	228 699.75–258 978.66	3–1	7.89+07	4.30−02	1.40+00	−0.889	C+	1
226	$3p4s-3s7d$	$^3P^\circ-^3D$	*4 456.29*	*4 457.54*	*226 676.0–249 109.9*	9–15	6.17+06	3.06−02	4.05+00	−0.560	D+	1
			4 482.874	4 484.132	226 820.28–249 121.14	5–7	607+06	2.56−02	1.89+00	−0.893	C	LS
			4 428.145	4 429.388	226 527.42–249 103.90	3–5	4.71+06	2.31−02	1.01+00	−1.159	D+	LS
			4 405.31	4 406.55	226 400.00–249 093.5	1–3	3.55+06	3.10−02	4.50−01	−1.509	D	LS
			4 486.342	4 487.601	226 820.28–249 103.90	5–5	1.51+06	4.56−03	3.37−01	−1.642	D	LS
			4 430.19	4 431.43	226 527.42–249 093.5	3–3	2.62+06	7.70−03	3.37−01	−1.636	D	LS
			4 488.44	4 489.70	226 820.28–249 093.5	5–3	1.68+05	3.04−04	2.25−02	−2.818	E	LS
227		$^1P^\circ-^1D$	4 557.273	4 558.550	228 699.75–250 636.55	3–5	5.47+07	2.84−01	1.28+01	−0.070	C+	1
228	$3p4s-3s8s$	$^3P^\circ-^3S$	*4 329.62*	*4 330.84*	*226 676.0*–249 766.19	9–3	3.25+07	3.05−2	3.91+00	−0.561	D+	1
			4 356.851	4 358.075	226 820.28–249 766.19	5–3	1.77+07	3.03−02	2.17+00	−0.820	C	LS
			4 301.944	4 303.154	226 527.42–249 766.19	3–3	1.11+07	3.07−02	1.30+00	−1.036	D+	LS
			4 278.484	4 279.688	226 400.00–249 766.19	1–3	3.74+06	3.08−02	4.34−01	−1.511	D	LS
229	$3p4s-3s8d$	$^1P^\circ-^1D$	3 835.180	3 836.268	228 699.75–254 766.75	3–5	9.79+06	3.60−02	1.36+00	−0.967	D+	1
230	$3s5d-3p3d$	$^1D-^1F^\circ$	12 901.63	12 905.16	227 665.09–235 413.93	5–7	2.51+07	8.79−01	1.87+02	0.643	B	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler et al.,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova et al.,[90] 4=Almaraz et al.,[3] 5=Nussbaumer,[82] 6=Livingston et al.,[58] 7=Livingston et al.,[59] and 8=Berry et al.[8])—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
231		^1D–$^1P^\circ$	12 065.25	12 068.55	227 665.09–235 951.09	5–3	2.89+07	3.79−01	7.53+01	0.278	B+	1
232	3s5d–3s5f	^3D–$^3F^\circ$		*3 183.6* cm^{-1}	*227 085.7–230 269.3*	15–21	2.77+06	5.73−01	8.89+02	0.934	B+	1
				3 181.94 cm^{-1}	227 088.72–230 270.66	7–9	2.76+06	5.26−01	3.81+02	0.566	B+	LS
				3 184.41 cm^{-1}	227 084.21–230 268.62	5–7	2.46+06	5.09−01	2.63+02	0.406	B+	LS
				3 186.5 cm^{-1}	227 081.19–230 267.7	3–5	2.33+06	5.73−01	1.78+02	0.235	B+	LS
				3 179.90 cm^{-1}	227 088.72–230 268.62	7–7	3.07+05	4.55−02	3.30+01	−0.497	B+	LS
				3 183.5 cm^{-1}	227 084.21–230 267.7	5–5	4.31+05	6.38−02	3.30+01	−0.496	B+	LS
				3 179.0 cm^{-1}	227 088.72–230 267.7	7–5	1.21+04	1.28−03	9.28−01	−2.048	C	LS
233	3s5d–3p4s	^1D–$^1P^\circ$		1 034.66 cm^{-1}	227 665.09–228 699.75	5–3	4.06+04	3.41−2	5.43+01	−0.768	B+	1
234	3s5d–3s6p	^3D–$^3P^\circ$	*13 603.8*	*13 607.5*	*227 085.7–234 434.6*	15–9	2.89+07	4.81−01	3.23+02	0.858	B+	1
			13 695.32	13 599.04	227 088.72–234 442.18	7–5	2.43+07	4.82−01	1.51+02	0.528	B+	LS
			13 612.48	13 616.21	227 084.21–234 428.40	5–3	2.16+07	3.61−01	8.09+01	0.256	B+	LS
			13 631.62	13 635.35	227 081.19–234 415.07	3–1	2.87+07	2.67−01	3.60+01	−0.096	B+	LS
			13 686.99	13 690.71	227 084.21–234 442.18	5–5	4.33+06	1.20−01	2.68+01	−0.222	B+	LS
			13 606.89	13 610.61	227 081.19–234 428.40	3–3	7.20+06	2.00−01	2.69+01	−0.222	B+	LS
			13 681.42	13 685.13	227 081.19–234 442.18	3–5	2.91+05	1.34−02	1.80+00	−1.396	C+	LS
235		^1D–$^1P^\circ$	14 871.24	14 875.31	227 665.09–234 387.64	5–3	2.89+04	5.76−04	1.41−01	−2.541	D+	1
236	3s5d–3s6f	^3D–$^3F^\circ$	*6 523.2*	*6 525.0*	*227 085.7–242 411.4*	15–21	3.83+07	3.42−01	1.10+02	0.710	B+	1
			6 524.34	6 526.15	227 088.72–242 411.70	7–9	3.82+07	3.14−01	4.72+01	0.342	B+	LS
			6 522.61	6 524.41	227 084.21–242 411.27	5–7	3.40+07	3.04−01	3.26+01	0.182	B+	LS
			6 521.49	6 523.29	227 081.19–242 410.88	3–5	3.22+07	3.42−01	2.20+01	0.011	B+	LS
			6 524.53	6 526.33	227 088.72–242 411.27	7–7	4.26+06	2.72−02	4.09+00	−0.720	B	LS
			6 522.77	6 524.57	227 084.21–242 410.88	5–5	5.97+06	3.81−02	4.09+00	−0.720	B	LS
			6 524.69	6 526.49	227 088.72–242 410.88	7–5	1.68+05	7.67−04	1.15−01	−2.270	D+	LS
237		^1D–$^1F^\circ$	6 169.83	6 171.54	227 665.09–243 868.50	5–7	1.06+07	8.48−02	8.61+00	−0.373	B	1
238	3s5d–3s7p	^3D–$^3P^\circ$	*5 599.85*	*5 601.39*	*227 085.7–244 938.4*	15–9	1.17+07	3.29−02	9.10+00	−0.307	C	1
			5 599.246	5 600.801	227 088.72–244 943.31	7–5	9.79+06	3.29−02	4.25+00	−0.638	C	LS
			5 600.953	5 602.508	227 084.21–244 933.36	5–3	8.75+06	2.47−02	2.28+00	−0.908	C	LS
			5 601.461	5 603.016	227 081.19–244 928.72	3–1	1.17+07	1.83−02	1.01+00	−1.260	D+	LS
			5 597.832	5 599.386	227 084.21–244 943.31	5–5	1.75+06	8.24−03	7.59−01	−1.385	D+	LS
			5 600.005	5 601.560	227 081.19–244 933.36	3–3	2.91+06	1.37−02	7.58−01	−1.386	D+	LS
			5 596.886	5 598.440	227 081.19–244 943.31	3–5	1.17+05	9.15−04	5.06−02	−2.561	E	LS
239		^1D–$^1P^\circ$	5 810.19	5 811.80	227 665.09–244 871.47	5–3	1.26+07	3.83−02	3.66+00	−0.718	C	1
240	3s5d–3s7f	D^3–$^3F^\circ$	*4 406.17*	*4 407.40*	*227 085.7–249 774.8*	15–21	3.11+07	1.27−01	2.76+01	0.280	C	1
			4 406.717	4 407.954	227 088.72–249 774.98	7–9	3.10+07	1.16−01	1.18+01	−0.090	C+	LS
			4 405.895	4 407.133	227 084.21–249 774.70	5–7	2.77+07	1.13−01	8.20+00	−0.248	C	LS
			4 405.352	4 406.589	227 081.19–249 774.48	3–5	2.62+07	1.27−01	5.53+00	−0.419	C	LS
			4 406.771	4 408.009	227 088.72–249 774.70	7–7	3.47+06	1.01−02	1.03+00	−1.151	D+	LS
			4 405.938	4 407.175	227 084.21–249 774.48	5–5	4.84+06	1.41−02	1.02+00	−1.152	D+	LS
			4 406.814	4 408.052	227 088.72–249 774.48	7–5	1.36+05	2.84−04	2.88−02	−2.702	E	LS
241		^1D–$^1F^\circ$	4 403.830	4 405.067	227 665.09–250 366.22	5–7	2.22+07	9.04−02	6.55+00	−0.345	C	1
242	3s5d–3s8f	^3D–$^3F^\circ$	*3 639.08*	*3 640.11*	*227 085.7–254 557.4*	15–21	2.24+07	6.24−02	1.12+01	−0.029	C	1
			3 639.441	3 640.478	227 088.72–254 557.64	7–9	2.24+07	5.73−02	4.81+00	−0.397	C	LS
			3 638.894	3 639.931	227 084.21–254 557.26	5–7	2.00+07	5.55−02	3.33+00	−0.557	C	LS
			3 638.524	3 639.561	227 081.19–254 557.03	3–5	1.89+07	6.24−02	2.24+00	−0.728	C	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			3 639.491	3 640.528	227 088.72–254 557.26	7–7	2.50+06	4.97−03	4.17−01	−1.459	D	LS
			3 638.924	3 639.961	227 084.21–254 557.03	5–5	3.50+06	6.96−03	4.17−01	−1.458	D	LS
			3 639.522	3 640.559	227 088.72–254 557.03	7–5	9.86+04	1.40−04	1.17−02	−3.009	E	LS
243		$^{1}D-^{1}F^{\circ}$	3 676.731	3 677.778	227 665.09–254 855.42	5–7	2.03+07	5.77−02	3.49+00	−0.540	C	1
244	$3s5d-3s9f$	$^{3}D-^{3}F^{\circ}$	*3 251.6*	*3 252.5*	*227 085.7–257 831*	15–21	1.63+07	3.62−02	5.81+00	−0.265	D	1
			3 251.87	3 252.81	227 088.72–257 831.4	7–9	1.63+07	3.32−02	2.49+00	−0.634	D+	LS
			3 251.39	3 252.33	227 084.21–257 831.4	5–7	1.45+07	3.22−02	1.72+00	−0.793	D	LS
			3 251.07	3 252.01	227 081.19–257 831.4	3–5	1.37+07	3.62−02	1.16+00	−0.964	D	LS
			3 251.87	3 252.81	227 088.72–257 831.4	7–7	1.82+06	2.88−03	2.16−01	−1.696	E	LS
			3 251.39	3 252.33	227 084.21–257 831.4	5–5	2.54+06	4.03−03	2.16−01	−1.696	E	LS
			3 251.87	3 252.81	227 088.72–257 831.4	7–5	7.18+04	8.13−05	6.09−03	−3.245	E	LS
245		$^{1}D-^{1}F^{\circ}$	3 294.131	3 295.080	227 665.09–258 013.37	5–7	1.63+07	3.72−02	2.02+00	−0.730	D	1
246	$3s6s-3p3d$	$^{1}S-^{1}P^{\circ}$	17 895.0	17 899.9	230 364.46–233 951.09	1–3	1.30+07	1.88+00	1.11+02	0.274	B+	1
247	$3s6s-3s6p$	$^{3}S-^{3}P^{\circ}$		*4 811.4* cm^{-1}	229 623.19–*234 434.6*	3–9	1.07+07	2.08+00	4.27+02	0.795	B+	1
				4 818.99 cm^{-1}	229 623.19–234 442.18	3–5	1.08+07	1.16+00	2.38+02	0.542	B+	LS
				4 805.21 cm^{-1}	229 623.19–234 428.40	3–3	1.06+07	6.91−01	1.42+02	0.317	B+	LS
				4 791.88 cm^{-1}	229 623.19–234 415.07	3–1	1.06+07	2.30−01	4.74+01	−0.161	B+	LS
248	$3s5g-3p3d$	$^{1}G-^{1}F^{\circ}$	19 556.8	19 562.1	230 302.01-235 413.93	9–7	2.78+06	1.24−01	7.19+01	0.048	B	1
249	$3s5g-3s6f$	$^{3}G-^{3}F^{\circ}$	*8 255.7*	*8 257.9*	*230 301.8–242 411.4*	27–21	1.10+06	8.72−03	6.40+00	−0.628	C+	1
			8 255.81	8 258.08	230 302.35–242 411.70	11–9	1.04+06	8.72−03	2.61+00	−1.018	C+	LS
			8 255.63	8 257.90	230 301.66–242 411.27	9–7	1.03+06	8.17−03	2.00+00	−1.134	C+	LS
			8 255.60	8 257.87	230 301.22–242 410.88	7–5	1.10+06	8.01−03	1.52+00	−1.251	C+	LS
			8 255.34	8 257.61	230 301.66–242 411.70	9–9	5.34+04	5.46−04	1.34−01	−2.309	D+	LS
			8 255.33	8 257.60	230 301.22–242 411.27	7–7	6.86+04	7.01−04	1.33−01	−2.309	D+	LS
			8 255.04	8 257.31	230 301.22–242 411.70	7–9	8.14+02	1.07−05	2.04−03	−4.126	E	LS
250		$^{1}G-^{1}F^{\circ}$	7 369.07	7 371.10	230 302.01–243 868.50	9–7	3.43+04	2.17−04	4.74−02	−2.709	D	1
251	$3s5g-3s7f$	$^{3}G-^{3}F^{\circ}$	*5 133.90*	*5 135.32*	*230 301.8–249 774.8*	27–21	4.40+05	1.35−03	6.17−01	−1.438	E+	1
			5 133.983	5 135.413	230 302.35–249 774.98	11–9	4.17+05	1.35−03	2.51−01	−1.828	D	LS
			5 133.875	5 135.305	230 301.66–249 774.70	9–7	4.13+05	1.27−03	1.93−01	−1.942	E+	LS
			5 133.817	5 135.247	230 301.22–249 774.48	7–5	4.39+05	1.24−03	1.47−01	−2.061	E+	LS
			5 133.801	5 135.231	230 301.66–249 774.98	9–9	2.14+04	8.45−05	1.29−02	−3.119	E	LS
			5 133.759	5 135.189	230 301.22–249 774.70	7–7	2.76+04	1.09−04	1.29−02	−3.117	E	LS
			5 133.685	5 135.115	230 301.22–249 774.98	7–9	3.25+02	1.65−06	1.95−04	−4.937	E	LS
252	$3s6p-3s6d$	$^{1}P^{\circ}-^{1}D$	16 223.72	16 228.15	234 387.64–240 549.77	3–5	5.43+03	3.57−04	5.72−02	−2.970	D	1
253		$^{3}P^{\circ}-^{3}D$	*17 061.7*	*17 066.6*	*234 434.6–240 294.0*	9–15	2.25+07	1.64+00	8.29+02	1.169	B+	1
			17 024.02	17 028.67	234 442.18–240 314.63	5–7	2.27+07	1.38+00	3.87+02	0.839	B+	LS
			17 072.19	17 076.85	234 428.40–240 284.28	3–5	1.69+07	1.23+00	2.07+02	0.567	B+	LS
			17 097.50	17 102.17	234 415.07–240 262.28	1–3	1.25+07	1.64+00	9.23+01	0.215	B+	LS
			17 112.46	17 117.13	234 442.18–240 284.28	5–5	5.58+06	2.45−01	6.90+01	0.088	B+	LS
			17 136.57	17 141.25	234 428.40–240 262.28	3–3	9.26+06	4.08−01	6.91+01	0.088	B+	LS
			17 177.14	17 181.84	234 442.18–240 262.28	5–3	6.14+05	1.63−02	4.61+00	−1.089	B	LS
254	$3s6p-3s7s$	$^{3}P^{\circ}-^{3}S$	*12 965.7*	*12 969.3*	*234 434.6*–242 145.10	9–3	5.32+07	4.47−01	1.72+02	0.605	B	1
			12 978.54	12 982.09	234 442.18–242 145.10	5–3	2.95+07	4.47−01	9.55−01	0.349	B	LS
			12 955.36	12 958.91	234 428.40–242 145.10	3–3	1.78+07	4.48−01	5.73−01	0.128	B	LS
			12 933.02	12 936.56	234 415.07–242 145.10	1–3	5.95+06	4.48−01	1.91−01	−0.349	C+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
255	$3s6p-3p4p$	$^1P^{\circ}_0-^1P$	11 764.73	11 767.95	234 387.64–242 885.30	3–3	3.14+05	6.52−03	7.58−01	−1.709	C	1
256		$^1P^{\circ}-^1D$	7 379.27	7 381.30	234 387.64–247 935.39	3–5	8.74+05	1.19−02	8.68−01	−1.447	C	1
257		$^1P^{\circ}-^1S$	4 065.377	4 066.525	234 387.64–258 978.66	3–1	1.03+08	8.54−02	3.43+00	−0.591	C+	1
258		$^3P^{\circ}-^3D$	*9 513.4*	*9 516.1*	*234 434.6–244 943.1*	9–15	8.67+06	1.96−01	5.53+01	0.246	B	1
			9 392.03	9 394.61	234 442.18–245 086.58	5–7	9.02+06	1.67−01	2.58+01	−0.078	B+	LS
			9 578.07	9 680.70	234 428.40–244 866.05	3–5	6.37+06	1.46−01	1.38+01	−0.359	B	LS
			9 685.52	9 688.18	234 415.07–244 736.93	1–3	4.57+06	1.93−01	6.16+00	−0.714	B	LS
			9 590.74	9 593.37	234 442.18–244 866.05	5–5	2.12+06	2.92−02	4.61+00	−0.836	B	LS
			9 698.04	9 700.70	234 428.40–244 736.93	3–3	3.41+06	4.81−02	4.61+00	−0.841	B	LS
			9 711.03	9 713.69	234 442.18–244 736.93	5–3	2.26+05	1.92−03	3.07−01	−2.018	C	LS
259		$^3P^{\circ}-^3P$	*7 335.2*	*7.337.2*	*234 434.6–248 063.7*	9–9	3.67+05	2.96−03	6.44−01	−1.574	D+	1
			7 283.51	7 285.52	234 442.18–248 168.04	5–5	2.81+05	2.24−03	2.69−01	−1.951	C	LS
			7 391.52	7 393.56	234 428.40–247 953.69	3–3	8.97+04	7.35−04	5.37−02	−2.657	D	LS
			7 399.06	7 401.10	234 442.18–247 953.69	5–3	1.49+05	7.34−04	8.94−02	−2.435	D+	LS
			7 436.62	7 438.67	234 428.40–247 871.66	3–1	3.52+05	9.73−04	7.15−02	−2.535	D+	LS
			7. 276.21	7 278.21	234 428.40–248 168.04	3–5	9.37+01	1.24−03	8.91−02	−2.429	D+	LS
			7 384.24	7 386.28	234 415.07–247 953.69	1–3	1.20+05	2.94−03	7.15−02	−2.532	D+	LS
260		$^3P^{\circ}-^3S$	*6 972.4*	*6 974.3*	*234 434.6*–248 772.86	9–3	6.58+06	1.60−02	3.31+00	−0.842	C+	1
			6 976.11	6 978.04	234 442.18–248 772.86	5–3	3.65+06	1.60−02	1.84+00	−1.097	C+	LS
			6 969.41	6 971.33	234 428.40–248 772.86	3–3	2.20+06	1.60−02	1.10+00	−1.319	C+	LS
			6 962.94	6 964.86	234 415.07–248 772.86	1–3	7.33+05	1.60−02	3.67−01	−1.796	C	LS
261	$3s6p-3s7d$	$^1P^{\circ}-^1D$	6 152.56	6 154.26	234 387.64–250 636.55	3–5	7.05+05	6.67−03	4.05−01	−1.699	D	1
262		$^3P^{\circ}-^3D$	*6 812.3*	*6 814.2*	*234 434.6–249 109.9*	9–15	8.87+06	1.03−01	2.08+01	−0.033	C	1
			6 810.59	6 812.47	234 442.18–249 121.14	5–7	8.88+06	8.65−02	9.70+00	−0.364	C+	LS
			6 812.20	6 814.08	234 428.40–249 103.90	3–5	6.65+06	7.72−02	5.20+00	−0.635	C	LS
			6 810.8	6 812.7	234 415.07–249 093.5	1–3	4.93+06	1.03−01	2.31+00	−0.987	C	LS
			6 818.60	6 820.48	234 442.18–249 103.90	5–5	2.21+06	1.54−02	1.73+00	−1.114	D+	LS
			6 817.0	6 818.9	234 428.40–249 093.5	3–3	3.69+06	2.57−02	1.73+00	−1.113	D+	LS
			6 823.4	6 825.3	234 442.18–249 093.5	5–3	2.46+05	1.03−03	1.16−01	−2.288	E+	LS
263	$3s6p-3s8s$	$^3P^{\circ}-^3S$	*6 520.7*	*6 522.5*	*234 434.6–249 766.19*	9–3	1.87+07	3.98−02	7.69+00	−0.446	C	1
			6 523.90	6 525.71	234 442.18–249 766.19	5–3	1.04+07	3.98−02	4.28+00	−0.701	C	LS
			6 518.04	6 519.84	234 428.40–249 766.19	3–3	6.25+06	3.98−02	2.56+00	−0.923	C	LS
			6 512.38	6 514.18	234 415.07–249 766.19	1–3	2.09+06	3.99−02	8.56−01	−1.399	D+	LS
264	$3s6p-3s8d$	$^1P^{\circ}-^1D$	4 905.616	4 906.986	234 387.64–254 766.75	3–5	1.21+06	7.26−03	3.52−01	−1.662	D	1
265		$^3P^{\circ}-^3D$	*5 108.3*	*5 109.8*	*234 434.6–254 005*	9–15	2.76+06	1.80−02	2.72−00	−0.790	D	1
			5 109.666	5 111.090	234 442.18–254 007.48	5–7	2.75+06	1.51−02	1.27+00	−1.122	D+	LS
			5 107.0	5 108.4	234 428.40–254 004	3–5	2.07+06	1.35−02	6.81−01	−1.393	D	LS
			5 104.0	5 105.4	234 415.07–254 002	1–3	1.54+06	1.80−02	3.03−01	−1.745	D	LS
			5 110.6	5 112.0	234 442.18–254 004	5–5	6.89+05	2.70−03	2.27−01	−1.870	D	LS
			5 107.5	5 108.9	234 428.40–254 002	3–3	1.15+06	4.54−03	2.28−01	−1.869	D	LS
			5 111.1	5 112.5	234 442.18–254 002	5–3	7.66+04	1.80−04	1.51−02	−3.046	E	LS
266	$3s6d-3s6f$	$^3D-^3F^{\circ}$		*2 117.4 cm^{-1}*	*240 294.0–242 411.4*	15–21	1.76+06	8.23−01	1.92+03	1.091	B+	1
				2 097.07 cm^{-1}	240 814.63–242 411.70	7–9	1.71+06	7.49−01	8.23+02	0.720	B+	LS
				2 126.99 cm^{-1}	240 284.28–242 411.27	5–7	1.58+06	7.35−01	5.69+02	0.565	B+	LS
				2 148.60 cm^{-1}	240 262.28–242 410.88	3–5	1.54+06	8.35−01	3.84+02	0.399	B+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				2 096.64 cm^{-1}	240 814.63–242 411.27	7–7	1.90+05	6.49−02	7.13+01	−0.343	B+	LS
				2 126.60 cm^{-1}	240 284.28–242 410.88	5–5	2.78+05	9.21−02	7.13+01	−0.337	B+	LS
				2 096.25 cm^{-1}	240 814.63–242 410.88	7–5	7.51+03	1.83−03	2.01+00	−1.892	C+	LS
267		^1D–$^1D^\circ$		3 318.73 cm^{-1}	240 549.77–243 868.50	5–7	6.24+06	1.19+00	5.90+02	0.775	B+	1
268	$3s6d$–$3s7p$	^3D–$^3P^\circ$		*4 644.4* cm^{-1}	*240 294.0–244 938.4*	15–9	1.35+07	5.62−01	5.97+02	0.926	B	1
				4 628 cm^{-1}	240 314.63–244 943.31	7–5	1.12+07	5.60−01	2.79+02	0.593	B	LS
				4 649.08 cm^{-1}	240 284.28–244 933.36	5–3	1.01+07	4.22−01	1.49+02	0.324	B	LS
				4 666.44 cm^{-1}	240 262.28–244 928.72	3–1	1.36+07	3.13−01	6.62+01	−0.027	B	LS
				4 659.03 cm^{-1}	240 284.28–244 943.31	5–5	2.04+06	1.41−01	4.98+01	−0.152	B	LS
				4 671.08 cm^{-1}	240 262.28–244 933.36	3–3	3.42+06	2.35−01	4.97+01	−0.152	B	LS
				4 681.03 cm^{-1}	240 262.28–244 943.31	3–5	1.38+05	1.57−02	3.31+00	−1.327	C	LS
269		^1D–$^1P^\circ$		4 321.70 cm^{-1}	240 549.77–244 871.47	5–3	1.06+07	5.10−01	1.94+02	0.407	B	1
270	$3s6d$–$3s7f$	^3D–$^3F^\circ$	*10 544.8*	*10 547.6*	*240 294.0–249 774.8*	15–21	8.56+06	2.00−01	1.04+02	0.477	C+	1
			10 567.54	10 570.43	240 314.63–249 774.98	7–9	8.50+06	1.83−01	4.46+01	0.108	B	LS
			10 534.06	10 536.94	240 284.28–249 774.70	5–7	7.64+06	1.78−01	3.09+01	−0.051	C+	LS
			10 509.94	10 512.82	240 262.28–249 774.48	3–5	7.24+06	2.00−01	2.08+01	−0.222	C+	LS
			10 567.85	10 570.75	240 814.63–249 774.70	7–7	9.49+05	1.59−02	3.87+00	−0.954	C	LS
			10 534.30	10 537.19	240 284.28–249 774.48	5–5	1.34+06	2.23−02	3.87+00	−0.953	C	LS
			10 568.10	10 570.99	240 314.63–249 774.48	7–5	3.74+04	4.47−04	1.09−01	−2.505	E+	LS
271		^1D–$^1F^\circ$	10 184.19	10 186.98	240 549.77–250 366.22	5–7	3.31+06	7.20−02	1.21+01	−0.444	C+	1
272	$3s6d$–$3s8f$	^3D–$^3F^\circ$	*7 009.1*	*7 011.0*	*240 294.0–254 557.4*	15–21	8.55+06	8.82−02	3.05+01	0.122	C	1
			7 019.05	7 020.99	240 814.63–254 557.64	7–9	8.51+06	8.09−02	1.31+01	−0.247	C+	LS
			7 004.31	7 006.25	240 284.28–254 557.26	5–7	7.61+06	7.84−02	9.04+00	−0.407	C+	LS
			6 993.65	6 995.58	240 262.28–254 557.03	3–5	7.23+06	8.84−02	6.11+00	−0.576	C	LS
			7 019.24	7 021.18	240 814.63–254 557.26	7–7	9.49+05	7.01−03	1.13+00	−1.309	D+	LS
			7 004.43	7 006.36	240 284.28–254 557.03	5–5	1.34+06	9.83−03	1.13+00	−1.308	D+	LS
			7 019.35	7 021.29	240 814.63–254 557.03	7–5	3.75+04	1.98−04	3.20−02	−2.858	E	LS
273		^1D–$^1F^\circ$	6 988.32	6 990.25	240 549.77–254 855.42	5–7	6.24+06	6.40−02	7.36+00	−0.495	C	1
274	$3s6d$–$3s9f$	^3D–$^3F^\circ$	*5 701*	*5 702*	*240 294.0–257 831*	15–21	7.04+06	4.81−02	1.35+01	−0.142	D+	1
			5 707.2	5 708.8	240 314.63–257 831.4	7–9	7.02+06	4.41−02	5.80+00	−0.510	D+	LS
			5 697.4	5 698.9	240 284.28–257 831.4	5–7	6.26+06	4.27−02	4.01+00	−0.671	D+	LS
			5 690.2	5 691.8	240 262.28–257 831.4	3–5	5.95+06	4.82−02	2.71+00	−0.840	D+	LS
			5 707.2	5 708.8	240 314.63–257 831.4	7–7	7.82+05	3.82−03	5.03−01	−1.573	E+	LS
			5 697.4	5 698.9	240 284.28–257 831.4	5–5	1.10+06	5.36−03	5.03−01	−1.572	E+	LS
			5 707.2	5 708.8	240 314.63–257 831.4	7–5	3.09+04	1.08−04	1.42−02	−3.121	E	LS
275		^1D–$^1F^\circ$	5 724.61	5 726.20	240 549.77–258 013.37	5–7	6.36+06	4.38−02	4.13+00	−0.660	D+	1
276	$3s7s$–$3s7p$	^3S–$^3P^\circ$		*2 793.3* cm^{-1}	242 145.10–*244 938.4*	3–9	4.30+06	2.48+00	8.75+02	0.872	B	1
				2 798.21 cm^{-1}	242 145.10–244 943.31	3–5	4.32+06	1.38+00	4.87+02	0.617	B	LS
				2 788.26 cm^{-1}	242 145.10–244 933.36	3–3	4.26+06	8.22−01	2.91+02	0.392	B	LS
				2 783.62 cm^{-1}	242 145.10–244 928.72	3–1	4.25+06	2.74−01	9.72+01	−0.085	B	LS
277		^1S–$^1P^\circ$		2 333.52 cm^{-1}	242 537.95–244 871.47	1–3	2.47+06	2.04+00	2.88+02	0.310	B	1
278	$3s6f$–$3p4p$	$^3F^\circ$–^3D		*2 531.7* cm^{-1}	*242 411.4–244 943.1*	21–15	7.70+05	1.29−01	3.51+02	0.433	B+	1
				2 674.88 cm^{-1}	242 411.70–245 086.58	9–7	8.35+05	1.36−01	1.51+02	0.088	B+	LS
				2 454.78 cm^{-1}	242 411.27–244 86605	7–5	6.25+05	1.11−01	1.04+02	−0.110	B+	LS
				2 326.05 cm^{-1}	242 410.88–242 736.93	5–3	5.95+05	9.90−02	7.01+01	−0.305	B+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				2 675.31 cm^{-1}	242 411.27–245 086.58	7–7	7.21+04	1.51−02	1.30+01	−0.976	B	LS
				2 455.17 cm^{-1}	242 410.88–244 866.05	5–5	7.80+04	1.94−02	1.30+01	−1.013	B	LS
				2 675.70 cm^{-1}	242 410.88–245 086.58	5–7	2.03+03	5.96−04	3.67−01	−2.526	C	LS
279		$^1F^\circ-^1D$		4 066.89 cm^{-1}	243 868.50–247 935.39	7–5	5.34+04	3.46−03	1.96+00	−1.616	C+	1
280	$3s6f-3s7d$	$^3F^\circ-^3D$	*14 924.6*	*14 928.7*	*242 411.4–249 109.9*	21–15	4.23+06	1.01−01	1.04+02	0.327	C+	1
			14 900.30	14 904.37	242 411.70–249 121.14	9–7	3.90+06	1.01−01	4.46+01	−0.041	B	LS
			14 937.73	14 941.81	242 411.27–249 103.90	7–5	3.75+06	8.97−02	3.09+01	−0.202	C+	LS
			14 960.1	14 964.2	242 410.88–249 093.5	5–3	4.21+06	8.47−02	2.09+01	−0.373	C+	LS
			14 899.35	14 903.42	242 411.27–249 121.14	7–7	3.39+05	1.13−02	3.88+00	−1.102	C	LS
			14 936.86	14 940.94	242 410.88–249 103.90	5–5	4.69+05	1.57−02	3.86+00	−1.105	C	LS
			14 898.48	14 902.55	242 410.88–249 121.14	5–7	9.55+03	4.45−04	1.09−01	−2.653	E+	LS
281		$^1F^\circ-^1D$	14 771.27	14 775.30	243 868.50–250 636.55	7–5	3.22+07	7.52−01	2.56+02	0.721	B	1
282	$3s6f-3s7g$	$^3F^\circ-^3G$	*13 497.4*	*13 501.1*	*242 411.4–249 818.2*	21–27	3.05+07	1.07+00	9.99+02	1.352	B	1
			13 496.63	13 500.32	242 411.70–249 818.93	9–11	3.05+07	1.02+00	4.08+02	0.963	B	LS
			13 497.82	13 501.51	242 411.27–249 817.85	7–9	2.85+07	1.00+00	3.11+02	0.845	B	LS
			13 498.07	13 501.76	242 410.88–249 817.32	5–7	2.80+07	1.07+00	2.38+02	0.728	B	LS
			13 498.60	13 502.29	242 411.70–249 817.85	9–9	1.91+06	5.21−02	2.08+01	−0.329	C+	LS
			13 498.78	13 502.47	242 411.27–249 817.32	7–7	2.45+06	6.69−02	2.08+01	−0.329	C+	LS
			13 499.57	13 503.26	242 411.70–249 817.32	9–7	3.73+04	7.93−04	3.17−01	−2.146	D	LS
283		$^1F^\circ-^1G$	16 803.71	16 808.30	243 868.50–249 817.94	7–9	2.77+07	1.51+00	5.85+02	1.024	B	1
284	$3s6f-3s8d$	$^3F^\circ-^3D$	*8 623*	*8 625*	*242.411.4–254 005*	21–15	2.79+06	2.22−02	1.32+01	−0.331	C	1
			8 621.46	8 623.83	242 411.70–254 007.48	9–7	2.56+06	2.22−02	5.67+00	−0.699	C	LS
			8 624	8 626	242 411.27–254 004	7–5	2.47+06	1.97−02	3.92+00	−0.860	C	LS
			8 625	8 627	242 410.88–254 002	5–3	2.79+06	1.87−02	2.66+00	−1.029	C	LS
			8 621.14	8 623.51	242 411.27–254 007.48	7–7	2.22+05	2.48−03	4.93−01	−1.760	D	LS
			8 623	8 626	242 410.88–254 004	5–5	3.11+05	3.47−03	4.93−01	−1.761	D	LS
			8 620.85	8 623.22	242 410.88–254 007.48	5–7	6.27+03	9.78−05	1.39−02	−3.311	E	LS
285		$^1F^\circ-^1D$	9 173.27	9 175.79	243 868.50–254 766.75	7–5	6.19+05	5.58−03	1.18+00	−1.408	D+	1
286	$3z6f-3s8g$	$^3F^\circ-^3$G	*8 212*	*8 214*	*242 411.4–254 585*	21–27	1.83+07	2.38−01	1.35+02	0.699	C+	1
			8 211.94	8 214.19	242 411.70–254 585.75	9–11	1.83+07	2.26−01	5.50+01	0.308	B	LS
			8 212.3	8 214.5	242 411.27–254 584.8	7–9	1.71+07	2.23−01	4.22+01	0.193	B	LS
			8 212.0	8 214.3	242 410.88–254 584.8	5–7	1.68+07	2.38−01	3.22+01	0.076	C+	LS
			8 212.6	8 214.8	242 411.70–254 584.8	9–9	1.15+06	1.16−02	2.82+00	−0.981	C	LS
			8 212.3	8 214.5	242 411.27–254 584.8	7–7	1.47+06	1.49−02	2.82+00	−0.982	C	LS
			8 212.6	8 214.8	242 411.70–254 584.8	9–7	2.24+04	1.76−04	4.28−02	−2.800	E	LS
287		$^1F^\circ-^1$G	9 329.2	9 331.8	243 868.50–254 584.6	7–9	1.01+07	1.70−01	3.66+01	0.076	B	1
288	$3s6f-3s9d$	$^3F^\circ-^3$D	*6 663*	*6 665*	*242 411.4–257 416*	21–15	1.77+06	8.42−03	3.88+00	−0.752	D	1
			6 663.1	6 664.9	242 411.72–257 415.6	9–7	1.63+06	8.42−03	1.66+00	−1.120	D	LS
			6 662.9	6 664.7	242 411.27–257 415.6	7–5	1.57+06	7.48−03	1.15+00	−1.281	D	LS
			6 662.7	6 664.6	242 410.88–257 415.6	5–3	1.77+06	7.07−03	7.76−01	−1.452	E+	LS
			6 662.9	6 664.7	242 411.27–257 415.6	7–7	1.41+05	9.38−04	1.44−01	−2.183	E	LS
			6 662.7	6 664.6	242 410.88–257 415.6	5–5	1.97+05	1.31−03	1.44−01	−2.184	E	LS
			6 662.7	6 664.6	242 410.88–257 415.6	5–7	3.98+03	3.71−05	4.07−03	−3.732	E	LS
289		$^1F^\circ-^1D$	7 151.1	7 153.1	243 868.50–257 848.5	7–5	9.84+05	5.39−03	8.88−01	−1.423	D	1
290	$3s6f-3s9g$	$^3F^\circ-^3G$	*6 474*	*6 476*	*242 411.4–257 854*	21–27	1.15+07	9.30−02	4.16+01	0.291	C	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			6 474.1	6 475.9	242 411.70–257 853.6	9–11	1.15+07	8.84−02	1.70+01	−0.999	C	LS
			6 473.9	6 475.7	242 411.27–257 853.6	7–9	1.08+07	8.71−02	1.30+01	−0.215	C	LS
			6 473.8	6 475.5	242 410.88–257 853.6	5–7	1.06+07	9.30−02	9.91+00	−0.333	C	LS
			6 474.1	6 475.9	242 411.70–257 853.6	9–9	7.19+05	4.52−03	8.67−01	−1.391	D	LS
			6 473.9	6 475.7	242 411.27–257 853.6	7–7	9.24+05	5.81−03	8.67−01	−1.391	D	LS
			6 474.1	6 475.9	242 411.70–257 853.6	9–7	1.41+04	6.89−05	1.32−02	−3.208	E	LS
291	$3s6g-3s6f$	$^1G-^1F^\circ$		1 394.23 cm^{-1}	242 474.27–243 868.50	9–7	3.97+05	2.38−01	5.06+02	0.331	B+	1
292	$3s6g-3s7f$	$^3G-^3F^\circ$	*13 693.8*	*13 697.5*	*242 474.2–249 774.8*	27–21	1.06+06	2.32−02	2.82+01	−0.203	C	1
			13 694.57	13 698.31	242 474.81–249 774.98	11–9	1.01+06	2.32−02	1.15+01	−0.593	C+	LS
			13 693.31	13 697.05	242 473.86–249 774.70	9–7	9.92+05	2.17−02	8.81+00	−0.709	C+	LS
			13 693.35	13 697.09	242 473.66–249 774.48	7–5	1.06+06	2.13−02	6.72+00	−0.827	C	LS
			13 692.78	13 696.53	242 473.86–249 774.98	9–9	5.16+04	1.45−03	5.88−01	−1.884	D	LS
			13 692.93	13 696.68	242 473.66–249 774.70	7–7	6.61+04	1.86−03	5.87−01	−1.885	D	LS
			13 692.41	13 696.15	242 473.66–249 774.98	7–9	7.85+02	2.84−05	8.96−03	−3.702	E	LS
293		$^1G-^1F^\circ$	12 667.67	12 671.14	242 474.27–250 366.22	9–7	1.85+05	2.02−03	7.58−01	−1.740	D+	1
294	$3s6g-3s8f$	$^3G-^3F^\circ$	*8.273.7*	*8 276.0*	*242 474.2–254 557.4*	27–21	5.03+05	4.02−03	2.95+00	−0.964	D+	1
			8 273.93	8 276.21	242 474.81–254 557.64	11–9	4.78+05	4.02−03	1.20+00	−1.354	D+	LS
			8 273.54	8 275.82	242 473.86–254 557.26	9–7	4.71+05	3.76−03	9.22−01	−1.471	D+	LS
			8 273.56	8 275.84	242 473.66–254 557.03	7–5	5.03+05	3.69−03	7.04−01	−1.588	D+	LS
			8 273.28	8 275.56	242 473.86–254 557.64	9–9	2.44+04	2.51−04	6.15−02	−2.646	E	LS
			8 273.41	8 275.68	242 473.66–254 557.26	7–7	3.15+04	3.23−04	6.16−02	−2.646	E	LS
			8 273.15	8 275.42	242 473.66–254 557.64	7–9	3.73+02	4.92−06	9.38−04	−4.463	E	LS
295	$3p4p-3s7p$	$^1P-^1P^\circ$		1 986.17 cm^{-1}	242 885.30–244 871.47	3–3	3.16+03	1.20−03	5.97−01	−2.444	D	1
296		$^3D-^3P^\circ$				3–9						1
				191.79 cm^{-1}	244 736.93–244–928.72	3–1	7.24+02	9.83−03	5.06+01	−1.530	B	LS
				196.43 cm^{-1}	244 736.93–244 933.36	3–3	1.94+02	7.55−03	3.80+01	−1.645	B	LS
				206.38 cm^{-1}	244 736.93–244 943.31	3–5	9.02+00	5.29−04	2.53+00	−2.799	C	LS
297	$3p4p-3s7f$	$^3D-^3F^\circ$		*4 831.7* cm^{-1}	*244 943.1–249 774.8*	15–21	4.61+06	4.14−01	4.23+02	0.793	B	1
				4 688.40 cm^{-1}	245 086.58–249 774.98	7–9	4.21+06	3.69−01	1.81+02	0.412	B	LS
				4 908.65 cm^{-1}	244 866.05–249 774.70	5–7	4.29+06	3.74−01	1.25+02	0.272	B	LS
			19 845.5	19 850.9	244 736.93–249 774.48	3–5	4.39+06	4.32−01	8.47+01	0.113	B	LS
				4 688.12 cm^{-1}	245 086.58–249 774.70	7–7	4.69+05	3.20−02	1.57+01	−0.650	C+	LS
				4 908.43 cm^{-1}	244 866.05–249 774.48	5–5	7.54+05	4.69−02	1.57+01	−0.630	C+	LS
				4 687.90 cm^{-1}	245 086.58–249 774.48	7–5	1.85+04	9.03−04	4.44−01	−2.199	D	LS
298		$^1D-^1F^\circ$		2 430.83 cm^{-1}	247 935.39–250 366.22	5–7	2.82+06	1.00+00	6.77+02	0.699	B	1
299	$3p4p-3s8f$	$^3D-^3F^\circ$	*10 398.4*	*10 401.2*	*244 943.1–254 557.4*	15–21	1.28+06	2.92−02	1.50+01	−0.359	C	1
			10 555.59	10 558.48	245 086.58–254 557.64	7–9	1.23+06	2.64−02	6.42+00	−0.733	C	LS
			10 315.80	10 318.63	244 866.05–254 557.26	5–7	1.17+06	2.61−02	4.43+00	−0.884	C	LS
			10 180.41	10 183.20	244 736.93–254 557.03	3–5	1.15+06	2.98−02	3.00+00	−1.049	C	LS
			10 556.01	10 558.90	245 086.58–254 557.26	7–7	1.37+05	2.29−03	5.57−01	−1.795	D	LS
			10 316.05	10 318.87	244 866.05–254 557.03	5–5	2.05+05	3.27−03	5.55−01	−1.786	D	LS
			10 556.27	10 559.16	245 086.58–254 557.03	7–5	5.40+03	6.45−05	1.57−02	−3.345	E	LS
300		$^1D-^1F^\circ$	14 446.86	14 450.80	247 935.39–254 855.42	5–7	6.37+07	2.79+00	6.64+02	1.145	B	1
301	$3p4p-3s9f$	$^3D-^3F^\circ$	*7 757*	*7 759*	*244 943.1–257 831*	15–21	4.55+05	5.75−03	2.20+00	−1.064	E+	1
			7 844.2	7 846.3	245 086.58–257 831.4	7–9	4.40+05	5.22−03	9.44−01	−1.437	D	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			7 710.7	7 712.9	244 866.05–257 831.4	5–7	4.12+05	5.14−03	6.53−01	−1.590	E+	LS
			7 634.7	7 636.8	244 736.93–257 831.4	3–5	4.01+05	5.84−03	4.40−01	−1.756	E+	LS
			7 844.2	7 846.3	245 086.58–257 831.4	7–7	4.91+04	4.53−04	8.19−02	−2.499	E	LS
			7 710.7	7 712.9	244 866.05–257 831.4	5–5	7.23+04	6.45−04	8.19−02	−2.491	E	LS
			7 844.2	7 846.3	245 086.58–257 831.4	7–5	1.94+03	1.28−05	2.31−03	−4.048	E	LS
302		$^1D-^1F^\circ$	9 919.90	9 922.62	247 935.39–258 013.37	5–7	6.29+06	1.30−01	2.12+01	−0.187	C	1
303	$3s7p-3p4p$	$^1P^\circ-^1D$		3 063.92 cm^{-1}	244 871.47–247 935.39	3–5	6.12+05	1.63−01	5.25+01	−0.311	B	1
304		$^1P^\circ-^1S$	7 086.63	7 088.58	244 871.47–258 978.66	3–1	2.34+06	5.88−03	4.12−01	−1.754	D	1
305		$^3P^\circ-^3S$		*3 834.5* cm^{-1}	*244 938.4*–248 772.86	9–3	4.01+06	1.36−01	1.05+02	0.088	B	1
				3 829.55 cm^{-1}	244 943.31–248 772.86	5–3	2.22+06	1.36−01	5.85+01	−0.167	B	LS
				3 839.50 cm^{-1}	244 933.36–248 772.86	3–3	1.35+06	1.37−01	3.52+01	−0.386	B	LS
				3 844.14 cm^{-1}	244 928.72–248 772.86	1–3	4.50+05	1.37−01	1.17+01	−0.863	C+	LS
306	$3s7p-3s7d$	$^1P^\circ-^1D$	17 341.08	17 345.81	244 871.47–250 636.55	3–5	4.42+07	3.32+00	5.69+02	0.998	B	1
307		$^3P^\circ-^3D$		*4 171.5* cm^{-1}	*244 938.4–249 109.9*	9–15	1.39+07	2.00+00	1.42+03	1.255	B	1
				4 177.83 cm^{-1}	244 943.31–249 121.14	5–7	1.40+07	1.68+00	6.62+02	0.924	B	LS
				4 170.54 cm^{-1}	244 933.36–249 103.90	3–5	1.04+07	1.50+00	3.55+02	0.653	B	LS
				4 164.8 cm^{-1}	244 928.72–249 093.5	1–3	7.71+06	2.00+00	1.58+02	0.301	B	LS
				4 160.59 cm^{-1}	244 943.31–249 103.90	5–5	3.46+06	3.00−01	1.19+02	0.176	B	LS
				4 160.1 cm^{-1}	244 933.36–249 093.5	3–3	5.76+06	4.99−01	1.18+02	0.175	B	LS
				4 150.2 cm^{-1}	244 943.31–249 093.5	5–3	3.81+05	1.99−02	7.89+00	−1.002	C	LS
308	$3s7p-3s8s$	$^1P^\circ-^1S$		4 985.79 cm^{-1}	244 871.47–249 857.26	3–1	3.12+07	6.27−01	1.24+02	0.274	B	1
309		$^3P^\circ-^3S$		*4 827.8* cm^{-1}	*244 938.4*–249 766.19	9–3	1.88+07	4.03−01	2.48+02	0.560	B	1
				4 822.88 cm^{-1}	244 943.31–249 766.19	5–3	1.04+07	4.03−01	1.38+02	0.304	B	LS
				4 832.83 cm^{-1}	244 933.36–249 766.19	3–3	6.29+06	4.04−01	8.26+01	0.084	B	LS
				4 837.47 cm^{-1}	244 928.72–249 766.19	1–3	2.10+06	4.04−01	2.75+01	−0.394	C+	LS
310	$3s7p-3s8d$	$^1P^\circ-^1D$	10 103.06	10 105.83	244 871.47–254 766.75	3–5	8.15+06	2.08−01	2.08+01	−0.205	C+	1
311		$^3P^\circ-^3D$	*11 026*	*11 029*	*244 938.4–254 005*	9–15	3.36+06	1.02−01	3.34+01	−0.037	C	1
			11 029.43	11 032.45	244 943.31–254 007.48	5–7	3.36+06	8.59−02	1.56+01	−0.367	C+	LS
			11 022	11 025	244 933.36–254 004	3–5	2.53+06	7.68−02	8.36+00	−0.638	C	LS
			11 018	11 021	244 928.72–254 002	1–3	1.87+06	1.02−01	3.70+00	−0.991	C	LS
			11 034	11 037	244 943.31–254 004	5–5	8.38+05	1.53−02	2.78+00	−1.16	C	LS
			11 024	11 027	244 933.36–254 002	3–3	1.40+06	2.56−02	2.79+00	−1.115	C	LS
			11 036	11 039	244 943.31–254 002	5–3	9.31+04	1.02−03	1.85−01	−2.292	E+	LS
312	$3s7d-3s7f$	$^3D-^3F^\circ$		*664.9* cm^{-1}	*249 109.9–249 774.8*	15–21	1.16+05	5.52−01	4.10+03	0.918	B	1
				653.84 cm^{-1}	249 121.4–249 774.98	7–9	1.11+05	4.99−01	1.76+03	0.543	B	LS
				670.80 cm^{-1}	249 103.90–249 774.70	5–7	1.06+05	4.95−01	1.21+03	0.394	B	LS
				681.0 cm^{-1}	249 093.5–249 774.48	3–5	1.05+05	5.66−01	8.21+02	0.230	B	LS
				653.56 cm^{-1}	249 121.14–249 774.70	7–7	1.23+04	4.32−02	1.52+02	−0.519	B	LS
				670.56 cm^{-1}	249 103.90–249 774.48	5–5	1.86+04	6.21−02	1.52+02	−0.508	B	LS
				653.34 cm^{-1}	249 121.14–249 774.48	7–5	4.86+02	1.22−03	4.30+00	−2.069	C	LS
313	$3s7d-3s8f$	$^3D-^3F^\circ$	*18 352*	*18 357*	*249 109.9–254 557.4*	15–21	6.05+06	4.28−01	3.88+02	0.808	B	1
			18 389.2	18 394.2	249 121.14–254 557.64	7–9	6.01+06	3.92−01	1.66+02	0.438	B	LS
			18 332.3	18 337.3	249 103.0–254 557.26	5–7	5.40+06	3.81−01	1.15+02	0.280	B	LS
			18 298	18 303	249 093.5–254 557.03	3–5	5.13+06	4.29−01	7.75+01	0.110	B	LS
			18 390.5	19 395.5	249 121.14–254 557.26	7–7	6.70+05	3.40−02	1.44+01	−0.623	C+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
			18 333.1	18 338.1	249 103.90–254 557.03	5–5	9.48+05	4.78−02	1.44+01	−0.622	C+	LS
			18 391.2	18 396.3	249 121.14–254 557.03	7–5	2.65+04	9.59−04	4.07−01	−2.173	D	LS
314		$^1D-^1F^{\circ}$		4 218.87 cm^{-1}	250 636.55–254 855.42	5–7	4.00+04	4.72−03	1.84+00	−1.627	D+	1
315	$3s7d-3s9f$	$^3D-^3F^{\circ}$	*11 463*	*11 466*	*249 109.9–257 831*	15–21	4.93+06	1.36−01	7.71+01	0.310	D	1
			11 477.6	11 480.7	249 121.14–257 831.4	7–9	4.92+06	1.25−01	3.31+01	−0.058	D+	LS
			11 454.9	11 458.0	249 103.90–257 831.4	5–7	4.39+06	1.21−01	2.28+01	−0.218	D+	LS
			11 441.3	11 444.4	249 093.5–257 821.4	3–5	4.16+06	1.36−01	1.54+01	−0.389	D	LS
			11 477.6	11 480.7	249 121.14–257 831.4	7–7	5.47+05	1.08−02	2.86+00	−1.121	E+	LS
			11 454.9	11 458.0	249 103.90–257 314.4	5–5	7.72+05	1.52−02	2.87+00	−1.119	E+	LS
			11 477.6	11 480.7	249 121.14–257 821.4	7–5	2.16+04	3.05−05	8.07−02	−2.671	E	LS
316	$3s7f-3s7d$	$^1F^{\circ}-^1D$		270.33 cm^{-1}	250 366.22–250 636.55	7–5	7.85+03	1.15−01	9.80+02	−0.094	B	1
317	$3s7f-3s8d$	$^3F^{\circ}-^3D$		*4 230* cm^{-1}	*249 774.8–254 005*	21–15	3.12+06	1.87−01	3.05+02	0.594	B	1
				4 232.50 cm^{-1}	249 774.98–254 007.48	9–7	2.87+06	1.87−01	1.31+02	0.226	B	LS
				4 229 cm^{-1}	249 774.70–254 004	7–5	2.77+06	1.66−01	9.05+01	0.065	B	LS
				4 228 cm^{-1}	249 774.48–254 002	5–3	3.12+06	1.57−01	6.11+01	−0.105	B	LS
				4 232.78 cm^{-1}	249 774.70–254 007.48	7–7	2.49+05	2.08−02	1.13+01	−0.837	C+	LS
				4 230 cm^{-1}	249 774.48–254 004	5–5	3.47+05	2.91−02	1.13+01	−0.837	C+	LS
				4 233.00 cm^{-1}	249 774.48–254 007.48	5–7	7.02+03	8.22−04	3.20−01	−2.386	D	LS
318		$^1F^{\circ}-^1D$		4 400.53 cm^{-1}	250 266.22–254 766.75	7–5	1.01+06	5.59−02	2.93+01	−0.407	C+	1
319	$3s7f-3s8g$	$^3F^{\circ}-^3D$		*4 810* cm^{-1}	*249 774.3–254 585*	21–27	1.25+07	1.04+00	1.49+03	1.339	B	1
				4 810.77 cm^{-1}	249 774.98–254 585.75	9–11	1.25+07	9.86−01	6.07+02	0.948	B	LS
				4 810.1 cm^{-1}	249 774.70–254 584.8	7–9	1.17+07	9.71−01	4.65+02	0.832	B	LS
				4 810.3 cm^{-1}	249 774.48–254 584.8	5–7	1.15+07	1.04+00	3.56+02	0.716	B	LS
				4 809.8 cm^{-1}	249 774.98–254 584.8	9–9	7.78+05	5.04−02	3.10+01	−0.343	C+	LS
				4 810.1 cm^{-1}	249 774.70–254 584.8	7–7	1.00+06	6.49−02	3.11+01	−0.343	C+	LS
				4 809.8 cm^{-1}	249 774.98–254 584.8	9–7	1.52+04	7.68−04	4.73−01	−2.160	D	LS
320		$^1F^{\circ}-^1G$		4 218.4 cm^{-1}	250 366.22–254 584.6	7–9	1.35+07	1.46+00	7.98+02	1.009	B	1
321	$3s7f-3s9d$	$^3F^{\circ}-^3D$	*13 084*	*13 087*	*249 774.8–257 416*	21–15	1.80+06	3.31−02	2.99+01	−0.158	D	1
			13 084.4	13 087.9	249 774.98–257 415.6	9–7	1.66+06	3.31−02	1.28+01	−0.526	D	LS
			13 083.9	13 087.5	249 774.70–257 415.6	7–5	1.60+06	2.94−02	8.87+00	−0.687	D	LS
			13 083.5	13 087.1	249 774.48–257 415.6	5–3	1.80+06	2.78−02	5.99+00	−0.857	E+	LS
			13 083.9	13 087.5	249 774.70–257 415.6	7–7	1.43+05	3.68−03	1.11+00	−1.589	E	LS
			13 083.5	13 087.1	249 774.48–257 415.6	5–5	2.01+05	5.16−03	1.11+00	−1.588	E	LS
			13 083.6	13 087.1	249 774.48–257 415.6	5–7	4.06+03	1.46−04	3.15−02	−3.137	E	LS
322		$^1F^{\circ}-^1D$	13 361.3	13 364.9	250 366.22–257 848.5	7–5	1.36+06	2.60−02	8.01+00	−0.740	D	1
323	$3s7f-3s9g$	$^3F^{\circ}-^3G$	*12 375*	*12 377*	*249 774.8–257 854*	21–27	8.42+06	2.49−01	2.13+02	0.718	D+	1
			12 375.0	12 378.4	249 774.98–257 853.6	9–11	8.41+06	2.36−01	8.66+01	0.327	D+	LS
			12 374.5	12 377.9	249 774.70–257 853.6	7–9	7.89+06	2.33−01	6.65+01	0.212	D+	LS
			12 374.2	12 377.6	249 774.48–257 853.6	5–7	7.74+06	2.49−01	5.07+01	0.095	D+	LS
			12 375.0	12 378.4	249 774.98–257 853.6	9–9	5.27+05	1.21−02	4.44+00	−0.963	E+	LS
			12 374.5	12 377.9	249 774.70–257 853.6	7–7	6.75+05	1.55−02	4.42+00	−0.965	E+	LS
			12 375.0	12.378.4	249 774.98–257 853.6	9–7	1.03+04	1.84−04	6.75−02	−2.781	E	LS
324	$3s7g-3s7f$	$^1G-^1F^{\circ}$		548.28 cm^{-1}	249 817.94–250 366.22	9–7	6.55+04	2.54−01	1.37+03	0.359	B	1
325	$3s7g-3s8f$	$^3G-^3F^{\circ}$		*4 739.2* cm^{-1}	*249 818.2–254 557.4*	27–21	7.96+05	4.13−02	7.75+01	0.047	C+	1
				4 738.1 cm^{-1}	249 818.93–254 557.64	11–9	7.56+05	4.13−02	3.16+01	−0.343	C+	LS

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				4 739.41 cm^{-1}	249 817.85–254 557.26	9–7	7.45+05	3.87−02	2.42+01	−0.458	C+	LS
				4 739.71 cm^{-1}	249 817.32–254 557.03	7–5	7.97+05	3.80−02	1.85+01	−0.575	C+	LS
				4 739.79 cm^{-1}	249 817.85–254 557.64	9–9	3.87+04	2.58−03	1.61+00	−1.634	D+	LS
				4 739.94 cm^{-1}	249 817.32–254 557.26	7–7	4.98+04	3.32−03	1.61+00	−1.634	D+	LS
				4 740.32 cm^{-1}	249 817.32–254 557.64	7–9	5.90+02	5.06−05	2.46−02	−3.451	E	LS
326		$^1G-^1F^{\circ}$	19 845.8	19 851.2	249 817.94–254 855.42	9–7	2.29+05	1.05−02	6.18+00	−1.025	C	1
327	$3s8d-3s8f$	$^3D-^3F^{\circ}$		*552* cm^{-1}	*254 005–254 557.4*	15–21	1.26+05	8.67−01	7.75+03	1.114	B	1
				550.16 cm^{-1}	254 007.48–254 557.64	7–9	1.25+05	7.93−01	3.32+03	0.744	B	LS
				553 cm^{-1}	254 004–254 557.26	5–7	1.12+05	7.71−01	2.29+03	0.586	B	LS
				555 cm^{-1}	254 002–254 557.03	3–5	1.08+05	8.72−01	1.55+03	0.418	B	LS
				549.78 cm^{-1}	254 007.48–254 557.26	7–7	1.39+04	6.87−02	2.88+02	−0.318	B	LS
				553 cm^{-1}	254 004–254 557.03	5–5	1.97+04	9.66−02	2.88+02	−0.316	B	LS
				549.55 cm^{-1}	254 007.48–254 557.03	7–5	5.47+02	1.94−03	8.14+00	−1.867	C	LS
328	$3s8d-3s9f$	$^3D-^3F^{\circ}$		*3 826* cm^{-1}	*254 005–257 831*	15–21	2.52+06	3.61−01	4.66+02	0.734	C	1
				3 823.9 cm^{-1}	254 007–257 821.4	7–9	2.51+06	3.31−01	1.99+02	0.365	C	LS
				3 827 cm^{-1}	254 004–257 831.4	5–7	2.24+06	3.21−01	1.38+02	0.205	C	LS
				3.829 cm^{-1}	254 002–257 831.4	3–5	2.12+06	3.61−01	9.31+01	0.035	D+	LS
				3.823.9 cm^{-1}	254 007.48–257 831.4	7–7	2.80+05	2.87−02	1.73+01	−0.697	D	LS
				3.827 cm^{-1}	254 004–257 831.4	5–5	3.93+05	4.02−02	1.73+01	−0.697	D	LS
				3.823.9 cm^{-1}	254 007.48–257 831.4	7–5	1.11+04	8.10−04	4.88−01	−2.246	E	LS
329		$^1D-^1D^{\circ}$		3 246.62 cm^{-1}	254 766.75–258 013.37	5–7	3.83+06	7.63−01	3.87+02	0.581	C	1
330	$3s8f-3s8f$	$^3F^{\circ}-^3D$		*2 859* cm^{-1}	*254 557.4–257 416*	21–15	1.93+06	2.53−01	6.12+02	0.725	C	1
				2 858.0 cm^{-1}	254 557.64–257 415.6	9–7	1.77+06	2.53−01	2.62+02	0.357	C	LS
				2 858.3 cm^{-1}	254 557.26–257 415.6	7–5	1.72+06	2.25−01	1.81+02	0.197	C	LS
				2 858.6 cm^{-1}	254 657.03–257 415.6	5–3	1.93+06	2.12−01	1.22+02	0.025	C	LS
				2 858.3 cm^{-1}	254 657.26–257 415.6	7–7	1.54+05	2.82−02	2.27+01	−0.705	D+	LS
				2 858.6 cm^{-1}	254 557.03–257 415.6	5–5	2.15+05	3.94−02	2.27+01	−0.706	D+	LS
				2 858.6 cm^{-1}	254 557.03–257 415.6	5–7	4.32+03	1.11−03	6.39−01	−2.256	E	LS
331		$^1F^{\circ}-^1D$		2 993.1 cm^{-1}	254 855.42–257 848.5	7–5	1.60+06	1.91−01	1.47+02	0.126	C	1
332	$3s8f-3s9g$	$^3F^{\circ}-^3G$		*3 297* cm^{-1}	*254 557.4–257 854*	21–27	5.76+06	1.02+00	2.14+03	1.331	C	LS
				3 296.0 cm^{-1}	254 557.64–257 853.6	9–11	5.76+06	9.72−01	8.74+02	0.942	C	LS
				3 296.3 cm^{-1}	254 557.26–257 853.6	7–9	5.40+06	9.58−01	6.70+02	0.826	C	LS
				3 296.6 cm^{-1}	254 557.03–257 853.6	5–7	5.28+06	1.02+00	5.09+02	0.728	C	LS
				3 296.0 cm^{-1}	254 557.64–257 853.6	9–9	3.61+05	4.98−02	4.48+01	−0.349	D+	LS
				3 296.3 cm^{-1}	254 557.26–257 853.6	7–7	4.64+05	6.40−02	4.47+01	−0.349	D+	LS
				3 296.0 cm^{-1}	254 557.64–257 853.6	9–7	7.06+03	7.58−04	6.81−01	−2.166	E	LS
333	$3s8g-3s8f$	$^1G-^1F^{\circ}$		270.8 cm^{-1}	254 584.6–254–855.42	9–7	1.60+04	2.54−01	2.78+03	0.359	B	1
334	$3s8g-3s9f$	$^1G-^1F^{\circ}$		3 428.8 cm^{-1}	254 584.6–258 013.37	9–7	2.40+05	2.38−02	2.06+01	−0.669	D+	1
335		$^3G-^3F^{\circ}$		*3 246* cm^{-1}	*254 585–257 831*	27–21	5.57+05	6.17−02	1.69+02	0.222	D+	1
				3 245.6 cm^{-1}	254 585.75–257 831.4	11–9	5.30+05	6.17−02	6.88+01	−0.168	D+	LS
				3 246.6 cm^{-1}	254 584.8–257 831.4	9–7	5.22+05	5.78−02	5.27+01	−0.284	D+	LS
				3 246.6 cm^{-1}	254 584.8–257 831.4	7–5	5.57+05	5.66−02	4.02+01	−0.402	D+	LS
				3 246.6 cm^{-1}	254 584.8–257 831.4	9–9	2.71+04	3.86−03	3.52+00	−1.459	E+	LS
				3 246.6 cm^{-1}	254 584.8–257 831.4	7–7	3.49+04	4.96−03	3.52+00	−1.459	E+	LS
				3 246.6 cm^{-1}	254 584.8–257 831.4	7–7	4.13+02	7.55−05	5.36−02	−3.277	E	LS
336	$3s9d-3s9f$	$^3D-^3F^{\circ}$		*415* cm^{-1}	*257 416–257 831*	15–21	8.93+04	1.08+00	1.29+04	1.210	B	1

TABLE 12. Transition probabilities of allowed lines for Si III (references for this table are as follows: 1=Butler *et al.*,[13] 2=Tachiev and C. Froese Fischer,[101] 3=Safronova *et al.*,[90] 4=Almaraz *et al.*,[3] 5=Nussbaumer,[82] 6=Livingston *et al.*,[58] 7=Livingston *et al.*,[59] and 8=Berry *et al.*[8])—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
				415.8 cm^{-1}	257 415.6–257 831.4	7–9	8.93+04	9.96−01	5.52+03	0.843	B	LS
				415 cm^{-1}	257 415.6–257 831.4	5–7	7.94+04	9.64−01	3.82+03	0.683	B	LS
				415.8 cm^{-1}	257 415.6–257 831.4	3–5	7.47+04	1.08+00	2.57+03	0.511	B	LS
				415.8 cm^{-1}	257 415.6–257 831.4	7–7	9.95+03	8.63−02	4.78+02	−0.219	C+	LS
				415.8 cm^{-1}	257 415.6–257 831.4	5–5	1.40+04	1.21−01	4.79+02	−0.218	C+	LS
				415.8 cm^{-1}	257 415.6–257 831.4	7–5	3.92+02	2.43−03	1.35+01	−1.769	C	LS
337		$^1D - ^1F^\circ$		164.9 cm^{-1}	257 848.5–258 013.37	5–7	5.45+03	4.21−01	4.20+03	0.323	B	1

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

4.3.3. Forbidden Transitions for Si III

Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. The calculations only extend to transitions from energy levels up to 3*s*4*p*. Safronova *et al.*[90] used relativistic second-order MBPT calculations. Godefroid *et al.*[45] calculated E2 transitions using a MCHF calculation. M2 transitions were excluded lest the number of forbidden lines becomes too large.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references.[45,90,101] Next we isoelectronically averaged the logarithmic quality factors observed for allowed lines from the lower-lying levels of Mg I and Si III and applied the result to forbidden lines of Si III using the method described in the introduction to Kelleher and Podobedova.[53]

4.3.4. References for Forbidden Transitions for Si III

[45]M. Godefroid, C. E. Magnusson, P. O. Zetterberg, and I. Joelsson, Phys. Scr. **32**, 125 (1985).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[90]U. I. Safronova, W. R. Johnson, and H. G. Berry, Phys. Rev. A **61**, 052503 (2000). A complete list of data was obtained by private communication from Safronova.

[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).

TABLE 13. Wavelength finding list for forbidden lines of Si III

Wavelength (vac) (Å)	Mult. No.
489.403	5
603.264	4
637.728	15
638.137	15
638.251	15
639.040	15
639.205	15
639.319	15
656.580	12
657.135	12
658.004	14
658.267	12
659.139	14
684.002	11
684.120	11
684.604	11
684.701	11
685.347	11
685.833	11
699.554	3
699.566	3
768.636	2
770.167	2
789.422	17
789.596	17
807.999	9
808.840	9
810.556	9
815.584	8
816.071	8
816.440	8
816.928	8
817.149	8
818.188	8
818.233	1
818.678	8
818.900	8
820.051	16
861.014	13
861.781	13
1 081.644	10
1 082.501	10
1 082.889	10
1 259.684	25
1 259.703	25
1 259.712	25
1 340.081	27
1 342.483	27
1 347.159	27
1 391.017	26

TABLE 13. Wavelength finding list for forbidden lines of Si III—Continued

Wavelength (vac) (Å)	Mult. No.
1 391.028	26
1 393.582	26
1 393.606	26
1 393.616	26
1 398.622	26
1 398.645	26
1 398.656	26
1 629.008	31
1 629.064	31
1 629.128	31
1 704.863	30
1 704.898	30
1 704.914	30
1 704.924	30
1 704.959	30
1 704.975	30
1 704.994	30
1 705.029	30
1 705.045	30
Wavelength (air) (Å)	**Mult. No.**
2 208.710	35
2 350.635	34
2 350.666	34
2 712.525	23
2 772.603	22
2 782.908	22
2 789.786	32
2 789.879	32
2 789.922	32
2 803.084	22
2 914.480	42
2 914.919	42
2 917.295	42
2 917.709	42
2 921.150	42
2 923.537	42
3 022.813	44
3 025.368	44
3 314.727	7
3 328.920	7
3 354.844	39
3 358.189	7
3 358.574	39
3 366.849	39
3 381.411	41
3 389.800	41
3 420.438	24
3 450.966	24
3 527.465	43
4 195.589	38
4 206.969	38
4 219.443	38
4 219.961	38
4 225.344	38
4 238.450	38

TABLE 13. Wavelength finding list for forbidden lines of Si III—Continued

Wavelength (air) (Å)	Mult. No.
4 380.648	28
4 381.051	28
4 381.514	28
4 435.450	40
4 455.880	40
4 821.711	20
4 822.272	20
4 822.760	20
6 200.31	29
6 201.23	29
7 550.91	21
7 552.28	21
7 627.83	21
7 629.23	21
7 630.46	21
7 781.33	21
7 782.79	21
7 784.07	21
9 363.75	48
9 399.29	48
9 424.04	48
9 455.27	48
9 491.51	48
9 516.75	48
9 579.95	48
9 617.16	48
9 643.07	48
12 677.23	18
13 106.96	18
13 340.48	18
14 931.57	33
16 373.02	46
16 654.90	46
16 930.43	47
17 045.67	46
17 232.01	47
17 650.67	47
Wavenumber (cm^{-1})	**Mult. No.**
4 771.64	52
4 731.27	52
4 703.34	52
4 570.61	49
4 530.24	49
4 502.31	49
2 733.06	50
2 732.51	50
2 731.31	50
1 257.18	37
1 224.09	37
1 150.93	37
392.07	19
390.32	6
261.73	6
258.55	19
240.95	45

TABLE 13. Wavelength finding list for forbidden lines of Si III—Continued

Wavenumber (cm^{-1})	Mult. No.
201.03	51
137.61	45
133.52	19
128.59	6
106.25	36
103.34	45
73.16	36
68.30	53
40.37	53
33.09	36
27.93	53

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])

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
1	$3s^2-3p^2$	$^1S-^1D$									
				818.233	0.00–122 214.52	1–5	E2	1.61+04	2.64+01	B+	1
2		$^1S-^3P$									
				768.636	0.00–130 100.52	1–5	E2	1.15+01	1.38−02	C	1
				770.167	0.00–129 84.97	1–3	M1	1.75−02	8.89−07	D	1
3	$3s^2-3s3d$	$^1S-^3D$									
				699.566	0.00–142 945.84	1–5	E2	8.49−03	6.35−06	D	1
				699.554	0.00–142 948.25	1–3	M1	8.65−11	3.30−15	E	1
4		$^1S-^1D$									
				603.264	0.00–165 765.00	1–5	E2	8.14+04	2.90+01	B+	1
5	$3s^2-3s4d$	$^1S-^1D$									
				489.403	0.00–204 330.79	1–5	E2	5.24+03	6.57−01	B	1
6	$3s3p-3s3p$	$^3P^{\circ}-^3P^{\circ}$									
				261.73 cm^{-1}	52 853.28–53 115.01	3–5	M1	2.33−04	2.41+00	B+	1,2
				261.73 cm^{-1}	52 853.28–53 115.01	3–5	E2	8.94−10	3.25+01	B+	1
				128.59 cm^{-1}	52 724.69–52 853.28	1–3	M1	3.87−05	2.03+00	B+	1,2
				390.32 cm^{-1}	52 724.69–53 115.01	1–5	E2	2.86−09	1.41+01	B+	1,2
7		$^3P^{\circ}-^1P^{\circ}$									
			3 328.920	3 329.878	52 853.28–82 884.41	3–3	M1	1.23−02	5.05−05	D+	1
			3 328.920	3 329.878	52 853.28–82 884.41	3–3	E2	1.91−03	2.10−03	C	1
			3 358.189	3 359.154	53 115.01–82 884.41	5–3	M1	2.00−02	8.42−05	D+	1
			3 358.189	3 359.154	53 115.01–82 884.41	5–3	E2	1.25−03	1.43−03	C	1
			3 314.727	3 315.681	52 724.69–82 884.41	1–3	M1	1.66−02	6.73−05	D+	1
8	$3s3p-3s4p$	$^3P^{\circ}-^3P^{\circ}$									
				818.188	53 115.01–175 336.26	5–5	M1	8.75−09	8.89−13	E	1
				818.188	53 115.01–175 336.26	5–5	E2	6.29+03	1.03+01	B	1
				816.928	52 853.28–175 263.10	3–3	M1	2.47−05	1.50−09	E	1
				816.928	52 853.28–175 263.10	3–3	E2	4.50+03	4.39+00	B	1
				818.900	53 115.01–175 230.01	5–1	E2	1.80+04	5.93+00	B	1
				818.678	53 115.01–175 263.10	5–1	M1	5.50−02	3.36−06	D	1
				818.678	53 115.01–175 263.10	5–1	E2	1.35+04	1.33+01	B+	1
				817.149	58 853.28–175 230.01	3–1	M1	3.01−02	6.08−07	D	1
				816.440	52 853.28–175 336.26	3–5	M1	3.14−02	3.17−06	D	1
				816.440	52 853.28–175 336.26	3–5	E2	8.11+03	1.31+01	B+	1

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
				816.071	52 724.69–175 263.10	1–3	M1	8.92−03	5.39−07	D	1
				815.584	52 724.69–175 336.26	1–5	E2	3.61+03	5.81+00	B	1
9		$^3P^\circ-^1P^\circ$									
				808.840	52 853.28–176 487.19	3–3	M1	1.83−02	1.08−06	D	1
				808.840	52 853.28–176 487.19	3–3	E2	1.12+01	1.04−02	C	1
				810.556	53 115.01–176 487.19	5–3	M1	2.71−02	1.61−06	D	1
				810.556	53 115.01–176 487.19	5–3	E2	2.30+01	2.15−02	C	1
				807.999	52 724.69–176 487.19	1–3	M1	2.57−02	1.51−06	D	1
10		$^1P^\circ-^3P^\circ$									
				1 082.501	82 884.41–175 263.10	3–3	M1	9.68−03	1.37−06	D	1
				1 082.501	82 884.41–175 263.10	3–3	E2	1.71+01	6.82−02	C+	1
				1 082.889	82 884.41–175 230.01	3–1	M1	3.91−02	1.84−06	D	1
				1081.644	82 884.41–175 336.26	3–5	M1	9.54−03	2.24−06	D	1
				1 081.644	82 884.41–175 336.26	3–5	E2	1.95−01	1.29−03	C	1
11	$3s3p-3p3d$	$^3P^\circ-^3F^\circ$									
				684.701	53 115.01–199 164.10	5–9	E2	1.00+05	1.21+02	B+	1
				684.120	52 853.28–199 026.49	3–7	E2	6.70+04	6.28+01	B+	1
				684.002	52 724.69–198 923.15	1–5	E2	4.67+04	3.12+01	B+	1
				685.347	53 115.01–199 026.49	5–7	M1	7.79−08	6.51−12	E	1
				685.347	53 115.01–199 026.49	5–7	E2	3.28+04	3.10+01	B+	1
				684.604	52 853.28–198 923.15	3–5	M1	4.00−07	2.38−11	E	1
				684.604	52 583.28–198 923.15	3–5	E2	4.63+04	3.11+01	B+	1
				685.883	53 115.01–198 923.15	5–5	M1	1.74−06	1.04−10	E	1
				685.833	53 115.01–198 923.15	5–5	E2	6.47+03	4.38+00	B	1
12		$^3P^\circ-^1D^\circ$									
				656.580	52 724.69–205 029.09	1–5	E2	4.98+01	2.71−02	C+	1
				657.135	52 853.28–205 029.09	3–5	M1	3.24−04	1.71−08	E+	1
				657.135	52 853.28–205 029.09	3–5	E2	3.72+00	2.04−03	C	1
				658.267	53 115.01–205 029.09	5–5	M1	9.25−04	4.89−08	E+	1
				658.267	53 115.01–205 029.09	5–5	E2	7.53+00	4.16−03	C	1
13		$^1P^\circ-^3F^\circ$									
				861.014	82 884.41–199 026.49	3–7	E2	2.55+00	7.54−03	C	1
				861.781	82 884.41–198 923.15	3–5	M1	9.03−08	1.07−11	E	1
				861.781	82 884.41–198 923.15	3–5	E2	3.36+00	7.13−03	C	1
14	$3s3p-3s4f$	$^3P^\circ-^1F^\circ$									
				658.004	52 853.28–204 828.06	3–7	E2	9.45+00	7.29−03	C	1
				659.139	53 115.01–204 828.06	5–7	M1	5.73−09	4.26−13	E	1
				659.139	53 115.01–204 828.06	5–7	E2	5.24+00	4.08−03	C	1
15		$^3P^\circ-^3F^\circ$									
				639.040	53 115.01–209 599.70	5–9	E2	8.70+03	7.45+00	B	1
				638.137	52 853.28–209 599.33	3–7	E2	5.94+03	3.93+00	B	1
				637.728	52 724.69–209 531.40	1–5	E2	4.31+03	2.03+00	B	1
				639.205	53 115.01–209 559.33	5–7	E2	3.24+03	2.16+00	B	1
				638.251	52 853.28–209 531.40	3–5	E2	4.52+03	2.13+00	B	1
				639.319	53 115.01–209 531.40	5–5	E2	6.96+02	3.32−01	C+	1
16		$^1P^\circ-^1F^\circ$									

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
				820.051	82 884.41–204 828.06	3–7	E2	2.25+04	5.23+01	B+	1
17		$^1P^\circ - ^3F^\circ$									
				789.422	82 884.41–209 559.33	3–7	E2	3.67+00	7.02+03	C	1
				789.596	82 884.41–209 531.40	3–5	E2	3.13+00	4.29−03	C	1
18	$3p^2 - 3p^2$	$^1D - ^3P$									
			13 340.48	13 344.13	122 214.52–129 708.45	5–1	E2	4.90−05	1.85−02	C	1
			13 106.96	13 110.54	122 214.52–129 841.97	5–3	M1	4.10−03	1.03−03	C	1
			13 106.96	13 110.54	122 214.52–129 841.97	5–3	E2	1.19−05	1.24−02	C	1
			12 677.23	12 680.70	122 214.52–130 100.52	5–5	M1	8.15−03	3.08−03	C	1
			12 677.23	12 680.70	122 214.52–130 100.52	5–5	E2	5.76−05	8.43−02	C+	1
19		$^3P - ^3P$									
				258.55 cm^{-1}	129 841.97–130 100.52	3–5	M1	2.33−04	2.50+00	B	1
				258.55 cm^{-1}	129 841.97–130 100.52	3–5	E2	7.19−10	2.78+01	B+	1
				133.52 cm^{-1}	129 708.45–129 841.97	1–3	M1	4.28−05	2.00+00	B	1
				392.07 cm^{-1}	129 708.45–130 100.52	1–5	E2	2.56−09	1.24+01	B	1
20	$3p^2 - 3s3d$	$^1D - ^3D$									
			4 822.272	4 823.620	122 14.52–142 945.84	5–5	M1	1.61−06	3.34−08	E+	1
			4 822.272	4 823.620	122 214.52–142 945.84	5–5	E2	1.49−05	1.73−04	D+	1
			4 821.711	4 823.059	122 214.52–142 948.25	5–3	M1	1.64−05	2.05−07	E+	1
			4 821.711	4 823.059	122 214.52–142 948.25	5–3	E2	2.32−06	1.62−05	D+	1
			4 822.760	4 824.108	122 214.52–142 943.74	5–7	M1	7.42−06	2.16−07	E+	1
			4 822.760	4 824.108	122 214.52–142 943.74	5–7	E2	2.11−05	3.44−04	C	1
21		$^3P - ^3D$									
			7 630.46	7 632.56	129 841.97–142 943.74	3–7	E2	2.14−03	3.46−01	C+	1
			7 552.28	7 554.36	129 708.45–142 945.84	1–5	E2	2.16−03	2.37−01	C+	1
			7 784.07	7 786.21	130 100.52–142 943.74	5–7	M1	2.21−06	2.71−07	D	1
			7 784.07	7 786.21	130 100.52–142 943.74	5–7	E2	3.73−03	6.67−01	B	1
			7 629.23	7 631.33	129 841.97–142 945.84	3–5	M1	1.02−07	8.40−09	E+	1
			7 629.23	7 631.33	129 841.97–142 945.84	3–5	E2	4.80−04	5.55−02	C+	1
			7 550.91	7 552.98	129 708.45–142 948.25	1–3	M1	8.19−07	3.92−08	E+	1
			7 782.79	7 784.94	130 100.52–142 945.84	5–5	M1	2.35−06	2.05−07	E+	1
			7 782.79	7 784.94	130 100.52–142 945.84	5–5	E2	3.21−03	4.10−01	C+	1
			7 627.83	7 629.93	129 841.97–142 948.25	3–3	M1	2.38−06	1.18−07	E+	1
			7 627.83	7 629.93	129 841.97–142 948.25	3–3	E2	4.46−03	3.09−01	C+	1
			7 781.33	7 783.48	130 100.52–142 948.25	5–3	M1	1.60−06	8.41−08	E+	1
			7 781.33	7 783.48	130 100.52–142 948.25	5–3	E2	1.36−03	1.04−01	C+	1
22		$^3P - ^1D$									
			2 772.603	2 773.421	129 708.45–165 765.00	1–5	E2	6.25−03	4.58−03	C	1
			2 782.908	2 783.730	129 841.97–165 765.00	3–5	M1	4.56−03	1.82−05	D+	1
			2 782.908	2 783.730	129 841.97–165 765.00	3–5	E2	1.06−04	7.88−05	D+	1
			2 803.084	2 803.910	130 100.52–165 765.00	5–5	M1	1.34−02	5.48−05	D+	1
			2 803.084	2 803.910	130 100.52–165 765.00	5–5	E2	8.85−03	6.85−03	C	1
23	$3P^2 - 3s4s$	$^1D - ^1S$									
			2 712.525	2 713.329	122 214.52–159 069.61	5–1	E2	2.99+02	3.92+01	B+	1
24		$^3P - ^1S$									
			3 450.966	3 451.955	130 100.52–159 069.61	5–1	E2	5.71−02	2.50−02	C+	1

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
			3 420.438	3 421.419	129 841.97–159 069.61	3–1	M1	3.85−04	5.72−07	D	1
25	$3p^2-3s4d$	$^1D-^3D$									
				1 259.703	122 214.52–201 598.28	5–5	M1	2.88−05	1.07−08	E+	1
				1 259.703	122 214.52–201 598.28	5–5	E2	1.50−02	2.12−04	D+	1
				1 259.712	122 214.52–201 597.73	5–3	M1	2.89−04	6.43−08	E+	1
				1 259.712	122 214.52–201 597.73	5–3	E2	7.83−03	6.65−05	D+	1
				1 259.684	122 214.52–201 599.48	5–7	M1	1.29−04	6.72−08	E+	1
				1 259.684	122 214.52–201 599.48	5–7	E2	3.20−03	6.34−05	D+	1
26		$^3P-^3D$									
				1 393.582	129 841.97–201 599.48	3–7	E2	3.88+00	1.28−01	C+	1
				1 391.017	129 708.45–201 598.28	1–5	E2	4.38+00	1.02−01	C+	1
				1 398.622	130 100.52–201 599.48	5–7	M1	8.95−05	6.36+08	E+	1
				1 398.622	130 100.52–201 599.48	5–7	E2	8.38+00	2.80−01	C+	1
				1 393.606	129 841.97–201 598.28	3–5	M1	1.11−07	5.55−11	E	1
				1 393.606	129 841.97–201 598.28	3–5	E2	1.28+00	3.00−02	C+	1
				1 391.028	129 708.45–201 597.73	1–3	M1	5.71−05	1.71−08	E+	1
				1 398.645	130 100.52–201 598.28	5–5	M1	9.51−05	4.82−08	E+	1
				1 398.645	130 100.52–201 598.28	5–5	E2	7.57+00	1.81−01	C+	1
				1 393.616	129 841.97–201 597.73	3–3	M1	1.71−04	5.14−08	E+	1
				1 393.616	129 841.97–201 597.73	3–3	E2	1.06+01	1.49−01	C+	1
				1 398.656	130 100.52–201 597.73	5–3	M1	3.51−05	1.07−08	E+	1
				1 398.656	130 100.52–201 597.73	5–3	E2	3.32+00	4.76−02	C+	1
27		$^3P-^1D$									
				1 340.081	129 708.45–204 330.79	1–5	E2	2.36−03	4.56−05	D+	1
				1 342.483	129 84.97–204 330.79	3–5	M1	2.17−04	9.75−08	E+	1
				1 342.483	129 841.97–204 330.79	3–5	E2	5.28−04	1.03−05	D	1
				1 347.159	130 100.52–204 330.79	5–5	M1	6.49−04	2.94−07	D	1
				1 347.159	130 100.52–204 330.79	5–5	E2	5.32−01	1.05−02	C	1
28	$3s3d-3s3d$	$^3D-^1D$									
			4 381.051	4 382.282	142 945.84–165 765.00	5–5	M1	2.63−06	4.10−08	E+	1
			4 381.051	4 382.282	142 945.84–165 765.00	5–5	E2	3.24−06	2.34−05	D+	1
			4 380.648	4 381.879	142 943.74–165 765.00	7–5	M1	1.50−05	2.34−07	E+	1
			4 380.648	4 381.879	142 943.74–165 765.00	7–5	E2	1.11−06	7.98−06	D	1
			4 381.514	4 382.745	142 948.25–165 765.00	3–5	M1	1.44−05	2.25−07	E+	1
			4 381.514	4 382.745	142 948.25–165 765.00	3–5	E2	7.54−08	5.44−07	D	1
29	$3s3d-3s4s$	$^3D-^1S$									
			6 200.31	6 202.02	142 945.84–159 069.61	5–1	E2	1.31−06	1.08−05	D	1
			6 201.23	6 202.95	142 948.25–159 069.61	3–1	M1	1.08−12	9.58−15	E	1
30	$3s3d-3s4d$	$^3D-^3D$									
				1 704.863	142 943.74–201 599.48	7–7	M1	1.28−09	1.65−12	E	1
				1 704.863	142 943.74–201 599.48	7–7	E2	9.40+02	8.47+01	B+	1
				1 704.959	142 945.84–201 598.28	5–5	M1	2.48−10	2.28−13	E	1
				1 704.959	142 954.84–201 598.28	5–5	E2	3.43+02	2.21+01	B+	1
				1 705.045	142 948.25–201 597.73	3–3	M1	3.30−10	1.82−13	E	1
				1 705.045	142 948.25–201 597.73	3–3	E2	4.80+02	1.85+01	B+	1
				1 704.914	142 943.74–201 597.73	7–3	E2	9.14+01	3.53+00	B	1
				1 704.898	142 943.74–201 598.28	7–5	M1	2.93−06	2.70−09	E+	1
				1 704.898	142 943.74–201 598.28	7–5	E2	5.48−02	3.53−01	B+	1
				1 704.975	142 945.82–201 597.73	5–3	M1	2.57−05	1.42−08	E+	1

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
				1 704.975	142 945.84–201 597.73	5–3	E2	8.00+02	3.09+01	B+	1
				1 704.924	142 945.84–201 599.48	5–7	M1	2.10−06	2.71−09	E+	1
				1 704.924	142 945.84–201 599.48	5–7	E2	3.92+02	3.53+01	B+	1
				1 705.029	142 948.25–201 598.28	3–5	M1	1.57−05	1.44−08	E+	1
				1 705.029	142 948.25–201 598.28	3–5	E2	4.80+02	3.09+01	B+	1
				1 704.994	142 948.25–201 599.48	3–7	E2	3.92+01	3.53+00	B	1
31		$^3D-^1D$									
				1 629.064	142 945.84–204 330.79	5–5	M1	1.03−06	8.24−10	E	1
				1 629.064	142 945.84–204 330.79	5–5	E2	1.10−03	5.61−05	D+	1
				1 629.008	142 943.74–204 330.79	7–5	M1	5.84−06	4.68−09	E+	1
				1 629.008	142 943.74–204 330.79	7–5	E2	8.54−04	4.38−05	D+	1
				1 629.128	142 948.25–204 330.79	3–5	M1	5.60−06	4.49−09	E+	1
				1 629.128	142 948.25–204 330.79	3–5	E2	7.10−04	3.64−05	D+	1
32		$^1D-^3D$									
			2 789.879	2 790.702	165 765.00–201 598.28	5–5	M1	7.37−06	2.97−08	E+	1
			2 789.879	2 790.702	165 765.00–201 598.28	5–5	E2	3.38−04	2.55−04	D+	1
			2 789.922	2 790.745	165 765.00–201 597.73	5–3	M1	6.62−05	1.60−07	E+	1
			2 789.922	2 790.745	165 765.00–201 597.73	5–3	E2	1.43−05	6.48−06	D	1
			2 789.786	2 790.608	165 765.00–201 599.48	5–7	M1	2.90−05	1.64−07	E+	1
			2 789.786	2 790.608	165 765.00–201 599.48	5–7	E2	1.01−05	1.07−05	D	1
33	$3s4s-3s3d$	$^1S-^1D$									
			14 931.57	14 935.65	159 069.61–165 765.00	1–5	E2	4.86−02	1.61+02	B+	1
34	$3s4s-3s4d$	$^1S-^3D$									
			2 350.635	2 351.355	159 069.61–201 598.28	1–5	E2	2.02−03	6.47−04	C	1
			2 350.666	2 351.385	159 069.61–201 597.73	1–3	M1	1.88−11	2.73−14	E	1
35		$^1S-^1D$									
			2 208.710	2 209.399	159 069.61–204 330.79	1–5	E2	2.08+03	4.89+02	B+	1
36	$3s4p-3s4p$	$^3P^\circ-^3P^\circ$									
				73.16 cm^{-1}	175 263.10–175 336.26	3–5	M1	5.27−06	2.50+00	B	1
				73.16 cm^{-1}	175 263.10–175 336.2	3–5	E2	3.36−11	7.15+02	B+	1
				33.09 cm^{-1}	175 230.01–175 263.10	1–3	M1	6.50−07	2.00+00	B	1
				106.25 cm^{-1}	175 230.01–175 336.26	1–5	E2	9.65−11	3.18+02	B+	1
37		$^3P^\circ-^1P^\circ$									
				1 224.09 cm^{-1}	175 263.10–176 487.19	3–3	M1	4.38−05	2.66−03	C	1
				1 224.09 cm^{-1}	175 263.10–176 487.19	3–3	E2	3.77−07	3.67+00	B	1
				1 150.93 cm^{-1}	175 336.26–176 487.19	5–3	M1	6.08−05	4.44−03	C	1
				1 150.93 cm^{-1}	175 336.26–176 487.19	5–3	E2	9.75−08	1.29+00	B	1
				1 257.18 cm^{-1}	175 230.01–176 487.19	1–3	M1	6.34−05	3.55−03	C	1
38	$3s4p-3p3d$	$^3P^\circ-^3F^\circ$									
			4 195.589	4 196.772	175 336.26–199 164.10	5–9	E2	4.93+01	5.16+02	B+	1
			4 206.969	4 208.154	175 263.10–199 026.49	3–7	E2	3.15+01	2.60+02	B+	1
			4 219.443	4 220.631	175 230.01–198 923.15	1–5	E2	2.14+01	1.28+02	B+	1
			4 219.961	4 221.149	175 336.26–199 026.49	5–7	M1	7.63−10	1.49−11	E	1
			4 219.961	4 221.149	175 336.26–199 026.49	5–7	E2	1.56+01	1.30+02	B+	1
			4 225.344	4 226.534	175 263.10–198 923.15	3–5	M1	4.38−09	6.14−11	E	1
			4 225.344	4 226.534	175 263.10–198 923.15	3–5	E2	2.12+01	1.28+02	B+	1

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
			4 238.450	4 239.643	175 336.26–198 923.15	5–5	M1	1.93−08	2.72−10	E	1
			4 238.450	4 239.643	175 336.26–198 923.15	5–5	E2	2.99+00	1.83+01	B+	1
39		$^3P^\circ-^1D^\circ$									
			3 354.844	3 355.808	175 230.01–205 029.09	1–5	E2	1.23−01	2.33−01	C+	1
			3 358.574	3 359.539	175 263.10–205 029.09	3–5	M1	7.02−06	4.94−08	E+	1
			3 358.574	3 359.539	175 263.10–205 029.09	3–5	E2	1.77−01	3.38−01	C+	1
			3 366.849	3 367.816	175 336.26–205 029.09	5–5	M1	2.13−05	1.51−07	E+	1
			3 366.849	3 367.816	175 336.26–205 029.09	5–5	E2	1.62−02	3.14−02	C+	1
40		$^1P^\circ-^3F^\circ$									
			4 435.450	4 436.695	176 487.19–199 026.49	3–7	E2	8.03−02	8.63−01	B	1
			4 455.880	4 457.130	176 487.19–198 923.15	3–5	M1	5.61−10	9.20−12	E	1
			4 455.880	4 457.130	176 487.19–198 923.15	3–5	E2	3.49−02	2.74−01	C+	1
41	$3s4p-3s4f$	$^3P^\circ-^1F^\circ$									
			3 381.411	3 382.382	175 263.10–204 828.06	3–7	E2	1.23+00	3.41+00	B	1
			3 389.800	3 390.773	175 336.26–204 828.06	5–7	M1	1.08−10	1.09−12	E	1
			3 389.800	3 390.773	175 336.26–204 828.06	5–7	E2	1.30−02	3.64−02	C+	1
42		$^3P^\circ-^3F^\circ$									
			2 917.709	2 918.563	175 336.26–209 599.70	5–9	E2	9.40+02	1.60+03	A	1
			2 914.919	2 915.772	175 263.10–209 599.33	3–7	E2	6.33+02	8.34+02	B+	1
			2 914.480	2 915.334	175 230.01–209 531.40	1–5	E2	4.47+02	4.20+02	B+	1
			2 921.150	2 922.006	175 336.26–209 599.33	5–7	E2	3.14+02	4.18+02	B+	1
			2 917.295	2 918.149	175 263.10–209 531.40	3–5	E2	4.44+02	4.19+02	B+	1
			2 923.537	2 924.392	175 336.26–209 531.40	5–5	E2	6.30+01	6.01+01	B+	1
43		$^1P^\circ-^3F^\circ$									
			3 527.465	3 528.473	176 487.19–204 828.06	3–7	E2	4.12+02	1.41+03	A	1
44		$^1P^\circ-^3F^\circ$									
			3 022.813	3 023.693	176 487.149–209 559.33	3–7	E2	1.35+00	2.13+00	B	1
			3 025.368	3 026.249	176 487.19–209 531.40	3–5	E2	7.11−01	8.06−01	B	1
45	$3p3d-3p3d$	$^3F^\circ-^3F^\circ$									
				137.61 cm^{-1}	199 026.49–199 164.10	7–9	M1	5.27−05	6.75+00	B	1
				137.61 cm^{-1}	199 026.49–199 164.10	7–9	E2	6.40−11	1.04+02	B+	1
				103.34 cm^{-1}	198 923.15–199 026.49	5–7	M1	2.83−05	6.66+00	B	1
				103.34 cm^{-1}	198 923.15–199 026.49	5–7	E2	1.86−11	9.85+01	B+	1
				240.95 cm^{-1}	198 923.15–199 164.10	5–9	E2	4.77−11	4.72+00	B	1
46		$^3F^\circ-^1D^\circ$									
			17 045.67	17 050.33	199 164.10–205 029.09	9–5	E2	2.11−06	1.36−02	C	1
			16 654.90	16 659.45	199 026.49–205 029.09	7–5	M1	2.89−03	2.48−03	C	1
			16 654.90	16 659.45	199 026.49–205 029.09	7–5	E2	9.15−06	5.24−02	C+	1
			16 373.02	16 377.49	198 923.15–205 029.09	5–5	M1	1.50−03	1.22−03	C	1
			16 373.02	16 377.49	198 923.15–205 029.09	5–5	E2	3.10−05	1.63−01	C+	1
47	$3p3d-3s4f$	$^3F^\circ-^1F^\circ$									
			17 232.01	17 236.71	199 026.49–204 828.06	7–7	M1	2.62−05	3.48−05	D+	1
			17 232.01	17 236.71	199 026.49–204 828.06	7–7	E2	1.21−06	1.15−02	C	1
			17 650.67	17 655.49	199 164.10–204 828.06	9–7	M1	2.90−04	4.14−04	C	1
			17 650.67	17 655.49	199 164.10–204 828.06	9–7	E2	1.27−06	1.36−02	C	1

TABLE 14. Transition probabilities of forbidden lines for Si III (references for this table are as follows; 1=Tachiev and Froese Fischer[101] and 2=Safronova *et al.*[90])—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
			16 930.43	16 935.06	198 923.15–204 828.06	5–7	M1	3.18−04	4.00−04	C	1
			16 930.43	16 935.06	198 923.15–204 828.06	5–7	E2	1.24−06	1.08−02	C	1
48		$^3F^\circ-^3F^\circ$									
			9 579.95	9 582.58	199 164.10–209 599.70	9–9	E2	3.03−01	1.97+02	B+	1
			9 491.51	9 494.12	199 026.49–209 559.33	7–7	E2	2.13−01	1.03+02	B+	1
			9 424.04	9 426.63	198 923.15–209 531.40	5–5	E2	2.65−01	8.80+01	B+	1
			9 643.07	9 645.71	199 164.10–209 531.40	9–5	E2	5.34−01	1.99+00	B	1
			9 617.16	9 619.80	199 164.10–209 599.33	9–7	E2	8.32−02	4.28+01	B+	1
			9 516.75	9 519.36	199 026.49–209 531.40	7–5	E2	1.14−01	4.00+01	B+	1
			9 455.27	9 457.87	199 026.49–209 599.70	7–9	E2	6.57−02	4.00+01	B+	1
			9 399.29	9 401.87	198 923.15.15–209 559.33	5–7	E2	8.27−02	3.80+01	B+	1
			9 363.75	9 366.32	198 923.15–209 599.70	5–9	E2	3.06−03	1.77+00	B	1
49		$^1D^\circ-^3F^\circ$									
				4 570.61 cm^{-1}	205 029.09–209 599.70	5–9	E2	1.29−08	5.20−04	C	1
				4 530.24 cm^{-1}	205 029.09–209 599.33	5–7	E2	5.09−06	1.67−01	C+	1
				4 502.31 cm^{-1}	205 029.09–209 531.40	5–9	E2	1.15−05	2.78−01	C	1
50	$3s4d-3s4d$	$^3D-^1D$									
				2 732.51 cm^{-1}	201 598.28–204 330.79	5–5	M1	1.07−07	9.68−07	D	1
				2 732.51 cm^{-1}	201 598.28–204 330.79	5–5	E2	2.09−09	6.13−04	C	1
				2 731.31 cm^{-1}	201 599.48–204 330.79	7–5	M1	5.97−07	5.43−06	D	1
				2 731.31 cm^{-1}	201 599.48–204 330.79	7–5	E2	5.22−09	1.53−03	C	1
				2 733.06 cm^{-1}	201 597.73–204 330.79	3–5	M1	5.76−07	5.23−06	D	1
				2 733.06 cm^{-1}	201 597.73–204 330.79	3–5	E2	4.29−09	1.26−03	C	1
51	$3s4f-3p3d$	$^1F^\circ-^1D^\circ$									
				201.03 cm^{-1}	204 828.06–205 029.09	7–5	M1	1.23−11	2.81−07	D	1
52	$3s4f-3s4f$	$^1F^\circ-^3F^\circ$									
				4 731.27 cm^{-1}	204 828.06–209 559.33	7–7	E2	1.79−08	4.71−04	C	1
				4 703.34 cm^{-1}	204 828.06–209 531.40	7–5	E2	1.05−06	2.04−02	C	1
				4 771.64 cm^{-1}	204 828.06–209 599.70	7–9	E2	6.06−07	1.97−02	C	1
53		$^3F^\circ-^3F^\circ$									
				40.37 cm^{-1}	209 559.33–209 599.70	7–9	E2	4.85−13	3.64+02	B+	1
				27.93 cm^{-1}	209 531.40–209 599.33	5–7	E2	9.58−14	3.52+02	B+	1
				68.30 cm^{-1}	209 531.40–209 599.70	5–9	E2	3.09−13	1.67+01	B+	1

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

4.4. Si IV

Sodium isoelectronic sequence
Ground state: $1s^22s^22p^63s\ ^2S_{1/2}$
Ionization energy: 45.141 79 eV (364 093.1 cm^{-1})

4.4.1. Allowed Transitions for Si IV

Froese Fischer[36] has performed extensive *ab initio* nonorthogonal spline CI calculations. The results of Maniak *et al.*[64] were derived by applying lifetime measurements to observed relative intensities. Theodosiou and Curtis[102] used a quantum defect approach. Siegel *et al.*[95] used a semiempirical model potential approach and explicitly accounted for the effects of core polarization.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[36,64,95,102] as described in the introduction to Kelleher and Podobedova.[53] We then isoelectronically averaged the logarithmic quality factors observed for Na-like lines of Na I, Mg II, Al III, and Si IV using the method described in the introduction to Kelleher and Podobedova.[53]

4.4.2. References for Allowed Transitions for Si IV

[36]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/

mchf_collection/ (nonorthogonal spline CI, *ab initio*, downloaded on April 20, 2004).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[64]S. T. Maniak, E. Träbert, and L. J. Curtis, Phys. Lett. A **173**, 407 (1993).
[95]W. Siegel, J. Migdalek, and Y.-K. Kim, At. Data Nucl. Data Tables **68**, 303 (1998).
[103]C. E. Theodosiou and L. J. Curtis, Phys. Rev. A **38**, 4435 (1988).

TABLE 15. Wavelength finding list for allowed lines of Si IV

Wavelength (vac) (Å)	Mult. No.
300.517	6
300.531	6
310.234	5
310.257	5
327.137	4
327.181	4
361.560	3
361.659	3
377.695	17
378.354	17
385.874	16
386.562	16
390.511	15
391.216	15
404.113	14
404.868	14
412.155	13
412.939	13
437.849	12
438.734	12
454.112	11
455.065	11
457.815	2
458.155	2
515.118	10
516.344	10
559.533	9
560.980	9
567.401	27
567.405	27
580.095	26
580.099	26
580.153	26
595.857	25
595.861	25
617.423	24
617.428	24
617.523	24
645.762	23
645.767	23
688.194	22
688.200	22
688.395	22
720.560	32

TABLE 15. Wavelength finding list for allowed lines of Si IV—Continued

Wavelength (vac) (Å)	Mult. No.
720.643	32
749.937	21
749.943	21
779.065	31
779.216	31
815.053	8
818.128	8
849.007	41
850.175	41
860.551	20
860.560	20
861.118	20
891.482	40
892.770	40
895.228	30
895.558	30
916.631	39
917.993	39
995.263	38
996.869	38
1 045.500	37
1 047.271	37
1 066.614	19
1 066.636	19
1 066.650	19
1 122.485	7
1 128.325	7
1 128.340	7
1 154.621	50
1 154.622	50
1 208.431	49
1 208.433	49
1 208.668	49
1 210.652	29
1 211.757	29
1 220.637	54
1 220.666	54
1 228.349	36
1 230.795	36
1 278.903	48
1 278.905	48
1 365.469	53
1 365.506	53
1 365.549	35
1 368.571	35
1 368.573	35
1 382.556	47
1 382.558	47
1 383.034	47
1 393.755	1
1 402.770	1
1 484.958	58
1 485.312	58
1 533.219	46
1 533.222	46
1 672.581	52

TABLE 15. Wavelength finding list for allowed lines of Si IV—Continued

Wavelength (vac) (Å)	Mult. No.
1 672.635	52
1 679.321	65
1 681.449	65
1 722.526	18
1 722.562	18
1 727.376	18
1 756.855	57
1 757.624	57
1 796.162	45
1 796.166	45
1 797.496	45
1 854.050	64
1 856.644	64
1 966.247	63
1 969.165	63
Wavelength (air) (Å)	**Mult. No.**
2 120.171	34
2 127.473	34
2 215.669	72
2 215.673	72
2 287.050	44
2 287.056	44
2 361.526	75
2 366.750	62
2 370.981	62
2 422.777	71
2 422.783	71
2 423.720	71
2 482.839	56
2 485.380	56
2 672.198	61
2 675.111	51
2 675.118	51
2 675.251	51
2 677.592	61
2 723.800	70
2 723.808	70
2 971.521	74
3 021.823	78
3 023.290	78
3 149.559	33
3 165.698	33
3 165.710	33
3 241.572	69
3 241.583	69
3 244.191	69
3 287.396	83
3 291.853	83
3 762.431	43
3 762.448	43
3 773.150	43
4 031.353	82
4 038.057	82
4 088.862	28
4 116.103	28

TABLE 15. Wavelength finding list for allowed lines of Si IV—Continued

Wavelength (air) (Å)	Mult. No.
4 212.397	68
4 212.414	68
4 314.102	60
4 328.177	60
4 403.733	88
4 411.652	77
4 416.505	77
4 602.578	81
4 611.318	81
4 801.437	90
4 950.111	73
5 304.971	87
5 309.493	87
6 667.57	59
6 701.21	59
6 701.25	59
6 998.36	86
7 047.87	67
7 047.92	67
7 068.39	67
7 132.16	92
7 140.34	92
7 276.75	95
7 289.96	95
7 630.50	80
7 654.56	80
8 240.60	89
8 957.25	55
9 018.14	55
10 802.50	98
11 869.13	85
11 904.32	85
12 083.01	79
12 143.43	79
12 301.71	94
12 339.51	94
12 732.92	99
16 647.35	76
16 762.27	76
18 520.5	97
18 575.7	97
19 800.3	93
19 898.5	93
Wavenumber (cm^{-1})	**Mult. No.**
4 121.01	42
4 119.06	42
4 118.94	42
3 595.04	91
3 570.14	91
3 307.68	101
3 291.63	101
2 320.26	100
2 304.21	100
2 221.49	66
2 221.39	66

TABLE 15. Wavelength finding list for allowed lines of Si IV—Continued

Wavenumber (cm^{-1})	Mult. No.
1 315.35	84
838.07	96
565.00	102

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])

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
1	$3s-3p$	$^2S-^2P^{\circ}$		*1 396.75*	0.00–*71 594.9*	2–6	8.74+0.8	7.67−01	7.06+00	0.186	A+	1,2,3
				1 393.755	0.00–71 748.64	2–4	8.80+08	5.13−01	4.70+00	0.011	A+	1,2,3
				1 402.770	0.00–71 287.54	2–2	8.63+08	2.55−01	2.35+00	−0.292	A+	1,2,3
2	$3s-4p$	$^2S-^2P^{\circ}$		*457.93*	0.00–*218 374.7*	2–6	3.95+08	3.72−02	1.12−01	−1.128	B+	1
				457.815	0.00–218 428.67	2–4	3.90+08	2.45−02	7.38−02	−1.310	B+	1
				458.155	0.00–218 266.86	2–2	4.05+08	1.27−02	3.84−02	−1.595	B+	1
3	$3s-5p$	$^2S-^2P^{\circ}$		*361.59*	0.00–*276 553.9*	2–6	2.90+08	1.71−02	4.07−02	−1.466	B+	1
				361.560	0.00–276 579.03	2–4	2.88+08	1.13−02	2.68−02	−1.646	B+	1
				361.659	0.00–276 503.67	2–2	2.96+08	5.81−03	1.38−02	−1.935	B+	1
4	$3s-6p$	$^2S-^2P^{\circ}$		*327.15*	0.00–*305 668.5*	2–6	1.84+08	8.86−03	1.91−02	−1.752	B	1
				327.137	0.00–305 682.27	2–4	1.82+08	5.85−03	1.26−02	−1.932	B	1
				327.181	0.00–305 641.10	2–2	1.87+08	3.01−03	6.48−03	−2.220	B	1
5	$3s-7p$	$^2S-^2P^{\circ}$		*310.24*	0.00–*322 329.5*	2–6	1.20+08	5.18−03	1.06−02	−1.985	C	1
				310.234	0.00–322 337.83	2–4	1.19+08	3.42−03	6.99−03	−2.165	C	1
				310.257	0.00–322 312.93	2–2	1.22+08	1.76−03	3.59−03	−2.453	C	1
6	$3s-8p$	$^2S-^2P^{\circ}$		*300.52*	0.00–*332 754.6*	2–6	8.10+07	3.29−03	6.51−03	−2.182	C	1
				300.517	0.00–332 759.92	2–4	8.04+07	2.18−03	4.31−03	−2.361	C	1
				300.531	0.00–332 743.87	2–2	8.24+07	1.12−03	2.21−03	−2.650	C	1
7	$3p-3d$	$^2P^{\circ}-^2D$		*1 126.38*	*71 594.9–160 374.9*	6–10	254+09	8.06−01	1.79+01	0.684	A	1,3
				1 128.340	71 748.64–160 374.41	4–6	2.53+09	7.25−01	1.08+01	0.462	A	1,3
				1 122.485	71 287.54–160.375.60	2–4	2.14+09	8.07−01	5.96+00	0.208	A	1,3
				1 128.325	71 748.64–160 375.60	4–4	4.22+08	8.05−02	1.20+00	−0.492	A	1,3
8	$3p-4s$	$^2P^{\circ}-^2S$		*817.10*	*71 594.9*–193 978.89	6–2	3.56+09	1.19−01	1.92+00	−0.146	A	1
				818.128	71 748.64–193 978.89	4–2	2.37+09	1.19−01	1.28+00	−0.322	A	1
				815.053	71 287.54–193 978.89	2–2	1.18+09	1.18−01	6.33−01	−0.627	A	1
9	$3p-4d$	$^2P^{\circ}-^2D$		*560.50*	*71 594.9–250 008.1*	6–10	7.39+07	5.80−03	6.42−02	−1.458	B+	1
				560.980	71 748.64–250 008.02	4–6	7.55+07	5.35−03	3.95−02	−1.670	B+	1
				559.533	71 287.54–250 008.14	2–4	5.88+07	5.52−03	2.04−02	−1.957	B+	1
				560.980	71 748.64–250 008.14	4–4	1.26+07	5.93−04	4.38−03	−2.625	B+	1
10	$3p-5s$	$^2P^{\circ}-^2S$		*515.93*	*71 594.9*–265 417.95	6–2	1.40+09	1.86−02	1.90−01	−0.952	B+	1
				516.344	71 748.64–265 417.95	4–2	9.32+08	1.86−02	1.27−01	−1.128	A	1
				515.118	71 287.54–265 417.95	2–2	4.66+08	1.85−02	6.29−02	−1.432	B+	1
11	$3p-5d$	$^2P^{\circ}-^2D$		*454.75*	*71 594.9–291 497.6*	6–10	1.64+08	8.49−03	7.62−02	−1.293	B+	1
				455.065	71 748.64–291 497.60	4–6	1.66+08	7.73−03	4.63−02	−1.510	B+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
				454.112	71 287.54–291 497.50	2–4	1.34+08	8.30−03	2.48−02	−1.780	B+	1
				455.065	71 748.64–291 497.50	4–4	2.76+07	8.57−04	5.14−03	−2.465	B+	1
12	$3p-6s$	$^2P^{\circ}-^2S$		*438.44*	*71 594.9*–299 676.95	6–2	7.11+08	6.83−03	5.92−02	−1.387	B+	1
				438.734	71 748.64–299 676.95	4–2	4.74+08	6.85−03	3.96−02	−1.562	B+	1
				437.849	71 287.54–299 676.95	2–2	2.37+08	6.81−03	1.96−02	−1.866	B	1
13	$3p-6d$	$^2P^{\circ}-^2D$		*412.68*	*71 594.9–313 914.9*	6–10	1.40+08	5.96−03	4.86−02	−1.447	B	1
				412.939	71 748.64–313 914.92	4–6	1.41+08	5.41−03	2.94−02	−1.665	B+	1
				412.155	71 287.54–313 914.92	2–4	1.15+08	5.86−03	1.59−02	−1.931	B	1
				412.939	71 748.64–313 914.92	4–4	2.35+07	6.01−04	3.27−03	−2.619	B	1
14	$3p-7s$	$^2P^{\circ}-^2S$		*404.62*	*71 594.9*–318 742.79	6–2	4.13+08	3.38−03	2.70−02	−1.693	C+	1
				404.868	71 748.64–318 724.79	4–2	2.76+08	3.39−03	1.81−02	−1.868	C+	1
				404.113	71 287.54–318 742.79	2–2	1.38+08	3.37−03	8.97−03	−2.171	C+	1
15	$3p-7d$	$^2P^{\circ}-^2D$		*390.98*	*71 594.9–327 362.0*	6–10	1.05+08	4.01−03	310−02	−1.619	C+	1
				391.216	71 748.64–327 361.97	4–6	1.06+08	3.64−03	1.88−02	−1.837	C+	1
				390.511	71 287.54–327 361.97	2–4	8.64+07	3.95−03	1.02−02	−2.102	C+	1
				391.216	71 748.64–327 361.97	4–4	1.76+07	4.04−04	2.08−03	−2.792	C	1
16	$3p-8s$	$^2P^{\circ}-^2S$		*386.33*	*71 594.9*–330 439.66	6–2	2.62+08	1.95−03	1.49−02	−1.932	C+	1
				386.562	71 748.64–330 439.66	4–2	1.74+08	1.95−03	9.95−03	−2.108	C+	1
				385.874	71 287.54–330 439.66	2–2	8.72+07	1.95−03	4.94−03	−2.409	C	1
17	$3p-8d$	$^2P^{\circ}-^2D$		*378.13*	*71 594.9–336 051.5*	6–10	7.75+07	2.77−03	2.07−02	−1.779	C+	1
				378.354	71 748.64–336 051.55	4–6	7.80+07	2.51−03	1.25−02	−1.998	C+	1
				377.695	71 287.54–336 051.55	2–4	6.38+07	2.73−03	6.79−03	−2.263	C	1
				378.354	71 748.64–336 051.55	4–4	1.30+07	2.79−04	1.39−03	−2.952	C	1
18	$3d-4p$	$^2D-^2P^{\circ}$		*1 724.14*	*160 374.9–218 374.7*	10–6	5.47+08	1.46−01	8.30+00	0.164	A	1
				1 722.526	160 374.41–218 428.67	6–4	4.92+08	1.46−01	4.97+00	−0.057	A	1
				1 727.376	160 375.60–218 266.86	4–2	5.47+08	1.22−01	2.78+00	−0.312	A	1
				1 722.562	160 375.60–218 428.67	4–4	5.47+07	2.43−02	5.52−01	−1.012	A	1
19	$3d-4f$	$^2D-^2F^{\circ}$		*1 066.63*	*160 374.9–254 128.2*	10–14	3.81+09	9.11−01	3.20+01	0.960	A	1
				1 066.614	160 374.41–254 129.03	6–8	3.81+09	8.67−01	1.83+01	0.716	A	1
				1 066.650	160 375.60–254 127.08	4–6	3.56+09	9.11−01	1.28+01	0.562	A	1
				1 066.636	160 374.41–254 127.08	6–6	2.54+08	4.34−02	9.14−01	−0.584	A	1
20	$3d-5p$	$^2D-^2P^{\circ}$		*860.74*	*160 374.9–276 553.9*	10–6	1.82+08	1.21−02	3.44−01	−0.917	A	1
				860.551	160 374.41–276 579.03	6–4	1.64+08	1.22−02	2.07−01	−1.135	A	1
				861.118	160 375.60–276 503.67	4–2	1.82+08	1.01−02	1.15−01	−1.394	A	1
				860.560	160 375.60–276 579.03	4–4	1.82+07	2.02−03	2.29−02	−2.093	B+	1
21	$3d-5f$	$^2D-^2F^{\circ}$		*749.94*	*160 374.9–293 719.0*	10–14	1.40+09	1.65−01	4.08+00	0.217	A	1
				749.937	160 374.41–293 718.99	6–8	1.40+09	1.57−01	2.33+00	−0.026	A	1
				749.943	160 375.60–293 718.99	4–6	1.31+09	1.65−01	1.63+00	−0.180	A	1
				749.937	160 374.41–293 718.99	6–6	9.33+07	7.86−03	1.17−01	−1.326	B+	1
22	$3d-6p$	$^2D-^2P^{\circ}$		*688.26*	*160 374.9–305 668.5*	10–6	9.05+07	3.86−03	8.74−02	−1.413	B+	1
				688.194	160 374.41–305 682.27	6–4	8.16+07	3.86−03	5.25−02	−1.635	B+	1
				688.395	160 375.60–305 641.10	4–2	9.03+07	3.21−03	2.91−02	−1.891	B+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1 = Froese Fischer,[36] 2 = Maniak *et al.*,[64] and 3 = Theodosiou and Curtis.[103])—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
				688.200	160 375.60–305 682.27	4–4	9.05+06	6.43−04	5.83−03	−2.590	B	1
23	$3d-6f$	$^2D-^2F^\circ$		*645.76*	*160 374.9–315 230.3*	10–14	6.92+08	6.06−02	1.29+00	−0.218	A	1
				645.762	160 374.41–315 230.27	6–8	6.92+08	5.77−02	7.36−01	−0.461	A	1
				645.767	160 375.60–315 230.27	4–6	6.46+08	6.06−02	5.15−01	−0.615	B+	1
				645.762	160 374.41–315 230.27	6–6	4.61+07	2.88−03	3.68−02	−1.762	B+	1
24	$3d-7p$	$^2D-^2P^\circ$		*617.46*	*160 374.9–322 329.5*	10–6	5.23+07	1.79−03	3.65−02	−1.747	C+	1
				617.423	160 374.41–322 337.83	6–4	4.71+07	1.80−03	2.19−02	−1.967	C+	1
				617.523	160 375.60–322 312.93	4–2	5.22+07	1.49−03	1.21−02	−2.225	C+	1
				617.428	160 375.60–322 337.83	4–4	5.23+06	2.99−04	2.43−03	−2.922	C	1
25	$3d-7f$	$^2D-^2F^\circ$		*595.86*	*160 374.9–328 200.0*	10–14	3.99+08	2.97−02	5.83−01	−0.527	B	1
				595.857	160 374.41–328 200.04	6–6	3.99+08	2.83−02	3.33−01	−0.770	B	1
				595.861	160 375.60–328 200.04	4–6	3.72+08	2.97−02	2.33−01	−0.925	B	1
				595.857	160 374.41–328 200.04	6–6	2.66+07	1.42−03	1.67−02	−2.070	C+	1
26	$3d-8p$	$^2D-^2P^\circ$		*580.11*	*160 374.9–332 754.6*	10–6	3.31+07	1.00−03	1.91−02	−2.000	C+	1
				580.095	160 374.41–332 759.92	6–4	2.98+07	1.00−03	1.15−02	−2.222	C+	1
				580.153	160 375.60–332 743.87	4–2	3.30+07	8.34−04	6.37−03	−2.477	C	1
				580.099	160 375.60–332 759.92	4–4	3.31+06	1.67−04	1.28−03	−3.175	C	1
27	$3d-8f$	$^2D-^2F^\circ$		*567.40*	*160 374.9–336 616.5*	10–14	2.53+08	1.71−02	3.19−01	−0.767	B	1
				567.401	160 374.41–336 616.55	6–8	2.53+08	1.63−02	1.83−01	−1.010	B	1
				567.405	160 375.60–336 616.55	4–6	2.36+08	1.71−02	1.28−01	−1.165	B	1
				567.401	160 374.41–336 616.55	6–6	1.69+07	8.14−04	9.12−03	−2.311	C+	1
28	$4s-4p$	$^2S-^2P^\circ$	*4 097.90*	*4 099.06*	193 978.89–*218 374.7*	2–6	1.55+08	1.17+00	3.15+01	0.369	A+	1
			4 088.862	4 090.016	193 978.89–218 428.67	2–4	1.56+08	7.81−01	2.10+01	0.194	A+	1
			4 116.103	4 117.265	193 978.89–218 266.86	2–2	1.53+08	3.88−01	1.05+01	−0.110	A+	1
29	$4s-5p$	$^2S-^2P^\circ$		*1 211.02*	193 978.89–*276 553.9*	2–6	3.73+07	2.46−02	1.96−1	−0.308	B+	1
				1 210.652	193 978.89–276 579.03	2–4	3.67+07	1.61−02	1.29−01	−1.492	A	1
				1 211.757	193 978.89–276 503.67	2–2	3.86+07	8.50−03	6.78−02	−1.770	B+	1
30	$4s-6p$	$^2S-^2P^\circ$		*895.34*	193 978.89–*305 668.5*	2–6	3.77+07	1.36−02	8.02−02	−1.565	B+	1
				895.228	193 978.89–305 682.27	2–4	3.73+07	8.95−03	5.28−02	−1.747	B+	1
				895.558	193 978.89–305 641.10	2–2	3.86+07	4.65−03	2.74−02	−2.032	B+	1
31	$4s-7p$	$^2S-^2P^\circ$		*779.12*	193 978.89–*322 329.5*	2–6	2.79+07	7.63−03	3.91−02	−1.816	C+	1
				779.065	193 978.89–322 337.83	2–4	2.76+07	5.03−03	2.58−02	−1.997	C+	1
				779.216	193 978.89–322 312.93	2–2	2.86+07	2.60−03	1.33−02	−2.284	C+	1
32	$4s-8p$	$^2S-^2P^\circ$		*720.59*	193 978.89–*332 754.6*	2–6	2.01+07	4.69−03	2.22−02	−2.028	C+	1
				720.560	193 978.89–332 759.92	2–4	1.99+07	3.09−03	1.47−02	−2.209	C+	1
				720.643	193 978.89–332 743.87	2–2	2.05+07	1.59−03	7.57−03	−2.498	C	1
33	$4p-4d$	$^2P^\circ-^2D$	*3 160.31*	*3 161.22*	*218 374.7–250 008.1*	6–10	4.79+08	1.20+00	7.47+01	0.857	A+	1
			3 165.710	3 166.626	218 428.67–250 008.02	4–6	4.77+08	1.08+00	4.49+01	0.635	A+	1
			3 149.559	3 150.472	218 266.86–250 008.14	2–4	4.02+08	1.20+00	2.48+01	0.380	A+	1
			3 165.698	3 166.614	218 428.67–250 008.14	4–4	7.95+07	1.20−01	4.98+00	−0.319	A+	1
34	$4p-5s$	$^2P^\circ-^2S$	*2 125.03*	*2 125.70*	*218 374.7*–265 417.95	6–2	9.21+08	2.08−01	8.73+00	0.096	A+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
			2 127.473	2 128.145	218 428.67–265 417.95	4–2	6.14+08	2.09−01	5.84+00	−0.078	A+	1
			2 120.171	2 120.842	218 266.86–265 417.95	2–2	3.06+08	2.07−01	2.89+00	−0.383	A+	1
35	$4p-5d$	$^2P^\circ-^2D$		*1 367.56*	*218 374.7–291 497.6*	6–10	5.17+05	2.41−04	6.52−03	−2.840	B	1
				1 368.571	218 428.67–291 497.60	4–6	4.47+05	1.88−04	3.40−03	−3.124	B	1
				1 365.549	218 266.86–291 497.50	2–4	5.48+06	3.06−04	2.75−03	−3.213	B	1
				1 368.573	218 428.67–291 497.50	4–4	7.39+04	2.08−05	3.74−04	−4.080	B	1
36	$4p-6s$	$^2P^\circ-^2S$		*1 229.98*	*218 374.7*–299 676.95	6–2	4.13+08	3.12−02	7.59−01	−0.728	B+	1
				1 230.795	218 428.67–299 676.95	4–2	2.76+08	3.13−02	5.07−01	−0.902	B+	1
				1 228.349	218 266.86–299 676.95	2–2	1.38+08	3.11−02	2.52−01	−1.206	B+	1
37	$4p-6d$	$^2P^\circ-^2D$		*1 046.68*	*218 374.7–313 914.9*	6–10	5.65+06	1.55−03	3.20−02	−2.032	B	1
				1 047.271	218 428.67–313 914.92	4–6	5.82+06	1.43−03	1.98−02	−2.243	B	1
				1 045.500	218 266.86–313 914.92	2–4	4.43+06	1.45−03	1.00−02	−2.538	B	1
				1 047.271	218 428.67–313 914.92	4–4	9.72+05	1.60−04	2.20−03	−3.194	B	1
38	$4p-7s$	$^2P^\circ-^2S$		*996.33*	*218 374.7*–318 742.79	6–2	2.30+08	1.14−02	2.25−01	−1.165	B	1
				996.869	218 428.67–318 742.79	4–2	1.54+08	1.14−02	1.50−01	−1.341	B	1
				995.263	218 266.86–318 742.79	2–2	7.68+07	1.14−02	7.47−02	−1.642	B	1
39	$4p-7d$	$^2P^\circ-^2D$		*917.54*	*218 374.7–327 362.0*	6–10	8.68+06	1.83−03	3.31−02	−1.959	C+	1
				917.993	218 428.67–327 361.97	4–6	8.84+06	1.68−03	2.03−02	−2.173	C+	1
				916.631	218 266.86–327 361.97	2–4	6.96+06	1.75−03	1.06−02	−2.456	C+	1
				917.993	218 428.67–327 361.97	4–4	1.47+06	1.86−04	2.25−03	−3.128	C	1
40	$4p-8s$	$^2P^\circ-^2S$		*892.34*	*218 374.7*–330 439.66	6–2	1.43+08	5.69−03	1.00−01	−1.467	C+	1
				892.770	218 428.67–330 439.66	4–2	9.53+07	5.70−03	6.70−02	−1.642	B	1
				891.482	218 266.86–3304 439.66	2–2	4.77+07	5.68−03	3.33−02	−1.945	C+	1
41	$4p-8d$	$^2P^\circ-^2D$		*849.79*	*218 374.7–336 051.5*	6–10	8.38+06	1.51−03	2.54−02	−2.043	C+	1
				850.175	218 428.67–336 051.55	4–6	8.51+06	1.38−03	1.55−02	−2.258	C+	1
				849.007	218 266.86–336 051.55	2–4	6.78+06	1.46−03	8.19−03	−2.535	C+	1
				850.175	218 428.67–336 051.55	4–4	1.42+06	1.54−04	1.72−03	−3.210	C	1
42	$4d-4f$	$^2D-^2F^\circ$		*4 120.1* cm^{-1}	*250 008.1–254 128.2*	10–14	9.98+05	1.23−01	9.86+01	0.090	A	1
				4 121.01 cm^{-1}	250 008.02–254 129.03	6–8	9.99+05	1.18−01	5.63+01	−0.150	A	1
				4 118.94 cm^{-1}	250 008.14–254 127.08	4–6	9.31+05	1.23−01	3.94+01	−0.308	A	1
				4 119.06 cm^{-1}	250 008.02–254 127.8	6–6	6.65+04	5.87−03	2.82+00	−1.453	A	1
43	$4d-5p$	$^2D-^2P^\circ$	*3 766.00*	*3 767.07*	*250 008.1–276 553.9*	10–6	2.33+08	2.98−01	3.69+01	0.474	A	1
			3 762.431	3 763.500	250 008.02–276 579.03	6–4	2.10+08	2.97−01	2.21+01	0.251	A	1
			3 773.150	3 774.222	250 008.14–276 503.67	4–2	2.33+08	2.49−01	1.24+01	−0.002	A	1
			3 762.448	3 763.517	250 008.14–276 579.03	4–4	2.33+07	4.96−02	2.46+00	−0.702	A	1
44	$4d-5f$	$^2D-^2F^\circ$	*2 287.05*	*2 287.76*	*250 008.1–293 719.0*	10–14	6.41+08	7.04−01	5.30+01	0.848	A	1
			2 287.050	2 287.755	250 008.02–293 718.99	6–8	6.41+08	6.70−01	3.03+01	0.604	A	1
			2 287.056	2 287.762	250 008.14–293 718.99	4–6	5.98+08	7.04−01	2.12+01	0.450	A	1
			2 287.050	2 287.755	250 008.02–293 718.99	6–6	4.27+07	3.35−02	1.51+00	−0.697	A	1
45	$4d-6p$	$^2D-^2P^\circ$		*1 796.61*	*250 008.1–305 668.5*	10–6	9.01+07	2.62−02	1.55+00	−0.582	A	1
				1 796.162	250 008.02–305 682.27	6–4	8.12+07	2.62−02	9.29−01	−0.804	A	1
				1 797.496	250 008.14–305 641.10	4–2	8.99+07	2.18−02	5.15−01	−1.059	B+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
				1 796.166	250 008.14–305 682.27	4–4	9.02+06	4.36−03	1.03−01	−1.758	B+	1
46	$4d-6f$	$^2D-^2F^\circ$		1 533.22	250 008.1–315 230.3	10–14	3.58+08	1.77−01	8.93+00	0.248	A	1
				1 533.219	250 008.02–315 230.27	6–8	3.59+08	1.68−01	5.10+00	0.003	A	1
				1 533.222	250 008.14–315 230.27	4–6	3.35+08	1.77−01	3.57+00	−0.150	A	1
				1 533.219	250 008.02–315 230.27	6–6	2.39+07	8.42−03	2.55−01	−1.297	B+	1
47	$4d-7p$	$^2D-^2P^\circ$		1 382.72	250 008.1–322 329.5	10–6	4.91+07	8.45−03	3.85−01	−1.073	B	1
				1 382.556	250 008.02–322 337.83	6–4	4.43+07	8.46−03	2.31−01	−1.294	B	1
				1 383.034	250 008.14–322 312.93	4–2	4.90+07	7.02−03	1.28−01	−1.552	B	1
				1 382.558	250 008.14–322 237.83	4–4	4.92+06	1.41−03	2.57−02	−2.249	C+	1
48	$4d-7f$	$^2D-^2F^\circ$		1 278.90	250 008.1–328 200.0	10–14	2.15+08	7.39−02	3.11+00	−0.131	B+	1
				1 278.903	250 008.02–328 200.04	6–8	2.15+08	7.03−02	1.78+00	−0.375	B+	1
				1 278.905	250 008.14–328 200.04	4–6	2.01+08	7.39−02	1.24+00	−0.529	B+	1
				1 278.903	250 008.02–328 200.04	6–6	1.43+07	3.52−03	8.89−02	−1.675	B	1
49	$4d-8p$	$^2D-^2P^\circ$		1 208.51	250 008.1–332 754.6	10–6	3.03+07	3.98−03	1.59−01	−1.400	B	1
				1 208.431	250 008.02–332 759.92	6–4	2.73+07	3.99−03	9.53−02	−1.621	B	1
				1 208.668	250 008.14–332 743.87	4–2	3.02+07	3.31−03	5.27−02	−1.878	B	1
				1 208.433	250 008.14–332 759.92	4–4	3.04+06	6.65−04	1.06−02	−2.575	C+	1
50	$4d-8f$	$^2D-^2F^\circ$		1 154.62	250 008.1–336 616.5	10–14	1.39+08	3.89−02	1.48+00	−0.410	B+	1
				1 154.621	250 008.02–336 616.55	6–8	1.39+08	3.71−02	8.46−01	−0.652	B+	1
				1 154.622	250 008.14–336 616.55	4–6	1.30+08	3.89−02	5.92−01	−0.808	B+	1
				1 154.621	250 008.02–336 616.55	6–6	9.27+06	1.85−03	4.23−02	−1.955	C+	1
51	$4f-5d$	$^2F^\circ-^2D$	2 675.19	2 675.99	254 128.2–291 497.6	14–10	2.74+07	2.10−02	2.59+00	−0.532	A	1
			2 675.251	2 676.046	254 129.03–291 497.60	8–6	2.61+07	2.10−02	1.48+00	−0.775	A	1
			2 675.118	2 675.913	254 127.08–291 497.50	6–4	2.74+07	1.96−02	1.04+00	−0.930	A	1
			2 675.111	2 675.906	254 127.08–291 497.60	6–6	1.30+06	1.40−03	7.40−02	−2.076	B+	1
52	$4f-6d$	$^2F^\circ-^2D$		1 672.61	254 128.2–313 914.9	14–10	1.19+07	3.55−03	2.74−01	−1.304	B+	1
				1 672.635	254 129.03–313 914.92	8–6	1.13+07	3.55−03	1.57−01	−1.547	B+	1
				1 672.581	254 127.08–313 914.92	6–4	1.19+07	3.31−03	1.10−01	−1.702	B+	1
				1 672.581	254 127.08–313 914.92	6–6	5.64+05	2.37−04	7.82−03	−2.847	B	1
53	$4f-7d$	$^2F^\circ-^2D$		1 365.49	254 128.2–327 362.0	14–10	6.35+06	1.27−03	7.98−02	−1.750	C+	1
				1 365.506	254 129.03–327 361.97	8–6	6.05+06	1.27−03	4.56−02	−1.993	C+	1
				1 365.469	254 127.08–327 361.97	6–4	6.35+06	1.18−03	3.19−02	−2.150	C+	1
				1 365.469	254 127.08–327 361.97	6–6	3.02+05	8.45−05	2.28−03	−3.295	C	1
54	$4f-8d$	$^2F^\circ-^2D$		1 220.65	254 128.2–336 051.5	14–10	3.85+06	6.14−04	3.45−02	−2.066	C+	1
				1 220.666	254 129.03–336 051.55	8–6	3.66+06	6.14−04	1.97−02	−2.309	C+	1
				1 220.637	254 127.08–336 051.55	6–4	3.85+06	5.73−04	1.38−02	−2.464	C+	1
				1 220.637	254 127.08–336 051.55	6–6	1.83+05	4.09−05	9.87−04	−3.610	C	1
55	$5s-5p$	$^2S-^2P^\circ$	8 977.5	8 979.9	265 417.95–276 553.9	2–6	4.23+07	1.53+00	9.07+01	0.486	A+	1
			8 957.25	8 959.71	265 417.95–276 579.03	2–4	4.26+07	1.02+00	6.04+01	0.310	A+	1
			9 018.14	9 020.61	265 417.95–276 503.67	2–2	4.17+07	5.09−01	3.02+01	0.008	A	1
56	$5s-6p$	$^2S-^2P^\circ$	2 483.69	2 484.44	265 417.95–305 668.5	2–6	6.76+06	1.88−02	3.07−01	−1.425	B+	1
			2 482.839	2 483.588	265 417.95–305 682.27	2–4	6.62+06	1.22−02	2.00−01	−1.613	B+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
			2 485.380	2 486.130	265 417.95–305 641.10	2–2	7.06+06	6.54−03	1.07−01	−1.883	B+	1
57	$5s-7p$	$^2S-^2P^\circ$		*1 757.11*	265 417.95–*322 329.5*	2–6	8.45+06	1.17−02	1.36−01	−1.631	B	1
				1 756.855	265 417.95–322 337.83	2–4	8.33+06	7.71−03	8.91−02	−1.812	B	1
				1 757.624	265 417.95–322 312.93	2–2	8.70+06	4.03−03	4.66−02	−2.094	C+	1
58	$5s-8p$	$^2S-^2P^\circ$		*1 485.08*	2.65 417.95–*332 754.6*	2–6	6.96+06	6.91−03	6.75−02	−1.859	C+	1
				1 484.958	265 417.95–332 759.92	2–4	6.87+06	4.54−03	4.44−02	−2.042	C+	1
				1 485.312	265 417.95–332 743.87	2–2	7.14+06	2.36−03	2.31−02	−2.326	C+	1
59	$5p-5d$	$^2P^\circ-^2D$	*6 690.0*	*6 691.8*	*276 553.9–291 497.6*	6–10	1.37+08	1.53+00	2.02+02	0.963	A+	1
			6 701.21	6 703.06	276 579.03–291 497.60	4–6	1.36+08	1.37+00	1.21+02	0.739	A+	1
			6 667.57	6 669.41	276 503.67–291 497.50	2–4	1.15+08	1.53+00	6.71+01	0.486	A+	1
			6 701.25	6 703.10	276 579.03–291 497.50	4–4	2.27+07	1.53−01	1.35+01	−0.213	A+	1
60	$5p-6s$	$^2P^\circ-^2S$	*4 323.48*	*4 324.69*	*276 553.9*–299 676.95	6–2	3.18+08	2.97−01	2.54+01	0.251	A	1
			4 328.177	4 329.394	276 579.03–299 676.95	4–2	2.12+08	2.98−01	1.70+01	0.076	A	1
			4 314.102	4 315.315	276 503.67–299 676.95	2–2	1.06+08	2.95−01	8.39+00	−0.229	A	1
61	$5p-6d$	$^2P^\circ-^2D$	*2 675.79*	*2 676.59*	*276 533.9–313 914.9*	6–10	2.80+06	5.02−03	2.65−01	−1.521	B+	1
			2 677.592	2 678.388	276 579.03–313 914.92	4–6	2.72+06	4.38−03	1.55−01	−1.756	B+	1
			2 672.198	2 672.993	276 503.67–313 914.92	2–4	2.49+06	5.33−03	9.38−02	−1.972	B+	1
			2 677.592	2 678.388	276 579.03–313 914.92	4–4	4.51+05	4.85−04	1.71−02	−2.712	B	1
62	$5p-7s$	$^2P^\circ-^2S$	*2 369.57*	*2 370.29*	*276 553.9*–318 742.79	6–2	1.55+08	4.36−02	2.04+00	−0.582	B+	1
			2 370.981	2 371.705	276 579.03–318 742.79	4–2	104+08	4.37−02	1.36+00	−0.757	B+	1
			2 366.750	2 367.474	276 503.67–318 742.79	2–2	5.18+07	4.35−02	6.78−01	−1.060	B+	1
63	$5p-7d$	$^2P^\circ-^2D$		*1 968.19*	*276 553.9–327 362.0*	6–10	3.43+04	3.32−05	1.29−03	−3.701	C	1
				1 969.165	276 579.03–327 361.97	4–6	4.15+04	3.62−05	9.39−04	−3.839	C	1
				1 966.247	276 503.67–327 361.97	2–4	1.64+04	1.90−05	2.46−04	−4.420	D+	1
				1 969.165	276 579.03–327 361.97	4–4	7.05+03	4.10−06	1.06−04	−4.785	D+	1
64	$5p-8s$	$^2P^\circ-^2S$		*1 855.78*	*276 553.9*–330 439.66	6–2	9.23+07	1.59−02	5.82−01	−1.020	B	1
				1 856.644	276 579.03–330 439.66	4–2	6.15+07	1.59−02	3.89−01	−1.197	B	1
				1 854.050	276 503.67–330 439.66	2–2	3.08+07	1.59−02	1.94−01	−1.498	B	1
65	$5p-8d$	$^2P^\circ-^2D$		*1 680.74*	*276 553.9–336 051.5*	6–10	5.51+05	3.89−04	1.29−02	−2.632	C	1
				1 681.449	276 579.03–336 051.55	4–6	5.76+05	3.66−04	8.10−03	−2.834	C+	1
				1 679.321	276 503.67–336 051.55	2–4	4.17+05	3.53−04	3.90−03	−3.151	C	1
				1 681.449	276 579.03–336 051.55	4–4	9.63+04	4.08−05	9.04−04	−3.787	C	1
66	$5d-5f$	$^2D-^2F^\circ$		*2 221.4* cm^{-1}	*291 497.6–293 719.0*	10–14	5.53+05	2.35−01	3.48+02	0.371	A	1
				2 221.39 cm^{-1}	291 497.60–293 718.99	6–8	5.53+05	2.24−01	1.99+02	0.128	A	1
				2 221.49 cm^{-1}	291 497.50–293 718.99	4–6	5.16+05	2.35−01	1.39+02	−0.027	A	1
				2 221.39 cm^{-1}	291 497.60–293 718.99	6–6	3.69+04	1.12−02	9.96+00	−1.173	A	1
67	$5d-6p$	$^2D-^2P^\circ$	*7 054.7*	*7 056.7*	*291 497.6–305 668.5*	10–6	1.00+08	4.50−01	1.05+02	0.653	A	1
			7 047.92	7 049.86	291 497.60–305 682.27	6–4	9.05+07	4.49−01	6.26+01	0.430	A	1
			7 068.39	7 070.34	291 497.50–305 641.10	4–2	1.00+08	3.76−01	3.50+01	0.177	A	1
			7 047.878	7 049.81	291 497.50–305 682.27	4–4	1.00+07	7.49−02	6.95+00	−0.523	A	1
68	$5d-6f$	$^2D-^2F^\circ$	*4 212.41*	*4 213.60*	*291 497.6–315 230.3*	10–14	1.63+08	6.09−01	8.45+01	0.785	A	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
			4 212.414	4 213.601	291 497.60–315 230.27	6–8	1.63+08	5.80−01	4.83+01	0.542	A	1
			4 212.397	4 213.583	291 497.50–315 230.27	4–6	1.53+08	6.09−01	3.38+01	0.387	A	1
			4 212.414	4 213.601	291 497.60–315 230.27	6–6	1.09+07	2.90−02	2.42+00	−0.759	A	1
69	$5d-7p$	$^2D-^2P^\circ$	*3 242.45*	*3 243.39*	*291 497.6–322 329.5*	10–6	4.22+07	3.99−02	4.26+00	−0.399	B+	1
			3 241.583	3 242.518	291 497.60–322 337.83	6–4	3.80+07	4.00−02	2.56+00	−0.620	B+	1
			3 244.191	3 245.128	291 497.50–322 312.93	4–2	4.21+07	3.32−02	1.42+00	−0.877	B+	1
			3 241.572	3 242.507	291 497.50–322 337.83	4–4	4.23+06	6.66−03	2.84−01	−1.574	B	1
70	$5d-7f$	$^2D-^2F^\circ$	*2 723.80*	*2 724.62*	*291 497.6–328 200.0*	10–14	1.10+08	1.71−01	1.54+01	0.223	B+	1
			2 723.808	2 724.614	291 497.60–328 200.04	6–8	1.10+08	1.63−01	8.79+00	−0.010	B+	1
			2 723.800	2 724.607	291 497.50–328 200.04	4–6	1.03+08	1.71−01	6.15+00	−0.165	B+	1
			2 723.808	2 724.614	291 497.60–328 200.04	6–6	7.34+06	8.16−03	4.39−01	−1.310	B	1
71	$5d-8p$	$^2D-^2P^\circ$	*2 423.09*	*2 423.83*	*291 497.6–332 754.6*	10–6	2.45+07	1.29−02	1.03+00	−0.889	B	1
			2 422.783	2 423.519	291 497.60–332 759.92	6–4	2.21+07	1.29−02	6.20−01	−1.111	B+	1
			2 423.720	2 424.456	291 497.50–332 743.87	4–2	2.44+07	1.07−02	3.43−01	−1.369	B	1
			2 422.777	2 423.513	291 497.50–332 759.92	4–4	2.45+06	2.16−03	6.89−02	−2.063	B	1
72	$5d-8f$	$^2D-^2F^\circ$	*2 215.67*	*2 216.37*	*291 497.6–336 616.5*	10–14	7.37+07	7.60−02	5.54+00	−0.119	B+	1
			2 215.673	2 216.364	291 497.60–336 616.55	6–8	7.37+07	7.23−02	3.17+00	−0.363	B+	1
			2 215.669	2 216.359	291 497.50–336 616.55	4–6	6.88+07	7.60−02	2.22+00	−0.517	B+	1
			2 215.673	2 216.364	291 497.60–336 616.55	6–6	4.91+06	3.62−03	1.58−01	−1.663	B	1
73	$5f-6d$	$^2F^\circ-^2D$	*4 950.11*	*4 951.50*	*293 719.0–313 914.9*	14–10	1.99+07	5.22−02	1.99+01	−0.136	A	1
			4 950.111	4 951.493	293 718.99–313 914.92	8–6	1.89+07	5.22−02	6.81+00	−0.379	A	1
			4 950.111	4 951.493	293 718.99–313 914.92	6–4	1.99+07	4.87−02	4.77+00	−0.534	A	1
			4 950.111	4 951.493	293 718.99–313 914.92	6–6	9.46+05	3.48−03	3.40−01	−1.680	B+	1
74	$5f-7d$	$^2F^\circ-^2D$	*2 971.52*	*2 972.39*	*293 719.0–327 362.0*	14–10	9.70+06	9.18−03	1.26+00	−0.891	B	1
			2 971.521	2 972.388	293 718.99–327 361.97	8–6	9.24+06	9.18−03	7.18−01	−1.134	B+	1
			2 971.521	2 972.388	293 718.99–327 361.97	6–4	9.70+06	8.57−03	5.03−01	−1.289	B	1
			2 971.521	2 972.388	293 718.99–327 361.97	6–6	4.62+05	6.11−04	3.59−02	−2.436	C+	1
75	$5f-8d$	$^2F^\circ-^2D$	*2 361.53*	*2 362.25*	*293 719.0–336 051.5*	14–10	5.58+06	3.33−03	3.63−01	−1.331	B	1
			2 361.526	2 362.248	293 718.99–336 051.55	8–6	5.31+06	3.33−03	2.07−01	−1.574	B	1
			2 361.526	2 362.248	293 718.99–336 051.55	6–4	5.58+06	3.11−03	1.45−01	−1.729	B	1
			2 361.526	2 362.248	293 718.99–336 051.55	6–6	2.65+05	2.22−04	1.04−02	−2.875	C+	1
76	$6s-6p$	$^2S-^2P^\circ$	*16 685.5*	*16 690.2*	299 676.95–*305 668.5*	2–6	1.50+07	1.88+00	2.07+02	0.575	A	1
			16 647.35	16 651.90	299 676.95–305 682.27	2–4	1.51+07	1.26+00	1.38+02	0.401	A	1
			16 762.27	16 766.85	299 676.95–305 641.10	2–2	1.48+07	6.25−01	6.90+01	0.097	A	1
77	$6s-7p$	$^2S-^2P^\circ$	*4 413.27*	*4 414.51*	299 676.95–*322 329.5*	2–6	1.79+06	1.57−02	4.56−01	−1.503	B	1
			4 411.652	4 412.891	299 676.95–322 337.83	2–4	1.74+06	1.02−02	2.96−01	−1.690	B	1
			4 416.505	4 417.746	299 676.95–322 312.93	2–2	1.88+06	5.51−03	1.60−01	−1.958	B	1
78	$6s-8p$	$^2S-^2P^\circ$	*3 022.31*	*3 023.19*	299 676.95–*332 754.6*	2–6	2.62+06	1.08−02	2.15−01	−1.666	B	1
			3 021.823	3 022.703	299 676.95–332 759.92	2–4	2.58+06	7.07−03	1.41−01	−1.850	B	1
			3 023.290	3 024.170	299 676.95–332 743.87	2–2	2.71+06	3.72−03	7.40−02	−2.128	B	1
79	$6p-6d$	$^2P^\circ-^2D$	*12 123.2*	*12 126.5*	*305 668.5–313 914.9*	6–10	5.00+07	1.84+00	4.40+02	1.043	A	1
			12 143.43	12 146.76	305 682.27–313 914.92	4–6	4.98+07	1.65+00	2.64+02	0.820	A	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1 = Froese Fischer,[36] 2 = Maniak *et al.*,[64] and 3 = Theodosiou and Curtis.[103])—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
			12 083.01	12 086.32	305 641.10–313 914.92	2–4	4.19+07	1.84+00	1.46+02	0.566	A	1
			12 143.43	12 146.76	305 682.27–313 914.92	4–4	8.29+06	1.83−01	2.93+01	−0.135	A	1
80	$6p-7s$	$^2P^{\circ}-^2S$	*7 646.5*	*7 648.6*	*305 668.5*–318 742.79	6–2	1.32+08	3.86−01	5.84+01	0.365	A	1
			7 654.56	7 656.66	305 682.27–318 742.79	4–2	8.82+07	3.87−01	3.91+01	0.190	A	1
			7 630.50	7 632.60	305 641.10–318 742.79	2–2	4.40+07	3.84−01	1.93+01	−0.115	B+	1
81	$6p-7d$	$^2P^{\circ}-^2D$	*4 608.40*	*4 609.68*	*305 668.5–327 362.0*	6–10	2.28+06	1.21−02	1.10+00	−1.139	B	1
			4 611.318	4 612.610	305 682.27–327 361.97	4–6	2.23+06	1.07−02	6.48−01	−1.369	B+	1
			4 602.578	4 603.867	305 641.10–327 361.97	2–4	1.98+06	1.26−02	3.82−01	−1.599	B	1
			4 611.318	4 612.610	305 682.27–327 361.97	4–4	3.71+05	1.18−03	7.18−02	−2.326	B	1
82	$6p-8s$	$^2P^{\circ}-^2S$	*4 035.82*	*4 036.95*	*305 668.5*–330 439.66	6–2	6.88+07	5.60−02	4.47+00	−0.474	B+	1
			4 038.057	4 039.198	305 682.27–330 439.66	4–2	4.59+07	5.61−02	2.98+00	−0.649	B+	1
			4 031.353	4 032.492	305 641.10–330 439.66	2–2	2.29+07	5.59−02	1.49+00	−0.952	B+	1
83	$6p-8d$	$^2P^{\circ}-^2D$	*3 290.37*	*3 291.31*	*305 668.5–336 051.5*	6–10	1.22+05	3.29−04	2.14−02	−2.705	C+	1
			3 291.853	3 292.801	305 682.27–336 051.55	4–6	1.12+05	2.73−04	1.18−02	−2.962	C+	1
			3 287.396	3 288.343	305 641.10–336 051.55	2–4	1.17+05	3.81−04	8.24−03	−3.118	C+	1
			3 291.853	3 292.801	305 682.27–336 051.55	4–4	1.85+04	3.01−05	1.31−03	−3.919	C	1
84	$6d-6f$	$^2D-^2F^{\circ}$		*1 315.4* cm^{-1}	*313 914.9–315 230.3*	10–14	2.77+05	3.36−01	8.40+02	0.526	A	1
				1 315.35 cm^{-1}	313 914.92–315 230.27	6–8	2.77+05	3.20−01	4.80+02	0.283	A	1
				1 315.35 cm^{-1}	313 914.92–315 230.27	4–6	2.58+05	3.36−01	3.36+02	0.128	A	1
				1 315.35 cm^{-1}	313 914.92–315 230.27	6–6	1.84+04	1.60−02	2.40+01	−1.018	A	1
85	$6d-7p$	$^2D-^2P^{\circ}$	*11 880.8*	*11 884.1*	*313 914.9–322 329.5*	10–6	4.74+07	6.02−01	2.36+02	0.780	A	1
			11 869.13	11 872.38	313 914.92–322 337.83	6–4	4.27+07	6.02−01	1.41+02	0.558	A	1
			11 904.32	11 907.58	313 914.92–322 312.93	4–2	4.74+07	5.03−01	7.89+01	0.304	A	1
			11 869.13	11 872.38	313 914.92–322 337.83	4–4	4.74+06	1.00−01	1.57+01	−0.398	B+	1
86	$6d-7f$	$^2D-^2F^{\circ}$	*6 998.4*	*7 000.3*	*313 914.9–328 200.0*	10–14	5.47+07	5.63−01	1.30+02	0.751	A	1
			6 998.36	7 000.29	313 914.92–328 200.04	6–8	5.48+07	5.36−01	7.42+01	0.507	A	1
			6 998.36	7 000.29	313 914.92–328 200.04	4–6	5.11+07	5.63−01	5.19+01	0.353	A	1
			6 998.36	7 000.29	313 914.92–328 200.04	6–6	3.65+06	2.68−02	3.71+00	−0.794	B+	1
87	$6d-8p$	$^2D-^2P^{\circ}$	*5 306.48*	*5 307.94*	*313 914.9–332 754.6*	10–6	2.11+07	5.35−02	9.35+00	−0.272	B+	1
			5 304.971	5306.447	313 914.92–332 759.92	6–4	1.90+07	5.36−02	5.61+00	−0.493	B+	1
			5 309.493	5 310.971	313 914.92–332 743.87	4–2	2.10+07	4.45−02	3.11+00	−0.750	B+	1
			5 304.971	5 306.447	313 914.92–332 759.92	4–4	2.11+06	8.93−03	6.24−01	−1.447	B+	1
88	$6d-8f$	$^2D-^2F^{\circ}$	*4 403.73*	*4 404.98*	*313 914.9–336 616.5*	10–14	4.09+07	1.67−01	2.42+01	0.223	B+	1
			4 403.733	4 404.970	313 914.92–336 616.55	6–8	4.09+07	1.59−01	1.38+01	−0.020	B+	1
			4 403.733	4 404.970	313 914.92–336 616.55	4–6	3.82+07	1.67−01	9.67+00	−0.175	B+	1
			4 403.733	4 404.970	313 914.92–336 616.55	6–6	2.73+06	7.94−03	6.91−01	−1.322	B+	1
89	$6f-7d$	$^2F^{\circ}-^2D$	*8 240.6*	*8 242.9*	*315 230.3–327 362.0*	14–10	1.23+07	8.95−02	3.40+01	0.098	B+	1
			8 240.60	8 242.87	315 230.27–327 361.97	8–6	1.17+07	8.95−02	1.94+01	−0.145	B+	1
			8 240.60	8 242.87	315 230.27–327 361.97	6–4	1.23+07	8.35−02	1.36+01	−0.300	B+	1
			8 240.60	8 242.87	315 230.27–327 361.97	6–6	5.85+05	5.96−03	9.71−01	−1.447	B+	1
90	$6f-8d$	$^2F^{\circ}-^2D$	*8 801.44*	*4 802.80*	*315 230.3–336 051.5*	14–10	6.55+06	1.62−02	3.58+00	−0.644	B+	1
			4 801.437	4 802.779	315 230.27–336 051.55	8–6	6.24+06	1.62−02	2.05+00	−0.887	B+	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
			4 801.437	4 802.779	315 230.27–336 051.55	6–4	6.55+06	1.51−02	1.43+00	−1.043	B+	1
			4 801.437	4 802.779	315 230.27–336 051.55	6–6	3.12+05	1.08−03	1.02−01	−2.188	B	1
91	$7s-7p$	$^2S-^2P^{\circ}$		*3 586.7* cm^{-1}	318 742.79–*322 329.5*	2–6	6.38+06	2.23+00	4.09+02	0649	A	1
				3 595.04 cm^{-1}	318 742.79–322 337.83	2–4	6.42+06	1.49+00	2.73+02	0.474	A	1
				3 570.14 cm^{-1}	318 742.79–322 312.93	2–2	6.29+06	7.40−01	1.37+02	0.170	A	1
92	$7s-8p$	$^2S-^2P^{\circ}$	*7 134.9*	*7 136.8*	318 742.79–*332 754.6*	2–6	5.98+05	1.37−02	6.44−01	−1.562	B	1
			7 132.16	7 134.13	318 742.79–332 759.92	2–4	5.80+05	8.86−03	4.16−01	−1.752	B	1
			7 140.34	7 142.31	318 742.79–332 743.87	2–2	6.34+05	4.85−03	2.28−01	−2.013	B	1
93	$7p-7d$	$^2P^{\circ}-^2D$	*19 866*	*19 871*	*322 329.5–362.0*	6–10	2.16+07	2.13+00	8.37+02	1.107	A	1
			19 898.5	19 903.9	322 337.83–327 361.97	4–6	2.15+07	1.92+00	5.03+02	0.885	A	1
			19 800.3	19 805.7	322 312.93–327 361.97	2–4	1.81+07	2.13+00	2.78+02	0.629	A	1
			19 898.5	19 903.9	322 337.83–327 361.97	4–4	3.59+06	2.13−01	5.59+01	−0.070	A	1
94	$7p-8s$	$^2P^{\circ}-^2S$	*12 326.9*	*12 330.2*	*322 329.5–330 439.66*	6–2	6.26+07	4.76−01	1.16+02	0.456	A	1
			12 339.51	12 342.89	322 337.83–330 439.66	4–2	4.18+07	4.77−01	7.75+01	0.281	A	1
			12 301.71	12 305.07	322 312.93–330 439.66	2–2	2.08+07	4.73−01	3.83+01	−0.024	A	1
95	$7p-8d$	$^2P^{\circ}-^2D$	*7 285.5*	*7 287.6*	*322 329.5–336 051.5*	6–10	1.50+06	1.99−02	2.86+00	−0.923	B+	1
			7 289.96	7 291.97	322 337.83–336 051.55	4–6	1.47+06	1.76−02	1.69+00	−1.152	B+	1
			7 276.75	7 278.75	322 312.93–336 051.55	2–4	1.29+06	2.05−02	9.84−01	−1.387	B+	1
			7 289.96	7 291.97	322 337.83–336 051.55	4–4	2.45+05	1.95−03	1.87−01	−2.108	B	1
96	$7d-7f$	$^2D-^2F^{\circ}$		*838.0* cm^{-1}	*327 362.0–328 200.0*	10–14	1.43+05	4.29−01	1.68+03	0.632	A	1
				838.07 cm^{-1}	327 361.97–328 200.04	6–8	1.43+05	4.08−01	9.62+02	0389	A	1
				838.07 cm^{-1}	327 361.97–328 200.04	4–6	1.34+05	4.29−01	6.73+02	0.235	A	1
				838.07 cm^{-1}	327 361.97–328 200.04	6–6	9.56+03	2.04−02	4.81+01	−0.912	A	1
97	$7d-8p$	$^2D-^2P^{\circ}$	*18 539*	*18 544*	*327 362.0–332 754.6*	10–6	2.44+07	7.55−01	4.61+02	0.878	A	1
			18 520.5	18 525.6	327 361.97–332 759.92	6–4	2.20+07	7.54−01	2.76+02	0.656	A	1
			18 575.7	18 580.8	327 361.97–332 743.87	4–2	2.44+07	6.31−01	1.54+02	0.402	A	1
			18 520.5	18 525.6	327 361.97–332 759.92	4–4	2.44+06	1.26−01	3.06+01	−0.298	A	1
98	$7d-8f$	$^2D-^2F^{\circ}$	*10 802.5*	*10 805.6*	*327 362.0–336 616.5*	10–14	2.21+07	5.41−01	1.92+02	0.733	A	1
			10 802.50	10 805.46	327 361.97–336 616.55	6–8	2.21+07	5.15−01	1.10+02	0490	A	1
			10 802.50	10 805.46	327 361.97–336 616.55	4–6	2.06+07	5.41−01	7.69+01	0.335	A	1
			10 802.50	10 805.46	327 361.97–336 616.55	6–6	1.47+06	2.58−02	5.50+00	−0.810	B+	1
99	$7f-8d$	$^2F^{\circ}-^2D$	*12 732.9*	*12 736.4*	*328 200.0–336 051.5*	14–10	7.51+06	1.30−01	7.66+01	0.260	A	1
			12 732.92	12 736.40	328 200.04–336 051.55	8–6	7.15+06	1.30−01	4.38+01	0.017	A	1
			12 732.92	12 736.40	328 200.04–336 051.55	6–4	7.51+06	1.22−01	3.06+01	−0.135	A	1
			12 732.92	12 736.40	328 200.04–336 051.55	6–6	3.57+05	8.69−03	2.19+00	−1.283	B+	1
100	$8s-8p$	$^2S-^2P^{\circ}$		*2 314.9* cm^{-1}	330 439.66–*332 754.6*	2–6	3.06+06	2.57+00	7.32+02	0.711	A	1
				2 320.26 cm^{-1}	330 439.66–332 759.92	2–4	3.08+06	1.72+00	4.87+02	0.537	A	1
				2 304.21 cm^{-1}	330 439.66–332 743.87	2–2	3.03+06	8.54−01	2.44+02	0.232	A	1
101	$8p-8d$	$^2P^{\circ}-^2D$		*3 296.9* cm^{-1}	*332 754.6–336 051.5*	6–10	1.05+07	2.42+00	1.45+03	1.162	A	1
				32 91.63 cm^{-1}	332 759.92–336 051.55	4–6	1.05+07	2.18+00	8.72+02	0.941	A	1
				3 307.68 cm^{-1}	332 743.87–336 051.55	2–4	8.85+06	2.42+00	4.83+02	0.685	A	1
				3 291.63 cm^{-1}	332 759.92–336 051.55	4–4	1.75+06	2.42−01	9.69+01	−0.014	A	1

TABLE 16. Transition probabilities of allowed lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Maniak *et al.*,[64] and 3 =Theodosiou and Curtis.[103])—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
102	$8d-8f$	$^2D-^2F^{\circ}$		*565.0* cm^{-1}	*336 0.51.5–336 616.5*	10–14	7.86+04	5.17−01	3.01+03	0.713	A	1
				565.00 cm^{-1}	336 051.55–336 616.55	6–8	7.86+04	4.92−01	1.72+03	0.470	A	1
				565.00 cm^{-1}	336 051.55–336 616.55	4–6	7.33+04	5.17−01	1.20+03	0.316	A	1
				565.00 cm^{-1}	336 051.55–336 616.55	6–6	5.24+03	2.46−02	8.60+01	−0.831	A	1

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

4.4.3. Forbidden Transitions for Si IV

Froese Fischer[36] performed extensive MCHF calculations with Breit-Pauli corrections to order α^2, with energy corrections. Kundu and Mukherjee[55] performed computations with a time-dependent coupled Hartree-Fock theory. Godefroid *et al.*[45] performed nonrelativistic MCHF calculations.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references.[36,45,55] Next we isoelectronically averaged the logarithmic quality factors observed for allowed lines from the lower-lying levels of Na I, Mg II, Al III, and Si IV and applied the result to forbidden lines of Si IV using the method described in the introduction to Kelleher and Podobedova.[53]

4.4.4. References for Forbidden Transitions for Si IV

[36]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (nonorthogonal spline CI, *ab initio*, downloaded on April 20, 2004).

[45]M. Godefroid, C. E. Magnusson, P. O. Zetterberg, and I. Joelsson, Phys. Scr. **32**, 125 (1985).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[55]B. Kundu and P. K. Mukherjee, Phys. Rev. A **35**, 980 (1987).

TABLE 17. Wavelength finding list for forbidden lines of Si IV

Wavelength (vac) (Å)	Mult. No.
305.472	8
318.558	7
343.056	6
399.987	5
457.815	4
515.520	3

TABLE 17. Wavelength finding list for forbidden lines of Si IV—Continued

Wavelength (vac) (Å)	Mult. No.
559.533	13
560.980	13
623.54	2
679.620	12
680.368	12
681.756	12
682.509	12
818.128	11
1 115.651	15
1 115.653	15
1 115.666	15
1 115.668	15
1 122.485	10
1 122.500	10
1 128.325	10
1 128.340	10
1 393.755	1
1 722.526	14
1 722.562	14
1 727.341	14
1 727.376	14
Wavelength (air) (Å)	**Mult. No.**
3 149.559	18
3 149.571	18
3 165.698	18
3 165.710	18
4 088.862	16
Wavenumber (cm^{-1})	**Mult. No.**
461.10	9
161.81	17

TABLE 18. Transition probabilities of forbidden lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Kundu and Mukherjee,[55] and 3=Godefroid *et al.*[45])

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source
1	$3s-3p$	$^2S-^2P^{\circ}$									
				1 393.755	0.00–71 748.64	2–4	M2	5.24−02	7.39+01	A	1

TABLE 18. Transition probabilities of forbidden lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Kundu and Mukherjee,[55] and 3=Godefroid *et al.*[45])—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source
2	$3s-3d$	$^2S-^2D$									
				623.54	0.00–160 375.60	2–4	E2	1.27+05	4.29+01	A	2,3
3	$3s-4s$	$^2S-^2S$									
				515.520	0.00–193 978.89	2–2	M1	2.92+00	2.96−05	C	1
4	$3s-4p$	$^2S-^2P^{\circ}$									
				457.815	0.00–218 428.67	2–4	M2	1.80−01	9.72−01	B+	1
5	$3s-4d$	$^2S-^2D$									
				399.987	0.00–250 008.14	2–4	E2	1.42+04	5.18−01	B+	2
6	$3s-5d$	$^2S-^2D$									
				343.056	0.00–291 497.50	2–4	E2	2.83+04	4.81−01	B+	2
7	$3s-6d$	$^2S-^2D$									
				318.558	0.00–313 914.92	2–4	E2	2.35+04	2.75−01	B+	2
8	$3s-7d$	$^2S-^2D$									
				305.472	0.00–327 361.97	2–4	E2	1.82+04	1.73−01	B	2
9	$3p-3p$	$^2P^{\circ}-^2P^{\circ}$									
				461.10 cm^{-1}	71 287.54–71 748.64	2–4	M1	8.81−04	1.33+00	B+	1
				461.10 cm^{-1}	71 287.54–71 748.64	2–4	E2	1.09−08	1.86+01	B+	1
10	$3p-3d$	$^2P^{\circ}-^2D$									
				1 122.500	71 287.54–160 374.41	2–6	M2	5.47−02	3.93+01	A	1
				1 128.340	71 748.64–160 374.41	4–6	M2	2.91−01	2.15+02	A	1
				1 122.485	71 287.54–160 375.60	2–4	M2	7.64−03	3.65+00	B+	1
				1 128.325	71 748.64–160 375.60	4–4	M2	6.49−08	3.19−05	D	1
11	$3p-4s$	$^2P^{\circ}-^2S$									
				818.128	71 748.64–193 978.89	4–2	M2	3.77−01	1.85+01	B+	1
12	$3p-4p$	$^2P^{\circ}-^2P^{\circ}$									
				681.756	71 748.64–218 428.67	4–4	M1	1.16−01	5.46−06	D+	1
				681.756	71 748.64–218 428.67	4–4	E2	1.69+04	8.91+00	A	1
				690.368	71 287.54–218 266.86	2–2	M1	2.37−01	5.53−06	D+	1
				682.509	71 748.64–218 266.86	4–2	M1	8.99−01	2.12−05	C	1
				682.509	71 748.64–218 266.86	4–2	E2	3.41+04	9.02+00	A	1
				679.620	71 287.54–218 428.67	2–4	M1	6.98−02	3.25−06	D+	1
				679.620	71 287.54–218 428.67	2–4	E2	1.71+04	8.86+00	A	1
13	$3p-4d$	$^2P^{\circ}-^2D$									
				559.533	71 287.54–250 008.02	2–6	M2	4.28−03	9.46−02	B	1
				560.980	71 748.64–250 008.02	4–6	M2	2.48−02	5.54−01	B	1
				559.533	71 287.54–250 008.14	2–4	M2	6.64−04	9.77−03	C+	1
				560.980	71 748.64–250 008.14	4–4	M2	8.85−07	1.32−05	D	1
14	$3d-4p$	$^2D-^2P^{\circ}$									
				1 727.341	160 374.41–218 266.86	6–2	M2	8.55−03	1.76+01	B+	1
				1 722.526	160 374.41–218 428.67	6–4	M2	2.35−02	9.55+01	A	1
				1 727.376	160 375.60–218 266.86	4–2	M2	8.07−04	1.67+00	B+	1

TABLE 18. Transition probabilities of forbidden lines for Si IV (references for this table are as follows: 1=Froese Fischer,[36] 2=Kundu and Mukherjee,[55] and 3=Godefroid *et al.*[45])—Continued

No.	Transition Array	Mult.	λ_{air} (Å)	λ_{vac} (Å) σ (cm^{-1})[a]	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source
				1 722.562	160 375.60–218 428.67	4–4	M2	2.73+09	1.11−05	D	1
15	$3d-4d$	$^2D-^2D$									
				1 115.653	160 374.41–250 008.02	6–6	M1	3.60−03	1.11−06	D+	1
				1 115.653	160 374.41–250 008.02	6–6	E2	4.19+03	3.88+01	A	1
				1 115.666	160 375.60–250 008.14	4–4	M1	6.24−04	1.28−07	D	1
				1 115.666	160 375.60–250 008.14	4–4	E2	3.67+03	2.26+01	A	1
				1 115.651	160 374.41–250 008.14	6–4	M1	2.04−04	4.21−08	D	1
				1 115.651	160 374.41–250 008.14	6–4	E2	1.57+03	9.70+00	A	1
				1 115.668	160 375.60–250 008.02	4–6	M1	8.50−05	2.63−08	E+	1
				1 115.668	160 375.60–250 008.02	4–6	E2	1.05+03	9.70+00	A	1
16	$4s-4p$	$^2S-^2P^\circ$									
			4 088.862	4 090.016	193 978.89–218 428.67	2–4	M2	1.04−03	3.18+02	A	1
17	$4p-4p$	$^2P^\circ-^2P^\circ$									
				161.81 cm^{-1}	218 266.86–218 428.67	2–4	M1	3.81−05	1.33+00	A	1
				161.81 cm^{-1}	218 266.86–218 428.67	2–4	E2	1.09−09	3.52+02	A	1
18	$4p-4d$	$^2P^\circ-^2D$									
			3 149.571	3 150.483	218 266.86–250 008.02	2–6	M2	1.28−03	1.60+02	A	1
			3 165.710	3 166.626	218 428.67–250 008.02	4–6	M2	6.80−03	8.72+02	A	1
			3 149.559	3 150.472	218 266.86–250 008.14	2–4	M2	1.80−04	1.50+01	B+	1
			3 165.698	3 166.614	218 428.67–250 008.14	4–4	M2	5.27−11	4.50−06	E+	1

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

4.5. Si V

Neon isoelectronic sequence
Ground state: $1s^2 2s^2 2p^6\ ^1S_0$
Ionization energy: 166.767 eV (1 345 070 cm^{-1})

4.5.1. Allowed Transitions for Si V

For this Ne-like spectrum, OP (Ref. 50) data were deemed of reference accuracy only for a few transitions. However, the agreement between OP and MCHF (Tachiev and Froese Fischer[101]) results was better than for the Ne-like spectra Na II, Mg III, and Al IV. The other sources we used in the compilation are, however, far from comprehensive, resulting in the relatively small number of lines presented below. Wherever available we have used the data of Tachiev and Froese Fischer,[101] which result from extensive MCHF calculations with Breit-Pauli corrections to order α^2, with energy corrections. Hibbert *et al.*[48] applied the CIV3 code. The calculations only extend to transitions from energy levels up to $2p^5 4s$. Träbert[104] measured lifetimes using the beam-foil technique.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[48,50,101,104] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. We then isoelectronically averaged the logarithmic quality factors observed for Ne-like lines of Na II, Mg III, Al IV, and Si V using the method described in the introduction to Kelleher and Podobedova.[53] For the lines from higher-lying levels, we scaled the logarithmic quality factor of the lower-lying lines.

4.5.2. References for Allowed Transitions for Si V

[48]A. Hibbert, M. Le Dourneuf, and M. Mohan, At. Data Nucl. Data Tables **53**, 24 (1993).
[49]A. Hibbert and M. P. Scott, J. Phys. B **27**, 1315 (1994).
[50]A. Hibbert and M. P. Scott, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Hibbert and Scott. (Ref. 49).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).
[104]E. Träbert, Phys. Scr. **53**, 167 (1996).

TABLE 19. Wavelength finding list for allowed lines of Si V

Wavelength (vac) (Å)	Mult. No.
90.848	6
96.440	5
97.143	4
98.209	3

TABLE 19. Wavelength finding list for allowed lines of Si V—Continued

Wavelength (vac) (Å)	Mult. No.
117.853	2
118.964	1
468.347	64
501.674	53
504.559	52
517.808	46
535.832	55
541.357	55
544.718	54
551.130	47
554.279	47
560.192	47
560.231	56
561.209	58
562.50	58
564.40	58
566.74	48
568.05	57
571.16	48
572.11	49
576.61	49
581.48	50
584.90	50
645.77	61
648.31	61
653.83	61
660.06	62
698.93	63
703.88	63
727.75	51
812.43	20
817.26	12
847.78	26
861.69	26
873.83	18
882.729	19
887.92	32
889.00	25
892.991	19
893.28	25
897.23	25
897.57	24
897.854	19
901.16	37
901.59	25
905.41	25
905.96	24
912.82	25
913.10	42
916.51	42
921.29	25
921.58	42
921.86	24
929.39	23
938.38	23
938.76	59
940.63	22
942.31	31
947.12	31
947.36	59
949.84	22
951.34	31
951.94	30
957.24	36
957.65	22
964.62	59
966.56	36
966.60	22
967.19	35
967.20	22
967.34	22
970.72	41
975.83	41
980.31	41
980.95	40
984.166	21
984.24	41
987.81	29
990.08	41
990.74	40
994.253	21
1 000.52	28
1 007.292	21
1 013.443	21
1 017.37	34
1 019.08	39
1 019.79	28
1 020.06	60
1 025.70	60
1 026.993	21
1 033.430	21
1 049.916	27
1 064.466	27
1 068.489	33
1 083.562	33
1 085.314	38
1 090.730	33
1 097.309	38
1 100.869	38
1 105.830	38
1 106.342	11
1 113.213	38
1 118.809	11
1 120.780	38
1 137.270	10
1 138.752	11
1 146.583	11
1 151.965	11
1 159.094	9
1 171.546	10
1 171.855	11
1 194.719	9

TABLE 19. Wavelength finding list for allowed lines of Si V—Continued

Wavelength (vac) (Å)	Mult. No.
1 206.612	10
1 207.052	8
1 235.453	8
1 245.735	8
1 251.391	8
1 251.655	17
1 261.122	17
1 267.636	17
1 276.008	8
1 285.458	8
1 291.387	16
1 319.601	15
1 351.99	45
1 382.118	14
1 419.483	14
1 423.37	69
1 465.526	7
1 504.73	44
1 522.944	7
1 582.737	7
1 731.869	13
1 808.8	43

Wavelength (air) (Å)	Mult. No.
2 721.2	66
3 503.6	65
10 781	67
12 131	68

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1 = Hibbert and Scott,[50] 2 = Tachiev and Froese Fischer,[101] 3 = Hibbert *et al.*,[48] and 4 = Träbert[104])

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_{ki}	S (a.u.)	log gf	Acc.	Source
1	$2p^6-2p^53s$	$^1S-^3P^\circ$										
				118.964	0–840 590.0	1–3	3.84+09	2.44−02	9.56−03	−1.613	D+	2
2		$^1S-^1P^\circ$		117.853	0–848 511.2	1–3	3.57+10	2.23−01	8.65−02	−0.652	B+	4
3	$2p^6-2p^53d$	$^1S-^3P^\circ$										
				98.209	0–1 018 235.5	1–3	6.88+08	2.98−03	9.65−04	−2.526	D	2
4		$^1S-^3D^\circ$										
				97.143	0–1 029 407	1–3	2.42+10	1.03−01	3.29−02	−0.987	C	2
5		$^1S-^1P^\circ$		96.440	0–1 036 915	1–3	2.36+11	9.89−01	3.14−01	−.0005	B+	2,3
6	$2p^6-2p^5(^2P^\circ_{3/2})4s$	$^1S-^2[3/2]^\circ$										
				90.848	0–1 100 739	1–3	4.54+09	1.69−02	5.04−03	−1.772	D+	2
7	$2p^53s-2p^53p$	$^3P^\circ-^3S$		*1 496.65*	*839 436*–906 252.3	9–3	5.36+08	6.00−02	2.66+00	−0.268	B+	2,3
				1 465.526	838 017.4–906.252.3	5–3	3.76+08	7.26−02	1.75+00	−0.440	A	2,3
				1 522.944	840 590.0–906.252.3	3–3	1.35+08	4.69−02	7.05−01	−0.852	B+	2,3
				1 582.737	843 070.6–906.252.3	1–3	3.48+07	3.92−02	2.04−01	−1.407	B+	2,3
8		$^3P^\circ-^3D$		*1 259.08*	*839 436–918 859*	9–15	9.38+08	3.72−01	1.39+01	0.525	A	2,3
				1 251.391	838 017.4–917 928.5	5–7	9.59+08	3.15−01	6.49+00	0.197	A	2,3
				1 276.008	840 590.0–918 959.4	3–5	5.58+08	2.27−01	2.86+00	−0.167	A	2,3
				1 285.458	843 070.6–920 863.9	1–3	2.67+08	1.98−01	8.40−01	−0.703	B+	2,3
				1 235.453	838 017.4–918 959.4	5–5	3.75+08	8.57−02	1.74+00	−0.368	A	2,3
				1 245.735	840 590.0–920 863.9	3–3	5.88+08	1.37−01	1.68+00	−0.386	A	2,3
				1 207.052	838 017.4–920 863.9	5–3	9.49+07	1.24−02	2.47−01	−1.208	B+	2,3
9		$^3P^\circ-^1D$										
				1 194.719	840 590.0–924 291.7	3–5	2.12+08	7.55−02	8.91−01	−0.645	B	2
				1 159.094	838 017.4–924 291.7	5–5	5.12+08	1.03−01	1.97+00	−0.288	B	2
10		$^3P^\circ-^1P$										
				1 171.546	840 590.0–925 947.3	3–3	7.44+07	1.53−02	1.77−01	−1.338	C+	2

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1=Hibbert and Scott,[50] 2=Tachiev and Froese Fischer,[101] 3=Hibbert *et al.*,[48] and 4=Träbert[104])—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_{ki}	S (a.u.)	log gf	Acc.	Source
				1 137.270	838 017.4–925 947.3	5–3	7.45+07	8.67−03	1.62−01	−1.363	C+	2
				1 206.612	843 070.6–925 947.3	1–3	3.25+08	2.13−01	8.45−01	−0.672	B	2
11		$^3P^\circ-^1P$		*1 131.95*	*839 436–927 779*	9–9	6.61+08	1.27−01	4.26+00	0.058	B+	2,3
				1 118.809	838 017.4–927 398.2	5–5	2.58+08	4.85−02	8.93−01	−0.615	B+	2,3
				1 138.752	840 590.0–928 405.4	3–3	9.05+07	1.76−02	1.98−01	−1.277	B+	2,3
				1 106.342	838 017.4–928 405.4	5–3	2.88+08	3.17−02	5.77−01	−0.800	B+	2,3
				1 146.583	840 590.0–927 805.7	3–1	1.17+09	7.65−02	8.67−01	−0.639	B+	2,3
				1 151.965	840 590.0–927 398.2	3–5	2.26+08	7.50−02	8.53−01	−0.648	B+	2,3
				1 171.855	843 070.6–928 405.4	1–3	3.67+08	2.27−01	8.74−01	−0.644	B+	2,3
12		$^3P^\circ-^1S$										
				817.26	840 590.0–962 950	3–1	2.60+08	8.67−03	7.00−02	−1.585	C	2
13		$^1P^\circ-^3S$										
				1 731.869	848 511.2–906 252.3	3–3	4.33+06	1.95−03	3.33−02	−2.233	C	2
14		$^1P^\circ-^3D$										
				1 419.483	848 511.2–918 959.4	3–5	6.29+06	3.16−03	4.44−02	−2.023	C	2
				1 382.118	848 511.2–920 863.9	3–3	1.93+06	5.53−04	7.55−03	−2.780	D+	2
15		$^1P^\circ-^1D$		1 319.601	848 511.2–924 291.7	3–5	3.10+08	1.35−01	1.76+00	−0.393	A	2,3
16		$^1P^\circ-^1P$		1 291.387	848 511.2–925 947.3	3–3	5.02+08	1.26−01	1.60+00	−0.423	B+	2,3
17		$^1P^\circ-^3P$										
				1 251.655	848 511.2–928 405.4	3–3	3.96+08	9.29−02	1.15+00	−0.555	B	2
				1 261.122	848 511.2–927 805.7	3–1	6.03+07	4.79−03	5.97−02	−1.843	C	2
				1 267.636	848 511.2–927 398.2	3–5	5.67+08	2.28−01	2.85+00	−0.165	B	2
18		$^1P^\circ-^1S$		873.83	848 611.2–962 950	3–1	2.93+09	1.12−01	9.64−01	−0.474	B+	2,3
19	$2p^53p-2p^53d$	$^3S-^3P^\circ$		*887.79*	906 252.3–*1 018 891*	3–9	1.83+09	6.48−01	5.68+00	0.289	A	2,3
				882.729	906 252.3–1 019 537.4	3–5	1.68+09	3.28−01	2.86+00	−0.007	A	2,3
				892.991	906 252.3–1 018 235.5	3–3	1.97+09	2.35−01	2.07+00	−0.152	A	2,3
				897.854	906 252.3–1 017 629.0	3–1	2.08+09	8.39−02	7.44−01	−0.599	B+	2,3
20		$^3S-^1D^\circ$										
				812.43	906 252.3–1 029 340	3–5	2.57+06	4.24−04	3.40−03	−2.896	D	2
21		$^3D-^3P^\circ$		*999.68*	*918 859–1 018 891*	15–9	1.26+08	1.13−02	5.60−01	−0.771	B	2,3
				984.166	917 928.5–1 019 537.4	7–5	5.97+07	6.19−03	1.40−01	−1.363	B	2,3
				1 007.292	918 959.4–1 018 235.5	5–3	1.02+08	9.35−03	1.55−01	−1.330	B	2,3
				1 033.430	920 863.9–1 017 629.0	3–1	1.64+08	8.76−03	8.94−02	−1.580	B+	2,3
				994.253	918 959.4–1 019 537.4	5–5	3.14+07	4.65−03	7.61−02	−1.634	B+	2,3
				1 026.993	920 863.9–1 018 235.5	3–3	9.45+06	1.49−03	1.52−02	−2.350	B	2,3
				1 013.443	920 863.9–1 019 537.4	3–5	3.27+07	8.40−03	8.40−02	−1.599	B+	2,3
22		$^2D-^3F^\circ$		*965.9*	*918 859–1 022 386*	15–21	2.79+09	5.47−01	2.61+01	0.914	A	2,3
				966.60	917 928.5–1 021 384	7–9	2.81+09	5.07−01	1.13+01	0.550	A	2,3
				967.20	918 959.4–1 022 351	5–7	2.39+09	4.68−01	7.46+00	0.369	A	2,3
				967.34	920 863.9–1 024 240	3–5	2.01+09	4.71−01	4.50+00	0.150	A	2,3
				957.65	917 928.5–1 022 351	7–7	3.56+08	4.89−02	1.08+00	−0.466	B+	2,3
				949.84	918 959.4–1 024 240	5–5	7.97+08	1.08−01	1.68+00	−0.268	A	2,3
				940.63	917 928.5–1 024 240	7–5	4.14+07	3.93−03	8.51−02	−1.561	B+	2,3
23		$^3D-^1F^\circ$										
				938.38	918 959.4–1 025 526	5–7	3.37+06	6.23−04	9.63−03	−2.507	D+	2

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1=Hibbert and Scott,[50] 2=Tachiev and Froese Fischer,[101] 3=Hibbert *et al.*,[48] and 4=Träbert[104])—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_{ki}	S (a.u.)	log gf	Acc.	Source
				929.39	917 928.5–1 025 525	7–7	4.29+08	5.56−02	1.19+00	−0.410	B	2
24		$^3D-^1D^\circ$										
				905.96	918 959.4–1 029 340	5–5	9.87+07	1.22−02	1.81−01	−1.215	C+	2
				897.57	917 928.5–1 029 340	7–5	1.29+07	1.12−03	2.31−02	−2.106	C	2
				921.86	920 863.9–1 029 340	3–5	1.19+08	2.53−02	2.31−01	−1.120	C+	2
25		$^3D-^3D^\circ$		*900.1*	*918 859–1 029 961*	15–15	5.79+08	7.04−02	3.13+00	0.024	B+	2,3
				893.28	917 928.5–1 029 875	7–7	2.84+08	3.39−02	6.99−01	−0.625	B+	2,3
				897.23	918 959.4–1 029 875	5–5	2.61+08	3.15−02	4.65−01	−0.803	B+	2,3
				921.29	920 863.9–1 029 407	3–3	1.06+09	1.35−01	1.23+00	−0.393	B+	2,3
				889.00	917 928.5–1 030 414	7–5	6.59+07	5.58−03	1.14−01	−1.408	B+	2,3
				905.41	918 959.4–1 029 407	5–3	2.02+08	1.49−02	2.21−01	−1.128	B+	2,3
				901.59	918 959.4–1 029 875	5–7	8.91+07	1.52−02	2.26−01	−1.119	B+	2,3
				912.82	920 863.9–1 030 414	3–5	9.07+07	1.89−02	1.70−01	−1.246	B+	2,3
26		$^3D-^1P^\circ$										
				847.78	918 959.4–1 036 915	5–3	2.28+06	1.47−04	2.06−03	−3.134	D	2
				861.69	920 863.9–1 036 915	3–3	5.07+06	5.64−04	4.80−03	−2.772	D+	2
27		$^1D-^3P^\circ$										
				1 064.466	924 291.7–1 018 235.5	5–3	2.19+08	2.24−02	3.92−01	−0.951	C+	2
				1 049.916	924 291.7–1 019 537.4	5–5	5.38+08	8.89−02	1.54+00	−0.352	B	2
28		$^1D-^3F^\circ$										
				1 019.79	924 291.7–1 022 351	5–7	6.28+07	1.37−02	2.30−01	−1.164	C+	2
				1 019.79	924 291.7–1 022 351	5–5	6.57+05	9.87−05	1.62−03	−3.307	D	2
29		$^1D-^1F^\circ$		987.81	924 291.7–1 025 526	5–7	2.22+09	4.55−01	7.39+00	0.357	A	2,3
30		$^1D-^1D^\circ$		951.94	924 291.7–1 029 340	5–5	5.46+07	7.42−03	1.16−01	−1.431	B+	2,3
31		$^1D-^3D^\circ$										
				942.31	924 291.7–1 030 414	5–5	4.44+08	5.91−02	9.16−01	−0.529	B	2
				951.34	924 291.7–1 029 407	5–3	1.50+07	1.22−03	1.91−02	−2.215	D+	2
				947.12	924 291.7–1 029 875	5–7	4.24+07	7.99−03	1.25−01	−1.398	C	2
32		$^1D-^1P^\circ$		887.92	924 291.7–1 036 915	5–3	3.70+07	2.63−03	3.84−02	−1.881	B	2,3
33		$^1P-^3P^\circ$										
				1 083.562	925 947.3–1 018 235.5	3–3	5.16+07	9.08−03	9.72−02	−1.565	C	2
				1 090.730	925 947.3–1 017 629.0	3–1	1.43+08	8.48−03	9.13−02	−1.594	C	2
				1 068.489	925 947.3–1 019 537.4	3–5	7.60+07	2.17−02	2.29−01	−1.186	C+	2
34		$^1P-^3F^\circ$										
				1 017.37	925 947.3–1 024 240	3–5	1.41+07	3.64−03	3.65−02	−1.962	C	2
35		$^1P-^1D^\circ$		967.19	925 947.3–1 029 340	3–5	2.20+09	5.14−01	4.91+00	0.188	A	2,3
36		$^1P-^3D^\circ$										
				957.24	925 947.3–1 030 414	3–5	1.80+07	4.12−03	3.90−02	−1.908	C	2
				966.56	925 947.3–1 029 407	3–3	1.76+08	2.47−02	2.36−01	−1.130	C+	2
37		$^1P-^1P^\circ$		901.16	925 947.3–1 036 915	3–3	8.91+08	1.08−01	9.66−01	−0.489	B+	2,3
38		$^3P-^3P^\circ$		*1 097.55*	*927 779–1 018 891*	9–9	3.98+08	7.18−02	2.33+00	−0.190	B+	2,3
				1 085.314	927 398.2–1 019 537.4	5–5	3.12+08	5.50−02	9.83−01	−0.561	B+	2,3
				1 113.213	928 405.4–1 018 235.5	3–3	1.39+08	2.59−02	2.85−01	−1.110	B+	2,3
				1 100.869	927 398.2–1 018 235.5	5–3	1.32+08	1.43−02	2.60−01	−1.146	B+	2,3
				1 120.780	928 405.4–1 017 629.0	3–1	4.13+08	2.59−02	2.87−01	−1.110	B+	2,3

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1=Hibbert and Scott,[50] 2=Tachiev and Froese Fischer,[101] 3=Hibbert *et al.*,[48] and 4=Träbert[104])—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_{ki}	S (a.u.)	log gf	Acc.	Source
				1 097.309	928 405.4–1 019 537.4	3–5	4.95+07	1.49−02	1.61−01	−1.350	B+	2,3
				1 105.830	927 805.7–1 018 235.5	1–3	1.79+08	9.84−02	3.58−01	−1.007	B+	2,3
39		$^3P-^1F^\circ$										
				1 019.08	927 398.2–1 025 526	5–7	1.05+08	2.28−02	3.83−01	−0.943	C+	2
40		$^3P-^1D^\circ$										
				990.74	928 405.4–1 029 340	3–5	1.26+07	3.10−03	3.03−02	−2.032	C	2
				980.95	927 398.2–1 029 340	5–5	4.09+08	5.90−02	9.53−01	−0.530	B	2
41		$^3P-^3D^\circ$		*978.6*	*927 779–1 029 961*	9–15	2.13+09	5.10−01	1.48+01	0.662	A	2,3
				975.83	927 398.2–1 029 875	5–7	2.49+09	4.97−01	7.98+00	0.395	A	2,3
				980.31	928 405.4–1 030 414	3–5	2.01+09	4.82−01	4.67+00	0.160	A	2,3
				984.24	927 805.7–1 029 407	1–3	1.21+09	5.28−01	1.71+00	−0.277	A	2,3
				970.72	927 898.2–1 030 414	5–5	3.23+07	4.57−03	7.30−02	−1.641	B+	2,3
				990.08	928 405.4–1 029 407	3–3	2.51+08	3.69−02	3.61−01	−0.956	B+	2,3
				980.31	927 398.2–1 029 407	5–3	3.35+05	2.90−05	4.67−04	−3.839	D+	2
42		$^3P-^1P^\circ$										
				921.58	928 405.4–1 036 915	3–3	6.94+08	8.83−02	8.04−01	−0.577	B	2
				913.10	927 398.2–1 036 915	5–3	2.50+07	1.87−03	2.82−02	−2.029	C	2
				916.51	927 805.7–1 036 915	1–3	1.07+08	4.03−02	1.22−01	−1.395	C	2
43		$^1S-^3P^\circ$										
				1 808.8	962 950–1 018 235.5	1–3	2.06+05	3.02−04	1.80−03	−3.520	D	2
44		$^1S-^3D^\circ$										
				1 504.73	962 950–1 029 407	1–3	2.85+07	2.90−02	1.44−01	−1.538	C	2
45		$^1S-^1P^\circ$		1 351.99	962 950–1 036 915	1–3	6.04+08	4.96−01	2.21+00	−0.305	B+	2,3
46	$2p^53p-$ $2p^5(^2P_{3/2})4s$	$^3S-^2[3/2]^\circ$										
				517.808	906 252.3–1 0999 374	3–5	2.10+08	1.40−02	7.18−02	−1.377	B	2
47		$^3D-^2[3/2]^\circ$										
				560.192	920 863.9–1 099 374	3–5	3.41+06	2.68−04	1.48−03	−3.095	C	2
				554.279	918 959.4–1 099 374	5–5	1.62+08	7.44−03	6.79−02	−1.429	B	2
				551.130	917 928.5–1 099 374	7–5	3.38+09	1.10−01	1.40+00	−0.114	B+	2
48		$^3D-^2[3/2]^\circ$										
				571.16	924 291.7–1 099 374	5–5	9.05±08	4.42−02	4.16−01	−0.656	C+	2
				566.74	924 291.7–1 100 739	5–3	1.47±09	4.24−02	3.96−01	−0.674	C+	2
49		$^1P-^2[3/2]^\circ$										
				576.61	925 947.3–1 099 374	3–5	7.01+07	5.82−03	3.32−02	−1.758	C	2
				572.11	925 947.3–1 100 739	3–3	4.89+08	2.40−02	1.36−01	−1.143	C	2
50		$^3P-^2[3/2]^\circ$										2
				5.84.90	928 405.4–1 099 374	3–5	3.28+07	2.80−03	1.62−02	−2.076	C+	2
				581.48	927 398.2–1 099 374	5–5	1.76+08	8.92−03	8.54−02	−1.351	C+	2
51		$^1S-^2[3/2]^\circ$										
				725.75	962 950–1 100 739	1–3	2.99+08	7.08−02	1.69−01	−1.150	C+	2
52	$2p^53p-$ $2p^5(^2P^\circ_{1/2})4s$	$^3S-^2[1/2]^\circ$										2
				504.559	906 252.3–1 104 445	3–1	5.92+07	7.53−04	3.75−03	−2.646	C+	2

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1=Hibbert and Scott,[50] 2=Tachiev and Froese Fischer,[101] 3=Hibbert *et al.*,[48] and 4=Träbert[104])—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_{ki}	S (a.u.)	log gf	Acc.	Source
53		$^3S-^2[1/2]^\circ$										
				501.674	906 252.3–1 105 585	3–3	2.66+08	1.00−02	4.97−02	−1.523	C	2
54		$^3D-^2[1/2]^\circ$										2
				544.718	920 863.9–1 104 445	3–1	1.03+09	1.53−02	8.21−02	−1.338	B	2
55		$^3D-^2[1/2]^\circ$										
				541.357	920 863.9–1 105 585	3–3	1.58+08	6.92−03	3.70−02	−1.683	C	2
				535.832	918 959.4–1 105 585	5–3	1.81+08	4.67−03	4.12−02	−1.632	C	2
56		$^1P-^2[1/2]^\circ$										
				560.231	925 947.3–1 104 445	3–1	2.08+09	3.25−02	1.80−01	−1.011	C+	2
57		$^3P-^2[1/2]^\circ$										2
				568.05	928 405.4–1 104 445	3–1	9.06+08	1.46−02	8.20−02	−1.359	B	2
58		$^3P-^2[1/2]^\circ$										
				562.50	927 805.7–1 105 585	1–3	2.40+08	3.41−02	6.32−02	−1.467	C	2
				564.40	928 405.4–1 105 585	3–3	9.96+08	4.76−02	2.65−01	−0.845	C+	2
				561.209	927 389.2–1 105 585	5–3	2.99+09	8.46−02	7.81−01	−0.374	B	2
59	$2p^53d-$ $2p^5(^2P^\circ_{3/2})4p$	$^3F^\circ-^2[5/2]$										1
				964.62	1 024 240–1 127 908	5–7	2.40+06	4.69−04	7.45−03	−2.630	E	LS′
				947.36	1 022 351–1 127 908	7–7	8.99+07	1.21−02	2.64−01	−1.072	E+	LS′
				938.76	1 021 384–1 127 908	9–7	1.07+09	1.10−01	3.06+00	−0.004	C	LS′
60		$^3D^\circ-^2[5/2]$										1
				1 025.70	1 030 414–1 127 908	5–7	2.13+07	4.71−03	7.95−02	−1.628	E	LS′
				1 020.06	1 029 875–1 127 908	7–7	1.73+08	2.70−02	6.35−01	−0.724	D	LS′
61	$2p^53d-$ $2p^5(^2P^\circ_{3/2})4f$	$^3P^\circ-^2[3/2]$										1
				645.77	1 017 329.0–1 172 483	1–3	4.71+09	8.83−01	1.88+00	−0.054	D+	LS′
				648.31	1 018 235.5–1 172 483	3–3	3.49+09	2.20−01	1.41+00	−0.180	D+	LS′
				653.83	1 019 37.4–1 172 483	5–3	2.27+08	8.72−03	9.38−02	−1.361	E	LS′
62		$^3F^\circ-^2[9/2]$										1
				660.06	1 021 384–1 172 886	9–11	9.96+09	7.95−01	1.55+01	0.855	C+	LS′
63		$^3D^\circ-^2[3/2]$										1
				698.93	1 029 407–1 172 483	3–3	1.04+09	7.65−02	5.28−01	−0.639	D	LS′
				703.88	1 030 414–1 172 483	5–3	3.41+08	1.52−02	1.76−01	−1.119	E	LS′
64	$2p^53d-$ $2p^5(^2P^\circ_{3/2})5f$	$^3F^\circ-^2[9/2]$										1
				468.347	1 021 384–1 234 901	9–11	3.73+09	1.50−01	2.08+00	0.130	D+	LS′
65	$2p^5(^2P^\circ_{3/2})4s-$ $2p^5(^2P^\circ_{3/2})4p$	$^2[3/2]^\circ-^2[5/2]$										1
			3 503.6	3 504.6	1 099 374–1 127 908	5–7	1.89+08	4.86−01	2.80+01	0.386	B	LS′
66	$2p^5(^2P^\circ_{3/2})4p-$ $2p^5(^2P^\circ_{3/2})4d$	$^2[5/2]-^2[7/2]^\circ$										1

TABLE 20. Transition probabilities of allowed lines for Si V (references for this table are as follows: 1=Hibbert and Scott,[50] 2=Tachiev and Froese Fischer,[101] 3=Hibbert *et al.*,[48] and 4=Träbert[104])—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_{ki}	S (a.u.)	log gf	Acc.	Source
			2 721.2	2 722.1	1 127 908–1 164 645	7–9	5.50+08	7.86−01	4.93+01	0.741	B	LS′
67	$2p^5(^2P^\circ_{3/2})4d-2p^5(^2P^\circ_{3/2})4f$	$^2[1/2]^\circ-^2[3/2]$										1
			10 781	10 784	1 163 210–1 172 483	1–3	3.46+06	1.81−01	6.43+00	−0.742	C	LS′
68		$^2[7/2]^\circ-^2[9/2]$										1
			12 131	12 134	1 164 645–1 172 886	9–11	5.15+06	1.39−01	5.00+01	0.097	B	LS′
69	$2p^5(^2P^\circ_{3/2})4d-2p^5(^2P^\circ_{3/2})5f$	$^2[7/2]^\circ-^2[9/2]$										1
				1 423.37	1 164 645–1 234 901	9–11	1.59+09	5.91−01	2.49+01	0.726	B	LS′

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

4.5.3. Forbidden Transitions for Si V

Wherever available we have used the data of Tachiev and Froese Fischer,[101] which result from extensive MCHF calculations with Breit-Pauli corrections to order α^2. The calculations only extend to transitions from energy levels up to $2p^54s$.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two of the references.[31,57,101] Only three lines were available from Landman,[57] so the estimated uncertainties are probably not very reliable. Next we isoelectronically averaged the logarithmic quality factors observed for allowed Ne-like lines from the lower-lying levels of Na II, Mg III, Al IV, and Si V and applied the result to forbidden lines of Si V using the method described in the introduction to Kelleher and Podobedova.[53]

4.5.4. References for Forbidden Transitions for Si V

[31]W. Fielder, Jr., D. L. Lin, and D. Ton-That, Phys. Rev. A **19**, 741 (1979); **20**, 1738 (1979); (relativistic).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[57]D. A. Landman, J. Quant. Spectrosc. Radiat. Transf. **34**, 365 (1985).

[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).

TABLE 21. Wavelength finding list for forbidden lines of Si V

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
119.329	1						
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
9 526.8	3	12 620.9	3	18 375	3	19 784	2
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**
2 572.6	2	2 480.6	2				

TABLE 22. Transition probabilities of forbidden lines for Si V (references for this table are as follows: 1=Tachiev and C. Froese Fischer,[101] 2=Landman,[57] and 3=Fielder *et al.*[31])

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
1	$2p^6-2p^53s$	$^1S-^3P^\circ$									
				119.329	0–838 017.4	1–5	M2	1.04+02	8.45−01	C+	1,2,3
2	$2p^53s-2p^53s$	$^3P^\circ-^3P^\circ$									
			19 784	19 789	838 017.4–843 070.6	5–1	E2	1.15−05	3.13−02	D+	1,2

TABLE 22. Transition probabilities of forbidden lines for Si V (references for this table are as follows: 1=Tachiev and C. Froese Fischer,[101] 2=Landman,[57] and 3=Fielder *et al.*[31])—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
				2 572.6 cm^{-1}	838 0.17.4–840 590.0	5–3	M1	3.46−01	2.26+00	B+	1
				2 572.6 cm^{-1}	838 017.4–840 590.0	5–3	E2	1.83−07	4.35−02	D+	1
				2 480.6 cm^{-1}	840 590.0–843 070.6	3–1	M1	7.42−01	1.80+00	B+	1,2
3		$^3P^\circ - ^1P^\circ$									
			12 620.9	12 624.3	840 590.0–848 511.2	3–3	M1	5.88−01	1.32−01	C	1
			12 620.9	12 624.3	840 590.0–848 511.2	3–3	E2	1.54−05	1.32−02	D	1
			9 526.8	9 529.4	838 017.4–848 511.2	5–3	M1	2.52+00	2.43−01	C+	1
			9 526.8	9 529.4	838 017.4–848 511.2	5–3	E2	2.19−05	4.61−03	E+	1
			18 375	18 380	843 070.6–848 511.2	1–3	M1	2.81−01	1.94−01	C+	1

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

4.6. Si VI

Fluorine isoelectronic sequence
Ground state: $1s^2 2s^2 2p^5\ ^2P^\circ_{3/2}$
Ionization energy: 205.267 eV (1 655 590 cm^{-1})

4.6.1. Allowed Transitions for Si VI

Only OP (Ref. 14) computations are available for energy levels above the $2p^4 3d$. Wherever available we have used the data of Tachiev and Froese Fischer,[101] which result from extensive MCHF calculations with Breit-Pauli corrections to order α^2, with energy adjustments. The calculations only extend to transitions from energy levels to $2p^4 3d$. Coutinho and Trigueiros[20] applied the COWAN code with least squares energy fitting. McPeake, and Hibbert[62] used the CIV3 code.

The spin-allowed and intercombination data were treated separately, and each of these were in turn divided into two upper energy level energy groups below and above 834 500 cm^{-1}. To estimate accuracies for all but the low-lying spin-allowed group, we applied the pooling fit parameters found for F-like Na III,[62] using the method described in the introduction to Kelleher and Podobedova.[53] Thus the accuracies we list for these lines are only rough estimates. Energy levels labeled $2p^4(^3P)3p\ ^2P^\circ_{1/2}$ and $2p^4(^1D)3p\ ^2P^\circ_{1/2}$ are actually admixtures of these basis states, and therefore transitions from them have been assigned lower accuracies.

A NIST compilation of far-UV lines of Si VI was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.6.2. References for Allowed Transitions for Si VI

[14]K. Butler and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[20]L. H. Coutinho and A. G. Trigueiros, Astrophys. J., Suppl. Ser. **121**, 591 (1999).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[62]D. McPeake and A. Hibbert, J. Phys. B **33**, 2809 (2000).
[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).

TABLE 23. Wavelength finding list for allowed lines of Si VI

Wavelength (vac) (Å)	Multi. No.
66.772	19
69.204	18
69.236	18
69.448	18
71.181	17
71.302	16
71.533	16
71.561	16
72.896	15
75.194	14
75.483	14
77.412	13
77.429	13
77.718	13
80.395	12
80.449	12
80.490	11
80.577	11
80.698	10
80.725	12
80.821	11
80.909	11
81.031	10
83.005	8
83.128	9
83.257	9
83.284	8
83.358	8
83.611	9
83.639	8
83.729	7
83.807	7
84.088	7

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (vac) (Å)	Multi. No.
84.538	6
84.580	6
84.627	6
84.904	6
84.946	6
91.370	5
91.797	5
96.018	4
96.023	4
96.490	4
99.096	3
99.460	3
99.599	3
99.966	3
100.455	2
100.640	2
100.957	2
100.971	2
101.158	2
102.845	23
103.163	23
134.447	22
134.879	22
145.842	21
147.818	20
147.991	20
246.004	1
249.124	1
285.936	96
389.152	95
411.347	68
416.055	68
420.629	93
421.365	93
446.590	94
594.35	90
595.34	90
597.76	90
634.08	91
635.21	91
635.38	36
635.75	91
636.68	64
636.89	91
638.40	36
640.11	64
641.63	63
643.54	63
645.94	36
648.03	64
648.25	36
648.28	62
651.58	64
654.27	62
655.14	63
656.03	36

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (vac) (Å)	Multi. No.
659.24	67
660.05	62
662.91	67
665.69	66
671.69	66
680.18	65
690.36	38
694.54	35
694.98	92
696.34	92
696.55	35
701.90	38
706.67	92
708.40	38
709.94	35
712.04	35
720.55	38
721.44	35
747.93	34
751.74	34
769.82	34
774.80	37
777.30	37
800.24	37
831.12	83
836.96	83
839.57	82
841.74	83
842.84	82
844.38	82
847.69	82
847.86	55
860.85	56
868.11	55
874.86	56
874.98	52
880.07	52
881.07	50
881.73	56
884.64	50
886.24	50
888.05	52
888.34	59
888.71	52
889.23	50
890.04	50
891.97	52
894.49	50
894.73	50
896.43	56
898.28	52
899.43	50
899.58	55
900.84	52
901.64	52
902.19	52

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (vac) (Å)	Multi. No.
902.62	60
910.92	86
914.38	86
917.94	86
918.03	60
919.03	46
921.33	59
921.46	86
922.07	81
923.28	84
924.62	85
925.03	85
928.59	85
929.96	54
934.85	84
938.49	84
939.10	46
939.59	46
939.61	54
954.38	54
954.70	54
964.54	54
967.13	61
968.65	28
973.58	51
978.17	51
978.90	58
983.72	27
984.15	51
989.59	58
990.60	51
993.26	51
995.35	51
998.88	28
999.04	51
1 001.09	51
1 005.69	51
1 006.97	51
1 009.78	26
1 014.91	27
1 017.48	28
1 034.12	27
1 038.64	26
1 042.11	89
1 042.68	26
1 046.96	53
1 051.31	89
1 054.26	53
1 058.32	88
1 059.65	53
1 062.96	26
1 068.63	89
1 071.27	53
1 073.47	26
1 073.55	88
1 074.34	45

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (vac) (Å)	Multi. No.
1 074.99	45
1 078.00	53
1 079.16	45
1 079.81	45
1 085.68	88
1 085.75	53
1 090.52	25
1 095.42	87
1 101.71	88
1 102.26	57
1 108.84	25
1 109.39	57
1 117.59	57
1 119.03	25
1 124.76	87
1 128.99	25
1 130.98	25
1 132.22	33
1 142.43	25
1 148.63	25
1 152.80	25
1 152.86	32
1 181.56	33
1 188.82	31
1 204.05	32
1 207.69	44
1 217.67	44
1 218.50	44
1 229.01	31
1 243.33	31
1 259.13	72
1 260.43	24
1 269.99	72
1 277.19	24
1 289.11	30
1 289.32	72
1 290.51	24
1 302.34	30
1 312.09	24
1 321.72	24
1 328.55	30
1 330.26	24
1 344.38	24
1 353.45	30
1 368.05	30
1 412.69	71
1 415.25	75
1 423.61	75
1 435.07	71
1 449.19	71
1 451.82	76
1 460.62	76
1 470.57	71
1 485.40	71
1 492.11	76
1 500.85	75

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (vac) (Å)	Multi. No.
1 501.41	76
1 522.09	29
1 523.81	71
1 552.22	29
1 577.71	29
1 612.62	29
1 646.47	29
1 659.86	74
1 671.37	74
1 690.85	74
1 701.52	70
1 702.79	74
1 720.90	70
1 735.30	70
1 741.25	70
1 753.00	74
1 755.99	70
1 759.36	79
1 791.1	69
1 816.2	80
1 836.3	79
1 870.8	69
1 879.7	80
1 893.6	79
1 910.7	43
1 912.8	43
1 967.8	80
1 970.2	42
1 972.4	42
1 983.0	79
Wavelength (air) (Å)	**Mult. No.**
2 048.0	73
2 072.7	73

TABLE 23. Wavelength finding list for allowed lines of Si VI—Continued

Wavelength (air) (Å)	Mult. No.
2 077.0	41
2 079.4	41
2 090.7	73
2 101.6	73
2 120.1	73
2 142.0	73
2 153.3	78
2 202.9	41
2 205.6	41
2 205.7	78
2 269.7	78
2 407.1	40
2 450.3	40
2 453.7	40
2 544.8	40
2 548.4	40
2 664.5	40
2 856.9	77
2 905.3	77
2 962.3	77
3 065.5	77
3 121.3	77
3 370.9	39
3 515.4	39
3 522.4	39
3 649.0	39
3 656.5	39
4 064.7	47
4 287.0	47
Wavenumber (cm^{-1})	**Mult. No.**
2 278	48
697	49

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])

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
1	$2s^22p^5-2s2p^6$	$^2P^\circ-^2S$		*247.04*	*1 697–406 497*	6–2	2.61+10	7.96−02	3.89−01	−0.321	B+	2
				246.004	0–406 497	4–2	1.77+10	8.01−02	2.59−01	−0.494	B+	2
				249.124	5 090–406 497	2–2	8.46+09	7.87−02	1.29−01	−0.803	B+	2
2	$2p^5-2p^4(^3P)3s$	$^2P^\circ-^4P$										
				100.640	0–993 640	4–4	1.18+09	1.79−03	2.38−03	−2.145	C	2
				100.971	5 090–995 470	2–2	2.64+08	4.04−04	2.69−04	−3.093	D+	2
				100.455	0–995 470	4–2	8.55+06	6.47−06	8.56−06	−4.587	E+	2
				100.957	0–990 516	4–6	7.51+07	1.72−04	2.29−04	−3.162	D+	2
				101.158	5 090–993 640	2–4	1.02+08	3.13−04	2.08−04	−3.203	D+	2
3		$^2P^\circ-^2P$		*99.51*	*1 697–1 006 659*	6–6	7.88+10	1.17−01	2.30−01	−0.154	B+	2
				99.460	0–1 005 430	4–4	6.74+10	1.00−01	1.31−01	−0.398	B+	2
				99.599	5 090–1 009 118	2–2	5.15+10	7.66−02	5.02−02	−0.815	B+	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				99.096	0–1 009 118	4–2	2.82+10	2.08−02	2.71−02	−1.080	B+	2
				99.966	5 090–1 005 430	2–4	1.09+10	3.28−02	2.16−02	−1.183	B+	2
4	$2p^5 - 2p^4(^1D)3s$	$^2P^\circ - ^2D$		*96.18*	*1 697–1 041 438*	6–10	3.09+10	7.14−02	1.36−01	−0.368	B+	2
				96.023	0–1 041 416	4–6	3.08+10	6.39−02	8.08−02	−0.592	B	2
				96.490	5 090–1 041 472	2–4	2.79+10	7.79−02	4.95−02	−0.807	B+	2
				96.018	0–1 041 472	4–4	3.03+09	4.19−03	5.30−03	−1.776	B	2
5	$2p^5 - 2p^4(^1S)3s$	$^2P^\circ - ^2S$		*91.51*	*1 697*–1 094 449	6–2	3.19+10	1.34−02	2.42−02	−1.095	B+	2
				91.370	0–1 094 449	4–2	1.96+10	1.23−02	1.48−02	−1.308	B+	2
				891.797	5 090–1 094 449	2–2	1.23+10	1.55−02	9.39−03	−1.509	B	2
6	$2p^5 - 2p^4(^3P)3d$	$^2P^\circ - ^4D$										
				84.627	0–1 181 649	4–6	2.30+07	3.71−05	4.13−05	−3.829	E+	2
				84.946	5 090–1 182 311	2–4	3.50+07	7.58−05	4.24−05	−3.819	E+	2
				84.580	0–1 182 311	4–4	1.45+08	1.56−04	1.74−04	−3.205	D	2
				84.904	5 090–1 182 894	2–2	1.99+08	2.15−04	1.20−04	−3.367	D	2
				84.538	0–1 182 894	4–2	8.61+07	4.61−05	5.14−05	−3.734	E+	2
7		$^2P^\circ - ^4F$										
				83.807	0–1 193–223	4–6	3.75+09	5.93−03	6.54−03	−1.625	C	2
				84.088	5 090–1 194–327	2–4	2.44+09	5.17−03	2.86−03	−1.985	C	2
				83.729	0–1 194 327	4–4	1.18+09	1.24−03	1.37−03	−2.305	C	2
8		$^2P^\circ - ^2P$		*83.22*	*1 697–1 203 397*	6–6	1.02+11	1.06−01	1.74−01	−0.197	C	2
				83.005	0–1 204 740	4–4	1.77+10	1.82−02	1.99−02	−1.138	D+	2
				83.639	5 090–1 200 710	2–2	4.36+10	4.57−02	2.52−02	−1.039	C	2
				83.284	0–1 200 710	4–2	2.99+10	1.55−02	1.70−02	−1.208	D+	2
				83.358	5 090–1 204 740	2–4	9.74+10	2.03−01	1.11−01	−0.391	C	2
9		$^2P^\circ - ^2D$		*83.30*	*1 697–1 202 216*	6–10	2.06+11	3.74−01	6.16−01	0.351	C+	2
				83.128	0–1 202 960	4–6	2.34+11	3.63−01	3.97−01	0.162	C+	2
				83.611	5 090–1 201 100	2–4	9.47+10	1.99−01	1.09−01	−0.400	C	2
				83.257	0–1 201 100	4–4	9.60+10	9.98−02	1.09−01	−0.399	C	2
10	$2p^5 - 2p^4(^1D)3d$	$^2P^\circ - ^2S$		*80.81*	*1 697*–1 239 190	6–2	3.60+11	1.18−01	1.88−01	−0.150	C	2
				80.698	0–1 239 190	4–2	2.76+11	1.35−01	1.43−01	−0.268	C+	2
				81.031	5 090–1 239 190	2–2	8.45+10	8.32−02	4.44−02	−0.779	C	2
11		$^2P^\circ - ^2P$		*80.66*	*1 697–1 241 497*	6–6	3.36+11	3.28−01	5.23−01	0.294	C+	2
				80.577	0–1 241 050	4–4	2.74+11	2.67−01	2.83−01	0.029	C+	2
				80.821	5 090–1 242 390	2–2	2.78+11	2.73−01	1.45−01	−0.263	C+	2
				80.490	0–1 242 390	4–2	6.85+10	3.33−02	3.52−02	−0.875	C	2
				80.909	5 090–1 241 050	2–4	5.67+10	1.11−01	5.92−02	−0.654	C	2
12		$^2P^\circ - ^2D$		*80.54*	*1 697–1 243 356*	6–10	1.68+11	2.72−01	4.33−01	0.213	C+	2
				80.449	0–1 243 020	4–6	1.31+11	1.90−01	2.02−01	−0.119	C+	2
				80.725	5 090–1 243 860	2–4	1.89+11	3.68−01	1.96−01	−0.133	C+	2
				80.395	0–1 243 860	4–4	3.50+10	3.39−02	3.59−02	−0.868	C	2
13	$2p^5 - 2p^4(^1S)3d$	$^2P^\circ - ^2D$		*77.52*	*1 697–1 291 622*	6–10	5.57+10	8.36−02	1.28−01	−0.300	C	2
				77.429	0–1 291 510	4–6	5.05+10	6.81−02	6.94−02	−0.565	C	2
				77.718	5 090–1 291 790	2–4	5.57+10	1.01−01	5.16−02	−0.695	C	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				77.412	0–1 291 790	4–4	7.74+09	6.95−03	7.09−03	−1.556	D	2
14	$2p^5-2p^4(^3P)4s$	$^2P^\circ-^2P$				6–6						3
				75.194	0–1 329 900	4–4	1.24+10	1.05−02	1.04−02	−1.377	D	3
				75.483	5 090–1 329 900	2–4	2.11+09	3.60−03	1.79−03	−2.143	E+	3
15	$2p^5-2p^4(^1D)4s$	$^2P^\circ-^2D$				6–10						3
				[72.896]	0–1 371 820	4–6	8.24+09	9.85−03	9.46−03	−1.405	D	3
16	$2p^5-2p^4(^3P)4d$	$^2P^\circ-^2P$				6–6						3
				71.561	5 090–1 402–490	2–2	3.56+10	2.73−02	1.29−02	−1.263	D	3
				71.302	0–1 402 490	4–2	2.19+10	8.35−03	7.84−03	−1.476	D	3
				71.533	5 090–1 403 050	2–4	3.26+07	5.00−05	2.35−05	−4.000	E	3
17		$^2P^\circ-^2D$				6–10						3
				[71.181]	0–1 404 870	4–6	6.63+10	7.55−02	7.08−02	−0.520	D+	3
18	$2p^5-2p^4(^1D)4d$	$^2P^\circ-^2D$?		*[69.30]*	*1 697–1 444 600*	6–10	8.19+10	9.82−02	1.34−01	−0.230	D+	1,3
				[69.236]	0–1 444 340	4–6	7.82+10	8.42−02	7.68−02	−0.473	C	3
				[69.448]	5 090–1 445 010	2–4	7.61+10	1.10−01	5.03−02	−0.658	D+	3
				[69.204]	0–1 445 010	4–4	1.13+10	8.10−03	7.38−03	−1.489	E	LS
19	$2p^5-2p^4(^3P)5d$	$^2P^\circ-^2D$				6–10						3
				[66.772]	0–1 497 630	4–6	1.40+11	1.40−01	1.23−01	−0.252	C	3
20	$2s2p^6-$ $2s^22p^4(^3P)3p$	$^2S-^4D^\circ$										
				147.991	406 497–1 082 215	2–4	5.73+05	3.76−06	3.67−06	−5.124	E+	2
				147.818	406 497–1 083 003	2–2	1.40+06	4.57−06	4.45−06	−5.039	D	2
21		$^2S-^2P^\circ$				2–6						2
				145.842	406 497–1 092 171	2–4	1.10+08	6.99−04	6.71−04	−2.854	C	2
22	$2s2p^6-$ $2s^22p^4(^1D)3p$	$^2S-^2P^\circ$		*134.73*	406 497–*1 148 695*	2–6	7.42+08	6.06−03	5.38−03	−1.916	C+	2
				134.879	406 497–1 147 901	2–4	7.11+08	3.88−03	3.44−03	−2.110	C+	2
				134.447	406 497–1 150 282	2–2	8.06+08	2.18−03	1.93−03	−2.361	C+	2
23	$2s2p^6-$ $2s2p^5(^3P^\circ)3s$	$^2S-^2P^\circ$		*103.06*	406 497–*1 137 837*	2–6	2.92+10	1.39−01	9.42−02	−0.556	D+	3
				103.163	406 497–1 375 840	2–4	2.88+10	9.20−02	6.25−02	−0.735	D+	3
				102.845	406 497–1 378 830	2–2	3.00+10	4.75−02	3.22−02	−1.022	D+	3
24	$2p^4(^3P)3s$ $-2p^4(^3P)3p$	$^4P-^4P^\circ$		*1 296.0*	*992 383–1 069 546*	12–12	6.59+08	1.66−01	8.49+00	0.299	B+	2
				1 277.19	990 516–1 068 813	6–6	5.64+08	1.38−01	3.48+00	−0.082	A	2
				1 312.09	993 640–1 069 854	4–4	9.73+07	2.51−02	4.34−01	−0.998	B+	2
				1 321.72	995 470–1 071 129	2–2	7.46+07	1.95−02	1.70−01	−1.409	B+	2
				1 260.43	990 516–1 069 854	6–4	4.11+08	6.52−02	1.62+00	−0.408	B+	2
				1 290.51	993 640–1 071 129	4–2	5.85+08	7.30−02	1.24+00	−0.535	B+	2
				1 330.26	993 640–1 068 813	4–6	1.10+08	4.38−02	7.67−01	−0.756	B+	2
				1 344.38	995 470–1 069 854	2–4	1.62+08	8.75−02	7.75−01	−0.757	B+	2
25		$^4P-^4D^\circ$		*1 134.5*	*992 383–1 080 527*	12–20	1.01+09	3.25−01	1.45+01	0.591	A	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				1 130.98	990 516–1 078 935	6–8	1.03+09	2.63−01	5.88+00	0.198	A	2
				1 148.63	993 640–1 080 700	4–6	7.83+08	2.32−01	3.52+00	−0.032	A	2
				1 152.80	995 470–1 082 215	2–4	4.82+08	1.92−01	1.46+00	−0.416	B+	2
				1 108.84	990 516–1 080 700	6–6	1.91+08	3.52−02	7.72−01	−0.675	B+	2
				1 128.99	993 640–1 082 215	4–4	4.95+08	9.46−02	1.41+00	−0.422	B+	2
				1 142.43	995 470–1 083 033	2–2	8.74+08	1.71−01	1.29+00	−0.466	B+	2
				1 090.52	990 516–1 082 215	6–4	2.03+07	2.42−03	5.21−02	−1.838	B	2
				1 119.03	993 640–1 083 003	4–2	1.29+08	1.21−02	1.79−01	−1.315	B+	2
26		$^4P-^2D^{\circ}$										
				1 073.47	993 640–1 086 796	4–6	2.22+07	5.75−03	8.12−02	−1.638	C+	2
				1 062.96	995 470–1 089 547	2–4	2.75+06	9.31−04	6.51−03	−2.730	C	2
				1 038.64	990 516–1 086 796	6–6	1.33+07	2.14−03	4.40−02	−1.891	C	2
				1 042.68	993 640–1 089 547	4–4	1.22+06	1.99−04	2.73−03	−3.099	D+	2
				1 009.78	990 516–1 089 547	6–4	2.19+06	2.23−04	4.44−03	−2.874	D+	2
27		$^4P-^2P^{\circ}$										
				1 014.91	993 640–1 092 171	4–4	8.46+05	1.31−04	1.75−03	−3.281	D+	2
				983.72	990 516–1 092 171	6–4	5.01+06	4.84−04	9.41−03	−2.537	C	2
				1 034.12	995 470–1 092 171	2–4	1.08+07	3.45−03	2.35−02	−2.161	C	2
28		$^4P-^4S$		*986.5*	*992 383–1 093 752*	12–4	1.56+09	7.57−02	2.95+00	−0.042	B+	2
				968.65	990 516–1 093 752	6–4	6.81+08	6.39−02	1.22+00	−0.416	B+	2
				998.88	993 640–1 093 752	4–4	5.52+08	8.26−02	1.09+00	−0.481	B+	2
				1 017.48	995 470–1 093 752	2–4	3.08+08	9.55−02	6.40−01	−0.719	B+	2
29		$^2P-^4P^{\circ}$										
				1 552.22	1 005 430–1 069 854	4–4	5.56+04	2.01−05	4.11−04	−4.095	D	2
				1 612.62	1 009 118–1 071 129	2–2	4.38+05	1.71−04	1.81−03	−3.466	D+	2
				1 522.09	1 005 430–1 071 129	4–2	9.49+05	1.65−04	3.30−03	−3.180	D+	2
				1.577.71	1 005 430–1 068 813	4–6	3.09+05	1.73−04	3.59−03	−3.160	D+	2
				1 646.47	1 009 118–1 069 854	2–4	3.79+03	3.08−06	3.34−06	−5.210	E+	2
30		$^2P-^4D^{\circ}$										
				1 328.55	1 005 430–1 080 700	4–6	1.86+07	7.40−03	1.30−01	−1.529	C+	2
				1 368.05	1 009 118–1 082 215	2–4	4.53+06	2.54−03	2.29−02	−2.294	C	2
				1 302.34	1 005 430–1 082 215	4–4	1.88+03	4.78−07	8.20−06	−5.719	E+	2
				1 353.45	1 009 118–1 083 003	2–2	7.09+05	1.95−04	1.74−03	−3.409	D+	2
				1 289.11	1 005 430–1 083 003	4–2	2.58+05	3.22−05	5.47−04	−3.890	D	2
31		$^2P-^2D^{\circ}$		*1 231.0*	*1 006 659–1 087 896*	6–10	7.86+08	2.97−01	7.23+00	0.251	A	2
				1 229.01	1 005 430–1 086 796	4–6	8.02+08	2.72−01	4.41+00	0.037	A	2
				1 243.33	1 009 118–1 089 547	2–4	3.48+08	1.61−01	1.32+00	−0.492	B+	2
				1 188.32	1 005 430–1 089 547	4–4	4.54+08	9.61+02	1.50−00	−0.415	B+	2
32		$^2P-^2P^{\circ}$				6–6						2
				1 152.86	1 005 430–1 092 171	4–4	2.33+08	4.63−02	7.03−01	−0.732	B+	2
				1 204.05	1 009 118–1 092 171	2–4	4.31+08	1.87−01	1.48+00	−0.427	B+	2
33		$^2P-^4S^{\circ}$										
				1 132.22	1 005 430–1 093 752	4–4	5.45+04	1.05−05	1.56−04	−4.377	D	2
				1 181.56	1 009 118–1 093 752	2–4	5.32+06	2.23−03	1.73−02	−2.351	C	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
34	$2p^4(^3P)3s-2p^4(^1D)3p$	$^4P-^2F°$										
				747.93	990 516–1 124 219	6–8	1.20+05	1.34−05	1.99−04	−4.095	D	2
				769.82	993 640–1 123 540	4–6	1.51+04	2.01−06	2.04−05	−5.095	E+	2
				751.74	990 516–1 123 540	6–6	3.83+03	3.24−07	4.82−06	−5.711	E+	2
35		$^4P-^2D°$										
				709.94	993 640–1 134 496	4–6	4.62+03	5.24−07	4.90−06	−5.679	E+	2
				721.44	995 470–1 134 081	2–4	1.89+00	2.95−10	1.40−09	−9.299	E	2
				694.54	990 516–1 134 496	6–6	4.88+05	3.53−05	4.84−04	−3.674	D	2
				712.04	993 640–1 134 081	4–4	4.40+05	3.35−05	3.14−04	−3.873	D	2
				696.55	990 516–1 134 081	6–4	6.24+04	3.02−06	4.16−05	−4.742	E+	2
36		$^4P-^2P°$										
				648.25	993 640–1 147 901	4–4	1.92+07	1.21−03	1.03−02	−2.315	C	2
				645.94	995 470–1 150 282	2–2	3.77+06	2.36−04	1.00−03	−3.326	D+	2
				635.38	990 516–1 147 901	6–4	5.48+05	2.21−05	2.77−04	−3.877	D	2
				638.40	993 640–1 150 282	4–2	4.61+06	1.41−04	1.18−03	−3.249	D+	2
				656.03	995 470–1 147 901	2–4	1.09+05	1.41−05	6.08−05	−4.550	D	2
37		$^2P-^2D°$		*783.3*	*1 006 659–1 134 330*	6–10	1.62+07	2.48−03	3.83−02	−1.827	B	2
				774.80	1 005 430–1 134 496	4–6	1.05+07	1.42−03	1.45−02	−2.246	B	2
				800.24	1 009 118–1 134 081	2–4	5.19+06	9.97−04	5.25−03	−2.700	B	2
				777.30	1 005 430–1 134 081	4–4	2.00+07	1.81−03	1.85−02	−2.140	B	2
38		$^2P-^2P°$		*704.1*	*1 006 659–1 148 695*	6–6	1.62+09	1.21−01	1.68+00	−0.139	B+	2
				701.90	1 005 430–1 147 901	4–4	1.38+09	1.02−01	9.45−01	−0.389	B+	2
				708.40	1 009 118–1 150 282	2–2	1.06+09	7.95−02	3.71−01	−0.799	B+	2
				690.36	1 005 430–1 150 282	4–2	4.52+08	1.61−02	1.47−01	−1.191	B+	2
				720.55	1 009 118–1 147 901	2–4	2.92+08	4.54−02	2.16−01	−1.042	B+	2
39	$2p^4(^1D)3s-2p^4(^3P)3p$	$^2D-^4P°$										
			3 515.4	3 516.4	1 041 416–1 069 854	6–4	1.62+04	2.00−05	1.39−03	−3.921	D+	2
			3 370.9	3 371.9	1 041 472–1 071 129	4–2	1.49+04	1.27−05	5.65−04	−4.294	D	2
			3 649.0	3 650.0	1 041 416–1 068 813	6–6	2.37+03	4.73−06	3.41−04	−4.547	D	2
			3 522.4	3 523.4	1 041 472–1 069 854	4–4	5.44+03	1.01−05	4.70−04	−4.394	D	2
			3 656.5	3 657.5	1 041 472–1 068 813	4–6	2.40+02	7.22−07	3.48−05	−5.539	E+	2
40		$^2D-^4D°$										
			2 544.8	2 545.6	1 041 416–1 080 700	6–6	9.31+03	9.05−06	4.55−04	−4.265	D	2
			2 453.7	2 454.4	1 041 472–1 082 215	4–4	1.45+04	1.31−05	4.24−04	−4.281	D	2
			2 450.3	2 451.0	1 041 416–1 082 215	6–4	9.91+03	5.95−06	2.88−04	−4.447	D	2
			2 407.1	2 407.8	1 041 472–1 083 003	4–2	9.16+03	3.98−06	1.26−04	−4.798	D	2
			2 664.5	2 665.3	1 041 416–1 078 935	6–8	3.54+03	5.03−06	2.65−04	−4.520	D	2
			2 548.4	2 549.2	1 041 472–1 080 700	4–6	2.30+03	3.36−06	1.13−04	−4.872	D	2
41		$^2D-^2D°$	*2 152*	*2 152*	*1 041 438–1 087 896*	10–10	3.74+06	2.60−03	1.84−01	−1.585	B	2
			2 202.9	2 203.6	1 041 416–1 086 796	6–6	2.49+05	1.81−04	7.88−03	−2.964	B	2
			2 079.4	2 080.1	1 041 472–1 089 547	4–4	2.63+06	1.70−03	4.67−02	−2.167	B	2
			2 077.0	2 077.7	1 041 416–1 089 547	6–4	7.30+06	3.15−03	1.29−01	−1.724	B	2
			2 205.6	2 206.3	1 041 472–1 086 796	4–6	6.85+03	7.50−06	2.18−04	−4.523	C+	2
42		$^2D-^2P°$				10–6						2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				1 970.2	1 041 416–1 092 171	6–4	4.31+07	1.67−02	6.51−01	−0.999	B	2
				1 972.4	1 041 472–1 092 171	4–4	3.31+06	1.93−03	5.01−02	−2.112	C+	2
43		$^2D-^4S^\circ$										
				1 910.7	1 041 416–1 093 752	6–4	9.78+05	3.57−04	1.35−02	−2.669	C	2
				1 912.8	1 041 472–1 093 752	4–4	7.32+04	4.02−05	1.01−03	−3.794	D+	2
44	$2p^4(^1D)3s-2p^4(^1D)3p$	$^2D-^2F^\circ$		*1 212.3*	*1 041 438–1 123 928*	10–14	8.46+08	2.61−01	1.04+01	0.417	A	2
				1 207.69	1 041 416–1 124 219	6–8	8.56+08	2.50−01	5.95+00	0.176	A	2
				1 218.50	1 041 472–1 123 540	4–6	7.56+08	2.52−01	4.05+00	0.003	A	2
				1 217.67	1 041 416–1 123 540	6–6	7.65+07	1.70−02	4.09−01	−0.991	B+	2
45		$^2D-^2D^\circ$		*1 076.5*	*1 041 438–1 134 330*	10–10	1.20+09	2.09−01	7.39+00	0.320	A	2
				1 074.34	1 041 416–1 134 496	6–6	1.10+09	1.90−01	4.03+00	0.057	A	2
				1 079.81	1 041 472–1 134 081	4–4	1.11+09	1.95−01	2.77+00	−0.108	A	2
				1 079.16	1 041 416–1 134 081	6–4	7.19+07	8.37−03	1.78−01	−1.299	B+	2
				1 074.99	1 041 472–1 134 496	4–6	1.13+08	2.94−02	4.16−01	−0.930	B+	2
46		$^2D-^2P^\circ$		*932.3*	*1 041 438–1 148 695*	10–6	1.33+09	1.04−01	3.20+00	0.017	B+	2
				939.10	1 041 416–1 147 901	6–4	1.23+09	1.08−01	2.00+00	−0.188	B+	2
				919.03	1 041 472–1 150 282	4–2	1.44+09	9.11−02	1.10+00	−0.438	B+	2
				939.59	1 041 472–1 147 901	4–4	5.69+07	7.53−03	9.32−02	−1.521	B	2
47	$2p^4(^3P)3p-2p^4(^1S)3s$	$^4P^\circ-^2S$										
			4 064.7	4 065.9	1 069 854–1 094 449	4–2	2.32+03	2.88−06	1.54−04	−4.939	D	2
			4 287.0	4 288.2	1 071 129–1 094 449	2–2	6.69+02	1.84−06	5.21−05	−5.434	E+	2
48		$^2P^\circ-^2S$				6–2						
				2 278 cm^{-1}	1 092 171–1 094 449	4–2	4.19+02	6.06−05	3.50−02	−3.615	C+	2
49		$^4S^\circ-^2S$										
				697 cm^{-1}	1 093 752–1 094 449	4–2	2.83−01	4.36−07	8.24−04	−5.758	D+	2
50	$2p^4(^3P)3p-2p^4(^3P)3d$	$^4P^\circ-^4D$		*891.5*	*1 069 546–1 181 713*	12–20	1.84+09	3.66−01	1.29+01	0.643	B+	2
				890.04	1 068 813–1 181 167	6–8	1.73+09	2.74−01	4.82+00	0.216	A	2
				894.49	1 069 854–1 181 649	4–6	1.05+09	1.89−01	2.22+00	−0.121	B+	2
				899.43	1 071 129–1 182 311	2–4	5.68+08	1.38−01	8.17−01	−0.559	B+	2
				866.24	1 068 813–1 181 649	6–6	8.42+08	9.91−02	1.74+00	−0.226	B+	2
				889.23	1 069 854–1 182 311	4–4	1.18+09	1.40−01	1.64+00	−0.252	B+	2
				894.73	1 071 129–1 182 894	2–2	1.49+09	1.79−01	1.05+00	−0.446	B+	2
				881.07	1 068 813–1 182 311	6–4	2.06+08	1.60−02	2.79−01	−1.018	B+	2
				884.64	1 069 854–1 182 894	4–2	4.86+08	2.85−02	3.32−01	−0.943	B+	2
51		$^4D^\circ-^4D$		*988.3*	*1 080 527–1 181 713*	20–20	4.22+08	6.17−02	4.02+00	0.091	B+	2
				978.17	1 078 935–1 181 167	8–8	4.78+08	6.86−02	1.77+00	−0.261	B+	2
				990.60	1 080 700–1 181 649	6–6	2.06+08	3.02−02	5.92−01	−0.742	B+	2
				999.04	1 082 215–1 182 311	4–4	1.19+08	1.77−02	2.33−01	−1.150	B+	2
				1 001.09	1 083 003–1 182 894	2–2	1.41+08	2.12−02	1.40−01	−1.373	B+	2
				973.58	1 078 935–1 181 649	8–6	1.16+08	1.24−02	3.18−01	−1.003	B+	2
				984.15	1 080 700–1 182 311	6–4	1.44+08	1.40−02	2.71−01	−1.076	B+	2
				993.26	1 082 215–1 182 894	4–2	1.71+08	1.27−02	1.66−01	−1.294	B+	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				995.35	1 080 700–1 181 167	6–8	5.14+07	1.02−02	2.00−01	−1.213	B+	2
				1 005.69	1 082 215–1 181 649	4–6	6.56+07	1.49−02	1.98−01	−1.225	B+	2
				1 006.97	1 083 003–1 182 311	2–4	6.55+07	1.99−02	1.32−01	−1.400	B+	2
52		$^4D^\circ - ^4F$		*899.6*	*1 080 527–1 191 693*	20–28	2.49+09	4.23−01	2.50+01	0.927	A	2
				901.64	1 078 935–1 189 844	8–10	2.50+09	3.81−01	9.04+00	0.484	A	2
				902.19	1 080 700–1 191 541	6–8	2.22+09	3.62−01	6.45+00	0.337	A	2
				900.84	1 082 215–1 193 223	4–6	1.93+09	3.53−01	4.19+00	0.150	A	2
				898.28	1 083 003–1 194 327	2–4	1.79+09	4.32−01	2.56+00	−0.063	A	2
				888.05	1 078 935–1 191 541	8–8	2.29+08	2.71−02	6.33−01	−0.664	B+	2
				888.71	1 080 700–1 193 223	6–6	5.44+08	6.44−02	1.13+00	−0.413	B+	2
				891.97	1 082 215–1 194 327	4–4	6.90+08	8.22−02	9.66−01	−0.483	B+	2
				874.98	1 078 935–1 193 223	8–6	8.98+06	7.73−04	1.78−02	−2.209	B	2
				880.07	1 080 700–1 194 327	6–4	3.23+07	2.50−03	4.35−02	−1.824	B	2
53		$^2D^\circ - ^4D$										
				1 054.26	1 086 796–1 181 649	6–6	7.24+06	1.21−03	2.51−02	−2.139	C	2
				1 078.00	1 089 547–1 182 311	4–4	1.12+06	1.94−04	2.76−03	−3.110	D+	2
				1 046.96	1 086 796–1 182 311	6–4	4.93+06	5.40−04	1.12−02	−2.489	C	2
				1 071.27	1 089 547–1 182 894	4–2	1.27+06	1.10−04	1.54−03	−3.357	D+	2
				1 059.65	1 086 796–1 181 167	6–8	2.34+04	5.26−06	1.10−04	−4.501	D	2
				1 085.75	1 089 547–1 181 649	4–6	2.28+04	6.06−06	8.66−05	−4.615	D	2
54		$^2D^\circ - ^4F$										
				954.70	1 086 796–1 191 541	6–8	4.76+07	8.68−03	1.64−01	−1.283	B	2
				964.54	1 089 547–1 193 223	4–6	2.21+07	4.61−03	5.86−02	−1.734	C+	2
				939.61	1 086 796–1 193 223	6–6	5.80+05	7.68−05	1.43−03	−3.336	D+	2
				954.38	1 089 547–1 194 547	4–4	4.11+05	5.61−05	7.05−04	−3.649	D+	2
				929.96	1 086 796–1 194 327	6–4	2.59+05	2.24−05	4.11−04	−3.872	D	2
55		$^2D^\circ - ^2P$		*865.8*	*1 087 896–1 203 397*	10–6	1.44+08	9.71−03	2.77−01	−1.013	C	2
				847.86	1 086 796–1 204 740	6–4	2.54+07	1.83−03	3.06−02	−1.959	D	2
				899.58	1 089 547–1 200 710	4–2	2.98+08	1.81−02	2.14−01	−1.140	C	2
				868.11	1 089 547–1 204 740	4–4	2.49+07	2.81−03	3.21−02	−1.949	D	2
56		$^2D^\circ - ^2D$		*874.7*	*1 087 896–1 202 216*	10–10	6.33+08	7.26−02	2.09−00	−0.139	C+	2
				860.85	1 086 796–1 202 960	6–6	3.90+08	4.34−02	7.37−01	−0.584	C+	2
				896.43	1 089 547–1 201 100	4–4	8.26+08	9.95−02	1.17+00	−0.400	C+	2
				874.86	1 086 796–1 201 100	6–4	1.36+08	1.04−02	1.80−01	−1.205	C	2
				881.73	1 089 547–1 202 960	4–6	3.01+01	5.26−09	6.10−08	−7.677	E	2
57		$^2P^\circ - ^4D$										
				1 117.59	1 092 171–1 181 649	4–6	1.79+05	5.03−05	7.40−04	−3.696	D+	2
				1 109.39	1 092 171–1 182 311	4–4	9.68+03	1.79−06	2.61−05	−5.145	E+	2
				1 102.26	1 092 171–1 182 894	4–2	8.46+04	7.70−06	1.12−04	−4.511	D	2
58		$^2P^\circ - ^4F$										
				989.59	1 092 171–1 193 223	4–6	6.41+02	1.41−07	1.84−06	−6.249	E	2
				978.90	1 092 171–1 194 327	4–4	1.95+06	2.81−04	3.62−03	−2.949	D+	2
59		$^2P^\circ - ^2P$				6–6						2
				888.34	1 092 171–1 204 740	4–4	4.69+08	5.54−02	6.49−01	−0.654	D+	2
				921.33	1 092 171–1 200 710	4–2	1.21+08	7.71−03	9.35−02	−1.511	D	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
60		$^2P^{\circ}-^2D$				6–10						2
				902.62	1 092 171–1 202 960	4–6	1.74+09	3.19−01	3.79+00	0.106	C+	2
				918.03	1 092 171–1 201 100	4–4	2.70+08	3.41−02	4.12−01	−0.865	D+	2
61		$^4S^{\circ}-^2F$										
				967.13	1 093 752–1 197 151	4–6	4.54+08	9.55−02	1.22+00	−0.418	C+	2
62	$2p^4(^3P)3p$ $-2p^4(^1D)3d$	$^2D^{\circ}-^2P$		*651.0*	*1 087 896–1 241 497*	10–6	1.53+08	5.82−03	1.25−01	−1.235	D+	2
				648.28	1 086 796–1 241 050	6–4	6.65+07	2.79−03	3.58−02	−1.776	D+	2
				654.27	1 089 547–1 242 390	4–2	1.74+07	5.57−04	4.80−03	−2.652	E+	2
				660.05	1 089 547–1 241 050	4–4	1.48+08	9.69−03	8.42−02	−1.412	D+	2
63		$^2D^{\circ}-^2F$		*647.0*	*1 087 896–1 242 451*	10–14	3.98+07	3.50−03	7.46−02	−1.456	D+	2
				641.63	1 086 796–1 242 649	6–8	1.03+03	8.44−08	1.07−06	−6.296	E	2
				655.14	1 089 547–1 242 186	4–6	2.24+07	2.16−03	1.87−02	−2.063	D	2
				643.54	1 086 796–1 242 186	6–6	7.08+07	4.40−03	5.59−02	−1.578	D+	2
64		$^2D^{\circ}-^2D$		*643.3*	*1 087 896–1 243 356*	10–10	1.28+08	7.93−03	1.68−01	−1.101	D+	2
				640.11	1 086 796–1 243 020	6–6	9.63+07	5.91−03	7.48−02	−1.450	C	2
				648.03	1 089 547–1 243 860	4–4	1.03+08	6.46−03	5.52−02	−1.588	D+	2
				636.68	1 086 796–1 243 860	6–4	1.72+07	6.97−04	8.77−03	−2.379	D	2
				651.58	1 089 547–1 243 020	4–6	3.58+07	3.42−03	2.93−02	−1.864	D	2
65		$^2P^{\circ}-^2S$				6–2						2
				680.18	1 092 171–1 239 190	4–2	9.75+08	3.38−02	3.03−01	−0.869	C	2
66		$^2P^{\circ}-^2P$				6–6						2
				671.69	1 092 171–1 241 050	4–4	3.33+08	2.25−02	1.99−01	−1.046	D+	2
				665.69	1 092 171–1 242 390	4–2	1.41+08	4.67−03	4.10−02	−1.729	E+	2
67		$^2P^{\circ}-^2D$				6–10						2
				662.91	1 092 171–1 243 020	4–6	3.65+07	3.61−03	3.15−02	−1.840	E+	2
				659.24	1 092 171–1 243 860	4–4	9.67+07	6.30−03	5.47−02	−1.599	D	2
68	$2p^4(^3P)3p$ $-2p^4(^3P)4s$	$^2D^{\circ}-^2P$				10–6						3
				411.347	1 086 796–1 329 900	6–4	4.65+09	7.87−02	6.39−01	−0.326	C+	3
				416.055	1 089 547–1 329 900	4–4	1.37+09	3.55−02	1.94−01	−0.848	C	3
69	$2p^4(^1S)3s$ $-2p^4(^1D)3p$	$^2S-^2P^{\circ}$		*1 843*	1 094 449–*1 148 695*	2–6	3.59+05	5.49−04	6.66−03	−2.959	B	2
				1 870.8	1 094 449–1 147 901	2–4	5.77−04	6.06−05	7.46−04	−3.916	C+	2
				1 791.1	1 094 449–1 150 282	2–2	1.04+06	5.01−04	5.91−03	−2.999	B	2
70	$2p^4(^1D)3p$ $-2p^4(P3)3d$	$^2F^{\circ}-^4D$										
				1 741.25	1 124 219–1 181 649	8–6	6.50+03	2.22−06	1.02−04	−4.751	D	2
				1 701.52	1 123 540–1 182 311	6–4	2.28+03	6.59−07	2.22−05	−5.403	E+	2
				1 755.99	1 124 219–1 181 167	8–8	8.83+03	4.08−06	1.89−04	−4.486	D	2
				1 720.90	1 123 540–1 181 649	6–6	9.46+02	4.20−07	1.43−05	−5.599	E+	2
				1 735.30	1 123 540–1 181 167	6–8	7.63+02	4.59−07	1.57−05	−5.560	E+	2
71		$^2F^{\circ}-^4F$										

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				1 485.40	1 124 219–1 191 541	8–8	3.75+04	1.24−05	4.86−04	−4.003	D	2
				1 435.07	1 123 540–1 193 223	6–6	3.52+04	1.09−05	3.09−04	−4.184	D	2
				1 449.19	1 124 219–1 193 223	8–6	8.48+03	2.00−06	7.65−05	−4.796	D	2
				1 412.69	1 123 540–1 194 327	6–4	1.24+04	2.48−06	6.92−05	−4.827	D	2
				1 523.81	1 124 219–1 189 844	8–10	6.12+03	2.66−06	1.07−04	−4.672	D	2
				1 470.57	1 123 540–1 191 541	6–8	6.02+03	2.60−06	7.56−05	−4.807	D	2
72		$^2F^\circ-{}^2D$		*1 277.3*	*1 123 928–1 202 216*	14–10	1.96+06	3.43−04	2.02−02	−2.319	D	2
				1 269.99	1 124 219–1 202 960	8–6	2.25+06	4.07−04	1.36−02	−2.487	D	2
				1 289.32	1 123 540–1 201 100	6–4	1.54+06	2.55−04	6.50−03	−2.815	D	2
				1 259.13	1 123 540–1 202 960	6–6	1.49+04	3.54−06	8.82−05	−4.673	E	2
73		$^2D^\circ-{}^4D$										
			2 120.1	2 120.8	1 134 496–1 181 649	6–6	1.99+04	1.34−05	5.62−04	−4.095	D	2
			2 072.7	2 073.4	1 134 081–1 182 311	4–4	1.42+04	9.12−06	2.49−04	−4.438	D	2
			2 090.7	2 091.4	1 134 496–1 182 311	6–4	1.58+04	6.89−06	2.85−04	−4.384	D	2
			2 048.0	2 048.6	1 134 081–1 182 894	4–2	2.13+04	6.69−06	1.81−04	−4.573	D	2
			2 142.0	2 142.7	1 134 496–1 181 167	6–8	7.96+02	7.31−07	3.09−05	−5.358	E+	2
			2 101.6	2 102.3	1 134 081–1 181 649	4–6	1.56+01	1.55−08	4.29−07	−7.208	E	2
74		$^2D^\circ-{}^4F$										
				1 753.00	1 134 496–1 191 541	6–8	4.05+04	2.49−05	8.61−04	−3.826	D+	2
				1 690.85	1 134 081–1 193 223	4–6	1.45+04	9.35−06	2.08−04	−4.427	D	2
				1 702.79	1 134 496–1 193 223	6–6	9.77+04	4.25−05	1.43−03	−3.593	D+	2
				1 659.86	1 134 081–1 194 327	4–4	8.30+04	3.43−05	7.49−07	−3.863	D+	2
				1 671.37	1 134 496–1 194 327	6–4	1.61+04	4.49−06	1.48−04	−4.570	D	2
75		$^2D^\circ-{}^2P$		*1 447.9*	*1 134 330–1 203 397*	10–6	1.70+07	3.21−03	1.53−01	−1.493	D+	2
				1 423.61	1 134 496–1 204 740	6–4	6.38+06	1.29−03	3.63−02	−2.111	D+	2
				1 500.85	1 134 081–1 200 710	4–2	1.24+07	2.10−03	4.14−02	−2.076	D+	2
				1 415.25	1 134 081–1 204 740	4–4	1.34+07	4.03−03	7.52−02	−1.793	D+	2
76		$^2D^\circ-{}^2D$		*1 473.1*	*1 134 330–1 202 216*	10–10	2.05+07	6.66−03	3.23−01	−1.177	C	2
				1 460.62	1 134 496–1 202 960	6–6	1.93+07	6.17−03	1.78−01	−1.432	C	2
				1 492.11	1 134 081–1 201 100	4–4	1.37+07	4.56−03	8.96−02	−1.739	C	2
				1 501.41	1 134 496–1 201 10	6–4	7.73+06	1.74−03	5.17−02	−1.981	D	2
				1 451.82	1 134 081–1 202 960	4–6	4.45+05	2.11−04	4.03−03	−3.074	E+	2
77		$^2P^\circ-{}^4D$										
			2 962.3	2 963.1	1 147 901–1 181 649	4–6	5.74+03	1.13−05	4.43−04	−4.345	D	2
			3 121.3	3 122.2	1 150 282–1 182 311	2–4	4.77+03	1.39−05	2.87−04	−4.556	D	2
			2 905.3	2 906.1	1 147 901–1 182 311	4–4	4.35+03	5.51−06	2.11−04	−4.657	D	2
			3 065.5	3 066.4	1 150 282–1 182 894	2–2	1.71+03	2.42−06	4.88−05	−5.315	E+	2
			2 856.9	2 857.7	1 147 901–1 182 894	4–2	8.35+02	5.11−07	1.92−05	−5.690	E+	2
78		$^2P^\circ-{}^4F$										
			2 205.7	2 206.4	1 147 901–1 193 223	4–6	2.71+05	2.97−04	8.64−03	−2.925	C	2
			2 269.7	2 270.4	1 150 282–1 194 327	2–4	1.69+05	2.62−04	3.92−03	−3.281	D+	2
			2 153.3	2 154.0	1 147 901–1 194 327	4–4	7.49+04	5.21−05	1.48−03	−3.681	D+	2
79		$^2P^\circ-{}^2P$		*1 828*	*1 148 695–1 203 397*	6–6	1.16+07	5.79−03	2.09−01	−1.459	D+	2
				1 759.36	1 147 901–1 204 740	4–4	6.19+05	2.87−04	6.66−03	−2.940	E	2
				1 983.0	1 150 282–1 200 710	2–2	2.01+06	1.18−03	1.55−02	−2.627	D	2
				1 893.6	1 147 901–1 200 710	4–2	1.69+06	4.54−04	1.13−02	−2.741	D	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
				1 836.3	1 150 282–1 204 740	2–4	1.44+07	1.45−02	1.76−01	−1.538	D+	2
80		$^2P^\circ-^2D$		*1 868*	*1 148 695–1 202 216*	6–10	3.80+07	3.31−02	1.22+00	−0.702	C	2
				1.816.2	1 147 901–1 202 960	4–6	4.67+07	3.46−02	8.28−01	−0.859	C+	2
				1 967.8	1 150 282–1 201 100	2–4	1.65+07	1.92−02	2.49−01	−1.416	D+	2
				1 879.7	1 147 901–1 201 100	4–4	1.11+07	5.91−03	1.46−01	−1.626	D+	2
81	$2p^4(^1D)3P$ $-2p^4(^1D)3d$	$^2F^\circ-^2G$				14–18						2
				[922.07]	1 124 219–1 232 671	8–10	2.30+09	3.67−01	8.91+00	0.468	B+	2
82		$^2F^\circ-^2F$		*843.7*	*1 123 928–1 242 451*	14–14	8.52+08	9.09−02	3.54+00	0.105	B	2
				844.38	1 124 219–1 242 649	8–8	9.98+08	1.07−01	2.37+00	−0.068	B+	2
				842.84	1 123 540–1 242 186	6–6	6.25+08	6.66−02	1.11+00	−0.398	B	2
				847.69	1 124 219–1 242 186	8–6	1.78+06	1.44−04	3.22−03	−2.939	E+	2
				839.57	1 123 540–1 242 649	6–8	2.21+07	3.11−03	5.15−02	−1.729	D+	2
83		$^2F^\circ-^2D$		*837.3*	*1 123 928–1 243 356*	14–10	4.02+08	3.02−02	1.17+00	−0.374	C+	2
				841.74	1 124 219–1 243 020	8–6	1.62+08	1.29−02	2.86−01	−0.986	C	2
				831.12	1 123 540–1 243 860	6–4	1.40+08	9.69−03	1.59−01	−1.236	C	2
				836.96	1 123 540–1 243 020	6–6	4.15+08	4.36−02	7.20−01	−0.582	C+	2
84		$^2D^\circ-^2P$		*933.1*	*1 134 330–1 241 497*	10–6	4.94+08	3.87−02	1.19+00	−0.412	C+	2
				938.49	1 134 496–1 241 050	6–4	4.47+08	3.93−02	7.29−01	−0.627	C+	2
				923.28	1 134 081–1 242 390	4–2	4.33+08	2.77−02	3.36−01	−0.955	C	2
				934.85	1 134 081–1 241 050	4–4	7.61+07	9.97−03	1.23−01	−1.399	C	2
85		$^2D^\circ-^2F$		*924.9*	*1 134 330–1 242 451*	10–14	1.64+09	2.94−01	8.94+00	0.468	B+	2
				924.62	1 134 496–1 242 649	6–8	1.62+09	2.77−01	5.06+00	0.221	B+	2
				925.03	1 134 081–1 242 186	4–6	1.39+09	2.68−01	3.27+00	0.030	B+	2
				928.59	1 134 496–1 242 186	6–6	2.58+08	3.34−02	6.13−01	−0.698	C+	2
86		$^2D^\circ-^2D$		*917.2*	*1 134 330–1 243 356*	10–10	1.38+09	1.74−01	5.27+00	0.241	B	2
				921.46	1 134 496–1 243 020	6–6	1.15+09	1.46−01	2.66+00	−0.057	B	2
				910.92	1 134 081–1 243 860	4–4	1.26+09	1.57−01	1.88+00	−0.202	B	2
				914.38	1 134 496–1 243 860	6–4	1.19+08	9.97−03	1.80−01	−1.223	C	2
				917.94	1 134 081–1 243 020	4–6	2.38+08	4.50−02	5.44−01	−0.745	C+	2
87		$^2P^\circ-^2S$		*1 105.0*	*1 148 695–1 239 190*	6–2	9.45+08	5.77−02	1.26+00	−0.461	C+	2
				1 095.42	1 147 901–1 239 190	4–2	7.49+08	6.74−02	9.72−01	−0.569	C+	2
				1 124.76	1 150 282–1 239 190	2–2	2.04+08	3.87−02	2.87−01	−1.111	C	2
88		$^2P^\circ-^2P$		*1 077.6*	*1 148 695–1 241 497*	6–6	9.43+08	1.64−01	3.49+00	−0.007	C+	2
				1 073.55	1 147 901–1 241 050	4–4	7.75+08	1.34−01	1.89+00	−0.271	B	2
				1 085.68	1 150 282–1 242 390	2–2	7.53+08	1.33−01	9.52−01	−0.575	C+	2
				1 058.32	1 147 901–1 242 390	4–2	2.28+08	1.91−02	2.66−01	−1.117	C	2
				1 101.71	1 150 282–1 241 050	2–4	1.45+08	5.26−02	3.82−01	−0.978	C	2
89		$^2P^\circ-^2D$		*1 056.4*	*1 148 695–1 243 356*	6–10	4.51+08	1.26−01	2.63+00	−0.121	C+	2
				1 051.31	1 147 901–1 243 020	4–6	3.66+08	9.09−02	1.26+00	−0.439	C+	2
				1 068.63	1 150 282–1 243 860	2–4	4.54+08	1.55−01	1.09+00	−0.509	C+	2
				1 042.11	1 147 901–1 243 860	4–4	1.22+08	1.99−02	2.73−01	−1.099	C	2

TABLE 24. Transition probabilities of allowed lines for Si VI (references for this table are as follows: 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] and 3=Coutinho and Trigueiros.[20])—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
90	$2p^4(^1D)3p-2p^4(^1S)3d$	$^2F^\circ-^2D$		*596.3*	*1 123 928–1 291 622*	14–10	3.06+07	1.17−03	3.21−02	−1.786	D	2
				597.76	1 124 219–1 291 510	8–6	2.97+07	1.19−03	1.88−02	−2.021	D	2
				594.35	1 123 540–1 291 790	6–4	3.03+07	1.07−03	1.26−02	−2.192	D	2
				595.34	1 123 540–1 291 510	6–6	1.15+06	6.14−05	7.22−04	−3.434	E	2
91		$^2D^\circ-^2D$		*635.8*	*1 134 330–1 291 622*	10–10	4.10+07	2.48−03	5.19−02	−1.606	D	2
				636.89	1 134 496–1 291 510	6–6	4.23+07	2.57−03	3.24−02	−1.812	D+	2
				634.08	1 134 081–1 291 790	4–4	3.01+07	1.81−03	1.52−02	−2.140	D	2
				635.75	1 134 496–1 291 790	6–4	3.79+06	1.53−04	1.92−03	−3.037	E+	2
				635.21	1 134 081–1 291 510	4–6	3.28+06	2.97−04	2.49−03	−2.925	E+	2
92		$^2P^\circ-^2D$		*699.7*	*1 148 690–1 291 620*	6–10	4.63+07	5.67−03	7.83−02	−1.468	D	2
				696.34	1 147 901–1 291 510	4–6	3.34+07	3.64−03	3.34−02	−1.837	D+	2
				706.67	1 150 282–1 291 790	2–4	5.59+07	8.37−03	3.89−02	−1.776	E	LS
				694.98	1 147 901–1 291 790	4–4	9.08+06	6.57−04	6.02−03	−2.580	E+	2
93	$2p^4(^1D)3p-2p^4(^1D)4s$	$^2D^\circ-^2D$				10–10						1,3
				[421.365]	1 134 496–1 371 820	6–6	2.76+09	7.33−02	6.10−01	−0.357	C+	3
				[420.629]	1 134 081–1 371 820	4–6	2.08+08	8.27−03	4.58−02	−1.480	E	LS
94		$^2P^\circ-^2D$				6–10						3
				[446.590]	1 147 901–1 371 820	4–6	1.39+09	6.25−02	3.68−01	−0.602	C	3
95	$2p^4(^1D)3p-2p^4(^3P)4d$	$^2P^\circ-^2D$				6–10						3
				[389.152]	1 147 901–1 404 870	4–6	7.63+08	2.60−02	1.33−01	−0.983	C	3
96	$2p^4(^1D)3p-2p^4(^3P)5d$	$^2P^\circ-^2D$				6–10						3
				[285.936]	1 147 901–1 497 630	4–6	1.36+08	2.50−03	9.41−03	−2.000	D	3

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

4.6.3. Forbidden Transitions for Si VI

Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. Mohan and Le Dourneuf[75] used a CI method with a Breit-Pauli Hamiltonian.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references.[75,101]

4.6.4. References for Forbidden Transitions for Si VI

[75]M. Mohan and M. Le Dourneuf, Phys. Rev. A **41**, 2862 (1990).

[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).

TABLE 25. Wavelength finding list for forbidden lines of Si VI

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
91.370	6	96.495	5	100.455	3	101.479	3
96.018	5	99.096	4	100.640	3	246.004	2
96.023	5	99.460	4	100.957	3	19646	1
96.490	5	99.966	4	101.158	3		

TABLE 26. Transition probabilities of forbidden lines for Si VI (references for this table are as follows: 1=Tachiev and Froese Fischer[101] and 2=Mohan and Le Dourneuf[75])

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
1	$2p^5-2p^5$	$^2P^\circ-^2P^\circ$									
			19 641	19 646	0–5 090	4–2	M1	2.38+00	1.34+00	B+	1,2
			19 641	19 646	0–5 090	4–2	E2	1.58−05	8.26−02	B	1,2
2	$2s^22p^5-2s2p^6$	$^2P^\circ-^2S$									
				246.004	0–406 497	4–2	M2	5.36+01	6.48+00	B+	1
3	$2p^5-2p^4(^3P)3s$	$^2P^\circ-^4P$									
				100.640	0–993 640	4–4	M2	1.96+01	5.43−02	C	1
				100.455	0–995 470	4–2	M2	6.76+01	9.27−02	C	1
				100.957	0–990 516	4–6	M2	2.74+02	1.16+00	B	1
				101.158	5 090–993 640	2–4	M2	1.75+02	4.98−01	C+	1
				101.479	5 090–990 516	2–6	M2	6.22+01	2.69−01	C+	1
4		$^2P^\circ-^2P$									
				99.460	0–1 005 430	4–4	M2	3.57+01	9.33−02	C	1
				99.096	0–1 009 118	4–2	M2	4.83+01	6.19−02	C	1
				99.966	5 090–1 005 430	2–4	M2	3.65+01	9.79−02	C	1
5	$2p^5-2p^4(^1D)3s$	$^2P^\circ-^2D$									
				96.495	5 090–1 041 416	2–6	M2	1.78+02	6.00−01	C+	1
				96.023	0–1 041 416	4–6	M2	1.27+02	4.16−01	C+	1
				96.490	5 090–1 041 472	2–4	M2	1.06+01	2.39−02	C	1
				96.018	0–1 041 472	4–4	M2	3.65+01	8.00−02	C	1
6	$2p^5-2p^4(^1S)3s$	$^2P^\circ-^2S$									
				91.370	0–1 094 449	4–2	M2	3.83+02	3.27−01	C+	1

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

4.7. Si VII

Oxygen isoelectronic sequence
Ground state: $1s^22s^22p^4\ ^3P_2$
Ionization energy: 246.48 eV (1 988 000 cm^{-1})

4.7.1. Allowed Transitions for Si VII

Only OP (Ref. 14) results were available for transitions from energy levels above the $2p^33d$. Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. Bogdanovich *et al.*[10] used a Hartree-Fock-Pauli approximation with correlation effects estimated by CI using a basis of transformed radial orbitals. Second-order MBPT results from Vilkas *et al.*[111] were also available for some of the lowest transitions. Baluja and Zeippen[4] used the SUPERSTRUCTURE code with CI, relativistic effects, and semiempirical energy corrections. Flaig *et al.*[32] measured lifetimes.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[4,10,14,32,101,111] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. OP lines constituted a third group. We then isoelectronically averaged the logarithmic quality factors observed for O-like lines of Na IV, Mg V, and Si VII using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying intercombination lines and those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines.

A NIST compilation of far-UV lines of Si VII was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.7.2. References for Allowed Transitions for Si VII

[4]K. L. Baluja and C. J. Zeippen, J. Phys. B **21**, 15 (1988).
[10]P. Bogdanovich, R. Karpuškienė, A. Momkauskaite, and A. Udris, Lith. Phys. J. **39**, 9 (1999).
[14]K. Butler and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[32]H.-J. Flaig, K.-H. Schartner, E. Träbert, and P. H. Heckmann, Phys. Scr. **31**, 255 (1985).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).

[99]G. Tachiev and C. Froese Fischer, Astron. Astrophys. **385**, 716 (2002).
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 99).
[111]M. J. Vilkas, G. Merkelis, R. Kisielius, G. Gaigalas, A. Bernotas, and Z. Rudzikas, Phys. Scr. **49**, 592 (1994).

TABLE 27. Wavelength finding list for allowed lines of Si VII

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
56.528	49	70.22	19	85.224	16	389.833	77
57.325	47	70.241	20	85.290	7	408.213	73
58.388	45	70.250	39	85.584	7	411.828	59
58.445	44	70.382	38	85.697	7	413.805	72
58.526	45	70.426	38	87.742	52	414.336	59
58.578	45	71.384	31	87.901	52	414.473	59
58.579	43	71.702	30	88.005	52	415.213	59
58.583	44	71.933	28	88.021	52	419.727	72
58.718	43	71.955	29	88.174	52	420.415	59
58.782	48	72.000	28	88.286	52	421.177	59
59.966	46	72.324	27	88.825	12	469.021	71
60.837	42	72.384	26	172.359	55	472.724	70
62.940	41	72.388	26	197.765	2	476.644	71
68.025	37	72.491	25	199.354	2	480.192	71
68.148	36	73.123	17	199.966	2	480.469	70
68.190	36	73.134	17	207.352	50	481.649	69
68.212	37	73.350	17	217.827	4	489.692	69
68.378	36	73.432	17	236.037	54	492.732	65
68.406	35	74.522	34	246.118	6	494.120	65
68.453	35	74.771	33	248.936	61	496.574	65
68.595	35	75.194	32	248.985	61	553.741	81
68.642	35	75.701	18	249.252	61	566.03	82
68.669	35	75.712	18	272.639	1	578.37	80
68.715	35	79.237	13	273.388	58	586.75	68
69.087	24	79.264	13	274.175	1	598.73	68
69.385	23	79.491	13	275.353	1	693.14	67
69.580	23	79.518	13	275.667	1	759.36	66
69.602	21	79.523	13	276.839	1	832.78	76
69.622	22	79.615	13	278.443	1	1 266.30	75
69.654	23	80.913	9	291.200	51	1 283.86	79
69.664	21	81.178	9	301.241	56	1 337.08	62
69.797	21	81.449	53	302.654	56	1 399.58	62
69.818	22	81.556	15	304.053	60	1 400.95	62
69.860	21	81.623	8	305.810	56	1 477.54	63
69.872	21	81.892	8	312.289	3	1 483.24	63
69.967	20	81.995	8	315.856	3	1 512.17	63
70.024	19	82.273	14	358.064	57	1 562.26	63
70.027	19	82.302	14	360.062	57	1 594.39	63
70.072	40	84.082	11	364.538	57	1 867.1	83
70.165	20	84.848	10	373.909	5	1 940.02	84
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
2 485.0	74	3 031.3	64	15 011	78		
2 747.2	64	3 116.3	64				

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])

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
1	$2s^22p^4-2s2p^5$	$^3P-^3P^{\circ}$		*275.46*	*1 962–364 997*	9–9	1.21+10	1.38−01	1.12+00	0.094	B+	2,4
				275.353	0.0–363 170	5–5	9.07+09	1.03−01	4.67−01	−0.288	B+	2,4
				275.667	4 030–366 786	3–3	3.02+09	3.44−02	9.36−02	−0.986	B+	2,4
				272.639	0.0–366 786	5–3	5.22+09	3.49−02	1.56−01	−0.758	B+	2,4
				274.175	4 030–368 761	3–1	1.23+10	4.62−02	1.25−01	−0.858	B+	2,4
				278.443	4 030–363 170	3–5	2.93+09	5.67−02	1.56−01	−0.769	B+	2,4
				276.839	5 565–366 786	1–3	3.97+09	1.37−01	1.25−01	−0.863	B+	2,4
2		$^3P-^1P^{\circ}$										
				199.354	4 030–505 650	3–3	2.81+06	1.67−05	3.30−05	−4.300	D	2,4
				197.765	0.0–505 650	5–3	1.27+08	4.46−04	1.45−03	−2.652	C	2,4
				199.966	5 565–505 650	1–3	5.65+06	1.02−04	6.69−05	−3.991	D	2,4
3		$^1D-^3P^{\circ}$										
				312.289	46 569.8–366.786	5–3	1.06+06	9.31−06	4.79−05	−4.332	D	2,4
				315.856	46 569.8–363 170	5–5	1.80+07	2.69−04	1.40−03	−2.871	C	2,4
4		$^1D-^1P^{\circ}$		217.827	46 569.8–505 650	5–3	4.44+10	1.89−01	6.79−01	−0.025	B+	2,4,5
5		$^1S-^3P^{\circ}$										
				373.909	99 341–366 786	1–3	2.73+06	1.72−04	2.12−04	−3.764	D+	2,4
6		$^1S-^1P^{\circ}$		246.118	99 341–505 650	1–3	3.03+09	8.25−02	6.68−02	−1.084	B+	2,4,5,6
7	$2p^4-2p^3(^4S^{\circ})3s$	$^3P-^3S^{\circ}$		*85.43*	*1 962*–1 172 470	9–3	1.43+11	5.21−02	1.32−01	−0.329	B	2,3
				85.290	0.0–1 172 470	5–3	8.12+10	5.32−02	7.46−02	−0.575	B	2,3
				85.584	4 030–1 172 470	3–3	4.63+10	5.08−02	4.30−02	−0.817	B	2,3
				85.697	5 565–1 172 470	1–3	1.54+10	5.08−02	1.43−02	−1.294	B	2,3
8	$2p^4-2p^3(^2D^{\circ})3s$	$^3P-^3D^{\circ}$		*81.75*	*1 962–1 225 150*	9–15	4.46+10	7.44−02	1.80−01	−0.174	B+	2,3
				81.623	0.0–1 225 150	5–7	4.47+10	6.25−02	8.40−02	−0.505	B+	2,3
				81.892	4 030–1 225 150	3–5	2.98+10	5.00−02	4.04−02	−0.824	B+	2,3
				81.995	5 565–1 225 150	1–3	2.19+10	6.62−02	1.79−02	−1.179	B+	2,3
				81.623	0.0–1 225 150	5–5	1.47+10	1.47−02	1.97−02	−1.134	B+	2,3
				81.892	4 030–1 225 150	3–3	2.07+10	2.08−02	1.68−02	−1.205	B+	2,3
				81.623	0.0–1 225 150	5–3	1.77+09	1.06−03	1.43−03	−2.276	B	2,3
9		$^3P-^1D^{\circ}$										
				81.178	4 030–1 235 890	3–5	1.99+08	3.28−04	2.63−04	−3.007	D+	2,3
				80.913	0.0–1 235 890	5–5	1.23+09	1.21−03	1.61−03	−2.218	C	2,3
10		$^1D-^3D^{\circ}$										
				84.848	46 569.8–1 225 150	5–5	6.23+06	6.72−06	9.39−06	−4.474	E+	2
				84.848	46 569.8–1 225 150	5–3	1.95+08	1.26−04	1.76−04	−3.201	D	2
				84.848	46 569.8–1 225 150	5–7	1.40+08	2.12−04	2.96−04	−2.975	D+	2,3
11		$^1D-^1D^{\circ}$		84.082	46 569.8–1 235 890	5–5	1.14+11	1.21−01	1.67−01	−0.218	B	2,3
12		$^1S-^3D^{\circ}$										
				88.825	99 341–1 225 150	1–3	7.96+07	2.83−04	8.27−05	−3.548	D	2
13	$2p^4-2p^3(^2P^{\circ})3s$	$^3P-^3P^{\circ}$		*[79.37]*	*1 962–1 261 840*	9–9	4.42+10	4.17−02	9.81−02	−0.426	B+	2,3
				79.237	0.0–1 262 040	5–5	2.89+10	2.72−02	3.55−02	−0.866	B+	2,3
				79.518	4 030–1 261 610	3–3	1.03+10	9.75−03	7.66−03	−1.534	B	2,3
				79.264	0.0–1 261 610	5–3	1.59+10	8.97−03	1.17−02	−1.348	B+	2,3
				[79.523]	4 030–1 261 530	3–1	4.42+10	1.40−02	1.10−02	−1.377	B+	2,3
				79.491	4 030–1 262 040	3–5	1.50+10	2.36−02	1.85−02	−1.150	B+	2,3
				79.615	5 565–1 261 610	1–3	1.84+10	5.24−02	1.37−02	−1.281	B+	2,3

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
14		$^1D-^3P^\circ$										
				82.302	46 569.8–1 261 610	5–3	1.36+08	8.26−05	1.12−04	−3.384	D	2
				82.273	46 569.8–1 262 040	5–5	2.10+09	2.13−03	2.88−03	−1.973	C	2,3
15		$^1D-^1P^\circ$		81.556	46 569.8–1 272 720	5–3	5.71+10	3.42−02	4.59−02	−0.767	B+	2,3
16		$^1S-^1P^\circ$		85.224	99 341–1 272 720	1–3	5.29+10	1.73−01	4.85−02	−0.762	B+	2,3
17	$2p^4-2p^3(^4S^\circ)3d$	$^3P-^3D^\circ$		*73.23*	*1 962–1 367 453*	9–15	2.13+11	2.86−01	6.20−01	0.411	B+	2,3
				73.123	0.0–1 367 560	5–7	2.17+11	2.43−01	2.93−01	0.085	B+	2,3
				73.350	4 030–1 367 360	3–5	1.54+11	2.08−01	1.50−02	−0.205	B+	2,3
				73.432	5 565–1 367 360	1–3	1.15+11	2.79−01	6.75−02	−0.554	B+	2,3
				73.134	0.0–1 367 360	5–5	5.59+10	4.48−02	5.40−02	−0.650	B+	2,3
				73.350	4 030–1 367 360	3–3	8.83+10	7.12−02	5.16−02	−0.670	B+	2,3
				73.134	0.0–1 367 360	5–3	6.21+09	2.99−03	3.60−03	−1.825	B	2
18		$^1D-^3D^\circ$										
				75.712	46 569.8–1 367 360	5–5	1.05+08	9.00−05	1.12−04	−3.347	D	2
				75.712	46 569.8–1 367 360	5–3	3.99+07	2.06−05	2.57−05	−3.987	E+	2
				75.701	46 569.8–1 367 560	5–7	1.74+08	2.09−04	2.61−04	−2.981	D	2
19	$2p^4-2p^3(^2D^\circ)3d$	$^3P-^3D^\circ$				9–15						2,3
				70.027	0.0–1 428 020	5–7	3.18+11	3.27−01	3.77−01	0.214	B+	2,3
				70.222	4 030–1 428 090	3–5	2.28+11	2.81−01	1.95−01	−0.074	B+	2,3
				70.024	0.0–1 428 090	5–5	5.36+10	3.94−02	4.54−02	−0.706	B+	2,3
20		$^3P-^1P^\circ$										
				70.165	4 030–1 429 240	3–3	4.44+10	3.27−02	2.27−02	−1.008	C+	2,3
				69.967	0.0–1429 240	5–3	1.24+10	5.46−03	6.28−03	−1.564	C+	2,3
				70.241	5 565–1 429 240	1–3	1.92+10	4.26−02	9.84−03	−1.371	C+	2,3
21		$^3P-^3P^\circ$				9–9						2,3
				69.664	0.0–1 435 460	5–5	4.14+11	3.01−01	3.45−01	0.178	B+	2,3
				69.797	4 030–1 436 750	3–3	1.04+11	7.59−02	5.23−02	−0.643	B+	2,3
				69.602	0.0–1 436 750	5–3	2.41+11	1.05−01	1.20−01	−0.280	B+	2,3
				69.860	4 030–1 435 460	3–5	1.04+11	1.27−01	8.74−02	−0.419	B+	2,3
				69.872	5 565–1 436 750	1–3	1.28+11	2.82−01	6.49−02	−0.550	B+	2,3
22		$^3P-^1D^\circ$										
				[69.818]	4 030–1 436 330	3–5	2.41+09	2.93−03	2.02−03	−2.056	D+	2
				[69.622]	0.0–1 436 330	5–5	1.07+10	7.81−03	8.95−03	−1.408	C	2
23		$^3P-^3S^\circ$		*69.48*	*1 962*–1 441 230	9–3	5.20+11	1.26−01	2.58−01	0.55	A	2,3
				69.385	0.0–1 441 230	5–3	2.76+11	1.19−01	1.36−01	−0.225	A	2,3
				69.580	4 030–1 441 230	3–3	1.81+11	1.32−01	9.04−02	−0.402	A	2,3
				69.654	5 565–1 441 230	1–3	6.31+10	1.38−01	3.16−02	−0.860	A	2,3
24		$^3P-^1F^\circ$										
				69.087	0.0–1 447 440	5–7	9.11+09	9.12−03	1.04−02	−1.341	C+	2
25		$^1D-^3F^\circ$?										
				[72.491]	46 569.8–1 426 050	5–5	1.87+09	1.47−03	1.75−03	−2.134	D+	2
26		$^1D-^3D^\circ$										
				72.384	46 569.8–1 428 090	5–5	9.18+07	7.21−05	8.59−05	−3.443	D	2
				72.388	46 569.8–1 428 020	5–7	3.57+08	3.93−04	4.69−04	−2.707	D	2
27		$^1D-^1P^\circ$		72.324	46 569.8–1 429 240	5–3	1.87+11	8.80−02	1.05−01	−0.357	B+	2,3

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
28		$^1D-^3P^\circ$										
				71.933	46 569.8–1 436 750	5–3	7.88+09	3.67−03	4.34−03	−1.736	C	2
				72.000	46 569.8–1 435 460	5–5	4.24+09	3.30−03	3.91−03	−1.783	C	2
29		$^1D-^1D^\circ$		[71.955]	46 569.8–1 436 330	5–5	2.29+11	1.78−01	2.10−01	−0.051	B+	2,3
30		$^1D-^3S^\circ$										
				71.702	46 569.8–1 441 230	5–3	2.59+08	1.20−04	1.41−04	−3.222	D	2
31		$^1D-^1F^\circ$		71.384	46 569.8–1 447 440	5–7	4.13+11	4.42−01	5.19−01	0.344	B+	2,3
32		$^1S-^1P^\circ$		75.194	99 341–1 429 240	1–3	3.10+10	7.89−02	1.95−02	−1.103	B+	2,3
33		$^1S-^3P^\circ$										
				74.771	99 341–1 436 750	1–3	1.44+08	3.63−04	8.94−05	−3.440	D	2
34	$2p^3(^2P^\circ)3d$	$^1S-^3S^\circ$										
				74.522	99 341–1 441 230	1–3	1.66+08	4.16−04	1.02−04	−3.381	D	2
35	$2p^4-2p^3(^2P^\circ)3d$	$^3P-^3P^\circ$		*68.52*	*1 962–1 461 352*	9–9	8.03+10	5.65−02	1.15−01	−0.294	B+	2,3
				68.406	0.0–1 461 860	5–5	3.89+10	2.73−02	3.07−02	−0.865	B+	2,3
				68.642	4 030–1 460 860	3–3	4.45+10	3.14−02	2.13−02	−1.026	B+	2,3
				68.453	0.0–1 460 860	5–3	2.05+10	8.63−03	9.72−03	−1.365	B	2,3
				68.669	4 030–1 460 290	3–1	1.38+11	3.24−02	2.20−02	−1.012	B+	2,3
				68.595	4 030–1 461 860	3–5	1.19+10	1.40−02	9.46−03	−1.377	B	2,3
				68.715	5 565–1 460 860	1–3	4.49+10	9.53−02	2.16−02	−1.021	B+	2,3
36		$^3P-^3D^\circ$				9–15						2,3
				68.148	0.0–1 467 390	5–7	2.24+11	2.18−01	2.45−01	0.037	B+	2,3
				68.378	4 030–1 466 490	3–5	1.94+11	2.26−01	1.53−01	−0.169	B+	2,3
				68.190	0.0–1 466 490	5–5	4.83+10	3.37−02	3.78−02	−0.773	B+	2,3
37		$^3P-^1D^\circ$?										
				[68.212]	4 030–1 470 050	3–5	3.21+10	3.74−02	2.52−02	−0.950	D+	2,3
				[68.025]	0.0–1 470 050	5–5	1.00+10	6.97−03	7.80−03	−1.458	D	2,3
38		$^1D-^3D^\circ$										
				70.426	46 569.8–1 466 490	5–5	4.52+10	3.36−02	3.90−02	−0.775	C	2,3
				70.382	46 569.8–1 467 390	5–7	3.33+09	3.46−03	4.01−03	−1.762	E+	2
39		$^1D-^1D^\circ$?		*[70.250]*	46 569.8–*1 470 050*	5–5	3.09+11	2.29−01	2.64−01	0.059	B+	2,3
40		$^1D-^1F^\circ$		70.072	46 569.8–1 473 670	5–7	4.42+11	4.56−01	5.26−01	0.358	B+	2,3
41	$2p^4-2p^3(^2D^\circ)4s$	$^1D-^1D^\circ$		62.940	46 569.8–1 635 390	5–5	4.58+10	2.72−02	2.82−02	−0.866	D	1
42	$2p^4-2p^3(^4S^\circ)4d$	$^3P-^3D^\circ$				9–15						1
				60.837	0.0–1 643 740	5–7	1.26+11	9.82−02	9.83−02	−0.309	D+	LS
43	$2p^4-2p^3(^2D^\circ)4d$	$^3P-^3D^\circ$				9–15						1
				58.579	0.0–1 707 090	5–7	8.37+10	6.03−02	5.81−02	−0.521	D	LS
				58.718	4 030–1 707 090	3–5	6.23+10	5.37−02	3.11−02	−0.793	D	LS
				58.579	0.0–1 707 090	5–5	2.10+10	1.08−02	1.04−02	−1.268	E+	LS
44		$^3P-^3P^\circ$				9–9						1
				58.445	0.0–1 711 010	5–5	1.21+11	6.18−02	5.95−02	−0.510	D	LS
				58.583	4 030–1 711 010	3–5	3.99+10	3.42−02	1.98−02	−0.989	E+	LS
45		$^3P-^3S^\circ$		*58.45*	1 962–1 712 680	9–3	2.42+11	4.12−02	7.14−02	−0.431	D	1

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
				58.388	0.0–1 712 680	5–3	1.35+11	4.13−02	3.97−02	−0.685	D	LS
				58.526	4 030–1 712 680	3–3	8.02+10	4.12−02	2.38−02	−0.908	D	LS
				58.578	5 565–1 712 680	1–3	2.66+10	4.11−02	7.93−03	−1.386	E+	LS
46		$^1D-^1F^{\circ}$		[59.966]	46 569.8–1 714 180	5–7	1.56+11	1.18−01	1.16−01	−0.229	D+	1
47	$2p^4-2p^3(^2P^{\circ})4d$	$^3P-^3D^{\circ}$				9–15						1
				57.325	0.0–11 744 440	5–7	8.93+10	6.16−02	5.81−02	−0.511	D	LS
48		$^1D-^1F^{\circ}$		58.782	46 569.8–1 747 770	5–7	1.34+11	9.73−02	9.41−02	−0.313	D+	1
49	$2p^4-2p^3(^4S^{\circ})5d$	$^3P-^3D^{\circ}$				9–15						1
				56.528	0.0–1 769 040	5–7	1.15+11	7.72−02	7.18−02	−0.413	D+	LS
50	$2s2p^5-2p^6$	$^3P^{\circ}-^1S$										
				207.352	366 786–849 057	3–1	3.44+07	7.39−05	1.51−04	−3.654	D	2
51		$^1P^{\circ}-^1S$		291.200	505 650–849 057	3–1	3.44+10	1.46−01	4.19−01	−0.359	B+	2,4
52	$2s2p^5$ $-2s2p^4(^4P)3s$	$^3P^{\circ}-^3P$		*88.02*	*364 997–1 501 158*	9–9	8.45+10	9.81−02	2.56−01	−0.054	D	1
				88.005	363 170–1 499 470	5–5	6.34+10	7.36−02	1.07−01	−0.434	D+	LS
				88.021	366 786–1 502 880	3–3	2.11+10	2.45−02	2.13−02	−1.134	E+	LS
				87.742	363 170–1 502 880	5–3	3.55+10	2.46−02	3.55−02	−0.910	D	LS
				87.901	366 786–1 504 430	3–1	8.49+10	3.28−02	2.85−02	−1.007	D	LS
				88.286	366 786–1 499 470	3–5	2.09+10	4.08−02	3.56−02	−0.912	D	LS
				88.174	368 761–1 502 880	1–3	2.80+10	9.80−02	2.84−02	−1.009	D	LS
53	$2s2p^5$ $-2s2p^4(^2D)3s$	$^3P^{\circ}-^3D$				9–15						1
				81.449	363 170–1 590 930	5–7	5.12+10	7.13−02	9.56−02	−0.448	D+	LS
54	$2p^6$ $-2s^22p^3(^2P^{\circ})3s$	$^1S-^1P^{\circ}$		236.037	849 057–1 272 720	1–3	2.35+03	5.89−08	4.58−08	−7.230	D+	2
55	$2p^6$ $-2s^22p^3(^2D^{\circ})3d$	$^1S-^1P^{\circ}$		172.359	849 057–1 429 240	1–3	1.60+06	2.14−05	1.21−05	−4.670	C	2
56	$2s^22p^3(^4S^{\circ})3s-$ $2s2p^4(^4P)3s$	$^3S^{\circ}-^3P$		*304.24*	1 172 470–*1 501 158*	3–9	2.90+09	1.21−01	3.63−01	−0.440	D+	1
				305.810	1 172 470–1 490 470	3–5	2.86+09	6.68−02	2.02−01	−0.698	C	LS
				302.654	1 172 470–1 502 880	3–3	2.95+09	4.05−02	1.21−01	−0.915	D+	LS
				301.241	1 172 470–1 504 430	3–1	3.00+9	1.36−02	4.05−02	−1.389	D	LS
57	$2s^22p^3(^2D^{\circ})3s-$ $2s2p^4(^4P)3s$	$^3D^{\circ}-^3P$		*362.31*	*1 225 150–1 501 158*	15–9	4.33+08	5.11−03	9.14−02	−1.115	E+	1
				364.538	1 225 150–1 499 470	7–5	3.57+08	5.08−03	4.27−02	−1.449	D	LS
				360.062	1 225 150–1 502 880	5–3	3.31+08	3.86−03	2.29−02	−1.714	E+	LS
				358.064	1 225 150–1 504 430	3–1	4.48+08	2.87−03	1.01−02	−2.065	E+	LS
				364.538	1 225 150–1 499 470	5–5	6.37+07	1.27−03	7.62−03	−2.197	E+	LS
				360.062	1 225 150–1 502 880	3–3	1.10+08	2.14−03	7.61−03	−2.192	E+	LS
				364.538	1 225 150–1 499 470	3–5	4.25+06	1.41−04	5.08−04	−3.374	E	LS
58	$2s^22p^3(^2D^{\circ})3s-$ $2s2p^4(^2D)3s$	$^3D^{\circ}-^3D$				15–15						1
				273.388	1 225 150–1 590 930	7–7	1.15+10	1.29−01	8.13−01	−0.044	C+	LS
				273.388	1 225 150–1 590 930	5–7	1.45+09	2.27−02	1.02−01	−0.945	D+	LS

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
59	$2s^22p^3(^2P^\circ)3s-2s2p^4(^4P)3s$	$^3P^\circ-^3P$		*[417.85]*	*1 261 840–1 501 158*	9–9	2.27+08	5.93−03	7.34−02	−1.273	E+	1
				421.177	1 262 040–1 499 470	5–5	1.66+08	4.41−03	3.06−02	−1.657	D	LS
				414.473	1 261 610–1 502 880	3–3	5.82+07	1.50−03	6.14−03	−2.347	E	LS
				415.213	1 262 040–1 502 880	5–3	9.61+07	1.49−03	1.02−02	−2.128	E+	LS
				411.828	1 261 610–1 504 430	3–1	2.37+08	2.01−03	8.18−03	−2.220	E+	LS
				420.415	1 261 610–1 499 470	3–5	5.57+07	2.46−03	1.02−02	−2.132	E+	LS
				[414.336]	1 261 530–1 502 880	1–3	7.74+07	5.98−03	8.16−03	−2.223	E+	LS
60	$2s^22p^3(^2P^\circ)3s-2s2p^4(^2D)3s$	$^3P^\circ-^3D$				9–15						1
				304.053	1 262 040–1 590 930	5–7	2.01+09	3.90−02	1.95−01	−0.710	C	LS
61	$2s^22p^3(^2P^\circ)3s-2s2p^4(^2S)3s$	$^3P^\circ-^3S$		*[249.13]*	*1 261 840*–1 663 240	9–3	2.82+10	8.75−02	6.46−01	−0.104	C	1
				249.252	1 262 040–1 663 240	5–3	1.57+10	8.75−02	3.59−01	−0.359	C	LS
				248.985	1 261 610–1 663 240	3–3	9.43+09	8.76−02	2.15−01	−0.580	C	LS
				[248.936]	1 261 530–1 663 240	1–3	3.14+09	8.76−02	7.18−02	−1.057	D+	LS
62	$2s^22p^3(^2D^\circ)3d-2s2p^4(^4P)3s$	$^3D^\circ-^3P$				15–9						1
				1 399.58	1 428 020–1 499 470	7–5	7.77+06	1.63−03	5.26−02	−1.943	D	LS
				1 337.08	1 428 090–1 502 880	5–3	7.96+06	1.28−03	2.82−02	−2.194	D	LS
				1 400.95	1 428 090–1 499 470	5–5	1.39+06	4.08−04	9.41−03	−2.690	E+	LS
63		$^3P^\circ-^3P$				9–9						1
				1 562.26	1 435 460–1 499 470	5–5	6.29+06	2.30−03	5.91−02	−1.939	D	LS
				1 512.17	1 436 750–1 502 880	3–3	2.30+06	7.90−04	1.18−02	−2.625	E+	LS
				1 483.24	1 435 460–1 502 880	5–3	4.07+06	8.06−04	1.97−02	−2.395	E+	LS
				1 477.54	1 436 750–1 504 430	3–1	9.90+06	1.08−03	1.58−02	−2.489	E+	LS
				1 594.39	1 436 750–1 499 470	3–5	1.97+06	1.25−03	1.97−02	−2.426	E+	LS
64	$2s^22p^3(^2P^\circ)3d-2s2p^4(^4P)3s$	$^3D^\circ-^3P$				15–9						1
			3 116.3	3 117.2	1 467 390–1 499 470	7–5	9.03+05	9.40−04	6.75−02	−2.182	D+	LS
			2 747.2	2 748.0	1 466 490–1 502 880	5–3	1.18+06	7.99−04	3.61−02	−2.398	D	LS
			3 031.3	3 032.1	1 466 490–1 499 470	5–5	1.75+05	2.41−04	1.20−02	−2.919	E+	LS
65	$2s^22p^3(^2P^\circ)3d-2s2p^4(^2S)3s$	$^3P^\circ-^3S$		*495.32*	*1 461 352*–1 663 240	9–3	3.44+08	4.22−03	6.19−02	−1.420	D	1
				496.574	1 461 860–1 663 240	5–3	1.90+08	4.21−03	3.44−02	−1.677	D	LS
				494.120	1 460 860–1 663 240	3–3	1.16+08	4.23−03	2.06−02	−1.897	E+	LS
				492.732	1 460 290–1 663 240	1–3	3.88+07	4.24−03	6.88−03	−2.373	E	LS
66	$2s2p^4(^4P)3s-2s^22p^3(^2D^\circ)4s$	$^3P-^3D^\circ$				9–15						1
				759.36	1 499 470–1 631 160	5–7	2.54+07	3.08−03	3.85−02	−1.812	D	LS
67	$2s2p^4(^4P)3s-2s^22p^3(^4S^\circ)4d$	$^3P-^3D^\circ$				9–15						1
				693.14	1 499 470–1 643 740	5–7	4.55+07	4.59−03	5.24−02	−1.639	D	LS
68	$2s2p^4(^4P)3s-2s^22p^3(^2P^\circ)4s$	$^3P-^3P^\circ$				9–9						1

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
				586.75	1 499 470–1 669 900	5–5	1.61+08	8.30−03	8.02−02	−1.382	D+	LS
				598.73	1 502 880–1 669 900	3–5	5.05+07	4.52−03	2.67−02	−1.868	D	LS
69	$2s2p^4(^4P)3s-$ $2s^22p^3(^2D^\circ)4d$	$^3P-^3D^\circ$				9–15						1
				481.649	1 499 470–1 707 090	5–7	1.72+08	8.37−03	6.64−02	−1.378	D+	LS
				489.692	1 502 880–1 707 090	3–5	1.23+08	7.35−03	3.55−02	−1.657	D	LS
				481.649	1 499 470–1 707 090	5–5	4.28+07	1.49−03	1.18−02	−2.128	E+	LS
70		$^3P-^3P^\circ$				9–9						1
				472.724	1 499 470–1 711 010	5–5	4.84+08	1.62−02	1.26−01	−1.092	D+	LS
				480.469	1 502 880–1 711 010	3–5	1.54+08	8.87−03	4.21−02	−1.575	D	LS
71		$^3P-^3S^\circ$		*472.76*	*1 501 158*–1 712 680	9–3	3.70+08	4.14−03	5.79−02	−1.429	E+	1
				469.021	1 499 470–1 712 680	5–3	2.11+08	4.17−03	3.22−02	−1.681	D	LS
				476.644	1 502 880–1 712 680	3–3	1.20+08	4.10−03	1.93−02	−1.910	E+	LS
				480.192	1 504 430–1 712 680	1–3	3.92+07	4.07−03	6.43−03	−2.390	E	LS
72	$2s2p^4(^4P)3s-$ $2s^22p^3(^3P^\circ)4d$	$^3P-^3P^\circ$				9–9						1
				413.805	1 499 470–1 741 130	5–5	2.15+08	5.52−03	3.76−02	−1.559	D	LS
				419.727	1 502 880–1 741 130	3–5	6.88+07	3.03−03	1.26−02	−2.041	E+	LS
73		$^3P-^3D^\circ$				9–15						1
				408.213	1 499 470–1 744 440	5–7	2.68+08	9.37−03	6.30−02	−1.329	D	LS
74	$2s2p^4(^2D)3s-$ $2s^22p^3(^2D^\circ)4s$	$^3D-^3D^\circ$				15–15						1
			2 485.0	2 485.7	1 590 930–1 631 160	7–7	1.48+07	1.37−02	7.85−01	−1.018	C+	LS
75	$2s2p^4(^2D)3s-$ $2s^22p^3(^2P^\circ)4s$	$^3D-^3P^\circ$				15–9						1
				1 266.30	1 590 930–1 669 900	7–5	6.52+07	1.12−02	3.27−01	−1.106	C	LS
76	$2s2p^4(^2D)3s-$ $2s^22p^3(^2D^\circ)4d$	$^3D-^3P^\circ$				15–9						1
				832.78	1 590 930–1 711 010	7–5	1.36+08	1.01−02	1.94−01	−1.151	C	LS
77	$2s^22p^3(^2D^\circ)4s-$ $2s2p^4(^4P)4s$	$^3D^\circ-^3P$				15–9						1
				389.833	1 631 160–1 887 680	7–5	1.75+08	2.84−03	2.55−02	−1.702	D	LS
78	$2s2p^4(^2S)3s-$ $2s^22p^3(^2P^\circ)4s$	$^3S-^3P^\circ$				9–3						1
			15 011	15 015	1 663 240–1 669 900	3–5	6.92+04	3.90−03	5.78−01	−1.932	C+	LS
79	$2s2p^4(^2S)3s-$ $2s^22p^3(^2P^\circ)4d$	$^3S-^3P^\circ$				3–9						1
				1 283.86	1 663 240–1 741 130	3–5	2.65+08	1.09−01	1.38+00	−0.485	B	LS
80	$2s2p^4(^2S)3s-$ $2s^22p^3(^2D^\circ)5d$	$^3S-^3P^\circ$				3–9						1
				578.37	1 663 240–1 836 140	3–5	5.54+07	4.63−03	2.64−02	−1.857	D	LS

TABLE 28. Transition probabilities of allowed lines for Si VII (references for this table are as follows; 1=Butler and Zeippen,[14] 2=Tachiev and Froese Fischer,[101] 3=Bogdanovich *et al.*[10] 4=Vikas *et al.*,[111] 5=Baluja and Zeippen,[4] and 6=Flaig *et al.*[32])—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
81	$2s^22p^3(^2D^\circ)4d$–$2s2p^4(^4P)4s$	$^3D^\circ-^3P$				15–9						1
				553.741	1 707 090–1 887 680	7–5	6.40+07	2.10−03	2.68−02	−1.833	D	LS
				553.741	1 707 090–1 887 680	5–5	1.14+07	5.25−04	4.79−03	−2.581	E	LS
82		$^3P^\circ-^3P$				9–9						1
				566.03	1 711 010–1 887 680	5–5	1.63+08	7.82−03	7.29−02	−1.408	D+	LS
83	$2s^22p^3(^2D^\circ)5d$–$2s2p^4(^4P)4s$	$^3D^\circ-^3P$				15–9						1
				1 867.1	1 834 120–1 887 680	7–5	3.67+07	1.37−02	5.89−01	−1.018	C+	LS
84		$^3P^\circ-^3P$				9–9						1
				1 940.2	1 836 140–1 887 680	5–5	6.43+07	3.63−02	1.16+00	−0.741	B	LS

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

4.7.3. Forbidden Transitions for Si VII

Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2, with energy corrections. Gaigalas *et al.*[37] used a second-order MBPT to compute transition rates. Baluja and Zeippen[5] used the SUPERSTRUCTURE code with CI, relativistic effects, and semiempirical energy corrections.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by two or more of the references.[5,37,101] Next we isoelectronically averaged the logarithmic quality factors observed for allowed O-like lines from the lower-lying levels of Na IV, Mg V, and Si VII and applied the result to forbidden lines of Si VII using the method described in the introduction to Kelleher and Podobedova.[53]

4.7.4. References for Forbidden Transitions for Si VII

[5]K. L. Baluja and C. J. Zeippen, J. Phys. B. **21**, 1455 (1988).

[37]G. Gaigalas, J. Kaniauskas, R. Kisielius, G. Merkelis, and M. J. Vilkas, Phys. Scr. **49**, 135 (1994).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[99]G. Tachiev and C. Froese Fischer, Astron. Astrophys. **385**, 716 (2002).

[102]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 99).

TABLE 29. Wavelength finding list for forbidden lines of Si VII

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
117.778	5	124.613	6	720.13	8	1 049.20	3
118.339	5	701.85	8	1 006.63	3	1 895.0	4
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
2 146.64	2	2 438.0	2	17 965	1		
2 350.0	2	17 881	7				
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**
4 030	1	3 616	7	1 975	7	1 535	1

TABLE 30. Transition probabilities of forbidden lines for Si VII (references for this table are as follows; 1=Tachiev and Frose Fischer,[101] 2=Gaigalas *et al.*,[37] and 3=Baluja and Zeippen[5])

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
1	$2p^4-2p^4$	$^3P-^3P$									
			17 965	17 969	0.0–5 565	5–1	E2	2.06−05	3.44−02	B+	1,2
				4 030 cm^{-1}	0.0–4 030	5–3	M1	1.46+00	2.48+00	A	1,2
				4 030 cm^{-1}	0.0–4 030	5–3	E2	3.00−06	7.56−02	B+	1,2
				1 535 cm^{-1}	4 030–5 565	3–1	M1	1.97−01	2.02+00	A	1,2
2		$^3P-^1D$									
			2 438.0	2 438.7	5 565–46 569.8	1–5	E2	2.15−04	8.28−05	C+	1,2
			2 350.0	2 350.7	4 030–46 569.8	3–5	M1	3.15+00	7.58−03	B	1,2
			2 350.0	2 350.7	4 030–46 569.8	3–5	E2	7.28−04	2.33−04	C+	1,2
			2 146.64	2 147.31	0.0–46 569.8	5–5	M1	1.24+01	2.27−02	B	1,2
			2 146.64	2 147.31	0.0–46 569.8	5–5	E2	7.70−03	1.57−03	B	1,2
3		$^3P-^1S$									
				1 006.63	0.0–99 341	5–1	E2	1.00−01	9.25−05	C+	1,2
				1 049.20	4 030–99 341	3–1	M1	1.39+02	5.97−03	B	1,2
4		$^1D-^1S$									
				1 895.0	46 569.8–99 341	5–1	E2	5.66+00	1.24−01	B+	1,2
5	$2s^22p^4-2p^6$	$^3P-^1S$									
				117.778	0.0–849 057	5–1	E2	1.18+03	2.40−05	C	2
				118.339	4 030–849 057	3–1	M1	3.42+01	2.10−06	D+	2
6		$^1D-^1S$									
				124.613	46 569.8–849 057	5–1	E2	3.18+05	8.53−03	B+	2
7	$2s2p^5-2s2p^5$	$^3P^\circ-^3P^\circ$									
			17 881	17 886	363 170–368 761	5–1	E2	2.00−05	3.27−02	B	2
				3 616 cm^{-1}	363 170–366 786	5–3	M1	1.06+00	2.50+00	B+	2
				3 616 cm^{-1}	363 170–366 768	5–3	E2	1.71−06	7.40−02	B	2
				1 975 cm^{-1}	366 768–368 761	3–1	M1	4.12−01	1.98+00	B+	2
8		$^3P^\circ-^1P^\circ$									
				720.13	366 786–505 650	3–3	M1	1.23+01	5.12−04	C+	2
				720.13	366 786–505 650	3–3	E2	1.67−01	8.66−05	C	2
				701.85	363 170–505 650	5–3	M1	2.22+01	8.54−04	C+	2
				701.85	363 170–505 650	5–3	E2	5.56−02	2.54−05	C	2

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

4.8. Si VIII

Nitrogen isoelectronic sequence
Ground state: $1s^22s^22p^3\ ^4S^\circ_{3/2}$
Ionization energy: 303.54 eV (2 448 200 cm^{-1})

4.8.1. Allowed Transitions for Si VIII

Only OP (Ref. 11) results were available for energy levels above the $2p^23d$. Tachiev and Froese Fischer[101] have performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. Second-order MBPT results from Merkelis *et al.*[74] have also been made for some of the transitions from the lowest-lying levels.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[11,44,74,100,101] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. We also divided the spin-allowed lines into groups with upper transition energy less than or greater than 900 000 cm^{-1}, respectively. The uncertainty of the upper group was estimated by conservatively scaling the fit parameters of the lower group. OP lines constituted a third group. We then isoelectronically averaged the logarithmic quality factors observed for N-like lines of Na V, Mg VI, Al VII, and Si VIII using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying intercombination lines and those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines, as described in Kelleher and Podobedova.[53]

A NIST compilation of far-UV lines of Si VIII was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.8.2. References for Allowed Transitions for Si VIII

[11]V. M. Burke and D. L. Lennon, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[44]M. Godefloid and C. F. Fischer, J. Phys. B **17**, 681 (1984).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[74]G. Merkelis, M. J. Vilkas, R. Kisielius, G. Gaigalas, and I. Martinson, Phys. Scr. **56**, 41 (1997).

[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[99]G. Tachiev and C. Froese Fischer, Astron. Astrophys. **385**, 716 (2002).
[100]G. Tachiev and C. Roese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/∼cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 99).

TABLE 31. Wavelength finding list for allowed lines of Si VIII

Wavlength (vac) (Å)	Mult. No
49.987	45
50.019	45
51.718	46
51.819	46
51.826	46
52.554	47
58.696	34
58.885	42
58.888	39
58.942	39
59.257	33
59.314	33
59.354	32
60.989	22
61.019	22
61.070	22
61.198	21
61.385	43
61.388	40
61.395	43
61.398	40
61.447	40
61.539	20
61.790	36
61.799	36
61.851	36
61.861	36
61.895	35
61.905	35
61.914	35
62.565	38
62.586	38
62.779	44
62.782	41
62.801	44
62.804	41
62.841	27
62.844	41
62.851	27
62.865	41
62.887	27
62.897	27
63.224	37
63.267	37

TABLE 31. Wavelength finding list for allowed lines of Si VIII—Continued

63.289	37
63.675	26
63.708	26
63.718	26
63.732	25
63.763	26
63.773	26
63.879	24
63.903	25
63.913	25
63.930	24
63.941	24
64.275	23
64.285	23
64.325	31
64.351	31
64.374	31
65.177	30
65.200	30
65.211	30
65.234	30
65.292	30
65.390	29
65.413	29
65.444	29
65.467	29
65.805	28
65.828	28
67.156	53
67.198	17
67.263	17
67.318	53
67.404	53
68.781	12
68.966	12
69.632	12
69.790	11
69.905	11
70.473	18
70.486	18
70.545	18
70.557	18
72.216	14
72.229	14
72.317	19
72.345	19
72.421	19
73.155	13
73.169	13
73.330	13
73.343	13
73.457	13
74.154	16
74.183	16
74.369	16
74.399	16
75.175	15
75.328	15
75.359	15

TABLE 31. Wavelength finding list for allowed lines of Si VIII—Continued

75.462	15
75.493	15
75.988	52
76.196	52
76.306	52
113.187	59
113.902	60
113.926	59
114.104	60
114.650	60
114.855	60
115.292	58
115.507	58
116.276	58
119.007	7
119.172	57
119.992	57
124.256	56
125.147	56
149.712	55
150.035	55
151.007	55
157.803	54
158.783	54
159.243	54
160.241	54
187.688	3
188.526	3
196.202	48
196.932	48
197.033	48
198.165	2
198.432	48
199.179	48
215.688	6
216.97	6
216.915	6
233.944	10
234.241	10
235.249	10
235.549	10
250.450	9
250.790	9
252.819	49
256.515	49
256.535	49
268.918	73
269.847	73
276.838	5
276.861	5
277.032	5
277.055	5
307.653	8
308.166	8
308.195	8
311.236	50
314.327	1
316.206	1
316.887	50
319.826	1
338.409	51
341.146	51
345.101	51
347.947	51
401.652	4
404.724	4
405.138	4
410.674	4
411.101	4
469.942	7
471.143	7
474.154	7
475.376	7
483.606	7
504.668	61
510.751	61
519.373	61
559.691	62
572.21	62
704.47	63
711.69	63
966.18	74
1 332.80	70
1 437.40	72
1 439.06	71
1 472.10	71
1 697.79	69
1 745.51	69
1 780.9	68
Wavlength (air) (Å)	Mult. No
3140.8	67
3260.6	67
9105	66
9830	66
11 348	66
18 582	65

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])

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	log gf	Acc.	Source
1	$2s^22p^3 - 2s2p^4$	$^4S^\circ - ^4P$		*317.69*	0.0–*314 775*	4–12	358+09	1.75–01	7.32–01	–0.155	A	2,4
				319.826	0.0–312 670	4–6	3.78+09	8.69–02	3.66–01	–0.459	A	2,4
				316.206	0.0–316 250	4–4	3.91+09	5.86–02	2.44–01	–0.630	A	2,4

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
				314.327	0.0–318 140	4–2	3.99+09	2.95−02	1.22−01	−0.928	B+	2,4
2		$^4S^\circ-^2S$										
				198.165	0.0–504 630	4–2	8.18+06	2.41−05	6.28−05	−4.016	D+	2,4
3		$^2S^\circ-^2P$										
				188.526	0.0–530 430	4–4	1.81+07	9.63−05	2.39−04	−3.414	C	2,4
				187.688	0.0–532 800	4–2	5.20+06	1.37−05	3.40−05	−4.261	D+	2,4
4		$^2D^\circ-^4P$										
				405.138	69 420.5–316 250	6–4	8.73+04	1.43−06	1.15−05	−5.067	D	2,4
				401.652	69 168.1–318 140	4–2	1.85+05	2.24−06	1.18−05	−5.048	D	2,4
				411.101	69 420.5–312 670	6–6	1.33+06	3.38−05	2.74−04	−3.693	D	2,4
				404.724	69 168.1–316 250	4–4	1.46+05	3.59−06	1.92−05	−4.843	D	2,4
				410.674	69 168.1–312 670	4–6	1.76+06	6.68−05	3.61−04	−3.573	E	2,4
5		$^2D^\circ-^2D$		*276.97*	*69 320–430 372*	10–10	8.96+09	1.03−01	9.69−01	0.013	A	2,4
				277.055	69 420.5–430 360	6–6	8.37+09	9.63−02	5.27−01	−0.238	A	2,4
				276.838	69 168.1–430 390	4–4	8.58+09	9.85−02	3.59−01	−0.405	A	2,4
				277.032	69 420.5–430 390	6–4	7.27+08	5.57−03	3.05−02	−1.476	B+	2,4
				276.861	69 168.1–430 360	4–6	3.62+08	6.24−03	2.27−02	−1.603	B+	2,4
6		$^2D^\circ-^2P$		*216.50*	*69 320–531 220*	10–6	3.32+10	1.40−01	9.98−01	0.146	A	2,4
				216.915	69 420.5–530 430	6–4	3.04+10	1.43−01	6.13−01	−0.067	A	2,4
				215.688	69 168.1–532 800	4–2	2.97+10	1.04−01	2.95−01	−0.381	A	2,4
				216.797	69 168.1–530 430	4–4	4.46+09	3.14−02	8.97−02	−0.901	B+	2,4
7		$^2P^\circ-^4P$										
				475.376	105 890–316 250	4–4	1.05+06	3.55−05	2.22−04	−3.848	C	2,4
				469.942	105 348–318 140	2–2	4.06+05	1.34−05	4.16−05	−4.572	D+	2,4
				471.143	105 590–318 140	4–2	1.60+04	2.66−07	1.65−06	−5.973	E+	2,4
				483.606	105 890–312 670	4–6	5.96+05	3.14−05	2.00−04	−3.901	D+	2,4
				474.154	105 348–316 250	2–4	6.32+03	4.26−07	1.33−06	−6.070	E+	2,4
8		$^2P^\circ-^2D$		*308.01*	*105 709–430 372*	6–10	1.33+09	3.15−02	1.92−01	−0.724	B+	2,4
				308.195	105 890–430 360	4–6	1.48+09	3.16−02	1.28−01	−0.898	B+	2,4
				307.653	105 348–430 390	2–4	1.06+09	3.01−02	6.10−02	−1.220	B+	2,4
				308.166	105 890–430 390	4–4	4.08+07	5.81−04	2.36−03	−2.634	C+	2,4
9		$^2P^\circ-^2S$		*250.68*	*105 709*–504 630	6–2	1.87+10	5.89−02	2.91−01	−0.452	B+	2,4
				250.790	105 890–504 630	4–2	1.10+10	5.20−02	1.72−01	−0.682	B+	2,4
				250.450	105 348–504 630	2–2	7.72+09	7.26−02	1.20−01	−0.838	B+	2,4
10		$^2P^\circ-^2P$		*235.01*	*105 709–531 220*	6–6	1.00+10	8.29−02	3.85−01	−0.303	B+	2,4
				235.549	105 890–530 430	4–4	3.78+09	5.64−02	1.75−01	−0.647	B+	2,4
				233.944	105 348–532 800	2–2	5.08+09	4.17−02	6.42−02	−1.079	B+	2,4
				234.241	105 890–532 800	4–2	8.02+09	3.30−02	1.02−01	−0.879	B+	2,4
				235.249	105 348–530 430	2–4	1.71+09	2.84−02	4.40−02	−1.246	B+	2,4
11	$2p^3-2p^2(^3P)3s$	$^4S^\circ-^4P$		*69.73*	0.0–*1 434 102*	4–12	5.42+10	1.18−01	1.09−01	−0.326	B+	2
				69.532	0.0–1 436 120	4–6	5.46+10	5.95−02	5.46−02	−0.623	B+	2
				69.790	0.0–1 432 870	4–4	5.39+10	3.93−02	3.62−02	−0.804	B+	2
				69.905	0.0–1 430 510	4–2	5.34+10	1.96−02	1.80−02	−1.106	B+	2

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
12		$^4S^\circ-{}^2P$										
				68.781	0.0–1 453 900	4–4	4.71+07	3.34−05	3.02−05	−3.874	D	2
				68.966	0.0–1 449 990	4–2	5.44+07	1.94−05	1.76−05	−4.110	E+	2
13		$^2D^\circ-{}^4P$										
				73.343	69 420.5–1 432 870	6–4	3.27+08	1.76−04	2.55−04	−2.976	D+	2
				73.457	69 168.1–1 430 510	4–2	3.52+08	1.43−04	1.38−04	−3.243	D	2
				73.169	69 420.5–1 436 120	6–6	2.03+08	1.63−04	2.35−04	−3.010	D+	2
				73.330	69 168.1–1 432 870	4–4	1.09+08	8.83−05	8.52−05	−3.452	D	2
				73.155	69 168.1–1 436 120	4–6	9.82+06	1.18−05	1.14−05	−4.326	E+	2
14		$^2D^\circ-{}^2P$		*72.29*	*69 320–1 452 97*	10–6	9.50+10	4.47−02	1.06−01	−0.350	B+	2
				72.229	69 420.5–1 453 900	6–4	8.80+10	4.59−02	6.55−02	−0.560	B+	2
				72.421	69 168.1–1 449 990	4–2	1.05+11	4.12−02	3.93−02	−0.783	B+	2
				72.216	69 168.1–1 453 900	4–4	2.11+09	1.65−03	1.57−03	−2.180	B	2
15		$^2P^\circ-{}^4P$										
				75.359	105 890–1 432 870	4–4	1.10+08	9.39−05	9.32−05	−3.425	D	2
				75.462	105 348–1 430 510	2–2	3.60+07	3.07−05	1.53−05	−4.212	E+	2
				75.493	105 890–1 430 510	4–2	7.08+07	3.02−05	3.01−08	−3.918	E	2
				75.175	105 890–1 436 120	4–6	3.25+05	4.13−07	4.09−07	−5.782	E	2
				75.328	105 348–1 432 870	2–4	2.08+07	3.49−05	1.73−05	−4.156	E+	2
16		$^2P^\circ-{}^2P$		*74.25*	*105 709–1 452 597*	6–6	6.85+10	5.66−02	8.30−02	−0.469	B+	2
				74.183	105 890–1 453 900	4–4	589+10	4.86−02	4.74−02	−0.711	B+	2
				74.369	105 348–1 449 990	2–2	4.41+10	3.66−02	1.79−02	−1.135	B+	2
				74.399	105 890–1 449 990	4–2	1.49+10	6.19−03	6.06−03	−1.606	B	2
				74.154	105 348–1 453 900	2–4	1.43+10	2.36−02	1.15−02	−1.326	B	2
17	$2p^3-2p^2(^1D)3s$	$^4S^\circ-{}^2D$										
				67.263	0.0–1 486 710	4–6	6.33+07	6.44−05	5.70−05	−3.589	D	2
				67.198	0.0–1 488 150	4–4	1.23+07	8.33−06	7.37−06	−4.477	E+	2
18		$^2D^\circ-{}^2D$		*70.52*	*69 320–1 487 286*	10–10	7.29+10	5.44−02	1.26−01	−0.264	B+	2
				70.557	69 420.5–1 486 710	6–6	6.88+10	5.13−02	7.16−02	−0.512	B+	2
				70.473	69 168.1–1 488 150	4–4	6.35+10	4.73−02	4.39−02	−0.723	B+	2
				70.486	69 420.5–1 488 150	6–4	3.66+09	1.82−03	2.53−03	−1.962	B	2
				70.545	69 168.1–1 486 710	4–6	7.95+09	8.89−03	8.26−03	−1.499	B	2
19		$^2P^\circ-{}^2D$		*72.38*	*105 709–1 487 286*	6–10	2.74+10	359−02	5.13−02	−0.667	B+	2
				72.421	105 890–1 486 710	4–6	2.35+10	2.77−02	2.64−02	−0.955	B+	2
				72.317	105 348–1 488 150	2–4	1.94+10	3.03−02	1.44−02	−1.218	B	2
				72.345	105 890–1 488 150	4–4	1.40+10	1.10−02	1.04−02	−1.357	B	2
20	$2p^3-2p^2(^3P)3d$	$^4S^\circ-{}^2P$										
				61.539	0.0–1 624 990	4–4	1.05+10	5.94−03	4.81−03	−1.624	C	3
21		$^4S^\circ-{}^2F$										
				61.198	0.0–1 634 040	4–6	2.45+09	2.06−03	1.66−03	−2.084	C	3
22		$^4S^\circ-{}^4P$		*61.04*	0.0–*1 638 285*	4–12	2.16+10	3.62−02	2.91−02	−0.839	B+	3
				61.070	0.0–1 637 470	4–6	3.57+10	3.00−02	2.41−02	−0.921	B+	3
				61.019	0.0–1 638 830	4–4	8.59+09	4.80−03	3.85−03	−1.717	B	3

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
				60.989	0.0–1 639 640	4–2	5.04+09	1.40−03	1.13−03	−2.252	B	3
23		$^2D^\circ-^2P$				10–6						3
				64.285	69 420.5–1 624 990	6–4	3.90+10	1.61−02	2.04−02	−1.015	B+	3
				64.275	69 168.1–1 624 990	4–4	1.91+10	1.18−02	1.00−02	−1.326	B	3
24		$^2D^\circ-^4D$										
				[63.930]	69 168.1–1 633 370	4–4	1.26+10	7.74−03	6.52−03	−1.509	C	3
				[63.941]	69 420.5–1 633 370	6–4	1.37+10	5.61−03	7.08−03	−1.473	C	3
				63.879	69 168.1–1 634 640	4–2	1.09+10	3.33−03	2.80−03	−1.875	C	3
25		$^2D^\circ-^2F$		*63.81*	*69 320–1 636 583*	10–14	1.80+11	1.54−01	3.23−01	−0.188	B+	3
				63.732	69 420.5–1 638 490	6–8	1.81+11	1.47−01	1.85−01	−0.055	B+	3
				63.903	69 168.1–1 634 040	4–6	1.65+11	1.51−01	1.27−01	−0.219	B+	3
				63.913	69 420.5–1 634 040	6–6	1.36+10	8.34−03	1.05−02	−1.0301	B	3
26		$^2D^\circ-^4P$										
				63.718	69 420.5–1 638 830	6–4	5.64+08	2.29−04	2.88−04	−2.862	D+	3
				63.675	69 168.1–1 639 640	4–2	1.09+08	3.30−05	2.77−05	−3.879	E+	3
				63.773	69 420.5–1 637 470	6–6	4.82+08	2.94−04	3.70−04	−2.754	D+	3
				63.708	69 168.1–1 638 830	4–4	4.12+06	2.51−06	2.10−06	−4.998	E	3
				63.763	69 168.1–1 637 470	4–6	1.14+08	1.05−04	8.78−05	−3.377	D	3
27		$^2D^\circ-^2D$		*62.87*	*69 320–1 660 022*	10–10	2.80+11	1.66−01	3.44−01	0.220	B+	3
				62.851	69 420.5–1 660 490	6–6	2.46+11	1.45−01	1.81−01	−0.060	B+	3
				62.887	69 168.1–1 659 320	4–4	1.68+11	9.98−02	8.27−02	−0.399	B+	3
				62.897	69 420.5–1 659 320	6–4	3.39+10	1.34−02	1.66−02	−1.095	B+	3
				62.841	69 168.1–1 660 490	4–6	8.67+10	7.70−02	6.37−02	−0.511	B+	3
28		$^2P^\circ-^2P$				6–6						
				65.828	105 890–1 624 990	4–4	1.08+11	7.03−02	6.10−02	−0.551	B+	3
				65.805	105 348–1 624 990	2–4	2.73+10	3.55−02	1.54−02	−1.149	B	3
29		$^2P^\circ-^4D$										
				[65.444]	105 348–1 633 370	2–4	1.28+10	1.65−02	7.11−03	−1.481	C	3
				[65.467]	105 890–1 633 370	4–4	4.68+10	3.01−02	2.59−02	−0.919	C+	3
				65.390	105 348–1 634 640	2–2	3.22+10	2.06−02	8.89−03	−1.385	C+	3
				65.413	105 890–1 634 640	4–2	1.75+10	5.61−03	4.83−03	−1.649	C	3
30		$^2P^\circ-^4P$										
				65.234	105 890–1 638 830	4–4	5.94+07	3.79−05	3.25−05	−3.819	D	3
				65.177	105 348–1 639 640	2–2	1.68+07	1.07−05	4.59−06	−4.670	E+	3
				65.200	105 890–1 639 640	4–2	6.43+07	2.08−05	1.76−05	−4.086	E+	3
				65.292	105 890–1 637 470	4–6	2.39+08	2.29−04	1.97−04	−3.038	D	3
				65.211	105 348–1 638 830	2–4	1.15+08	1.46−04	6.27−05	−3.535	D	3
31		$^2P^\circ-^2D$		*64.34*	*105 709–1 660 022*	6–10	2.81+11	2.91−01	3.69−01	−0.242	B+	3
				64.325	105 890–1 660 490	4–6	2.48+11	2.31−01	1.96−01	−0.034	B+	3
				64.351	105 348–1 659 320	2–4	2.50+11	3.10−01	1.31−01	−0.208	B+	3
				64.374	105 890–1 659 320	4–4	8.06+10	5.01−02	4.24−02	−0.698	B+	3
32	$2p^3-2p^2(^1D)3d$	$^4S^\circ-^2F$										
				59.354	0.0–1 684 810	4–6	1.28+08	1.01−04	7.90−05	−3.394	D	3

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
33		$^4S^{\circ}-^2D$										
				59.257	0.0–1 687 560	4–6	3.55+08	2.80−04	2.19−04	−2.951	D+	3
				59.314	0.0–1 685 950	4–4	9.80+07	5.17−05	4.04−05	−3.684	D	3
34		$^4S^{\circ}-^2S$										
				[58.696]	0.0–1 703 690	4–2	2.29+08	5.91−05	4.57−05	−3.626	D	3
35		$^2D^{\circ}-^2F$		*61.91*	*69 320–1 684 667*	10–14	9.05+11	7.28−01	1.18−00	−0.862	B+	3
				61.914	69 420.5–1 684 560	6–8	9.22+11	7.07−01	8.64−01	−0.628	B+	3
				61.895	69 168.1–1 684 810	4–6	6.17+11	5.32−01	4.33−01	−0.328	B+	3
				61.905	69 420.5–1 684 810	6–6	2.65+11	1.52−01	1.86−01	−0.040	B+	3
36		$^2D^{\circ}-^2D$		*61.82*	*69 320–1 686 916*	10–10	3.91+11	2.24−01	4.56−01	−0.350	B+	3
				61.799	69 420.5–1 687 560	6–6	1.43+11	8.18−02	9.99−02	−0.309	B+	3
				61.851	69 168.1–1 685 950	4–4	3.82+11	2.19−01	1.78−01	−0.057	B+	3
				61.861	69 420.5–1 685 950	6–4	4.65+10	1.78−02	2.17−02	−0.971	B+	3
				61.790	69 168.1–1 687 560	4–6	2.24+11	1.92−01	1.56−01	−0.115	B+	3
37		$^2P^{\circ}-^2D$		*63.24*	*105 709–1 686 916*	6–10	3.24+11	3.24−01	4.05−01	0.289	B+	3
				63.224	105 890–1 687 560	4–6	3.67+11	3.30−01	2.75−01	0.121	B+	3
				63.267	105 348–1 685 950	2–4	2.39+11	2.87−01	1.19−01	−0.241	B+	3
				63.289	105 890–1 685 950	4–4	2.12+10	1.27−02	1.06−02	−1.294	B	3
38		$^2P^{\circ}-^2S$		[*62.58*]	*105 709–1 703 690*	6–2	4.18+11	8.18−02	1.01−01	−0.309	B+	3
				[62.586]	105 890–1 703 690	4–2	2.97+11	8.72−02	7.18−02	−0.457	B+	3
				[62.565]	105 348–1 703 690	2–2	1.21+11	7.10−02	2.93−02	−8.848	B+	3
39	$2p^3-2p^2(^1D)3d$?	$^4S^{\circ}-^2P$?										
				[58.888]	0.0–1 698 150	4–4	1.08+10	5.63−03	4.37−03	−1.647	C	3
				[58.942]	0.0–1 696 590	4–2	1.03+09	2.69−04	2.09−04	−2.968	D	3
40		$^2D^{\circ}-^2P$?		*61.41*	*69 320–1697 630*	10–6	1.57+11	5.34−02	1.08−01	−0.272	B+	3
				61.398	69 420.5–1 698 150	6–4	1.31+11	4.92−02	5.97−02	−0.530	B+	3
				61.447	69 168.1–1 696 590	4–2	1.97+11	5.59−02	4.52−02	−0.651	B+	3
				61.388	69 168.1–1 698 150	4–4	6.48+09	3.66−03	2.96−03	−1.834	B	3
41		$^2P^{\circ}-^2P$?		*62.82*	*105 709–1 697 630*	6–6	4.04+11	2.39−01	2.96−01	−0.157	B+	3
				62.804	105 890–1 698 150	4–4	3.66+11	2.17−01	1.79−01	−0.061	B+	3
				62.844	105 348–1 696 590	2–2	2.70+11	1.60−01	6.62−02	−0.495	B+	3
				62.865	105 590–1 696 590	4–2	8.41+10	2.49−02	2.06−02	−1.002	B+	3
				62.782	105 348–1 695 150	2–4	6.20+10	7.32−02	3.03−02	−0.834	B+	3
42	$2s^22p^3-$ $2s2p^3(^5S^{\circ})3p$	$^4S^{\circ}-^4P$		[*58.88*]	0.0–1 698 230	4–12	1.12+11	1.75−01	1.36−01	−0.155	D	1
				[58.885]	0.0–1 698 230	4–6	1.12+11	8.76−02	6.79−02	−0.455	D	LS
				[58.885]	0.0–1 698 230	4–4	1.12+11	5.84−02	4.53−02	−0.632	E+	LS
				[58.885]	0.0–1 698 230	4–2	1.12+11	2.92−02	2.26−02	−0.933	E+	LS
43		$^2D^{\circ}-^4P$										
				[61.395]	69 420.5–1 698 230	6–4	1.48+10	5.57−03	6.76−03	−1.476	C	3
				[61.385]	69 168.1–1 698 230	4–2	5.91+08	1.67−04	1.35−04	−3.175	D	3
				[61.395]	69 420.5–1 698 230	6–6	9.50+06	5.37−06	6.51−06	−4.492	E+	3
				[61.385]	69 168.1–1 698 230	4–4	7.54+08	4.26−04	3.44−04	−2.769	D+	3
				[61.385]	69 168.1–1 698 230	4–6	2.39+06	2.03−06	1.64−06	−5.090	E	3

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
44		$^2P^\circ-^4P$										
				[62.801]	105 590–1 698 230	4–4	4.41+10	2.61−02	2.16−02	−0.981	C+	3
				[62.779]	105 348–1 698 230	2–2	1.05+09	6.21−04	2.57−04	−2.906	D+	3
				[62.801]	105 890–1 698 230	4–2	8.53+07	2.52−05	2.09−05	−3.997	E+	3
				[62.801]	105 890–1 698 230	4–6	1.09+08	9.68−05	8.01−05	−3.412	D	3
				[62.779]	105 348–1 698 230	2–4	6.86+09	8.10−03	3.35−03	−1.790	C	3
45	$2p^3-2p^2(^3P)4d$	$^4S^\circ-^4P$				4–12						1
				50.019	0.0–1 999 240	4–6	2.79+11	1.57−01	1.03−01	−0.202	D	LS
				[49.987]	0.0–2 000 520	4–4	2.80+11	1.05−01	6.91−02	−0.377	D	LS
46		$^2D^\circ-^2F$		*[51.76]*	*69 320–2 001 257*	10–14	1.89+11	1.06−01	1.81−01	0.025	D	1
				[51.718]	69 420.5–2 002 980	6–8	1.89+11	1.01−01	1.03−01	−0.218	D	LS
				[51.819]	69 168.1–1 998 960	4–6	1.76+11	1.06−01	7.23−02	−0.373	D	LS
				[51.826]	694 420.5–1 998 960	6–6	1.25+10	5.04−03	5.16−03	−1.519	E	LS
47		$^2P^\circ-^2D$				6–10						1
				[52.554]	105 890–2 008 700	4–6	1.71+11	1.06−01	7.34−02	−0.373	D	LS
48	$2s2p^4-2p^5$	$^4P^\circ-^2P$										
				198.432	316 250–820 200	4–4	4.80+06	2.83−05	7.40−05	−3.946	D	2
				196.932	318 140–825 930	2–2	5.50+06	3.20−05	4.15−05	−4.194	D	2
				197.033	312 670–820 200	6–4	1.70+07	6.58−05	2.56−04	−3.404	D+	2
				196.202	316 250–825 930	4–2	8.62+05	2.49−06	6.43−06	−5.002	E+	2
				199.179	318 140–820 200	2–4	1.34+06	1.60−05	2.10−05	−4.495	E+	2
49		$^2D-^2P^\circ$		*255.27*	*430 372–822 110*	10–6	1.52+10	8.93−02	7.51−01	−0.049	B+	2
				256.515	430 360–820 200	6–4	1.35+10	8.88−02	4.50−01	−0.273	B+	2
				252.819	430 390–825 930	4–2	1.51+10	7.23−02	2.41−01	−0.539	B+	2
				256.535	430 390–820 200	4–4	1.80+09	1.78−02	6.00−02	−1.148	B+	2
50		$^2S-^2P^\circ$		*314.98*	504 630–*822 110*	2–6	8.51+08	3.80−02	7.87−02	−1.119	B+	2
				316.887	504 630–820 200	2–4	1.10+09	3.31−02	6.90−02	−1.179	B+	2
				311.236	504 630–825 930	2–2	3.28+08	4.76−03	9.76−03	−2.021	B	2
51		$^2P-^2P^\circ$		*343.77*	*531 220–822 110*	6–6	1.07+10	1.89−01	1.28+00	0.055	B+	2
				345.101	530 430–820 200	4–4	8.68+09	1.55−01	7.05−01	−0.208	B+	2
				341.146	532 800–825 930	2–2	7.67+09	1.34−01	3.00−01	−0.572	B+	2
				338.409	530 430–825 930	4–2	3.99+09	3.42−02	1.53−01	−0.864	B+	2
				347.947	532 800–820 200	2–4	1.49+09	5.41−02	1.24−01	−0.966	B+	2
52	$2s2p^4-$ $2s2p^3(^5S^\circ)3s$	$^4P-^4S^\circ$		*76.11*	*314 775–1* 628 660	12–4	1.18+11	3.41−02	1.03−01	−0.388	B+	2
				75.988	312 670–1 628 660	6–4	5.98+10	3.45−02	5.18−02	−0.684	B+	2
				76.196	316 250–1 628 660	4–4	388+10	3.37−02	3.39−02	−0.870	B+	2
				76.306	318 140–1 628 660	2–4	1.92+10	3.35−02	1.69−02	−1.174	B+	2
53	$2s2p^4-$ $2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$		*67.25*	*314 775–1 801 730*	12–20	3.35+11	3.78−01	1.01+00	0.657	D+	1
				67.156	312 670–1 801 730	6–8	3.36+11	3.03−01	4.02−01	−0.260	D+	LS
				67.318	316 250–1 801 730	4–6	2.34+11	2.38−01	2.11−01	−0.021	D+	LS
				67.404	318 140–1 801 730	2–4	1.39+11	1.89−01	8.39−02	−0.423	D	LS
				67.156	312 670–1 81 730	6–6	1.01+11	6.81−02	9.03−02	−0.389	D	LS

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
				67.318	316 250–1 81 730	4–4	1.78+11	1.21−01	1.07−01	−0.315	D	LS
				67.404	318 140–1 801 730	2–2	2.77+11	1.89−01	8.39−02	−0.423	D	LS
				67.156	312 670–1 801 730	6–4	1.68+10	7.57−03	1.00−02	−1.343	E	LS
				67.318	316 250–1 801 730	4–2	5.56+10	1.89−02	1.68−02	−1.121	E+	LS
54	$2p^5$ $-2s^22p^2(^3P)3s$	$^2P-^2P^{\circ}$		*158.61*	*822 110–1 452 597*	6–6	1.08+05	4.06−07	1.27−06	−5.613	C	2
				157.803	820 200–1 453 900	4–4	8.16+04	3.05−07	6.33−07	−5.914	C	2
				160.241	825 930–1 449 990	2–2	5.59+04	3.69−07	3.90−07	−6.132	C	2
				158.783	820 200–1 449 990	4–2	3.94+04	7.44−08	1.56−07	−6.526	C	2
				1.59.243	825 930–1 453 900	2–4	1.18+04	8.99−08	9.42−08	−6.745	C	2
55	$2p^5$ $-2s^22p^2(^1D)3s$	$^2P-^2D^{\circ}$		*150.34*	*822 110–1 487 286*	6–10	2.87+05	1.62−06	4.82−06	−5.012	C	2
				150.035	820 200–1 486 710	4–6	2.87+05	1.45−06	2.87−06	−5.237	C	2
				151.007	825 930–1 488 150	2–4	2.32+05	1.59−06	1.58−06	−5.498	C	2
				149.712	820 200–1 488 150	4–4	5.61+04	1.89−07	3.72−07	−6.121	C	2
56	$2p^5$ $-2s^22p^2(^3P)3d$	$^2P^{\circ}-^2P$				6–6						
				124.256	820 200–1 624 990	4–4	4.47+06	1.03−05	1.69−05	−4.385	C+	2
				125.147	825 930–1 624 990	2–4	6.98+05	3.28−06	2.70−06	−5.183	C	2
57		$^2P^{\circ}-^2D$		*119.34*	*822 110–1 660 022*	6–10	4.29+06	1.53−05	3.60−05	−4.037	C+	2
				119.007	820 200–1 660 490	4–6	4.38+06	1.39−05	2.18−05	−4.255	C+	2
				119.992	825 930–1 659 320	2–4	3.74+06	1.62−05	1.28−05	−4.489	C+	2
				119.172	820 200–1 659 320	4–4	4.09+05	8.70−07	1.37−06	−5.458	C	2
58	$2p^5$ $-2s^22p^2(^1D)3d$	$^2P^{\circ}-^2D$		*115.63*	*822 110–1 686 916*	6–10	7.34+04	2.45−07	5.60−07	−5.833	C	2
				115.292	820 200–1 687 560	4–6	2.88+02	8.62−10	1.31−09	−8.462	D+	2
				116.276	825 930–1 685 950	2–4	1.74+05	7.07−07	5.41−07	−5.850	C	2
				115.507	820 200–1 685 950	4–4	5.68+03	1.14−08	1.73−08	−7.341	D+	2
59		$^2P^{\circ}-^2S$		[*113.43*]	*822 110*–1 703 690	6–2	1.55+07	1.00−05	2.24−05	−4.222	C+	2
				[113.187]	820 200–1 703 690	4–2	1.05+07	1.01−05	1.50−05	−4.394	C+	2
				[113.926]	825 930–1 703 690	2–2	5.08+06	9.88−06	7.41−06	−4.704	C+	2
60	$2p^5$ $-2s^22p^2(^1D)3d?$	$^2P^{\circ}-^2P?$		*114.22*	*822 110–1 697 630*	6–6	1.48+07	2.90−05	6.55−05	−3.759	C+	2
				113.902	820 200–1 698 150	4–4	1.31+07	2.54−05	3.81−05	−3.993	C+	2
				114.855	825 930–1 596 590	2–2	9.98+06	1.97−05	1.49−05	−4.405	C+	2
				114.104	820 200–1 696 590	4–2	4.42+06	4.32−06	6.49−06	−4.762	C	2
				114.650	825 930–1 698 150	2–4	1.99+06	7.85−06	5.92−06	−4.804	C	2
61	$2s^22p^2(^3P)3s$– $2s2p^3(^5S^{\circ})3s$	$^4P^{\circ}-^4S$		*513.98*	*1 434 102*–1 628 660	12–4	9.07+08	1.20−02	2.43−01	−0.842	B+	2
				519.373	1 436 120–1 628 660	6–4	4.39+08	1.18−02	1.21−01	−1.150	B+	2
				510.751	1 432 870–1 628 660	4–4	3.07+08	1.20−02	8.07−02	−1.319	B+	2
				504.668	1 430 510–1 628 660	2–4	1.61+08	1.23−02	4.10−02	−1.609	B+	2
62		$^2P^{\circ}-^4S$										
				572.21	1 453 900–1 628 660	4–4	3.60+06	1.77−04	1.33−03	−3.150	C	2
				559.691	1 449 990–1 628 660	2–4	1.30+06	1.22−04	4.49−04	−3.613	D+	2
63	$2s^22p^2(^1D)3s$– $2s2p^3(^5S^{\circ})3s$	$^2D^{\circ}-^4S$										
				704.47	1 486 710–1 628 660	6–4	4.52+06	2.24−04	3.12−03	−2.872	C	2

TABLE 32. Transition probabilities of allowed lines for Si VIII (references for this table are as follows; 1=Burke and Lennon,[11] 2,3=Tachiev and Froese Fischer,[100,101] and 4=Merkelis *et al.*[74])—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	log gf	Acc.	Source
				711.69	1 488 150–1 628 660	4–4	5.63+05	4.28−05	4.01−04	−3.766	D+	2
64	$2s^22p^2(^3P)3d$–$2s2p^3(^6S^\circ)3s$	$^2P^\circ-^4S$										
				3 670 cm^{-1}	1 624 990–1 628 660	4–4	1.47+01	1.63−06	5.86−04	−5.186	D+	2
65	$2s2p^3(^5S^\circ)3s$–$2s^22p^2(^3P)3d$	$^4S^\circ-^2F$	18 582	18 587	1 628 660–1 634 040	4–6	1.51+03	1.18−04	2.88−02	−3.326	C+	2
66		$^4S^\circ-^4P$	*10 390*	*10 390*	1 628 660–*1 638 285*	4–12	7.20+04	3.50−03	4.79−01	−1.854	B+	2
			11 348	11 351	1 628 660–1 637 470	4–6	4.94+04	1.43−03	2.14−01	−2.243	B+	2
			9 830	9 833	1 628 660–1 638 830	4–4	9.17+04	1.33−03	1.72−01	−2.274	B+	2
			9 105	9 107	1 628 660–1 639 640	4–2	1.25+05	7.76−04	9.31−02	−2.508	B+	2
67		$^4S^\circ-^2D$										
			3 140.8	3 141.7	1 628 660–1 660 490	4–6	2.62+03	5.81−06	2.40−04	−4.634	D+	2
			3 260.6	3 261.6	1 628 660–1 659 320	4–4	1.99+02	3.17−07	1.36−05	−5.897	E+	2
68	$2s2p^3(^5S^\circ)3s$–$2s^22p^2(^1D)3d$	$^4S^\circ-^2F$										
				1 780.9	1 628 660–1 684 810	4–6	2.97+04	2.12−05	4.96−04	−4.072	D+	2
69		$^4S^\circ-^2D$										
				1 697.79	1 628 660–1 687 560	4–6	1.15+05	7.47−05	1.67−03	−3.525	C	2
				1 745.51	1 628 660–1 685 950	4–4	3.18+04	1.45−05	3.34−04	−4.237	D+	2
70		$^4S^\circ-^2S$										
				[1 332.80]	1 628 660–1 703 690	4–2	6.65+05	8.86−05	1.56−03	−3.451	C	2
71	$2s2p^3(^5S^\circ)3s$–$2s^22p^2(^1D)3d$?	$^4S^\circ-^2P$?										
				[1 439.06]	1 628 660–1 698 150	4–4	9.51+06	2.95−03	5.60−02	−1.928	B	2
				[1 472.10]	1 628 660–1 696 590	4–2	8.91+05	1.45−04	2.81−03	−3.237	C	2
72	$2s2p^3(^5S^\circ)3s$–$2s2p^3(^5S^\circ)3p$	$^4S^\circ-^4P$		*[1437.4]*	1 628 660–1 698 230	4–12	3.12+08	2.90−01	5.49+00	0.064	B+	2
				[1 437.40]	1 628 660–1 698 230	4–6	3.15+08	1.46−01	2.77+00	−0.234	A	2
				[1 437.40]	1 628 660–1 698 230	4–4	3.06+08	9.47−02	1.79+00	−0.422	B+	2
				[1 437.40]	1 628 660–1 698 230	4–2	3.14+08	4.86−02	9.21−01	−0.711	B+	2
73	$2s2p^3(^5S^\circ)3s$–$2s^22p^2(^3P)4d$	$^4S^\circ-^4P$				4–12						1
				269.847	1 628 660–1 999 240	4–6	2.39+09	3.91−02	1.39−01	−0.806	D	LS
				[268.918]	1 628 660–2 000 520	4–4	2.42+09	2.62−02	9.28−02	−0.980	D	LS
74	$2s2p^3(^5S^\circ)3p$–$2s2p^3(^5S^\circ)3d$	$^4P-^4D^\circ$		*[966.2]*	*1 698 230–1 801 730*	12–20	1.38+09	3.22−01	1.23+01	0.587	C+	1
				[966.18]	1 698 230–1 801 730	6–8	1.38+09	2.58−01	4.92+00	0.190	B	LS
				[966.18]	1 698 230–1 801 730	4–6	9.67+08	2.03−01	2.58+00	−0.090	C+	LS
				[966.18]	1 698 230–1 801 730	2–4	5.75+08	1.61−01	1.02+00	−0.492	C	LS
				[966.18]	1 698 230–1 801 730	6–6	4.14+08	5.80−02	1.11+00	−0.458	C	LS
				[966.18]	1 698 230–1 801 730	4–4	7.36+08	1.03−01	1.31+00	−0.385	C	LS
				[966.18]	1 698 230–1 801 730	2–2	1.15+09	1.61−01	1.02+00	−0.492	C	LS
				[966.18]	1 698 230–1 801 730	6–4	6.90+07	6.44−03	1.23−01	−1.413	D	LS
				[966.18]	1 698 230–1 801 730	4–2	2.30+08	1.61−02	2.05−01	−1.191	D+	LS

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

4.8.3. Forbidden Transitions for Si VIII

The results of Tachiev and Froese Fischer[101] are the product of extensive MCHF calculations with Breit-Pauli corrections to order α^2, with energy corrections. The second-order MBPT results of Merkelis *et al.*[72] are also cited. Becker *et al.*[6] used the SUPERSTRUCTURE program with both semiempirical term energy and relativistic corrections.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by two or more references.[6,44,72,101] In this spectrum, the forbidden transitions between different configurations generally are stronger for E2 than for M1 lines. We note that these types of transitions have only been computed by a single source[101] and that their estimated accuracies are therefore quite uncertain. The same also holds for the M2 transitions. Next we isoelectronically averaged the logarithmic quality factors observed for allowed N-like lines from the lower-lying levels of Na V, Mg VI, Al VII, and Si VIII and applied the result to forbidden lines of Si VIII using the method described in the introduction to Kelleher and Podobedova.[53]

4.8.4. References for Forbidden Transitions for Si VIII

[6]S. R. Becker, K. Butler, and C. J. Zeippen, Astron. Astrophys. **221**, 375 (1989).

[44]M. Godefroid and C. F. Fischer, J. Phys. B **17**, 681 (1984).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[72]G. Merkelis, I. Martinson, R. Kisielius, and M. J. Vilkas, Phys. Scr. **59**, 122 (1999).

[99]G. Tachiev and C. Froese Fischer, Astron. Astrophys. **385**, 716 (2002).

[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 99).

TABLE 33. Wavelength finding list for forbidden lines of Si VIII

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.
454.277	9	530.842	8	891.11	7	999.60	12
459.221	9	849.47	7	944.38	2	1 346.44	11
461.787	9	849.69	7	949.23	2	1 346.98	11
466.897	9	876.12	7	976.18	12	1 440.497	1
471.054	9	876.35	7	976.47	12	1 445.753	1
520.942	8	890.87	7	999.30	12		
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**
2 722.4	4	2763.1	4	3 874.9	13		
2 741.2	4	2782.6	4	18 277	6		
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**
3 580	6	1 890	6	252.4	3		
2 370	14	542	5	30	10		

TABLE 34. Transition probabilities for forbidden lines for Si VIII (references for this table are as follows: 1=Tachiev and Froese Fischer,[101] 2=Merkelis *et al.*,[72] and 3=Becker *et al.*[6])

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
1	$2p^3-2p^3$	$^4S^\circ-^2D^\circ$									
				1 440.497	0.0–69 420.5	4–6	M1	3.21−02	2.14−05	C	1,2,3
				1 440.497	0.0–69 420.5	4–6	E2	9.51−03	3.16−04	B+	1,2,3
				1 445.753	0.0–69 168.1	4–4	M1	1.55+00	6.96−04	B+	1,2,3
				1 445.753	0.0–69 168.1	4–4	E2	6.02−03	1.36−04	B+	1,2,3
2		$^4S^\circ-^2P^\circ$									
				944.38	0.0–105 890	4–4	M1	7.23+01	9.04−03	B+	1,2,3
				944.38	0.0–105 890	4–4	E2	2.12−04	5.69−07	D+	1,2,3
				949.23	0.0–105 348	4–2	M1	3.02+01	1.92−03	B+	1,2,3
				949.23	0.0–105 348	4–2	E1	1.13−03	1.56−06	D+	1,2,3
3		$^2D^\circ-^2D^\circ$									
				252.4 cm^{-1}	69 168.1–69 420.5	4–6	M1	1.61−04	2.23+00	B+	1,2,3
				252.4 cm^{-1}	69 168.1–69 420.5	4–6	E2	5.48−14	2.87−03	B	1,2,3
4		$^2D^\circ-^2P^\circ$									
			2 782.6	2 783.4	69 420.5–105 348	6–2	E2	2.14−01	6.38−02	B+	1,2,3

TABLE 34. Transition probabilities for forbidden lines for Si VIII (references for this table are as follows: 1=Tachiev and Froese Fischer,[101] 2=Merkelis *et al.*,[72] and 3=Becker *et al.*[6])—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
			2 741.2	2 742.0	69 420.5–105 890	6–4	M1	1.17+01	3.57−02	B+	1,2,3
			2 741.2	2 742.0	69 420.5–105 890	6–4	E2	3.97−01	2.20−01	B+	1,2,3
			2 763.1	2 764.0	69 168.1–105 348	4–2	M1	1.26+01	1.98−02	B+	1,2,3
			2 763.1	2 764.0	69 168.1–105 348	4–2	E2	3.30−01	9.52−02	B+	1,2,3
			2 722.4	2 723.2	69 168.1–105 890	4–4	M1	2.10+01	6.28−02	B+	1,2,3
			2 722.4	2 723.2	69 168.1–105 890	4–4	E2	1.66−01	8.89−02	B+	1,2,3
5		$^2P^\circ-^2P^\circ$									
				542 cm^{-1}	105 348–105 890	2–4	M1	1.35−03	1.26+00	A	1,2,3
				542 cm^{-1}	105 348–105 890	2–4	E2	8.61−13	6.58−04	C+	1,2,3
6	$2s2p^4-2s2p^4$	$^4P-^4P$									
			18 277	18 282	312 670–318 140	6–2	E2	1.36−05	4.96−02	B	1
				3 580 cm^{-1}	312 670–316 250	6–4	E2	1.14−06	6.92−02	B	1
				1 890 cm^{-1}	316 250–318 140	4–2	E2	7.47−09	5.53−03	C+	1
7		$^4P-^2D$									
				891.11	318 140–430 360	2–6	E2	4.09−03	1.23−05	D+	1
				876.35	316 250–430 360	4–6	E2	2.65−02	7.35−05	C	1
				890.87	318 140–430 390	2–4	E2	2.08−02	4.16−05	C	1
				849.69	312 670–430 360	6–6	E2	9.14−02	2.17−04	C	1
				876.12	316 250–430 390	4–4	E2	6.77−04	1.25−06	D	1
				849.47	312 670–430 390	6–4	E2	3.71−02	5.87−05	C	1
8		$^4P-^2S$									
				520.942	312 670–504 630	6–2	E2	2.10−01	1.44−05	D+	1
				530.842	316 250–504 630	4–2	E2	3.73−02	2.81−06	D	1
9		$^4P-^2P$									
				466.897	316 250–530 430	4–4	E2	1.40−01	1.11−05	D+	1
				454.277	312 670–532 800	6–2	E2	2.09−02	7.23−07	D	1
				459.221	312 670–530 430	6–4	E2	8.02−02	5.85−06	D+	1
				461.787	316 250–532 800	4–2	E2	7.39−02	2.77−06	D	1
				471.054	318 140–530 430	2–4	E2	3.20−02	2.65−06	D	1
10		$^2D-^2D$									
				30 cm^{-1}	430 360–430 390	6–4	E2	3.22−17	4.73−02	B	1
11		$^2D-^2S$									
				1 346.44	430 360–504 630	6–2	E2	1.70+01	1.35−01	B+	1
				1 346.98	430 390–504 630	4–2	E2	1.12+01	8.84−02	B+	1
12		$^2D-^2P$									
				976.18	430 360–532 800	6–2	E2	4.75−01	7.51−04	C	1
				999.30	430 360–530 430	6–4	E2	8.84−02	3.15−04	C	1
				976.47	430 390–532 800	4–2	E2	1.08+00	1.72−03	C+	1
				999.60	430 390–530 430	4–4	E2	2.53−01	9.02−04	C+	1
13		$^2S-^2P$									
			3 874.9	3 876.0	504 630–530 430	2–4	E2	1.30−04	4.08−04	C	1
14		$^2P-^2P$									
				2 370 cm^{-1}	530 430–532 800	4–2	E2	2.64−07	6.31−02	B	1

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

4.9. Si IX

Ionization energy: 351.12 eV (2 832 000 cm^{-1})

Carbon isoelectronic sequence

Ground state: $1s^22s^22p^2\ ^3P_0$

4.9.1. Allowed Transitions for Si IX

Only OP (Ref. 61) results were available for energy levels above the 2p3d. Wherever available we have used the data of Tachiev and Froese Fischer,[101] which are the product of extensive MCHF calculations with Breit-Pauli corrections to order α^2. Their calculations only extend to transitions from energy levels up to 2p3d. Aggarwal[1] used the CIV3 code. Mendoza *et al.*[71] used the SUPERSTRUCTURE code with CI, relativistic effects, and semiempirical energy corrections.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[1,61,71,101] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately, and each of these were in turn divided into two upper-level energy groups below and above 900 000 cm^{-1}. Estimated accuracies were substantially better for the lower energy groups. OP lines constituted a fifth group. We then isoelectronically averaged the logarithmic quality factors observed for C-like lines of Na VI, Mg VII, Al VIII, and Si IX using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying intercombination lines and those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines.

A NIST compilation of far-UV lines of Si IX was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.9.2. References for Allowed Transitions for Si IX

[1]K. M. Aggarwal, Astrophys. J., Suppl. Ser. **118**, 589 (1998).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[60]D. Luo and A. K. Pradhan, J. Phys. B **22**, 3377 (1989).
[61]D. Luo and A. K. Pradhan, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Luo and Pradhan (Ref. 60).
[71]C. Mendoza, C. J. Zeippen, and P. J. Storey, Astron. Astrophys., Suppl. Ser. **135**, 159 (1999).
[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[98]G. Tachiev and C. Froese Fischer, Can. J. Phys. **79**, 955 (2001).
[101]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 98).

TABLE 35. Wavelength finding list for allowed lines of Si IX

Wavelength (vac) (Å)	Mult. No.
44.215	30
44.249	30
44.291	30

TABLE 35. Wavelength finding list for allowed lines of Si IX—Continued

Wavelength (vac) (Å)	Mult. No.
51.113	29
51.362	28
52.669	59
52.671	59
52.675	59
52.810	27
52.838	27
52.918	27
53.806	26
53.879	26
53.992	26
54.841	49
54.870	49
54.907	49
55.039	21
55.094	21
55.116	21
55.154	21
55.234	21
55.272	21
55.305	20
55.356	20
55.383	20
55.401	20
55.475	20
55.502	20
55.510	57
55.512	57
55.517	57
55.779	56
55.781	56
55.786	56
55.819	19
55.940	19
56.003	24
56.027	23
57.153	58
57.155	58
57.157	58
57.434	22
57.778	25
58.158	52
58.160	52
58.165	52
58.906	51
59.002	51
59.004	51
59.070	51
59.072	51
59.077	51
59.462	50
59.464	50
59.469	50
59.964	54
59.967	54
60.989	46

TABLE 35. Wavelength finding list for allowed lines of Si IX—Continued

Wavelength (vac) (Å)	Mult. No.
61.109	46
61.190	46
61.351	53
61.355	53
61.502	16
61.543	47
61.546	47
61.551	47
61.600	16
61.649	16
61.697	16
61.844	16
62.975	17
63.569	48
63.572	48
63.574	48
65.229	18
65.486	55
104.851	60
105.352	60
105.417	60
105.923	60
106.123	60
189.204	31
189.664	34
190.842	31
202.941	6
203.994	6
205.617	6
210.225	37
223.743	5
225.024	5
227.000	5
227.361	11
228.385	4
230.421	4
234.044	33
234.079	33
234.159	33
253.797	10
257.309	32
258.080	9
258.395	32
258.492	32
259.770	15
261.416	32
261.460	32
261.559	32
266.317	36
266.394	36
268.278	42
290.690	3
292.763	3
292.800	3
292.857	3
294.861	14
296.117	3
296.213	3
296.674	35
298.248	35
298.307	35
298.345	35
302.339	35
302.438	35
305.872	45
340.460	61
341.949	2
343.416	8
343.545	8
344.951	2
345.124	2
346.500	61
349.617	2
349.795	2
349.873	2
350.214	63
351.296	63
354.271	63
358.296	39
359.648	64
361.193	62
361.272	64
362.227	64
362.345	62
365.510	62
366.892	41
417.510	7
417.763	7
417.875	7
418.590	38
423.352	13
426.692	38
427.100	40
430.370	40
438.939	40
441.020	44
506.150	70
513.584	70
529.409	69
531.000	43
536.064	43
537.548	69
541.589	12
549.423	43
674.65	1
692.73	1
865.35	68
866.25	66
887.31	68
1 099.26	67
1 100.59	67
1 123.34	67

TABLE 35. Wavelength finding list for allowed lines of Si IX—Continued

Wavelength (vac) (Å)	Mult. No.
1 134.94	67
1 160.63	67
1 324.85	71
1 363.33	71

Wavelength (air) (Å)	Mult. No.
4 767.4	65
5 520.3	65

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])

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
1	$2s^22p^2-2s2p^3$	$^3P-^5S^\circ$										
				[692.73]	6 414–150 770	5–5	1.43+05	1.03−05	1.18−04	−4.288	C+	2,3,4
				[674.65]	2 545.0–150 770	3–5	6.19+04	7.04−06	4.69−05	−4.675	C+	2,3,4
2		$^3P-^3D^\circ$		*347.36*	*4 412–292 295*	9–15	2.30+09	6.94−02	7.14−01	−0.204	A	2,3
				349.873	6 414–292 232	5–7	2.24+09	5.75−02	3.31−01	−0.541	A	2,3
				345.124	2 545.0–292 296	3–5	1.94+09	5.77−02	1.97−01	−0.762	A	2,3
				341.949	0–292 441	1–3	1.49+09	7.82−02	8.81−02	−1.107	A	2,3
				349.795	6 414–292 296	5–5	4.00+08	7.34−03	4.23−02	−1.435	B+	2,3
				344.951	2 545.0–292 441	3–3	8.77+08	1.57−02	5.33−02	−1.327	A	2,3
				349.617	6 414–292 441	5–3	3.69+07	4.06−04	2.34−03	−2.693	B+	2,3
3		$^3P-^3P^\circ$		*294.41*	*4 412–344 077*	9–9	6.00+09	7.80−02	6.80−01	−0.154	A	2,3
				296.117	6 414–344 118	5–5	4.71+09	6.19−02	3.02−01	−0.509	A	2,3
				292.857	2 545.0–344 009	3–5	1.84+09	2.37−02	6.85−02	−1.148	A	2,3
				296.213	6 414–344 009	5–3	2.28+09	1.80−02	8.79−02	−1.046	A	2,3
				292.800	2 545.0–344 075	3–1	6.07+09	2.60−02	7.53−02	−1.108	B+	2
				292.763	2 545.0–344 118	3–5	1.23+09	2.64−02	7.64−02	−1.101	A	2,3
				290.690	0–344 009	1–3	1.94+09	7.36−02	7.05−02	−1.133	A	2,3
4		$^3P-^1D^\circ$										
				228.385	2 545.0–440 403	3–5	2.88+06	3.76−05	8.48−05	−3.948	D+	2,3
				230.421	6 414–440 403	5–5	5.46+07	4.35−04	1.65−03	−2.663	C	2,3
5		$^3P-^3S^\circ$		*225.97*	*4 412*–446 942	9–3	3.69+10	9.41−02	6.30−01	−0.072	A	2,3
				227.000	6 414–446 942	5–3	2.07+10	9.59−02	3.58−01	−0.319	A	2,3
				225.024	2 545.0–446 942	3–3	1.21+10	9.21−02	2.05−01	−0.559	A	2,3
				223.743	0–446 942	1–3	4.04+09	9.09−02	6.70−02	−1.041	A	2,3
6		$^3P-^1P^\circ$										
				203.994	2 545.0–492 755	3–3	6.70+07	4.18−04	8.43−04	−2.902	C	2,3
				205.617	6 414–492 755	5–3	2.06+06	7.85−06	2.66−05	−4.406	D	2,3
				202.941	0–492 755	1–3	3.52+05	6.53−06	4.36−06	−5.185	D	2,3
7		$^1D-^3D^\circ$										
				417.763	52 925.9–292 296	5–5	9.82+05	2.57−05	1.77−04	−3.891	D+	2,3
				417.510	52 925.9–292 441	5–3	7.11+05	1.12−05	7.66−05	−4.252	D+	2,3
				417.875	52 925.9–292 232	5–7	5.19+06	1.90−04	1.31−03	−3.022	C	2,3
8		$^1D-^3P^\circ$										
				343.545	52 925.9–344 009	5–3	5.76+06	6.12−05	3.46−04	−3.514	C	2,3
				343.416	52 925.9–344 118	5–5	8.27+05	1.46−05	8.26−05	−4.137	D+	2,3
9		$^1D-^1D^\circ$		258.080	52 925.9–440 403	5–5	1.77+10	1.77−01	7.52−01	−0.053	A	2,3
10		$^1D-^3S^\circ$										

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
				253.797	52 925.9–446 942	5–3	3.30+06	1.91−05	8.00−05	−4.020	D+	2,3
11		$^1D-^1P^{\circ}$		227.361	52 925.9–492 755	5–3	2.31+10	1.07−01	4.02−01	−0.272	A	2,3
12		$^1S-^3D^{\circ}$										
				541.589	107 799–292 441	1–3	3.64+05	4.80−05	8.56−05	−4.319	D+	2,3
13		$^1S-^3P^{\circ}$										
				423.352	107 799–344 009	1–3	1.87+06	1.51−04	2.10−4	−3.821	D+	2,3
14		$^1S-^3S^{\circ}$										
				294.861	107 799–446 942	1–3	5.15+06	2.01−04	1.95−04	−3.697	D+	2,3
15		$^1S-^1P^{\circ}$		259.770	107 799–492 755	1–3	5.80+09	1.76−01	1.51−01	−0.754	A	2,3
16	$2p^2-2p3s$	$^3P-^3P^{\circ}$				9–9						2,3
				61.649	6 414–1 628 500	5–5	8.75+10	4.98−02	5.06−02	−0.604	B	2,3
				61.697	2 545.0–1 623 380	3–3	2.81+10	1.60−02	9.77−03	−1.319	B	2,3
				61.844	6 414–1 623 380	5–3	4.89+10	1.68−02	1.71−02	−1.076	B	2,3
				61.502	2 545.0–1 628 500	3–5	2.94+10	2.78−02	1.69−02	−1.079	B	2,3
				61.600	0–1 623 380	1–3	3.84+10	6.55−02	1.33−02	−1.184	B	2,3
17		$^1D-^1P^{\circ}$		62.975	52 925.9–1 640 850	5–3	1.41+11	5.03−02	5.21−02	−0.599	C+	2,3
18		$^1S-^1P^{\circ}$		65.229	107 799–1 640 850	1–3	4.20+10	8.04−02	1.73−02	−1.095	C+	2,3
19	$2p^2-2p3d$	$^3P-^1D^{\circ}$										
				[55.819]	2 545.0–1 794 050	3–5	1.88+10	1.47−02	8.08−03	−1.356	D	2,3
				[55.940]	6 414–1 794 050	5–5	2.04+09	9.59−04	8.83−04	−2.319	E	2,3
20		$^3P-^3D^{\circ}$		*55.38*	*4 412–1 809 979*	9–15	1.06+12	8.10−01	1.33+00	0.863	B	2,3
				55.401	6 414–1 811 430	5–7	1.09+12	7.04−01	6.42−01	0.547	B+	2,3
				55.356	2 545.0–1 809 040	3–5	9.64+11	7.38−01	4.04−01	0.345	B	2,3
				55.305	0–1 808 160	1–3	7.68+11	1.06+00	1.92−01	0.025	B	2,3
				55.475	6 414–1 809 040	5–5	3.64+10	1.68−02	1.53−02	−1.076	D+	2,3
				55.383	2 545.0–1 808 160	3–3	3.03+11	1.39−01	7.63−02	−0.380	C+	2,3
				55.502	6 414–1 808 160	5–3	1.27+09	3.53−4	3.22−04	−2.753	E+	2,3
21		$^3P-^3P^{\circ}$		*55.19*	*4 412–1 816 287*	9–9	6.79+11	3.10−01	5.07−01	0.446	C+	2,3
				55.272	6 414–1 815 650	5–5	6.98+11	3.20−01	2.91−01	0.204	B	2,3
				55.116	2 545.0–1 816 900	3–3	3.16+11	1.44−01	7.83−02	−0.365	C+	2,3
				55.234	6 414–1 816 900	5–3	2.88+11	7.90−02	7.18−02	−0.403	C+	2,3
				55.094	2 545.0–1 817 630	3–1	6.26+11	9.50−02	5.17−02	−0.545	C	2,3
				55.154	2 545.0–1 815 650	3–5	1.70+09	1.29−03	7.02−04	−2.412	E	2,3
				55.039	0–1 816 900	1–3	5.42+10	7.39−02	1.34−02	−1.131	D+	2,3
22		$^1D-^1D^{\circ}$		[57.434]	52 925.9–1 794 050	5–5	2.76+11	1.36−01	1.29−01	−0.167	C	2
23		$^1D-^1F^{\circ}$		56.027	52 925.9–1 837 780	5–7	1.34+12	8.84−01	8.15−01	0.645	B+	2,3
24		$^1D-^1P^{\circ}$		56.003	52 925.9–1 838.560	5–3	3.84+10	1.08−02	9.99−03	−1.268	D+	2,3
25		$^1S-^1P^{\circ}$		57.778	107 799–1 838 560	1–3	8.01+11	1.20+00	2.29−01	0.079	B	2,3
26	$2s^22p^2-2s2p^2(^4P)3p$	$^3P-^3S^{\circ}$		*[53.93]*	*4 412*–1 858 540	9–3	2.61+11	3.80−02	6.07−02	−0.466	D	1
				[53.992]	6 414–1 858 540	5–3	1.45+11	3.79−02	3.37−02	−0.722	D	LS
				[53.879]	2 545.0–1 858 540	3–3	8.73+10	3.80−02	2.02−02	−0.943	E+	LS
				[53.806]	0–1 858 540	1–3	2.93+10	3.81−02	6.75−03	−1.419	E+	LS

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
27		$^3P-^3D^\circ$				9–15						1
				52.838	6 414–1 898 990	5–7	2.24+11	1.31−01	1.14−01	−0.184	D+	LS
				52.810	2 545.0–1 896 130	3–5	1.68+11	1.17−01	6.10−02	−0.455	D	LS
				52.918	6 414–1 896 130	5–5	5.57+10	2.34−02	2.04−02	−0.932	E+	LS
28	$2s^22p^2-2s2p^2(^2D)3p$	$^1D-^1F^\circ$		51.362	52 925.9–1 999 890	5–7	2.85+11	1.58−01	1.34−01	−0.102	D+	1
29		$^1D-^1D^\circ$		51.113	52 925.9–2 009 870	5–5	3.32+11	1.30−01	1.09−01	−0.187	D+	1
30	$2p^2-2p4d$	$^3P-^3D^\circ$				9–15						1
				[44.249]	6 414–2 266 350	5–7	3.80+11	1.56−01	1.14−01	−0.108	D+	LS
				[44.215]	2 545.0–2 264 220	3–5	2.85+11	1.39−01	6.07−02	−0.380	D	LS
				[44.291]	6 414–2 264 220	5–5	9.45+10	2.78−02	2.03−02	−0.857	E+	LS
31	$2s2p^3-2p^4$	$^5S^\circ-^3P$										
				[190.842]	150 770–674 764	5–5	5.62+06	3.07−05	9.63−0	−3.814	D+	2,3
				[189.204]	150 770–679 300	5–3	2.39+06	7.69−06	2.40−05	−4.415	D	2,3
32		$^3D^\circ-^3P$		*259.95*	*292 295–676 978*	15–9	1.50+10	9.09−02	1.17+00	0.135	A	2,3
				261.416	292 232–674 764	7–5	1.23+10	9.03−02	5.44−01	−0.199	A	2,3
				258.395	292 296–679 300	5–3	1.07+10	6.40−02	2.72−01	−0.495	A	2,3
				257.309	292 441–681 079	3–1	1.45+10	4.79−02	1.22−01	−0.843	A	2,3
				261.460	292 296–674 764	5–5	2.65+09	2.71−02	1.17−01	−0.868	A	2,3
				258.492	292 441–679 300	3–3	4.04+09	4.04−02	1.03−01	−0.916	A	2,3
				261.559	292 441–674 764	3–5	2.05+08	3.51−03	9.07−03	−1.978	B+	2,3
33		$^3D^\circ-^1D$										
				234.079	292 296–719 502	5–5	1.33+07	1.09−04	4.20−04	−3.264	C	2,3
				234.044	292 232–719 502	7–5	6.86+07	4.02−04	2.17−03	−2.551	C	2,3
				234.159	292 441–719 502	3–5	3.96+05	5.42−06	1.25−05	−4.789	D	2,3
34		$^3D^\circ-^1S$										
				189.664	292 441–819 689	3–1	3.07+06	5.51−06	1.03−05	−4.782	D	2,3
35		$^3P^\circ-^3P$		*300.39*	*344 077–676 978*	9–9	3.66+09	4.95−02	4.40−01	−0.351	A	2,3
				302.438	344 118–674 764	5–5	2.41+09	3.30−02	1.64−01	−0.783	A	2,3
				298.248	344 009–679 300	3–3	6.66+08	8.88−03	2.62−02	−1.574	B+	2,3
				298.345	344 118–679 300	5–3	2.05+09	1.64−02	8.06−02	−1.086	A	2,3
				296.674	344 009–681 079	3–1	4.18+09	1.84−02	5.38−02	−1.258	A	2,3
				302.339	344 009–674 764	3–5	9.79+08	2.24−02	6.68−02	−1.173	A	2,3
				298.307	344 075–679 300	1–3	1.24+09	4.95−02	4.86−02	−1.305	B+	2
36		$^3P^\circ-^1D$										
				266.317	344 009–719 502	3–5	6.32+06	1.12−04	2.94−04	−3.474	C	2,3
				266.394	344 118–719 502	5–5	1.18+06	1.26−05	5.52−05	−4.201	D+	2,3
37		$^3P^\circ-^1S$										
				210.225	344 009–819 689	3–1	1.96+07	4.32−05	8.98−05	−3.887	D+	2,3
38		$^1D^\circ-^3P$										
				418.590	440 403–679 800	5–3	6.20+05	9.78−06	6.74−05	−4.311	D+	2,3
				426.692	440 403–674 764	5–5	1.50+07	4.11−04	2.88−03	−2.687	C	2,3
39		$^1D^\circ-^1D$		358.296	440 403–719 502	5–5	9.72+09	1.87−01	1.10+00	−0.029	A	2,3
40		$^3S^\circ-^3P$		*434.72*	446 942–*676 978*	3–9	2.38+09	2.02−01	8.68−01	−0.218	A	2,3
				438.939	446 942–674 764	3–5	2.27+09	1.09−01	4.74−01	−0.485	A	2,3

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
				430.370	446 942–679 300	3–3	2.49+09	6.92−02	2.94−01	−0.683	A	2,3
				427.100	446 942–681 079	3–1	2.60+09	2.37−02	1.00−01	−1.148	A	2,3
41		$^3S^\circ-^1D$										
				366.892	446 942–719 502	3–5	4.29+05	1.44−05	5.23−05	−4.365	D+	2,3
42		$^3S^\circ-^1S$										
				268.278	446 942–819 689	3–1	9.64+07	3.47−04	9.19−04	−2.983	C	2,3
43		$^1P^\circ-^3P$										
				536.064	492 755–679 300	3–3	4.98+06	2.15−04	1.14−03	−3.190	C	2,3
				531.000	492 755–681 079	3–1	4.11+05	5.79−06	3.04−05	−4.760	D	2,3
				549.423	492 755–674 764	3–5	1.25+06	9.40−05	5.10−04	−3.550	C	2,3
44		$^1P^\circ-^1D$		441.020	492 755–719 502	3–5	1.09+09	5.31−02	2.31−01	−0.795	A	2,3
45		$^1P^\circ-^1S$		305.872	492 755–819 689	3–1	2.46+10	1.15−01	3.47−01	−0.462	A	2,3
46	$2s2p^3-2s2p^2(^4P)3s$	$^5S^\circ-^4P$		*61.07*	150 770–*1 788 259*	5–15	9.18+10	1.54−01	1.55−01	−0.114	D	1
				60.989	150 770–1 790 410	5–7	9.21+10	7.19−02	7.22−02	−0.444	D	LS
				61.109	150 770–1 787 190	5–5	9.16+10	5.13−02	5.16−02	−0.591	D	LS
				61.190	150 770–1 785 020	5–3	9.12+10	3.07−02	3.09−02	−0.814	D	LS
47	$2s2p^3-2s2p^2(^2D)3s$	$^3D^\circ-^3D$		*61.55*	*292 295–1 917 100*	15–15	1.28+11	7.26−02	2.21−01	0.037	D	1
				61.543	292 232–1 917 100	7–7	1.14+11	6.45−02	9.15−02	−0.345	D+	LS
				61.546	292 296–1 917 100	5–5	8.89+10	5.05−02	5.12−02	−0.598	D	LS
				61.551	292 441–1 917 100	3–3	9.60+10	5.45−02	3.31−02	−0.786	D	LS
				61.543	292 232–1 917 100	7–5	1.99+10	8.09−03	1.15−02	−1.247	E+	LS
				61.546	292 296–1 917 100	5–3	3.20+10	1.09−02	1.10−02	−1.264	E+	LS
				61.546	292 296–1 917 100	5–7	1.42+10	1.13−02	1.14−02	−1.248	E+	LS
				61.551	292 441–1 917 100	3–5	1.92+10	1.82−02	1.11−02	−1.263	E+	LS
48		$^3P^\circ-^3D$		*63.57*	*344 077–1 917 100*	9–15	4.84+10	4.89−02	9.21−02	−0.356	D	1
				63.574	344 118–1 917 100	5–7	4.85+10	4.11−02	4.30−02	−0.687	D	LS
				63.569	344 009–1 917 100	3–5	3.63+10	3.67−02	2.30−02	−0.958	D	LS
				63.572	344 075–1 917 100	1–3	2.69+10	4.89−02	1.02−02	−1.311	E+	LS
				63.574	344 118–1 917 100	5–5	1.21+10	7.33−03	7.67−03	−1.436	E+	LS
				63.569	344 009–1 917 100	3–3	2.01+10	1.22−02	7.66−03	−1.437	E+	LS
				63.574	344 118–1 917 100	5–3	1.35+09	4.89−04	5.12−04	−2.612	E	LS
49	$2s2p^3-2s2p^2(^4P)3d$	$^5S^\circ-^5P$		*54.88*	150 770–*1 972 878*	5–15	1.21+12	1.63+00	1.48+00	0.911	C	1
				54.907	150 770–1 972 030	5–7	1.20+12	7.62−01	6.89−01	0.581	C	LS
				54.870	150 770–1 973 260	5–5	1.21+12	5.45−01	4.92−01	0.435	C	LS
				54.841	150 770–1 974 220	5–3	1.21+1	3.27−01	2.95−01	0.214	C	LS
50		$^3D^\circ-^3P$				15–9						
				[59.462]	292 232–1 973 980	7–5	4.54+10	1.72−02	2.36−02	−0.919	D	LS
				[59.464]	292 296–1 973 980	5–5	8.09+09	4.29−03	4.20−03	−1.669	E	LS
				[59.469]	292 441–1 973 980	3–5	5.40+08	4.77−04	2.80−04	−2.844	E	LS
51		$^3D^\circ-^3F$		*[58.98]*	*292 295–1 987 814*	15–21	4.05+11	2.96−01	8.62−01	0.647	C	1
				[58.906]	292 232–1 989 850	7–9	4.07+11	2.72−01	3.69−01	0.280	C	LS
				[59.004]	292 296–1 987 100	5–7	3.60+11	2.63−01	2.55−01	0.119	C	LS
				[59.077]	292 441–1 985 150	3–5	3.38+11	2.95−01	1.72−01	−0.053	D+	LS

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
				[59.002]	292 232–1 987 100	7–7	4.50+10	2.35−02	3.20−02	−0.784	D	LS
				[59.072]	292 296–1 985 150	5–5	6.29+10	3.29−02	3.20−02	−0.784	D	LS
				[59.070]	292 232–1 985 150	7–5	1.77+09	6.63−04	9.03−04	−2.333	E	LS
52		$^3D^\circ-^3D$				15–15						1
				[58.158]	292 232–2 011 690	7–7	1.87+11	9.49−02	1.27−01	−0.178	D+	LS
				[58.160]	292 296–2 011 690	5–5	1.47+11	7.43−02	7.11−02	−0.430	D	LS
				[58.158]	292 232–2 011 690	7–5	3.29+10	1.19−02	1.59−02	−1.079	E+	LS
				[58.160]	292 296–2 011 690	5–7	2.35+10	1.67−02	1.60−02	−1.078	E+	LS
				[58.165]	292 441–2 011 690	3–5	3.16+10	2.67−02	1.53−02	−1.096	E+	LS
53		$^3P^\circ-^3P$				9–9						1
				[61.355]	344 118–1 973 980	5–5	2.11+11	1.19−01	1.20−01	−0.225	D+	LS
				[61.351]	344 009–1 973 980	3–5	7.01+10	6.59−02	3.99−02	−0.704	D	LS
54		$^3P^\circ-^3D$				9–15						1
				[59.967]	344 118–2 011 690	5–7	3.92+11	2.96−01	2.92−01	0.170	C	LS
				[59.964]	344 009–2 011 690	3–5	2.95+11	2.65−01	1.57−01	−0.100	D+	LS
				[59.967]	344 118–2 011 690	5–5	9.81+10	5.29−02	5.22−02	−0.578	D	LS
55		$^3S^\circ-^3P$				3–9						
				[65.486]	446 942–1 973 980	3–5	4.89+10	5.24−02	3.39−02	−0.804	D	LS
56	$2s2p^3-2s2p^2(^2D)3d$	$^3D^\circ-^3F$		*55.78*	*292 295–2 085 020*	15–21	9.68+11	6.32−01	1.74+00	0.977	C	1
				55.779	292 232–2 085 020	7–9	9.69+11	5.81−01	7.47−01	0.609	C	LS
				55.781	292 296–2 085 020	5–7	8.61+11	5.62−01	5.16−01	0.449	C	LS
				55.786	292 441–2 085 020	3–5	8.13+11	6.32−01	3.48−01	0.278	C	LS
				55.779	292 232–2 085 020	7–7	1.08+11	5.03−02	6.47−02	−0.453	D	LS
				55.781	292 296–2 085 020	5–5	1.51+11	7.04−02	6.46−02	−0.453	D	LS
				55.779	292 232–2 085 020	7–5	4.26+09	1.42−03	1.83−03	−2.003	E	LS
57		$^3D^\circ-^3D$		*55.51*	*292 295–2 093 700*	15–15	6.18+11	2.85−01	7.82−01	0.631	D+	1
				55.510	292 232–2 093 700	7–7	5.48+11	2.53−01	3.24−01	0.248	C	LS
				55.512	292 296–2 093 700	5–5	4.31+11	1.99−01	1.82−01	−0.002	D+	LS
				55.517	292 441–2 093 700	3–3	4.63+11	2.14−01	1.17−01	−0.192	D+	LS
				55.510	292 232–2 093 700	7–5	9.64+10	3.18−02	4.07−02	−0.652	D	LS
				55.512	292 296–2 093 700	5–3	1.54+11	4.28−02	3.91−02	−0.670	D	LS
				55.512	292 296–2 093 700	5–7	6.88+10	4.45−02	4.07−02	−0.653	D	LS
				55.517	292 441–2 093 700	3–5	9.26+10	7.13−02	3.91−02	−0.670	D	LS
58		$^3P^\circ-^3D$		*57.16*	*344 077–2 093 700*	9–15	3.24+11	2.64−01	4.48−01	0.376	D+	1
				57.157	344 118–2 093 700	5–7	3.24+11	2.22−01	2.09−01	0.045	C	LS
				57.153	344 009–2 093 700	3–5	2.43+11	1.98−01	1.12−01	−0.226	D+	LS
				57.155	344 075–2 093 700	1–3	1.80+11	2.65−01	4.99−01	−0.577	D	LS
				57.157	344 118–2 093 700	5–5	8.11+10	3.97−02	3.74−02	−0.702	D	LS
				57.153	344 009–2 093 700	3–3	1.35+11	6.61−02	3.73−02	−0.703	D	LS
				57.157	344 118–2 093 700	5–3	9.02+09	2.65−03	2.49−03	−1.878	E	LS
59	$2s2p^3-2s2p^2(^2P)3d$	$^3D^\circ-^3F$		*[52.67]*	*292 295–2 190 870*	15–21	2.05+11	1.19−01	3.11−01	0.252	D+	1
				[52.669]	292 232–2 190 870	7–9	2.06+11	1.10−01	1.34−01	−0.114	D+	LS
				[52.671]	292 296–2 190 870	5–7	1.82+11	1.06−01	9.19−02	−0.276	D+	LS
				[52.675]	292 441–2 190 870	3–5	1.72+11	1.19−01	6.19−02	−0.447	D	LS
				[52.669]	292 232–2 190 870	7–7	2.29+10	9.51−03	1.15−02	−1.177	E+	LS

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
				[52.671]	292 296–2 190 870	5–5	3.20+10	1.33−02	1.15−02	−1.177	E+	LS
				[52.669]	292 232–2 190 870	7–5	9.02+08	2.68−04	3.25−04	−2.727	E	LS
60	$2p^4-2s^22p3s$	$^3P-^3P^\circ$				9–9						2,3
				104.851	674 764–1 628 500	5–5	1.83+06	3.01−06	5.20−0.6	−4.822	E+	2,3
				105.923	679 300–1 623 380	3–3	5.20+05	8.75−07	9.15−07	−5.581	E	2,3
				105.417	674 764–1 623 380	5–3	8.97+05	8.97−07	1.56−06	−5.384	D	2,3
				105.352	679 300–1 628 500	3–5	5.22+05	1.45−06	1.51−06	−5.362	D	2,3
				106.123	681 079–1 623 380	1–3	6.22+05	3.15−06	1.10−06	−5.502	E+	2,3
61	$2s^22p3s-$ $2s2p^2(^2D)3s$	$^3P^\circ-^3D$				9–15						1
				346.500	1 628 500–1 917 100	5–7	3.10+09	7.80−02	4.45−01	−0.409	C	LS
				340.460	1 623 380–1 917 100	3–5	2.44+09	7.08−02	2.38−01	−0.673	C	LS
				346.500	1 628 500–1 917 100	5–5	7.72+08	1.39−02	7.93−02	−1.158	D+	LS
				340.460	1 623 380–1 917 100	3–3	1.36+09	2.36−02	7.94−02	−1.150	D+	LS
				346.500	1 628 500–1 917 100	5–3	8.59+07	9.28−04	5.29−03	−2.333	E+	LS
62	$2s^22p3d$ $2s2p^2(^2D)3d$	$^3D^\circ-^3F$		*363.58*	*1 809 979–2 085 020*	15–21	5.63+08	1.56−02	2.81−01	−0.631	D+	1
				365.510	1 811 430–2 085 020	7–9	5.55+08	1.43−02	1.20−01	−1.000	D+	LS
				362.345	1 809 040–2 085 020	5–7	5.04+08	1.39−02	8.29−02	−1.158	D+	LS
				361.193	1 808 160–2 085 020	3–5	4.82+08	1.57−02	5.60−02	−1.327	D	LS
				365.510	1 811 430–2 085 020	7–7	6.19+07	1.24−03	1.04−02	−2.061	E+	LS
				362.345	1 809 040–2 085 020	5–5	8.89+07	1.75−03	1.04−02	−2.058	E+	LS
				365.510	1 811 430–2 085 020	7–5	2.44+06	3.49−05	2.94−04	−3.612	E	LS
63		$^3D^\circ-^3D$		*352.46*	*1 809 979–2 093 700*	15–15	1.85+09	3.45−02	6.01−01	−0.286	D+	1
				354.271	1 811 430–2 093 700	7–7	1.62+09	3.05−02	2.49−01	−0.671	C	LS
				351.296	1 809 040–2 093 700	5–5	1.30+09	2.41−02	1.39−01	−0.919	D+	LS
				350.214	1 808 160–2 093 700	3–3	1.41+09	2.60−02	8.99−02	−1.108	D+	LS
				354.271	1 811 430–2 093 700	7–5	2.85+08	3.83−03	3.13−02	−1.572	D	LS
				351.296	1 809 040–2 093 700	5–3	4.68+08	5.19−03	3.00−02	−1.586	D	LS
				351.296	1 809 040–2 093 700	4–7	2.08+08	5.40−03	3.12−02	−1.569	D	LS
				350.214	1 808 160–2 093 700	3–5	2.83+08	8.68−03	3.00−02	−1.584	D	LS
64		$^3P^\circ-^3D$		*360.47*	*1 816 287–2 093 700*	9–15	4.09+08	1.33−02	1.42−01	−0.922	D	1
				359.648	1 815 650–2 093 700	5–7	4.13+08	1.12−02	6.63−02	−1.252	D	LS
				361.272	1 816 900–2 093 700	3–5	3.04+08	9.92−03	3.54−02	−1.526	D	LS
				362.227	1 817 630–2 093 700	1–3	2.24+08	1.32−02	1.57−02	−1.879	E+	LS
				359.648	1 815 650–2 093 700	5–5	1.03+08	1.99−03	1.18−02	−2.002	E+	LS
				361.272	1 816 900–2 093 700	3–3	1.69+08	3.31−03	1.18−02	−2.003	E+	LS
				359.648	1 815 650–2 093 700	5–3	1.14+07	1.33−04	7.87−04	−3.177	E	LS
65	$2s2p^2(^4P)3p-$ $2s2p^2(^2D)3s$	$^3D^\circ-^3D$				15–15						1
			5520.3	5521.8	1 898 990–1 917 100	7–7	1.45+05	6.62−04	8.42−02	−2.334	D+	LS
			4767.4	4768.7	1 896 130–1 917 100	5–5	1.76+05	6.01−04	4.72−02	−2.522	D	LS
			5520.3	5521.8	1 898 990–1 917 100	7–5	2.54+04	8.30−05	1.06−02	−3.236	E+	LS
			4767.4	4768.7	1 896 130–1 917 100	5–3	6.31+04	1.29−04	1.01−02	−3.190	E+	LS
			4767.4	4768.7	1 896 130–1 917 100	5–7	2.83+04	1.35−04	1.06−02	−3.171	E+	LS
66	$2s2p^2(^4P)3p-$ $2s2p^2(^4P)3d$	$^3S^\circ-^3P$				3–9						1
				[866.25]	1 858 540–1 973–980	3–5	7.20+08	1.35−01	1.15+00	−0.393	C+	LS

TABLE 36. Transition probabilities of allowed lines for Si IX (references for this table are as follows: 1=Luo and Pradhan,[61] 2=Tachiev and Froese Fischer,[101] 3=Aggarwal,[1] and 4=Mendoza *et al.*[71])—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
67		$^3D^\circ-^3F$				15–21						1
				[1100.59]	1 898 990–1 989 850	7–9	6.94+08	1.62−01	4.11+00	0.055	B	LS
				[1099.26]	1 896 130–1 987–100	5–7	6.19+08	1.57−01	2.84+00	−0.105	B	LS
				[1134.94]	1 898 990–1 987 150	5–5	7.09+07	1.37−02	3.58−01	−1.018	C	LS
				[1123.34]	1 896 130–1 985 150	5–5	1.02+08	1.93−02	3.57−01	−1.015	C	LS
				[1160.63]	1 898 990–1 985 150	7–5	2.61+06	3.77−04	1.01−02	−2.579	E+	LS
68		$^3D^\circ-^3D$				15–15						1
				[887.31]	1 898 990–2 011 690	7–7	3.26+08	3.85−02	7.87−01	−0.569	C+	LS
				[865.35]	1 896 130–2 011 690	5–5	2.75+08	3.09−02	4.40−01	−0.811	C+	LS
				[887.31]	1 898 990–2 011 690	7–5	5.73+07	4.83−03	9.88−02	−1.471	D+	LS
				[865.35]	1 896 130–2 011 690	5–7	4.42+07	6.94−03	9.89−02	−1.460	D+	LS
69	$2s2p^2(^4P)3p-2s2p^2(^2D)3d$	$^3D^\circ-^3F$				15–21						1
				537.548	1 898 990–2 085 020	7–9	5.60+07	3.12−03	3.86−02	−1.661	D	LS
				529.409	1 896 130–2 085 020	5–7	5.22+07	3.07−03	2.68−02	−1.814	D	LS
				537.548	1 898 990–2 085 020	7–7	6.26+06	2.71−04	3.36−03	−2.722	E	LS
				529.409	1 896 130–2 085 020	5–5	9.16+06	3.85−04	3.36−03	−2.716	E	LS
				537.548	1 898 990–2 085 020	7–5	2.47+05	7.63−06	9.45−05	−4.272	E	LS
70		$^3D^\circ-^3D$				15–15						1
				513.584	1 898 990–2 093 700	7–7	2.00+08	7.90−03	9.35−02	−1.257	D+	LS
				506.150	1 896 130–2 093 700	5–5	1.64+08	6.28−03	5.23−02	−1.503	E+	LS
				513.584	1 898 990–2 093 700	7–5	3.51+07	9.91−04	1.17−02	−2.159	E+	LS
				506.150	1 896 130–2 093 700	5–3	5.86+07	1.35−03	1.12−02	−2.171	E+	LS
				506.150	1 896 130–2 093 700	5–7	2.62+07	1.41−03	1.17−02	−2.152	E+	LS
71	$2s2p^2(^2P)3d-2s^22p4d$	$^3F-^3D^\circ$				21–15						1
				[1324.85]	2 190 870–2 266 350	9–7	2.68+07	5.49−03	2.16−01	−1.306	C	LS
				[1363.33]	2 190 870–2 264 220	7–5	2.38+07	4.74−03	1.49−01	−1.479	D+	LS
				[1324.85]	2 190 870–2 266 350	7–7	2.33+06	6.12−04	1.87−02	−2.368	E+	LS
				[1363.33]	2 190 870–2 264 220	5–5	2.99+06	8.32−04	1.87−02	−2.381	E+	LS
				[1324.85]	2 190 870–2 266 350	5–7	6.57+04	2.42−05	5.28−04	−3.917	E	LS

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

4.9.3. Forbidden Transitions for Si IX

The results of Tachiev and Froese Fischer[100] are the product of extensive MCHF calculations with Breit-Pauli corrections to order α^2. Vilkas *et al.*[110] used a second-order MBPT with Breit-Pauli relativistic corrections. M2 transitions were excluded lest the number of forbidden lines becomes disproportionately large.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by two or more references.[100,110] Next we isoelectronically averaged the logarithmic quality factors observed for allowed C-like lines from the lower-lying levels of Na VI, Mg VII, Al VIII, and Si IX and applied the result to forbidden lines of Si IX using the method described in the introduction to Kelleher and Podobedova.[53]

4.9.4. References for Forbidden Transitions for Si IX

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[98]G. Tachiev and C. Froese Fischer, Can. J. Phys. **79**, 955 (2001).

[100]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 98).

[110]M. J. Vilkas, I. Martinson, G. Merkelis, G. Gaigalas, and R. Kisielius, Phys. Scr. **54**, 281 (1996).

TABLE 37. Wavelength finding list for forbidden liens of Si IX

Wavelength (vac) (Å)	Mult. No.
122.377	7
139.478	6
147.210	5
147.377	5
148.614	5
148.761	5
159.649	8
174.978	9
292.410	14
337.642	13
345.265	12
498.696	19
498.855	19
499.216	19
517.202	11
517.317	11
517.494	11
646.37	18
646.64	18
647.25	18
672.29	23
672.59	23
672.78	23
674.90	17
675.19	17
675.85	17
705.86	10
706.58	10
706.90	10
950.08	3
971.51	22
972.13	22
972.54	22
986.34	3
1 037.41	21
1 038.12	21
1 038.58	21
1 822.4	4
1 889.4	2
1 910.1	25
1 927.3	16
1 929.7	16
1 931.3	16
1 931.4	16
1 933.7	16
1 935.1	16
1 936.7	16
1 939.2	16
1 984.88	2
Wavelength (air) (Å)	**Mult. No.**
2 149.3	2
2 182.1	26
15 289	24
15 587	1
Wavenumber (cm^{-1})	**Mult. No.**
3 869	1
2 545	1
209	15
145	15
109	20
66	20
64	15
43	20

TABLE 38. Transition probabilities of forbidden lines for Si IX (references for this table are as follows: 1 = Tachiev and C. Froese Fischer[100] and 2 = Vilkas *et al.*[110])

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
1	$2p^2-2p^2$	$^3P-^3P$									
				3 869 cm^{-1}	2 545.0–6 414	3–5	M1	7.63−01	2.44+00	A	1,2
				3 869 cm^{-1}	2 545–6 414	3–5	E2	9.02−07	4.64−02	B+	1,2
				2 545 cm^{-1}	0–2 545.0	1–3	M1	2.89−01	1.95+00	A	1,2
			15 587	15 591	0–6 414	1–5	E2	5.08−06	2.09−02	B+	1,2
2		$^3P-^1D$									
				1 889.4	0–52 925.9	1–5	E2	5.73−04	6.16−05	C+	1,2
				1 984.88	2 545.0–52 925.9	3–5	M1	7.65+00	1.11−02	B+	1,2
				1 984.88	2 545.0–52 925.9	3–5	E2	1.50−03	2.06−04	C+	1,2
			2 149.3	2 150.0	6 414–52 925.9	5–5	M1	1.80+01	3.31−02	B+	1,2
			2 149.3	2 150.0	6 414–52 925.9	5–5	E2	7.51−03	1.54−03	B	1,2
3		$^3P-^1S$									
				986.34	6 414–107 799	5–1	E2	1.64−01	1.37−04	C+	1,2
				950.08	2 545.0–107 799	3–1	M1	2.08+02	6.62−03	B	1,2

TABLE 38. Transition probabilities of forbidden lines for Si IX (references for this table are as follows: 1=Tachiev and C. Froese Fischer[100] and 2=Vilkas *et al.*[110])—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
4		$^1D-^1S$									
				1 822.4	52 925.9–107 799	5–1	E2	5.16+00	9.26−02	B+	1,2
5	$2s^22p^2-2p^4$	$^3P-^3P$									
				148.614	6 414–679 300	5–3	M1	1.13+01	4.14−06	C	2
				148.614	6 414–679 300	5–3	E2	2.97+04	5.77−03	B	2
				147.377	2 545.0–681 079	3–1	M1	8.54+00	1.01−06	D+	2
				148.761	2 545.0–674 764	3–5	M1	8.20+00	5.00−06	C	2
				148.761	2 545.0–674 764	3–5	E2	1.78+04	5.78−03	B	2
				147.210	0–679 300	1–3	M1	2.18+00	7.72−07	D+	2
6		$^3P-^1D$									
				139.478	2 545.0–719 502	3–5	M1	3.33+00	1.67−06	D+	2
				139.478	2 545.0–719 502	3–5	E2	9.46+01	2.23−05	C	2
7		$^3P-^1S$									
				122.377	2 545.0–819 689	3–1	M1	1.80+01	1.22−06	D+	2
8		$^1D-^3P$									
				159.649	52 925.9–679 300	5–3	M1	7.04+00	3.18−06	C	2
				159.649	52 925.9–679 300	5–3	E2	1.01+02	2.80−05	c	2
9		$^1S-^3P$									
				174.978	107 799–679 300	1–3	M1	3.40+00	2.02−06	D+	2
10	$2s2p^3-2s2p^3$	$^5S^\circ-^3D^\circ$									
				[706.90]	150 770–292 232	5–7	M1	6.46−02	5.93−06	C	1
				[706.90]	150 770–292 232	5–7	E2	8.68−02	9.57−05	C	1
				[706.58]	150 770–292 296	5–5	M1	1.41+00	9.20−05	C	1
				[706.58]	150 770–292 296	5–5	E2	7.66−02	6.02−05	C	1
				[705.86]	150 770–292 441	5–3	M1	4.76−01	1.86−05	C	1
				[705.86]	150 770–292 441	5–3	E2	3.28−02	1.54−05	C	1
11		$^5S^\circ-^3P^3$									
				[517.202]	150 770–344 118	5–5	M1	1.45+02	3.72−03	B	1
				[517.202]	150 770–344 118	5–5	E2	7.10−05	1.17−08	D	1
				[517.494]	150 770–344 009	5–3	M1	8.09+01	1.25−03	C+	1
				[517.494]	150 770–344 009	5–3	E2	2.69−05	2.67−09	D	1
				[517.317]	150 770–344 075	5–1	E2	2.61−04	8.65−09	D	1
12		$^5S^\circ-^1D^\circ$									
				[345.265]	150 770–440 403	5–5	M1	3.88−02	2.96−07	D+	1
				[345.265]	150 770–440 403	5–5	E2	2.54−06	5.57−11	E+	1
13		$^5S^\circ-^3S^\circ$									
				[337.642]	150 770–446 942	5–3	M1	1.74−01	7.43−07	D+	1
				[337.642]	150 770–446 942	5–3	E2	5.58−05	6.56−10	E+	1
14		$^5S^\circ-^1P^\circ$									
				[292.410]	150 770–492 755	5–3	M1	7.79−05	2.17−10	E+	1
				[292.410]	150 770–492 755	5–3	E2	3.07−04	1.76−09	D	1
15		$^3D^\circ-^3D^\circ$									

TABLE 38. Transition probabilities of forbidden lines for Si IX (references for this table are as follows: 1 = Tachiev and C. Froese Fischer[100] and 2 = Vilkas *et al.*[110])—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
				209 cm^{-1}	292 232–292 441	7–3	E2	5.36−15	3.60−04	C+	1
				64 cm^{-1}	292 232–292 296	7–5	M1	6.56−06	4.64+00	A	1
				64 cm^{-1}	292 232–292 296	7–5	E2	3.49−17	1.45−03	C+	1
				145 cm^{-1}	292 296–292 441	5–3	M1	1.23−04	4.49+00	A	1
				145 cm^{-1}	292 296–292 441	5–3	E2	1.59−18	6.65−07	D+	1
16		$^3D^\circ - ^3P^\circ$									
				1 931.4	292 232–344 009	7–3	E2	1.41+00	1.01−01	B+	1
				1 931.3	292 296–344 075	5–1	E2	3.00+00	7.20−02	B+	1
				1 927.3	292 232–344 118	7–5	M1	1.85+01	2.46−02	B	1
				1 927.3	292 232–344 118	7–5	E2	1.69+00	2.01−01	B+	1
				1 933.7	292 296–344 009	5–3	M1	2.44−04	1.96−07	D+	1
				1 933.7	292 296–344 009	5–3	E2	2.46−01	1.78−02	B	1
				1 936.7	292 441–344 075	3–1	M1	2.19+01	5.90−03	B	1
				1 929.7	292 296–344 118	5–5	M1	1.31+01	1.75−02	B	1
				1 929.7	292 296–344 118	5–5	E2	1.04+00	1.24−01	B+	1
				1 939.2	292 441–344 009	3–3	M1	2.18+01	1.77−02	B	1
				1 939.2	292 441–344 009	3–3	E2	1.31+00	9.64−02	B+	1
				1 935.1	292 441–344 118	3–5	M1	3.46+00	4.64−00	B	1
				1 935.1	292 441–344 118	3–5	E2	2.71−01	3.28−02	B	1
17		$^3D^\circ - ^1D^\circ$									
				675.19	292 296–440 403	5–5	M1	4.60−01	2.62−05	C	1
				675.19	292 296–440 403	5–5	E2	1.96−01	1.23−04	C	1
				674.90	292 232–440 403	7–5	M1	1.45−01	8.29−06	C	1
				674.90	292 232–440 403	7–5	E2	3.43−01	2.14−04	C+	1
				675.85	292 441–440 403	3–5	M1	1.27−04	7.26−09	D	1
				675.85	292 441–440 403	3–5	E2	1.74−02	1.10−05	C	1
18		$^3D^\circ - ^3S^\circ$									
				646.37	292 232–446 942	7–3	E2	6.48−01	1.96−04	C+	1
				646.64	292 296–446 942	5–3	M1	1.45+00	4.35−05	C	1
				646.64	292 296–446 942	5–3	E2	1.54+00	4.67−04	C+	1
				647.25	292 441–446 942	3–3	M1	6.56−01	1.98−05	C	1
				647.25	292 441–446 942	3–3	E2	1.56+00	4.76−04	C+	1
19		$^3D^\circ - ^1P^\circ$									
				498.696	292 232–492 755	7–3	E2	2.38−02	1.96−06	D+	1
				498.855	292 296–492 755	5–3	M1	1.26+02	1.75−03	C+	1
				498.855	292 296–492 755	5–3	E2	1.74−02	1.44−06	D+	1
				499.216	292 441–492 755	3–3	M1	4.19+01	5.80−04	C+	1
				499.216	292 441–492 755	3–3	E2	1.06−02	8.84−07	D+	1
20		$^3P^\circ - ^3P^\circ$									
				66 cm^{-1}	344 009–344 075	3–1	M1	1.55−05	1.99+00	B+	1
				109 cm^{-1}	344 009–344 118	3–5	M1	1.75−05	2.50+00	C	1
				109 cm^{-1}	344 009–344 118	3–5	E2	1.08−17	3.14−05	C	1
				43 cm^{-1}	344 075–344 118	1–5	E2	1.79−18	5.44−04	C+	1
21		$^3P^\circ - ^1D^\circ$									
				1 038.12	344 075–440 403	1–5	E2	5.34−05	2.87−07	D+	1
				1 037.41	344 009–440 403	3–5	M1	1.23+01	2.55−03	C+	1
				1 037.41	344 009–440 403	3–5	E2	7.05−05	3.78−07	D+	1
				1 038.58	344 118–440 403	5–5	M1	3.66+01	7.59−03	B	1
				1 038.58	344 118–440 403	5–5	E2	1.24−03	6.69−06	C	1

TABLE 38. Transition probabilities of forbidden lines for Si IX (references for this table are as follows: 1=Tachiev and C. Froese Fischer[100] and 2=Vilkas *et al.*[110])—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
22		$^3P^\circ - ^3S^\circ$									
				972.54	344 118–446 942	5–3	M1	1.40+01	1.43−03	C+	1
				972.54	344 118–446 942	5–3	E2	1.77−04	1.42−07	D+	1
				971.51	344 009–446 942	3–3	M1	8.46+00	8.63−04	C+	1
				971.51	344 009–446 942	3–3	E2	1.37−04	3.19−07	D+	1
				972.13	344 075–446 942	1–3	M1	1.14+01	1.17−03	C+	1
23		$^3P^\circ - ^1P^\circ$									
				672.29	344 009–492 755	3–3	M1	4.24−01	1.43−05	C	1
				672.29	344 009–492 755	3–3	E2	1.06−01	3.90−05	C	1
				672.78	344 118–492 755	5–3	M1	9.99−01	3.38−05	C	1
				672.78	344 118–492 755	5–3	E2	3.47−01	1.28−04	C	1
				672.59	344 075–492 755	1–3	M1	1.80−01	6.11−06	C	1
24		$^1D^\circ - ^3S^\circ$									
			15 289	15 293	440 403–446 942	5–3	M1	3.72−06	1.48−06	D+	1
			15 289	15 293	440 403–446 942	5–3	E2	5.80−07	1.30−03	C+	1
25		$^1D^\circ - ^1P^\circ$									
				1 910.1	440 403–492 755	5–3	M1	2.69−05	2.08−08	D	1
26		$^3S^\circ - ^1P^\circ$									
			2 182.1	2 182.8	446 942–492 755	3–3	M1	3.11+01	3.60−02	B	1
			2 182.1	2 182.8	446 942–492 755	3–3	E2	9.78−06	1.30−06	D+	1

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

4.10. Si X

Boron isoelectronic sequence
Ground state: $1s^2 2s^2 2p\ ^2P^\circ_{1/2}$
Ionization energy: 401.37 eV (3 237 300 cm^{-1})

4.10.1. Allowed Transitions for Si X

Most of the compiled data have been taken from the OP.[28] The high-quality data from the other references were available primarily for transitions from lower-lying levels. Tachiev and Froese Fischer[100] performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. As part of the Iron Project, Galavis *et al.*[38] used the SUPERSTRUCTURE code with CI, relativistic effects, and semiempirical energy corrections. Safronova *et al.*[91] applied relativistic second-order MBPT calculations. Second-order MBPT computations from Merkelis *et al.*[73] have also been made for some of the lowest transitions. Only OP results were available for energy levels above the $2s2p3s$. Saha and Trefftz[93] applied an *ab initio* multichannel quantum defect theory (MQDT) procedure. Träbert *et al.*[105] performed lifetime measurements. Cavalcanti *et al.*[17] used the COWAN code with least squares fitting to energies.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[17,28,38,73,91,93,100,105] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. OP lines constituted a third group. We then isoelectronically averaged the logarithmic quality factors observed for B-like lines of Na VII, Mg VIII, Al IX, and Si X using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying intercombination lines and those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines.

A NIST compilation of far-UV lines of Si X was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.10.2. References for Allowed Transitions for Si X

[17]G. H. Cavalcanti, F. R. T. Luna, and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **64**, 5 (2000).

[27]J. A. Fernley, A. Hibbert, A. E. Kingston, and M. J. Seaton, J. Phys. B. **32**, 5507 (1999).

[28]J. A. Fernley, A. Hibbert, A. E. Kingston, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Fernley *et al.* (Ref. 27).

[38]M. E. Galavís, C. Mendoza, and C. J. Zeippen, Astron. Astrophys. Suppl. Ser. **131**, 499 (1998).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[73]G. Merkelis, J. J. Vilkas, G. Gaigalas, and R. Kisielius,

Phys. Ser. **51**, 233 (1995).
[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[91]U. I. Safronova, W. R. Johnson, and A. E. Livingston, Phys. Rev. A. **60**, 996 (1999). A complete data listing was made available by private communication.
[93]H. P. Saha and E. Trefftz, J. Phys. B. **15**, 1089 (1982).
[97]G. Tachiev and C. Froese Fischer, J. Phys. B. **33**, 2419 (2000).
[100]2G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004). See Tachiev and Froese Fischer (Ref. 97).
[105]E. Träbert, G. Schneider, and P. H. Heckmann, Phys. Scr. **27**, 407 (1983).

TABLE 39. Wavelength finding list for allowed lines of Si X

Wavelength (vac) (Å)	Mult. No.
34.238	12
35.932	11
39.443	10
39.552	10
44.518	9
44.657	9
46.891	8
47.045	8
47.489	7
47.545	7
47.647	7
48.385	6
48.436	6
48.549	6
48.600	6
49.418	40
49.419	40
49.439	40
49.440	40
49.701	39
49.973	31
50.035	31
50.064	31
50.124	31
50.154	31
50.254	30
50.305	30
50.317	30
50.333	30
50.396	30
50.407	30
50.524	5
50.691	5
50.703	5
51.635	48
51.676	48
52.070	41
52.155	41
52.178	41
52.248	34
52.319	34
52.320	34
52.485	33
52.611	33
52.612	33
53.572	32
53.573	32
53.595	32
53.596	32
54.464	24
54.522	35
54.570	24
54.591	24
54.596	24
54.599	35
54.665	24
54.702	24
55.195	37
55.274	37
55.317	37
55.396	37
56.552	38
56.680	38
56.700	36
56.804	36
56.829	36
57.208	26
57.209	26
57.365	26
58.420	25
58.421	25
58.572	25
58.573	25
58.652	25
59.945	27
60.118	27
60.760	29
60.908	29
60.938	29
61.086	29
62.284	28
62.301	28
62.391	28
62.457	28
62.547	28
65.154	45
65.155	45
65.346	45
65.347	45
67.055	44
67.056	44
67.152	44
67.302	47
67.331	47
68.359	46

TABLE 39. Wavelength finding list for allowed lines of Si X—Continued

Wavelength (vac) (Å)	Mult. No.
68.541	46
68.570	46
71.210	42
71.211	42
71.234	42
71.235	42
75.047	43
75.056	43
75.082	43
112.125	63
132.598	62
159.281	73
162.025	74
198.314	61
200.220	61
205.601	15
205.867	15
206.654	15
206.924	15
208.190	15
220.668	60
221.798	59
222.559	59
224.004	59
224.780	59
241.301	14
242.742	14
242.754	14
244.864	14
244.876	14
253.788	4
256.384	4
258.372	4
261.063	4
271.983	3
277.255	3
278.133	18
278.156	18
278.621	18
287.092	13
289.151	13
292.167	13
301.087	54
301.514	54
301.869	54
302.297	54
311.876	53
312.334	53
338.868	70
339.397	70
340.646	70
341.180	70
344.080	70
347.403	2
347.705	17
347.729	17
347.741	17
347.766	17
350.779	71
352.237	71
352.684	71
354.158	71
356.012	2
356.050	2
357.500	20
358.307	20
388.576	23
389.529	23
394.695	23
395.679	23
451.508	16
451.569	16
464.598	58
468.472	52
475.195	58
477.715	52
478.790	52
539.403	22
551.207	22
551.268	22
570.71	51
572.25	51
573.26	51
574.81	51
611.66	1
621.08	1
624.73	1
638.98	1
649.27	1
705.92	19
728.86	65
740.52	65
742.83	65
754.94	65
838.29	21
867.30	21
984.83	57
1 033.70	57
1 041.23	68
1 069.98	68
1 122.21	64
1 124.23	68
1 136.75	72
1 139.86	64
1 150.09	64
1 205.84	67
1 207.15	67
1 276.65	67
1 338.87	56
1 344.09	56
1 430.82	56
1 445.30	69

TABLE 39. Wavelength finding list for allowed lines of Si X—Continued

Wavelength (vac) (Å)	Mult. No.
1 501.28	69
1 766.78	50
1 781.6	50
1 930.5	50
Wavelength (air) (Å)	**Mult. No.**
2 051.5	66
2 084.8	66
2 260.7	66
2 301.3	66
2 801.1	55
2 981.5	55
3 236.4	55
3 479.7	55
4 919.9	49
5 036.4	49
6 295	49
6 488	49
7 367	49

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])

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
1	$2s^22p-2s2p^2$	$^2P^\circ-^4P$										
				[638.98]	6 990.6–163 490	4–4	5.99+04	3.67−04	3.08−05	−4.833	C	2,3,4,5
				[621.08]	0.0 –161 010	2–2	2.99+05	1.73−05	7.07−0.5	−4.461	C	2,3,4,5
				[649.27]	6 990.6–161 010	4–2	2.31+05	7.30−06	6.24−05	−4.535	C	2,3,4,5
				[624.73]	6 990.6–167 060	4–6	2.33+05	2.05−05	1.68−04	−4.086	C	2,3,4,5
				[611.66]	0.0–163 490	2–4	7.46+03	8.36−07	3.37−06	−5.777	C	2,3,4,5
2		$^2P^\circ-^2D$		*353.10*	*4 660–287 868*	6–10	2.08+09	6.48−02	4.52−01	−0.410	A	2,3,4,5,6
				356.012	6 990.6–287 880	4–6	2.02+09	5.77−02	2.70−01	−0.637	A	2,3,4,5,6
				347.403	0.0–287 850	2–4	1.91+09	6.90−02	1.58−01	−0.860	A	2,3,4,5,6
				356.050	6 990.6–287 850	4–4	2.69+08	5.11−03	2.40−02	−1.690	A	2,3,4,5,6
3		$^2P^\circ-^2S$		*275.47*	*4 660–367 670*	6–2	9.10+09	3.45−02	1.88−01	−0.684	B+	2,3,4,5,6
				277.255	6 990.6–367 670	4–2	4.14+09	2.39−02	8.71−02	−1.020	B+	2,3,4,5,6
				271.983	0.0–367 670	2–2	5.07+09	5.62−02	1.01−01	−0.949	A	2,3,4,5,6
4		$^2P^\circ-^2P$		*257.71*	*4 660–392 700*	6–6	1.70+10	1.70−01	8.63−01	0.009	A	2,3,4,5,6
				258.372	6 990.6–394 030	4–4	1.43+10	1.43−01	4.88−01	−0.243	A	2,3,4,5,6
				256.384	0.0–390 040	2–2	9.23+09	9.09−02	1.54−01	−0.740	A	2,3,4,5,6
				261.063	6 990.6–390 040	4–2	7.52+09	3.84−02	1.32−01	−0.814	A	2,3,4,5,6
				253.788	0.0–394 030	2–4	2.78+09	5.37−02	8.97−02	−0.969	B+	2,3,4,5,6
5	$2p-3d$	$^2P^\circ-^2D$		*[50.64]*	*4 660–1 979 542*	6–10	9.72+11	6.23−01	6.23−01	0.573	A	2
				50.691	6 990.6–1 979 730	4–6	9.69+11	5.60−01	3.74−01	0.350	A	2
				[50.524]	0.0–1 979 260	2–4	8.15+11	6.23−01	2.07−01	0.096	A	2
				[50.703]	6 990.6–1 979 260	4–4	1.62+11	6.24−02	4.16−02	−0.603	B+	2
6	$2s^22p-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$		*48.51*	*4 660–2 066 030*	6–6	3.37+11	1.19−01	1.14−01	−0.146	B+	8

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
				48.549	6 990.6–2 066 750	4–4	2.48+11	8.75–02	5.59–02	−0.456	B+	8
				48.436	0.0–2 064 590	2–2	2.66+11	9.35–02	2.98–02	−0.728	B+	8
				48.600	6 990.6–2 064 590	4–2	1.05+11	1.86–02	1.19–02	−1.128	B	8
				48.385	0.0–2 066 750	2–4	7.27+10	5.10–02	1.62–02	−0.991	B	8
7		$^2P^\circ-^2D$		*[47.53]*	*4 660–2 108 460*	6–10	4.40+11	2.48–01	2.33–01	0.173	B+	1,8
				47.545	6 990.6–2 110 260	4–6	4.47+11	2.27–01	1.42–01	−0.042	B+	8
				[47.489]	0.0–2 105 750	2–4	3.61+11	2.44–01	7.63–02	−0.312	B+	8
				[47.647]	6 990.6–2 105 750	4–4	6.90+10	2.35–02	1.47–02	−1.027	D+	LS
8		$^2P^\circ-^2S$		*46.99*	*4 660–2 132 600*	6–2	4.28+11	4.72–02	4.38–02	−0.548	B+	8
				47.045	6 990.6–2 132 600	4–2	2.98+11	4.95–02	3.07–02	−0.703	B+	8
				46.891	0.0–2 132 600	2–2	1.29+11	4.26–02	1.32–02	−1.070	B	8
9	$2s^22p-2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$?		*44.61*	*4 660–2 246 300*	6–2	4.05+10	4.03–03	3.55–03	−1.617	B	8
				44.657	6 990.6–2 246 300	4–2	1.91+10	2.85–03	1.68–03	−1.943	C+	8
				44.518	0.0–2 246 300	2–2	2.15+10	6.40–03	1.88–03	−1.893	B	8
10	$2p-4d$	$^2P^\circ-^2D$		*39.52*	*4 660–2 535 310*	6–10	3.23+11	1.26–01	9.85–02	−0.121	B+	1,8
				39.552	6 990.6–2 535 310	4–6	3.21+11	1.13–01	5.89–02	−0.345	B+	8
				39.443	0.0–2 535 310	2–4	2.71+11	1.26–01	3.29–02	−0.599	B+	8
				39.552	6 990.6–2 535 310	4–4	5.46+10	1.28–02	6.67–03	−1.291	D+	LS
11	$2p-5d$	$^2P^\circ-^2D$				6–10						8
				35.932	6 990.6–2 790 020	4–6	1.62+11	4.70–02	2.22–02	−0.726	B+	8
12	$2p-6d$	$^2P^\circ-^2D$				6–10						8
				[34.238]	6 990.6–2 927 720	4–6	9.48+10	2.50–02	1.13–02	−1.000	B	8
13	$2s2p^2-2p^3$	$^4P-^4S^\circ$		*290.30*	*164 862*–509 330	12–4	1.57+10	6.63–02	7.61–01	−0.099	A	2,3,4,5,6
				292.167	167 060–509 330	6–4	7.72+09	6.59–02	3.80–01	−0.403	A	2,3,4,5,6
				289.151	163 490–509 330	4–4	5.31+09	6.66–02	2.54–01	−0.574	A	2,3,4,5,6
				287.092	161 010–509 330	2–4	2.72+09	6.71–02	1.27–01	−0.872	A	2,3,4,5,6
14		$^4P-^2D^\circ$										
				[242.742]	163 490–575 450	4–6	2.45+05	3.24–06	1.04–05	−4.887	B	2,3,4,5
				[241.301]	161 010–575 430	2–4	9.91+04	1.73–06	2.75–06	−5.461	C	2,3,4,5
				[244.864]	167 060–575 450	6–6	8.99+06	8.08–05	3.91–04	−3.314	C	2,3,4,5
				[242.754]	163 490–575 430	4–4	3.48+06	3.08–05	9.84–05	−3.909	C	2,3,4,5
				[244.876]	167 060–575 430	6–4	2.97+05	1.78–06	8.62–06	−4.971	C	2,3,4,5
15		$^4P-^2P^\circ$										
				[206.654]	163 490–647 390	4–4	4.82+06	3.09–05	8.41–05	−3.908	C	2,3,4,5
				[205.867]	161 010–646 760	2–2	2.24+06	1.42–05	1.93–05	−4.547	C+	2,3,4,5
				[208.190]	167 060–647 390	6–4	1.84+06	7.99–06	3.29–05	−4.319	D+	2,3,4,5
				[206.924]	163 490–646 760	4–2	4.29+05	1.38–06	3.75–06	−5.258	D+	2,3,4,5
				[205.601]	161 010–647 390	2–4	7.54+04	9.55–07	1.29–06	−5.719	D	2,3,5
16		$^2D-^4S^\circ$										
				[451.569]	287 880–509 330	6–4	1.60+04	3.26–07	2.91–06	−5.709	D	2,3,4,5
				[451.508]	287 850–509 330	4–4	1.32+04	4.02–07	2.39–06	−5.794	D	2,3,4,5
17		$^2D-^2D^\circ$		*347.74*	*287 868–575 442*	10–10	4.45+09	8.07–02	9.23–01	−0.093	A	2,3,4,5,6
				347.741	287 880–575 450	6–6	4.15+09	7.51–02	5.16–01	−0.346	A	2,3,4,5,6
				347.729	287 850–575 430	4–4	3.73+09	6.77–02	3.10–01	−0.567	A	2,3,4,5,6

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
				347.766	287 880–575 430	6–4	6.27+08	7.58−03	5.20−02	−1.342	B+	2,3,4,5,6
				347.705	287 850–575 450	4–6	3.64+08	9.89−03	4.53−02	−1.403	B+	2,3,4,5,6
18		$^2D-^2P^\circ$		*278.31*	*287 868–647 180*	10–6	7.26+09	5.06−02	4.63−01	−0.296	A	2,3,4,5,6,7
				278.156	287 880–647 390	6–4	6.25+09	4.83−02	2.66−01	−0.538	A	2,3,4,5,6
				278.621	287 850–646 760	4–2	7.45+09	4.34−02	1.59−01	−0.760	A	2,3,4,5,6,7
				278.133	287 850–647 390	4–4	9.06+08	1.05−02	3.85−02	−1.377	B+	2,3,4,5,6
19		$^2S-^4S^\circ$										
				[705.92]	367 670–509 330	2–4	1.46+04	2.18−06	1.01−05	−5.361	D	2,3,4,5
20		$^2S-^2P^\circ$		*357.77*	*367 670–647 180*	2–6	1.34+09	7.70−02	1.81−01	−0.812	A	2,3,4,5,6,7
				357.500	367 670–647 390	2–4	1.67+09	6.42−02	1.51−01	−0.891	A	2,3,4,5,6,7
				358.307	367 670–646 760	2–2	6.69+08	1.29−02	3.04−02	−1.588	B+	2,3,4,5,6
21		$^2P-^4S^\circ$										
				[867.30]	394 030–509 330	4–4	2.55+05	2.88−05	3.29−04	−3.939	C	2,3,4,5
				[838.29]	390 040–509 330	2–4	7.83+04	1.65−05	9.11−05	−4.481	C	2,3,4,5
22		$^2P-^2D^\circ$		*547.22*	*392 700–575 442*	6–10	1.05+09	7.88−02	8.52−01	−0.325	A	2,4,5,6
				551.207	394 030–575 450	4–6	1.03+09	7.04−02	5.11−01	−0.550	A	2,4,5,6
				539.403	390 040–575 430	2–4	9.58+08	8.35−02	2.97−01	−0.777	A	2,4,5,6
				551.268	394 030–575 430	4–4	1.33+08	6.06−03	4.40−02	−1.615	B+	2,4,5,6
23		$^2P-^2P^\circ$		*392.96*	*392 700–647 180*	6–6	4.54+09	1.05−01	8.15−01	−0.201	A	2,3,4,5,6,7
				394.695	394 030–647 390	4–4	3.95+09	9.23−02	4.80−01	−0.433	A	2,3,4,5,6,7
				389.529	390 040–646 760	2–2	3.65+09	8.29−02	2.13−01	−0.780	A	2,3,4,5,6,7
				395.679	394 030–646 760	4–2	1.36+09	1.59−02	8.30−02	−1.197	B+	2,3,4,5,6,7
				388.576	390 040–647 390	2–4	3.43+08	1.55−02	3.98−02	−1.509	B+	2,3,4,5,6,7
24	$2s2p^2-2s2p(^3P^\circ)3s$	$^4P-^4P^\circ$		*54.58*	*164 862–1 996 975*	12–12	1.96+11	8.74−02	1.89−01	0.021	B+	2
				54.570	167 060–1 999 580	6–6	1.38+11	6.18−02	6.66−02	−0.431	B+	2
				54.596	163 490–1 995 140	4–4	2.59+10	1.16−02	8.31−03	−1.333	B	2
				54.591	161 010–1 992 830	2–2	3.22+10	1.44−02	5.17−03	−1.541	B	2
				54.702	167 060–1 995 140	6–4	8.74+10	261−02	2.82−02	−0.805	B+	2
				54.665	163 490–1 992 830	4–2	1.60+11	3.59−02	2.59−02	−0.843	B+	2
				54.464	163 490–1 999 580	4–6	5.95+10	3.97−02	2.85−02	−0.799	B+	2
				54.522	161 010–1 995 140	2–4	8.11+10	7.23−02	2.60−02	−0.840	B+	2
25		$^2D-^4P^\circ$										
				[58.573]	287 880–1 995 140	6–4	1.30+08	4.47−05	5.17−05	−3.572	D	2
				[58.652]	287 850–1 992 830	4–2	7.34+07	1.89−05	1.46−05	−4.121	D	2
				[58.421]	287 880–1 999 580	6–6	1.19+08	6.07−05	7.01−05	−3.439	D	2
				[58.572]	287 850–1 995 140	4–4	7.18+07	3.69−05	2.85−05	−3.831	D	2
				[58.420]	287 850–1 999 580	4–6	6.97+06	5.35−06	4.12−06	−4.670	E+	2
26		$^2D-^2P^\circ$		*[57.2]*	*287 870–2 034 260*	10–6	1.06+11	3.13−02	5.90−02	−0.504	B	1,8
				[57.209]	287 880–2 035 860	6–4	9.73+10	3.18−02	3.60−02	−0.719	B+	8
				[57.365]	287 850–2 031 060	4–2	1.02+11	2.52−02	1.91−02	−0.997	B	8
				[57.208]	287 850–2 035 860	4–4	1.06+10	5.22−03	3.93−03	−1.680	D	LS
27		$^2S-^2P^\circ$		*[60.00]*	367 670–*2 034 260*	2–6	3.43+10	5.56−02	2.20−02	−0.954	D+	1
				[59.945]	367 670–2 035 860	2–4	3.44+10	3.71−02	1.46−02	−1.130	D+	LS
				[60.118]	367 670–2 031 060	2–2	3.41+10	1.85−02	7.32−03	−1.432	D+	LS
28		$^2P-^4P^\circ$										

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
				[62.457]	394 030–1 995 140	4–4	1.33+05	7.79−08	6.41−08	−6.506	E	2
				[62.391]	390 040–1 992 830	2–2	3.09+06	1.80−06	7.40−07	−5.444	E	2
				[62.547]	394 030–1 992 830	4–2	5.08+06	1.49−06	1.23−06	−5.225	E+	2
				[62.284]	394 030–1 999 580	4–6	3.00+06	2.62−06	2.15−06	−4.980	D	2
				[62.301]	390 040–1 995 140	2–4	3.67+06	4.27−06	1.75−06	−5.069	E+	2
29		$^2P-^2P^\circ$		*[60.92]*	*392 700–2 034 260*	6–6	8.58+09	4.77−03	5.74−03	−1.543	D	1
				[60.908]	394 030–2 035 860	4–4	7.16+09	3.98−03	3.19−03	−1.798	D	LS
				[60.938]	390 040–2 031 060	2–2	5.71+09	3.18−03	1.28−03	−2.197	D	LS
				[61.086]	394 030–2 031 060	4–2	2.84+09	7.93−04	6.38−04	−2.499	E+	LS
				[60.760]	390 040–2 035 860	2–4	1.44+09	1.59−03	6.36−04	−2.498	E+	LS
30	$2s2p^2-2s2p(^3P^\circ)3d$	$^4P-^4D^\circ$		*50.32*	*164 860–2 152 210*	12–20	1.42+12	9.02−01	1.79+00	1.034	B+	1,8
				50.333	167 060–2 153 830	6–8	1.54+12	7.78−01	7.74−01	0.669	A	8
				50.305	163 490–2 151 360	4–6	1.05+12	5.95−01	3.94−01	0.377	B+	8
				50.254	161 010–2 150 900	2–4	8.58+11	6.50−01	2.15−01	0.114	B+	8
				50.396	167 060–2 151 360	6–6	2.80+09	1.07−03	1.06−03	−2.192	C+	8
				50.317	163 490–2 150 900	4–4	8.01+11	3.04−01	2.01−01	0.085	C+	LS
				50.254	161 010–2 150 900	2–2	1.26+12	4.76−01	1.58−01	−0.021	C+	LS
				50.407	167 060–2 150 900	6–4	7.48+10	1.90−02	1.89−02	−0.943	C	LS
				50.317	163 490–2 150 900	4–2	2.51+11	4.76−02	3.15−02	−0.720	C	LS
31		$^4P-^4P^\circ$?				12–12						8
				50.154	167 060–2 160 920	6–6	8.40+11	3.17−01	3.14−01	0.279	B+	8
				50.035	163 490–2 162 100	4–4	3.94+11	1.48−01	9.75−02	−0.228	B+	8
				50.124	167 060–2 162 100	6–4	4.50+11	1.13−01	1.12−01	−0.169	B+	8
				50.064	163 490–2 160 920	4–6	2.41+11	1.36−01	8.97−02	−0.264	C+	LS
				49.973	161 010–2 162 100	2–4	7.81+10	5.85−02	1.92−02	−0.932	B	8
32		$^2D-^2D^\circ$		*53.58*	*287 880–2 154 170*	10–10	3.10+11	1.34−01	2.36−01	1.257	B	1,8
				53.573	287 880–2 154 480	6–6	2.42+11	1.04−01	1.10−01	−0.205	B+	8
				53.595	287 850–2 153 700	4–4	3.33+11	1.43−01	1.01−01	−0.243	B+	8
				53.596	287 880–2 153 700	6–4	4.04+10	1.16−02	1.23−02	−1.157	D+	LS
				53.572	287 850–2 154 480	4–6	2.70+10	1.74−02	1.23−02	−1.157	D+	LS
33		$^2D-^2F^\circ$		*52.54*	*287 880–2 191 220*	10–14	9.53+11	5.52−01	9.55−01	0.742	B+	1,8
				52.485	287 880–2 193 190	6–8	9.81+11	5.40−01	5.60−01	0.511	A	8
				52.611	287 850–2 188 590	4–6	8.51+11	5.30−01	3.67−01	0.326	B+	8
				52.612	287 880–2 188 590	6–6	6.55+10	2.72−02	2.83−02	−0.787	C	LS
34		$^2D-^2P^\circ$		*[52.30]*	*287 868–2 200 070*	10–6	1.61+10	3.95−03	6.81−03	−1.403	D	1
				[52.320]	287 880–2 199 210	6–4	1.44+10	3.95−03	4.08−03	−1.625	D	LS
				[52.248]	287 850–2 201 790	4–2	1.61+10	3.30−03	2.27−03	−1.879	D	LS
				[52.319]	287 850–2 199 210	4–4	1.61+09	6.59−04	4.54−04	−2.579	E+	LS
35		$^2S-^2P^\circ$		*[54.6]*	*367 670–2 200 070*	2–6	5.93+11	7.94−01	2.85−01	0.201	B	1,8
				[54.599]	367 670–2 199 210	2–4	5.93+11	5.30−01	1.91−01	0.025	B+	8
				[54.522]	367 670–2 201 790	2–2	5.90+11	2.63−01	9.44−02	−0.279	C+	LS
36		$^2P-^2D^\circ$		*56.77*	*392 700–2 154 170*	6–10	2.35+11	1.90−01	2.12−01	0.056	B	1,8
				56.804	394 030–2 154 480	4–6	3.13+11	2.27−01	1.70−01	−0.042	B+	8
				56.700	390 040–2 153 700	2–4	9.87+10	9.51−02	3.55−02	−0.721	C	LS
				56.829	394 030–2 153 700	4–4	1.96+10	9.49−03	7.10−03	−1.421	D+	LS

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
37		$^2P-^2P^\circ$		*[55.33]*	*392 700–2 200 070*	6–6	9.71+10	4.46−02	4.87−02	−0.573	D+	1
				[55.396]	394 030–2 199 210	4–4	8.06+10	3.71−02	2.71−02	−0.829	C	LS
				[55.195]	390 040–2 201 790	2–2	6.52+10	2.98−02	1.08−02	−1.225	D+	LS
				[55.317]	394 030–2 201 790	4–2	3.24+10	7.43−03	5.41−03	−1.527	D+	LS
				[55.274]	390 040–2 199 210	2–4	1.63+10	1.49−02	5.42−03	−1.526	D+	LS
38	$2s2p^2-2s2p(^1P^\circ)3s$	$^2P-^2P^\circ$				6–6						8
				56.680	394 030–2 158 330	4–4	1.37+11	6.57−02	4.91−02	−0.580	B+	8
				56.552	390 040–2 158 330	2–4	2.09+10	2.00−02	7.45−03	−1.398	E	LS
39	$2s2p^2-2s2p(^1P^\circ)3d$	$^2D-^2F^\circ$		*[49.70]*	*287 870–2 299 900*	10–14	8.32+11	4.31−01	7.06−01	0.634	C+	1,8
				[49.701]	287 880–2 299 900	6–8	8.67+11	4.28−01	4.21−01	0.410	B+	8
				[49.701]	287 850–2 299 900	4–6	7.31+11	4.06−01	2.66−01	0.211	D+	LS
				[49.701]	287 880–2 299 900	6–6	5.21+10	1.93−02	1.89−02	−0.936	E	LS
40		$^2D-^2D^\circ$		*[49.43]*	*287 870–2 311 050*	10–10	1.22+11	4.45−02	7.24−02	−0.351	C+	1,8
				[49.419]	287 880–2 311 390	6–6	1.17+11	4.30−02	4.20−02	−0.588	B+	8
				[49.439]	287 850–2 310 530	4–4	1.05+11	3.83−02	2.49−02	−0.815	E+	LS
				[49.440]	287 880–2 310 530	6–4	1.16+10	2.84−03	2.77−03	−1.769	E	LS
				[49.418]	287 850–2 311 390	4–6	7.76+09	4.26−03	2.77−03	−1.769	E	LS
41		$^2P-^2D^\circ$		*[52.1]*	*392 700–2 311 050*	6–10	4.43+11	3.01−01	3.09−01	0.256	B	1,8
				[52.155]	394 030–2 311 390	4–6	2.32+10	1.42−02	9.75−03	−1.246	B	8
				[52.070]	390 040–2 310 530	2–4	8.98+11	7.30−01	2.50−01	0.164	B+	8
				[52.178]	394 030–2 310 530	4–4	1.77+11	7.24−02	4.97−02	−0.538	E+	LS
42	$2p^3-2s^23d$	$^2D^\circ-^2D$		*[71.22]*	*575 442–1 979 542*	10–10	6.73+07	5.12−05	1.20−04	−3.291	C	2
				71.211	575 450–1 979 730	6–6	5.94+07	4.52−05	6.35−05	−3.567	C	2
				[71.234]	575 430–1 979 260	4–4	6.25+07	4.75−05	4.46−05	−3.721	C	2
				[71.235]	575 450–1 979 260	6–4	5.21+06	2.64−06	3.72−06	−4.800	D+	2
				71.210	575 430–1 979 730	4–6	7.69+06	8.77−06	8.22−06	−4.455	D+	2
43		$^2P^\circ-^2D$		*[75.05]*	*647 180–1 979 542*	6–10	3.27+06	4.60−06	6.82−06	−4.559	D+	2
				75.056	647 390–1 979 730	4–6	4.50+06	5.70−06	5.64−06	−4.642	D+	2
				[75.047]	646 760–1 979 260	2–4	1.32+06	2.23−06	1.10−06	−5.351	D+	2
				[75.082]	647 390–1 979 260	4–4	9.74+04	8.23−08	8.14−08	−6.483	D	2
44	$2p^3-2s2p(^3P^\circ)3p$	$^2D^\circ-^2P$		*67.09*	*575 442–2 066 030*	10–6	3.41+09	1.38−03	3.05−03	−1.859	D	1,8
				67.056	575 450–2 066 750	6–4	8.53+08	3.83−04	5.08−04	−2.639	C+	8
				67.152	575 430–2 064 590	4–2	7.10+09	2.40−03	2.12−03	−2.018	D	LS
				67.055	575 430–2 066 750	4–4	7.14+08	4.81−04	4.25−04	−2.716	E+	LS
45		$^2D^\circ-^2D$		*[65.23]*	*575 442–2 108 456*	10–10	4.49+09	2.87−03	6.15−03	−1.542	D	1
				65.155	575 450–2 110 260	6–6	4.21+09	2.68−03	3.45−03	−1.794	D	LS
				[65.346]	575 430–2 105 750	4–4	4.01+09	2.57−03	2.21−03	−1.988	D	LS
				[65.347]	575 450–2 105 750	6–4	4.48+08	1.91−04	2.47−04	−2.941	E+	LS
				65.154	575 430–2 110 260	4–6	3.01+08	2.87−04	2.46−04	−2.940	E+	LS
46		$^2P^\circ-^2D$		*[68.43]*	*647 180–2 108 456*	6–10	2.64+09	3.09−03	4.17−03	−1.732	D	1
				68.359	647 390–2 110 260	4–6	2.65+09	2.78−03	2.50−03	−1.954	D	LS
				[68.541]	646 760–2 105 750	2–4	2.19+09	3.08−03	1.39−03	−2.210	D	LS
				[68.570]	647 390–2 105 750	4–4	4.37+08	3.08−04	2.78−04	−2.909	E+	LS

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
47		$^2P^\circ-^2S$		*67.32*	*647 180–2 132 600*	6–2	2.17+10	4.91−03	6.53−03	−1.531	D	1
				67.331	647 390–2 132 600	4–2	1.44+10	4.91−03	4.35−03	−1.707	D	LS
				67.302	646 760–2 132 600	2–2	7.23+09	4.91−03	2.18−03	−2.008	D	LS
48	$2p^3-2p^2(^3P)3d$	$^4S^\circ-^4P$				4–12						8
				51.676	509 330–2 444 460	4–6	1.54+12	9.22−01	6.28−01	0.567	A	8
				51.635	509 330–2 446 000	4–4	1.56+12	6.22−01	4.23−01	0.396	B+	8
49	$2s^23d-2s2p(^3P^\circ)3s$	$^2D-^4P^\circ$										
			[6488]	[6489]	1 979 730–1 995 140	6–4	7.85+02	3.31−06	4.24−04	−4.702	C	2
			[7367]	[7369]	1 979 260–1 992 830	4–2	2.14+02	8.72−07	8.46−05	−5.457	D	2
			[5036.4]	[5037.8]	1 979 730–1 999 580	6–6	3.63+00	1.38−08	1.37−06	−7.082	E+	2
			[6295]	[6297]	1 979 260–1 995 140	4–4	8.09+01	4.81−07	3.99−05	−5.716	D	2
			[4919.9]	[4921.3]	1 979 260–1 999 580	4–6	3.31−01	1.80−09	1.17−07	−8.143	E	2
50		$^2D-^2P^\circ$		*[1828]*	*1 979 542–2 034 260*	10–6	8.53+06	2.56−03	1.54−01	−1.592	C	1
				[1781.6]	1 979 730–2 035 860	6–4	8.29+06	2.63−03	9.26−02	−1.802	C+	LS
				[1930.5]	1 979 260–2 031 060	4–2	7.23+06	2.02−03	5.14−02	−2.093	C	LS
				[1766.78]	1 979 260–2 035 860	4–4	9.44+05	4.42−04	1.03−02	−2.753	D+	LS
51	$2s^23d-2s2p(^3P^\circ)3d$	$^2D-^2D^\circ$		*[572.7]*	*1 979 542–2 154 168*	10–10	1.10+07	5.41−04	1.02−02	−2.267	D	1
				572.25	1 979 730–2 154 480	6–6	1.03+07	5.05−04	5.71−03	−2.519	D+	LS
				[573.26]	1 979 260–2 153 700	4–4	9.88+06	4.87−04	3.68−03	−2.710	D	LS
				574.81	1 979 730–2 153 700	6–4	1.09+06	3.59−05	4.08−04	−3.667	E+	LS
				[570.71]	1 979 260–2 154 480	4–6	7.41+05	5.43−05	4.08−04	−3.663	E+	LS
52		$^2D-^2F^\circ$		*[472.42]*	*1 979 542–2 191 219*	10–14	4.22+06	1.98−04	3.07−03	−2.703	D	1
				468.472	1 979 730–2 193 190	6–8	4.33+06	1.90−04	1.76−03	−2.943	D	LS
				[477.715]	1 979 260–2 188 590	4–6	3.80+06	1.95−04	1.23−03	−3.108	D	LS
				478.790	1 979 730–2 188 590	6–6	2.70+05	9.28−06	8.78−05	−4.254	E	LS
53	$2s^23d-2s2p(^1P^\circ)3d$	$^2D-^2F^\circ$		*[312.15]*	*1 979 542–2 299 900*	10–14	2.02+09	4.14−02	4.25−01	−0.383	D+	1
				[312.334]	1 979 730–2 299 900	6–8	2.02+09	3.94−02	2.43−01	−0626	D+	LS
				[311.876]	1 979 260–2 299 900	4–6	1.89+09	4.14−02	1.70−01	−0.781	D+	LS
				[312.334]	1 979 730–2 299 900	6–6	1.35+08	1.97−03	1.22−02	−1.927	E	LS
54		$^2D-^2D^\circ$		*[301.66]*	*1 979 542–2 311 046*	10–10	7.09+09	9.67−02	9.60−01	−0.015	D+	1
				[301.514]	1 979 730–2 311 390	6–6	6.63+09	9.03−02	5.38−01	−0.266	C	LS
				[301.869]	1 979 260–2 310 530	4–4	6.36+09	8.69−02	3.45−01	−0.459	D+	LS
				[302.297]	1 979 730–2 310 530	6–4	7.04+08	6.43−03	3.84−02	−1.414	E+	LS
				[301.087]	1 979 260–2 311 390	4–6	4.75+08	9.68−03	3.84−02	−1.412	E+	LS
55	$2s2p(^3P^\circ)3s-2s2p(^3P^\circ)3p$	$^2P^\circ-^2P$	*[3147]*	*[3148]*	*2 034 260–2 066 030*	6–6	2.09+07	3.11−02	1.93+00	−0.729	B	1
			[3236.4]	[3237.3]	2 035 860–2 066 750	4–4	1.60+07	2.52−02	1.07+00	−0.997	B+	LS
			[2981.5]	[2982.4]	2 031 060–2 064 590	2–2	1.64+07	2.19−02	4.30−01	−1.359	B	LS
			[3479.7]	[3480.7]	2 035 860–2 064 590	4–2	5.15+06	4.68−03	2.15−01	−1.728	C+	LS
			[2801.1]	[2801.9]	2 031 060–2 066 750	2–4	4.93+06	1.16−02	2.14−01	−1.635	C+	LS
56		$^2P^\circ-^2D$		*[1347.8]*	*2 034 260–2 108 456*	6–10	3.15+08	1.43−01	3.81+00	−0.067	B+	1
				[1344.09]	2 035 860–2 110 260	4–6	3.18+08	1.29−01	2.28+00	−0.287	B+	LS
				[1388.87]	2 031 060–2 105 750	2–4	2.68+08	1.44−01	1.27+00	−0.541	B+	LS
				[1430.82]	2 035 860–2 105 750	4–4	4.37+07	1.34−02	2.52−01	−1.271	B	LS

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
57		$^2P^\circ-^2S$		[1016.9]	2 034 260–2 132 600	6–2	8.26+08	4.27−02	8.58−01	−0.591	B	1
				[1033.70]	2 035 860–2 132 600	4–2	5.24+08	4.20−02	5.72−01	−0.775	B	LS
				[984.83]	2 031 060–2 132 600	2–2	3.03+08	4.41−02	2.86−01	−1.055	B	LS
58	$2s2p(^3P^\circ)3s-$ $2s2p(^1P^\circ)3p$	$^2P^\circ-^2S$?		[471.61]	2 034 260–2 246 300	6–2	1.40+09	1.55−02	1.45−01	−1.032	D	1
				[475.195]	2 035 860–2 246 300	4–2	9.10+08	1.54−02	9.64−02	−1.210	D	LS
				[464.598]	2 031 060–2 246 300	2–2	4.88+08	1.58−02	4.83−02	−1.500	E+	LS
59	$2s2p(^3P^\circ)3s-$ $2p^2(^3P)3d$	$^4P^\circ-^4P$				12–12						1,8
				224.780	1 999 580–2 444 460	6–6	3.75+07	2.84−04	1.26−03	−2.769	D	LS
				221.798	1 995 140–2 446 000	4–4	7.43+06	5.48−05	1.60−04	−3.659	E	LS
				224.004	1 999 580–2 446 000	6–4	2.43+07	1.22−04	5.40−04	−3.135	E+	LS
				222.559	1 995 140–2 444 460	4–6	1.65+07	1.84−04	5.39−04	−3.133	E+	LS
60		$^4P^\circ-^4P$				12–12						8
				220.668	1 992 830–2 446 000	2–4	3.08+06	4.50−05	6.54−05	−4.046	C	8
61	$2s2p(^3P^\circ)3s-2s^24d$	$^2P^\circ-^2D$		[199.58]	2 034 260–2 535 310	6–10	2.69+09	2.67−02	1.05−01	−0.795	C	1
				[200.220]	2 035 860–2 535 310	4–6	2.66+09	2.40−02	6.33−02	−1.018	C	LS
				[198.314]	2 031 060–2 535 310	2–4	2.28+09	2.69−02	3.51−02	−1.269	C	LS
				[200.220]	2 035 860–2 535 310	4–4	4.44+08	2.67−03	7.04−03	−1.971	D+	LS
62	$2s2p(^3P^\circ)3s-2s^25d$	$^2P^\circ-^2D$				6–10						1
				[132.598]	2 035 860–2 790 020	4–6	1.07+09	4.23−03	7.39−03	−1.772	D+	LS
63	$2s2p(^3P^\circ)3s-2s^26d$	$^2P^\circ-^2D$				6–10						1
				[112.125]	2 035 860–2 927 720	4–6	5.45+08	1.54−03	2.27−03	−2.210	D	LS
64	$2s2p(^3P^\circ)3p-$ $2s2p(^3P^\circ)3d$	$^2P-^2D^\circ$		1134.6	2 066 030–2 154 168	6–10	3.57+08	1.15−01	2.57+00	−0.161	B+	1
				1139.86	2 066 750–2 154 480	4–6	3.53+08	1.03−01	1.55+00	−0.385	B+	LS
				1122.21	2 064 590–2 153 700	2–4	3.07+08	1.16−01	8.57−01	−0.635	B	LS
				1150.09	2 066 750–2 153 700	4–4	5.70+07	1.13−02	1.71−01	−1.345	C+	LS
65		$^2P-^2P^\circ$		[746.0]	2 066 030–2 200 070	6–6	7.44+08	6.21−02	9.15−01	−0.429	B	1
				[754.94]	2 066 750–2 199 210	4–4	5.98+08	5.11−02	5.08−01	−0.690	B	LS
				[728.86]	2 064 590–2 201 790	2–2	5.32+08	4.24−02	2.03−01	−1.072	C+	LS
				[740.52]	2 066 750–2 201 790	4–2	2.53+08	1.04−02	1.01−01	−1.381	C+	LS
				[742.83]	2 064 590–2 199 210	2–4	1.26+08	2.08−02	1.02−01	−1.381	C+	LS
66		$^2D-^2D^\circ$	[2187]	[2188]	2 108 456–2 154 168	10–10	1.36+07	9.73−03	7.00−01	−1.012	B	1
			2260.7	2261.4	2 110 260–2 154 480	6–6	1.15+07	8.78−03	3.92−01	−1.278	B	LS
			[2084.8]	[2085.5]	2 105 750–2 153 700	4–4	1.41+07	9.18−03	2.52−01	−1.435	B	LS
			2301.3	2302.0	2 110 260–2 153 700	6–4	1.16+06	6.16−04	2.80−02	−2.432	C	LS
			[2051.5]	[2052.1]	2 105 750–2 154 480	4–6	1.10+06	1.04−03	2.81−02	−2.381	C	LS
67		$^2D-^2F^\circ$		[1208.3]	2 108 456–2 191 219	10–14	4.49+08	1.38−01	5.47+00	0.140	B+	1
				1205.84	2 110 260–2 193 190	6–8	4.51+08	1.31−01	3.12+00	−0.105	B+	LS
				[1207.15]	2 105 750–2 188 590	4–6	4.21+08	1.38−01	2.19+00	−0.258	B+	LS
				1276.65	2 110 260–2 188 590	6–6	2.53+07	6.19−03	1.56−01	−1.430	C+	LS
68		$^2D-^2P^\circ$		[1091.5]	2 108 456–2 200 070	10–6	4.78+07	5.12−03	1.84−01	−1.291	C	1
				[1124.23]	2 110 260–2 199 210	6–4	3.93+07	4.97−03	1.10−01	−1.525	C+	LS

TABLE 40. Transition probabilities of allowed lines for Si X (references for this table are as follows: 1=Fernley *et al.*,[28] 2=Tachiev and Froese Fischer,[100] 3=Galavis *et al.*,[38] 4=Safronova *et al.*,[91] 5=Merkelis *et al.*,[73] 6=Saba and Trefftz,[93] 7=Träbert *et al.*,[105] and 8=Cavalcanti *et al.*[17])—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
				[1041.23]	2 105 750–2 201 790	4–2	5.51+07	4.48−03	6.14−02	−1.747	C	LS
				[1069.98]	2 105 750–2 199 210	4–4	5.07+06	8.71−04	1.23−02	−2.458	D+	LS
69		${}^2S-{}^2P^\circ$		*[1482.1]*	*2 132 600–2 200 070*	2–6	1.37+08	1.36−01	1.32+00	−0.565	B	1
				[1501.28]	2 132 600–2 199 210	2–4	1.32+08	8.92−02	8.82−01	−0.749	B	LS
				[1445.30]	2 132 600–2 201 790	2–2	1.48+08	4.63−02	4.41−01	−1.033	B	LS
70	$2s2p({}^3P^\circ)3d-2p^2({}^3P)3d$	${}^4D^\circ-{}^4P$				20–12						1
				344.080	2 153 830–2 444 460	8–6	4.29+09	5.71−02	5.17−01	−0.340	B	LS
				339.397	2 151 360–2 446 000	6–4	3.53+09	4.06−02	2.72−01	−0.613	B	LS
				341.180	2 151 360–2 444 460	6–6	9.91+08	1.73−02	1.17−01	−0.984	C+	LS
				338.868	2 150 900–2 446 000	4–4	1.79+09	3.09−02	1.38−01	−0.908	C+	LS
				340.646	2 150 900–2 444 460	4–6	1.11+08	2.89−03	1.30−02	−1.937	D+	LS
				338.868	2 150 900–2 446 000	2–4	2.81+08	9.67−03	2.16−02	−1.714	C	LS
71		${}^0P^\circ?-{}^4P$				12–12						1
				352.684	2 160 920–2 444 460	6–6	1.16+09	2.17−02	1.51−01	−0.885	C+	LS
				352.237	2 162 100–2 446 000	4–4	2.23+08	4.14−03	1.92−02	−1.781	C	LS
				350.779	2 160 920–2 446 000	6–4	7.61+08	9.36−03	6.49−02	−1.251	C	LS
				354.158	2 162 100–2 444 460	4–6	4.93+08	1.39−02	6.48−02	−1.255	C	LS
72	$2s2p({}^1P^\circ)3s-2s2p({}^1P^\circ)3p$	${}^2P^\circ-{}^2S?$				6–2						1
				1136.75	2 158 330–2 246 300	4–2	3.04+08	2.94−02	4.40−01	−0.930	C	LS
73	$2s2p({}^1P^\circ)3d-2s^26d$	${}^2F^\circ-{}^2D$				14–10						8
				[159.281]	2 299 900–2 927 720	8–6	3.94+06	1.12−05	4.72−05	−4.048	C	8
				[159.281]	2 299 900–2 927 720	6–6	3.97+05	1.51−06	4.75−06	−5.043	E	LS
74		${}^2D^\circ-{}^2D$				10–10						8
				[162.025]	2 310 530–2 927 720	4–6	3.81+06	2.25−05	4.80−05	−4.046	C	8

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

4.10.3. Forbidden Transitions of Si X

The results of Tachiev and Froese Fischer[102] are the product of extensive MCHF calculations with Breit-Pauli corrections to order α^2. Charro *et al.*[18] used a relativistic MQDT method. Saha and Trefftz[94] applied an *ab initio* MQDT procedure. Vajed-Samii *et al.*[109] applied the relativistic multiconfiguration Dirac-Hartree-Fock code of Desclaux.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by two or more of the references.[18,94,102,108,109] Next we isoelectronically averaged the logarithmic quality factors observed for allowed B-like lines from the lower-lying levels of Na VII, Mg VIII, Al IX, and Si X and applied the result to forbidden lines of Si X using the method described in the introduction to Kelleher and Podobedova.[53]

4.10.4. References for Forbidden Transitions for Si X

[18]E. Charro, S. Lopez-Ferrero, and I. Martin, J. Phys. B **34**, 4243 (2001).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[94]H. P. Saha and E. Trefftz, Astron. Astrophys. **116**, 224 (1982).

[97]G. Tachiev and C. Froese Fischer, J. Phys. B **33**, 2419 (2000).

[102]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ MCHF (*ab initio*, downloaded on May 16, 2004). See Tachiev and Froese Fischer (Ref. 97).

[108]T. R. Verhey, B. P. Das, and W. F. Perger, J. Phys. B **20**, 3639 (1987).

[109]M. Vajed-Samii, D. Ton-That, and L. Armstrong, Jr., Phys. Rev. A **23**, 3034 (1981).

TABLE 41. Wavelength finding list for forbidden lines of Si X

Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (vac) (Å)	Mult. No.	Wavelength (Vac) (Å)	Mult. No.
598.59	2	624.73	2	649.27	2		
611.66	2	638.98	2				
Wavelength (air) (Å)	**Mult. No.**	**Wavelength (air) (Å)**	**Mult. No.**				
14 301.0	1	16 524	3				
Wavenumber (cm^{-1})	**Mult. No.**	**Wavenumber (cm^{-1})**	**Mult. No.**				
3 570	3	2 480	3				

TABLE 42. Transition probabilities of forbidden lines for Si X (references for this table are as follows: 1=Tachiev and Froese Fischer,[102] 2=Charro *et al.*,[18] 3=Verhey *et al.*,[108], 4=Saha and Trefftz,[94] and 5=Vajed-Samii *et al.*[109])

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
1	$2p-2p$	$^2P^\circ-^2P^\circ$									
			14 301.0	14 304.9	0.0–6 990.6	2–4	M1	2.69+00	1.17+00	C+	1,3,4,5
			14 301.0	14 304.9	0.0–6 990.6	2–4	E2	1.49−05	3.18−02	C	1,2
2	$2s^22p-2s2p^2$	$^2P^\circ-^4P$									
				[638.98]	6 990.6–163 490	4–4	M2	8.02−03	2.29−01	D+	1
				[649.27]	6 990.6–161 010	4–2	M2	3.73−02	5.78−01	C	1
				[624.73]	6 990.6–167 060	4–6	M2	1.92−01	7.35+00	C+	1
				[611.66]	0.0–163 490	2–4	M2	1.71−01	3.92+00	C	1
				[598.59]	0.0–167 060	2–6	M2	7.65−02	2.37+00	C	1
3	$2s2p^2-2s2p^2$	$^4P^\circ-^4P$									
				3 570 cm^{-1}	163 490–167 060	4–6	M1	7.36−01	3.60+00	B	1
				3 570 cm^{-1}	163 490–167 060	4–6	E2	5.97−07	5.51−02	C	1
				2 480 cm^{-1}	161 010–163 490	2–4	M1	3.43−01	3.33+00	B	1
				2 480 cm^{-1}	161 010–163 490	2–4	E2	1.15−08	4.37−03	D+	1
			16 524	16 529	161 010–167 060	2–6	E2	5.96−06	3.94−02	C	1

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

4.11. Si XI

Beryllium isoelectronic sequence
Ground state: $1s^22s^2\ ^1S_0$
Ionization energy: 476.36 eV (3 842 100 cm^{-1})

4.11.1. Allowed Transitions for Si XI

In general, the computed transition rates for this berylliumlike spectrum show excellent agreement, including the results of the OP (Ref. 107) from which most of the compiled data below have been taken. The results of Froese Fischer[34] are the product of fully relativistic MCDHF calculations. Safronova *et al.*[89,92] used relativistic second-order MBPT calculations. OP results have been used only when more accurate sources were not available. Only OP results were available for energy levels above the $2p3d$. Fritzsche and Grant[33] applied Grant's relativistic code. Zhang and Sampson[117] performed relativistic distorted-wave calculations. Johnson and Huang[52] used a multiconfiguration relativistic random-phase approximation. Ralchenko and Vainshtein[88] used Vainshtein's relativistic Z^{-1} MZ code. Granzow *et al.*[46] measured lifetimes using the beam-foil technique.

To estimate accuracies, we pooled the RSDM for each of the lines with transition rates published in two or more of the references,[33,34,46,52,88,89,92,107,117] as described in the introduction to Kelleher and Podobedova.[53] For this purpose the spin-allowed and intercombination data were treated separately. OP lines comprised a third group. Energy levels labeled $2p3p\ ^3D$ appear to be of highly mixed character in LS coupling, and therefore transitions from it were assigned lower accuracies. We then isoelectronically averaged the logarithmic quality factors observed for Be-like lines of Na VIII, Mg IX, and Al X using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying lines and for those from the OP data, we scaled the logarithmic quality factor of the lower-lying lines.

A NIST compilation of far-UV lines of Si XI was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.11.2. References for Allowed Transitions for Si XI

[33]S. Fritzsche and I. P. Grant, Phys. Scr. **50**, 473 (1994).

[34]G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCDHF, *ab initio*, downloaded on April 20, 2004). See also Tachiev and Froese Fischer (Ref. 98).

[46]J. Granzow, P. H. Heckmann, and E. Trabert, Phys. Scr. **49**, 148 (1994).

[52]W. R. Johnson and K.-N. Huang, Phys. Rev. Lett. **48**, 315 (1982).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[87]L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).

[88]Yu. V. Ralchenko and L. A. Vainshtein, Phys. Rev. A **52**, 2449 (1995).

[89]U. I. Safronova, A. Derevianko, M. S. Safronova, and W. R. Johnson, J. Phys. B **32**, 3527 (1999). A complete data listing was made available by private communication.

[92]U. I. Safronova, W. R. Johnson, M. S. Safronova, and A. Derevianko, Phys. Scr. **59**, 286 (1999).

[98]G. Tachiev and C. Froese Fischer, Can. J. Phys. **79**, 955 (2001).

[106]J. A. Tully, M. J. Seaton, and K. A. Berrington, J. Phys. B **23**, 3811 (1990).

[107]J. A. Tully, M. J. Seaton, and K. A. Berrington, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Tully *et al.* (Ref. 106).

[117]H. L. Zhang and D. H. Sampson, At. Data Nucl. Data Tables **52**, 143 (1992).

TABLE 43. Wavelength finding list for allowed lines of Si XI

Wavelength (vac) (Å)	Mult. No.
31.926	23
31.979	23
33.153	40
33.165	21
33.322	21
33.298	20
33.515	5
33.573	24
34.910	22
35.353	18
35.383	18
35.446	18
35.448	18
36.252	37
36.111	37
36.335	36
36.772	39
37.060	38
37.340	19
40.472	4
42.729	16
42.731	16
42.772	16
42.825	16
42.826	16
42.867	16
42.907	15
42.950	15
43.046	15
43.290	14
43.763	3
45.398	17
46.298	12
46.399	12
46.409	12
47.291	33
47.354	33
47.387	33
47.455	33
47.488	33
47.605	32
47.653	32
47.707	32
47.899	35
48.998	10
49.054	10
49.179	10
49.222	13
49.265	34
49.330	29
49.399	29
49.509	29
50.410	28
50.524	28
50.617	30
52.298	11
53.704	31
54.307	25
54.391	25
54.523	25
55.871	26
59.656	27
97.731	52
102.135	84
109.993	51
119.412	69
132.074	67
133.284	66
134.784	46
138.242	68
138.364	50
139.348	78
139.702	77
141.939	79
143.922	81
144.390	81

TABLE 43. Wavelength finding list for allowed lines of Si XI—Continued

Wavelength (vac) (Å)	Mult. No.
144.770	80
146.576	83
147.564	60
147.667	60
151.261	82
156.184	88
156.764	88
157.878	87
158.471	87
160.326	89
160.655	59
163.597	90
186.237	65
191.424	76
226.378	86
226.444	86
227.195	86
303.325	2
308.147	93
315.129	105
339.351	99
358.321	9
358.653	6
361.413	6
364.498	6
365.434	6
368.289	6
371.504	6
384.438	44
404.236	49
436.662	45
442.126	56
444.998	56
445.931	56
451.182	58
455.539	43
459.939	55
460.936	55
465.008	55
466.027	55
475.172	92
483.349	98
484.097	96
484.402	96
488.400	95
488.711	95
491.981	109
538.329	97

TABLE 43. Wavelength finding list for allowed lines of Si XI—Continued

Wavelength (vac) (Å)	Mult. No.
580.91	1
604.15	8
610.69	57
824.50	7
856.05	7
877.26	7
912.99	54
1 005.53	107
1 018.64	53
1 023.54	53
1 068.38	108
1 217.14	63
1 251.41	63
1 311.48	48
1 345.17	41
1 424.50	62
1 439.88	71
1 609.01	70
1 623.38	64
1 672.80	70
1 729.80	71
1 751.31	61
1 774.62	72
1 958.5	74
1 979.8	75
Wavelength (air) (Å)	**Mult. No.**
2 078.3	74
2 126.5	47
2 413.4	74
2 180.3	74
2 252.1	74
2 312.5	42
2 695.3	73
2 704.1	73
2 879.3	73
4 088.8	101
4 160.3	91
4 417.7	100
4 883.8	104
5 687	103
6 343	101
8 816	94
8 918	94
13 546	85

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])

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
1	$2s^2 - 2s2p$	$^1S - ^3P^{\circ}$										
				580.91	0–172 144	1–3	3.43+05	5.21−05	9.96−05	−4.283	D	2,3,7,8

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
2		$^1S-^1P^{\circ}$		303.325	0–329 679	1–3	6.42+09	2.66−01	2.65−01	−0.575	A	2,3,6,7
3	$2s^2-2s3p$	$^1S-^1P^{\circ}$		43.763	0–2 285 040	1–3	6.24+11	5.37−01	7.74−02	−0.270	B	2,4,5
4	$2s^2-2p3s$	$^1S-^1P^{\circ}$		[40.472]	0–2 470 820	1–	3.41+10	2.51−02	3.35−03	−1.600	C+	2,4
5	$2s^2-2s4p$	$^1S-^1P^{\circ}$		[33.515]	0–2 983 740	1–3	3.03+11	1.53−01	1.69−02	−0.815	D	1
6	$2s2p-2p^2$	$^3P^{\circ}-^3P$		*365.09*	*174 758–448 664*	9–9	5.12+09	1.02−01	1.11+00	−0.037	A	2,3,6
				365.434	117 318–450 965	5–5	3.82+09	7.64−02	4.60−01	−0.418	A	2,3,6
				364.498	172 144–446 494	3–3	1.29+09	2.57−02	9.25−02	−1.113	A	2,3,6
				371.504	177 318–446 494	5–3	2.02+09	2.51−02	1.51−01	−0.901	A	2,3,6
				368.289	172 144–443 670	3–1	4.99+09	3.39−02	1.23−01	−0.993	A	2,3,6
				358.653	142 144–450 965	3–5	1.36+09	4.37−02	1.55−01	−0.882	A	2,3,6
				361.413	169 802–446 494	1–3	1.77+09	1.04−01	1.24−01	−0.983	A	2,3,6
7		$^1P^{\circ}-^3P$										
				856.05	329 679–446 494	3–3	4.26+04	4.68−06	3.96−05	−4.853	E+	2,3
				877.26	329 679–443 670	3–1	4.73+05	1.82−05	1.57−04	−4.263	D	2,3
				824.50	329 679–450 965	3–5	1.62+06	2.24−04	2.23−03	−3.085	C	2,3
8		$^1P^{\circ}-^1D$		604.15	329 679–495 201	3–5	1.10+09	1.00−01	5.98−01	−0.523	B+	3,6
9		$^1P^{\circ}-^1S$		358.321	329 679–608 758	3–1	1.00+10	6.42−02	2.27−01	−0.715	B+	2,3,6
10	$2s2p-2s3s$	$^3P^{\circ}-^3S$		*49.12*	*174 758*–2 210 700	9–3	2.70+11	3.26−02	4.74−02	−0.533	A	2,4
				49.179	177 318–2 210 700	5–3	1.50+11	3.27−02	2.65−02	−0.786	A	2,4
				49.054	172 144–2 210 700	3–3	9.00+10	3.25−02	1.57−02	−1.011	A	2,4
				48.998	169 802–2 210 700	1–3	2.99+10	3.23−02	5.22−03	−1.491	B+	2,4
11		$^1P^{\circ}-^1S$		52.298	329 679–2 241 810	3–1	8.07+10	1.10−02	5.70−03	−1.481	C+	2,4
12	$2s2p-2s3d$	$^3P^{\circ}-^3D$				9–15						2,4
				46.399	177 318–2 332 520	5–7	1.33+12	6.03−01	4.60−01	0.479	B+	2,4
				46.298	172 144–2 332 050	3–5	1.01+12	5.39−01	2.47−01	0.209	B+	2,4
				46.409	177 318–2 332 050	5–5	3.34+11	1.08−01	8.24−02	−0.268	B	2,4
13		$^1P^{\circ}-^1D$		49.222	329 679–2 361 290	3–5	8.62+11	5.22−01	2.54−01	0.195	B+	2,4
14	$2s2p-2p3p$	$^3P^{\circ}-^3D$				9–15						4
				43.290	177 318–2 487 320	5–7	1.88+11	7.39−02	5.27−02	−0.432	C+	4
15		$^3P^{\circ}-^3S$		*43.00*	*174 758*–2 500 420	9–3	3.01+11	2.78−02	3.54−02	−0.602	C+	4
				43.046	177 318–2 500 420	5–3	1.02+11	1.69−02	1.20−02	−1.073	C	4
				42.950	172 144–2 500 420	3–3	1.41+11	3.91−02	1.66−02	−0.931	C+	4
				42.907	169 802–2 500 420	1–3	5.81+10	4.81−02	6.79−03	−1.318	C	4
16		$^3P^{\circ}-^3P$		*[42.80]*	*174 758–2 511 051*	9–9	3.34+11	9.17−02	1.16−01	−0.083	C+	4
				42.825	177 318–2 512 380	5–5	2.62+11	7.21−02	5.09−02	−0.443	C+	4
				42.772	172 144–2 510 130	3–3	5.03+10	1.38−02	5.82−03	−1.383	C	4
				72.867	177 318–2 510 130	5–3	2.10+11	3.47−02	2.45−02	−0.761	C+	4
				[42.826]	172 144–2 507 170	3–1	3.36+11	3.08−02	1.30−02	−1.034	C+	4
				42.731	172 144–2 512 380	3–5	7.05+10	3.22−02	1.36−02	−1.015	C+	4
				42.729	169 802–2 510 130	1–3	7.42+10	6.09−02	8.57−03	−1.215	C	4
17		$^1P^{\circ}-^1D$		45.398	329 679–2 532 420	3–5	5.30+11	2.73−01	1.22−01	−0.087	B	4
18	$2s2p-2s4d$	$^3P^{\circ}-^3D$		*35.41*	*174 758–2 998 441*	9–15	4.22+11	1.32−01	1.39−01	0.075	D+	1

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully et al.,[107] 2=Froese Fischer,[34] 3=Safronova et al.,[89] 4=Safronova et al.,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
				35.446	177 318–2 998 510	5–7	4.21+11	1.11−01	6.48−02	−0.256	C	LS
				35.383	172 144–2 998 380	3–5	3.18+11	9.94−02	3.47−02	−0.525	D+	LS
				35.353	169 802–2 998 380	1–3	2.37+11	1.33−01	1.55−02	−0.876	D	LS
				35.448	177 318–2 998 380	5–5	1.05+11	1.98−02	1.16−02	−1.004	D	LS
				35.383	172 144–2 998 380	3–3	1.76+11	3.31−02	1.16−02	−1.003	D	LS
				35.448	177 318– 2 998 380	5–3	1.17+10	1.32−03	7.70+04	−2.180	E	LS
19		$^1P^\circ-^1D$		37.340	329 679–3 007 770	3–5	3.30+11	1.15−01	4.24−02	−0.462	D+	1
20	$2s2p-2p4p$	$^3P^\circ-^3D$				9–15						1
				[33.298]	177 318–3 180 500	5–7	1.27+11	2.95−02	1.62−02	−0.831	D	LS
21		$^3P^\circ-^3P$				9–9						1
				[33.222]	177 318–3 187 370	5–5	1.19+11	1.97−02	1.08−02	−1.007	D	LS
				[33.165]	172 144–3 187 370	3–5	4.00+10	1.10−02	3.60−03	−1.481	E+	LS
22		$^1P^\circ-^1D$		[34.910]	329 679–3 194 190	3–5	1.87+11	5.69−02	1.96−02	−0.768	D	1
23	$2s2p-2s5d$	$^3P^\circ-^3D$				9–15						1
				31.979	177 318–3 304 400	5–7	1.88+11	4.04−02	2.13−02	−0.695	D	LS
				31.926	172 144–3 304 400	3–5	1.42+11	3.62−02	1.14−02	−0.964	D	LS
				31.979	177 318–3 304 400	5–5	4.71+10	7.22−03	3.80−03	−1.442	E+	LS
24		$^1P^\circ-^1D$		33.573	329 679–3 308 260	3–5	1.65+11	4.64−02	1.54−02	−0.856	D	1
25	$2p^2-2s3p$	$^3P-^1P^\circ$										
				54.391	446 494–2 285 040	3–3	7.24+07	3.21−05	1.72−05	−4.016	E+	2,4
				54.523	450 965–2 285 040	5–3	5.57+08	1.49−04	1.34−04	−3.128	D	2,4
				54.307	443 670–2 285 040	1–3	6.59+07	8.74−05	1.56−05	−4.058	E+	2,4
26		$^1D-^1P^\circ$		55.871	495 201–2 285 040	5–3	3.43+10	9.63−03	8.85−03	−1.317	C	4
27		$^1S-^1P^\circ$		59.656	608 758–2 285 040	1–3	7.02+08	1.12−03	2.21−04	−2.951	D+	2,4
28	$2p^2-2p3s$	$^3P-^3P^\circ$				9–9						4
				[50.524]	450 965–2 430 220	5–5	1.58+11	6.04−02	5.03−02	−0.520	C+	4
				[50.410]	446 494–2 430 220	3–5	5.47+10	3.47−02	1.73−02	−0.983	C+	4
29		$^3P-^1P^\circ$										
				[49.399]	446 494–2 470 820	3–3	4.89+08	1.79−04	8.73−05	−3.270	D	2,4
				[49.509]	450 965–2 470 820	5–3	2.38+06	5.26−07	4.28−07	−5.580	E	2,4
				[49.330]	443 670–2 470 820	1–3	3.02+08	3.31−04	5.37−05	−3.480	E+	2,4
30		$^1D-^1P^\circ$		[50.617]	495 201–2 470 820	5–3	1.59+11	3.66−02	3.05−02	−0.738	C+	4
31		$^1S-^1P^\circ$		[53.704]	608 758–2 470 820	1–3	5.52+10	7.16−02	1.27−02	−1.145	C+	2,4
32	$2p^2-2p3d$	$^3P-^3D^\circ$				9–15						4
				47.653	450 965–2 549 470	5–7	1.65+12	7.85−01	6.16−01	0.594	B+	4
				47.605	446 494–2 547 100	3–5	1.43+12	8.13−01	3.82−01	0.387	B+	4
				47.707	450 965–2 547 100	5–5	1.39+11	4.75−02	3.73−02	−0.624	C+	4
33		$^3P-^3P^\circ$				9–9						4
				47.488	450 965–2 556 770	5–5	9.16+11	3.10−01	2.42−01	0.190	B	4
				47.354	446 494–2 558 230	3–3	3.84+11	1.29−01	6.04−02	−0.412	B	4
				47.455	450 965–2 558 230	5–3	3.99+11	8.08−02	6.31−02	−0.394	B	4
				47.387	446 494–2 556 770	3–5	1.05+10	5.90−03	2.76−03	−1.752	C	4
				47.291	443 670–2 558 230	1–3	1.18+11	1.18−01	1.84−02	−0.928	C+	4

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
34		$^1D-^1D^\circ$		49.265	495 201–2 525 040	5–5	4.50+11	1.64−01	1.33−01	−0.086	B	4
35		$^1D-^1F^\circ$		47.899	495 201–2 582 930	5–7	2.00+12	9.65−01	7.60−01	0.683	B+	4
36	$2p^2-2p4d$	$^3P-^3D^\circ$				9–15						1
				36.335	450 965–3 203 130	5–7	5.74+11	1.59−01	9.51−02	−0.100	C	LS
37		$^3P-^3P^\circ$				9–9						1
				[36.311]	450 965–3 204 950	5–5	2.27+11	4.48−02	2.68−02	−0.650	D+	LS
				[36.252]	446 494–3 204 950	3–5	7.58+10	2.49−02	8.92−03	−1.127	D	LS
38		$^1D-^1D^\circ$		[37.060]	495 201–3 193 503	5–5	1.90+11	3.91−02	2.39−02	−0.709	D+	1
39		$^1D-^1F^\circ$		36.772	495 201–3 214 660	5–7	7.33+11	2.08−01	1.26−01	0.017	C	1
40	$2p^2-2p5d$	$^1D-^1F^\circ$		[33.153]	495 201– 3 511 520	5–7	3.53+11	8.14−02	4.44−02	−0.390	D+	1
41	$2s3s-2s3p$	$^3S-^1P^\circ$										
				1 345.17	2 210 700–2 285 040	3–3	2.30+07	6.25−03	8.31−02	−1.727	B	2
42		$^1S-^1P^\circ$	2 312.5	2 313.2	2 241 810–2 285 040	1–3	4.02+07	9.67−02	7.37−01	−1.015	B+	2
43	$2s3s-2p3s$	$^3S-^3P^\circ$				3–9						1
				[455.539]	2 210 700–2 240 220	3–5	1.10+09	5.69−02	2.56−01	−0.768	C+	LS
44		$^3S-^1P^\circ$										
				[384.438]	2 210 700–2 470 820	3–3	1.74+07	3.85−04	1.46−03	−2.937	D	3
45		$^1S-^1P^\circ$		[436.662]	2 241 810–2 470 820	1–3	2.82+09	2.42−01	3.47−01	−0.616	B+	2
46	$2s3s-2s4p$	$^1S-^1P^\circ$		[134.784]	2 241 810–2 983 740	1–3	3.99+10	3.26−01	1.45−01	−0.487	C	1
47	$2s3p-2s3d$	$^1P^\circ-^3D$										
			2 126.5	2 127.2	2 285 040–2 332 050	3–5	3.54+06	4.00−03	8.40−02	−1.921	B	2
48		$^1P^\circ-^1D$		1 311.48	2 285 040–2 861 290	3–5	2.27+08	9.77−02	1.26+00	−0.533	B+	2
49	$2s3p-2p3p$	$^1P^\circ-^1D$		404.236	2 285 040–2 532 420	3–5	2.60+08	1.06−02	4.23−02	−1.498	D+	1
50	$2s3p-2s4d$	$^1P^\circ-^1D$		138.364	2 285 040–3 007 770	3–5	9.14+10	4.37−01	5.97−01	0.118	C+	1
51	$2s3p-2p4p$	$^1P^\circ-^1D$		[109.993]	2 285 040–3 194 190	3–5	2.76+09	8.33−03	9.05−03	−1.602	D	1
52	$2s3p-2s5d$	$^1P^\circ-^1D$		97.731	2 285 040–3 308 260	3–5	4.86+10	1.16−01	1.12−01	−0.458	C	1
53	$2s3d-2p3s$	$^3D-^3P^\circ$				15–9						1
				[1 023.54]	2 332 520–2 430 220	7–5	1.29+07	1.45−03	3.42−02	−1.994	D+	LS
				[1 018 64]	2 332 050–2 430 220	5–5	2.35+06	3.65−04	6.12−03	−2.739	E+	LS
54		$^1D-^1P^\circ$		[912.99]	2 361 290–2 470 820	5–3	3.30+07	2.47−03	3.71−02	−1.908	C+	2
55	$2s3d-2p3d$	$^3D-^3D^\circ$				15–15						1
				460.936	2 332 520–2 549 470	7–7	1.38+09	4.38−02	4.65−01	−0.513	C+	LS
				465.008	2 332 050–2 547 100	5–5	1.05+09	3.40−02	2.60−01	−0.770	C+	LS
				466.027	2 332 520–2 547 100	7–5	2.34+08	5.44−03	5.84−02	−1.419	D+	LS
				459.939	2 332 050–2 549 470	5–7	1.74+08	7.71−03	5.84−02	−1.414	D+	LS
56		$^3D-^3P^\circ$				15–9						1
				445.931	2 332 520–2 556 770	7–5	1.46+09	3.11−02	3.20−01	−0.662	C+	LS
				442.126	2 332 050–2 558 230	5–3	1.34+09	2.35−02	1.71−01	−0.930	C	LS
				444.998	2 332 050–2 556 770	5–5	2.62+08	7.78−03	5.70−02	−1.410	D+	LS
57		$^1D-^1D^\circ$		610.96	2 361 290–2 525 040	5–5	6.17+08	3.45−02	3.47−01	−0.763	C+	1

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
58		$^1D-^1F^\circ$		451.182	2 361 290–2 582 930	5–7	3.79+08	1.62−02	1.20−01	−1.092	C	1
59	$2s3d-2s4p$	$^1D-^1P^\circ$		[160.655]	2 361 290–2 983 740	5–3	9.22+09	2.14−02	5.66−02	−0.971	D+	1
60	$2s3d-2s4f$	$^3D-^3F^\circ$				15–21						1
				147.667	2 332 520–3 009 720	7–9	2.12+11	8.93−01	3.04+00	0.796	B+	LS
				147.564	2 332 050–3 009 720	5–7	1.89+11	8.65−01	2.10+00	0.636	B+	LS
				147.667	2 332 520–3 009 720	7–7	2.37+10	7.74−02	2.63−01	−0.266	C+	LS
				147.564	2 332 050–3 009 720	5–5	3.31+10	1.08−01	2.62−01	−0.268	C+	LS
				147.667	2 332 520–3 009 720	7–5	9.34+08	2.18−03	7.42−03	−1.816	D	LS
61	$2p3s-2p3p$	$^3P^\circ-^3D$				9–15						1
				[1 751.31]	2 430 220–2 487 320	5–7	1.48+08	9.51−02	2.74+00	−0.323	B+	LS
62		$^3P^\circ-^3S$				9–3						1
				[1 424.50]	2 430 220–2 500 420	5–3	1.50+08	2.74−02	6.42−01	−0.863	B	LS
63		$^3P^\circ-^3P$				9–9						1
				[1 217.14]	2 430 220–2 512 380	5–5	3.66−08	8.13−02	1.63+00	−0.391	B	LS
				[1 251.41]	2 430 220–2 510 130	5–3	1.87+08	2.63−02	5.42−01	−0.881	C+	LS
64		$^1P^\circ-^1D$		[1 623.38]	2 470 820–2 532 420	3–5	2.31+08	1.52−01	2.44+00	−0.341	B+	1
65	$2p3s-2s4d$	$^1P^\circ-^1D$		[186.237]	2 470 820–3 007 770	3–5	6.32+09	5.48−02	1.01−01	−0.784	C	1
66	$2p3s-2p4p$	$^3P^\circ-^3D$				9–15						1
				[133.284]	2 430 220–3 180 500	5–7	4.24+10	1.58−01	3.47−01	−0.102	C+	LS
67		$^3P^\circ-^3P$				9–9						1
				[132.074]	2 430 220–3 187 370	5–5	2.93+10	7.65−02	1.66−01	−0.417	C	LS
68		$^1P^\circ-^1D$		[138.242]	2 470 820–3 194 900	3–5	3.54+10	1.69−01	2.31−01	−0.295	C	1
69	$2p3s-2s5d$	$^1P^\circ-^1D$		[119.412]	2 470 820–3 308 260	3–5	3.23+09	1.15−02	1.36−02	−1.462	D	1
70	$2p3p-2p3d$	$^3D-^3D^\circ$				15–15						1
				1 609.01	2 487 320–2 549 470	7–7	2.86+07	1.11−02	4.12−01	−1.110	C+	LS
				1 672.80	2 487 320–2 547 100	7–5	4.47+06	1.34−03	5.17−02	−2.028	D+	LS
71		$^3D-^3P^\circ$				15–9						1
				1 439.88	2 487 320–2 556 770	7–5	3.68+07	8.17−03	2.71−01	−1.243	C+	LS
72		$^3S-^3P^\circ$				3–9						1
				1 774.62	2 500 420–2 556 770	3–5	8.87+07	6.98−02	1.22+00	−0.679	B	LS
				1 729.80	2 500 420–2 558 230	3–3	9.59+07	4.30−02	7.35−01	−0.889	B	LS
73		$^3P-^3D^\circ$				9–15						1
			2 685.3	2 696.1	2 512 380–2 549 470	5–7	2.55+07	3.89−02	1.73+00	−0.711	B	LS
			2 704.1	2 704.9	2 510 130–2 547 100	3–5	1.89+07	3.46−02	9.24−01	−0.984	B	LS
			2 879.3	2 880.2	2 512 380–2 547 100	5–5	5.23+06	6.51−03	3.09−01	−1.487	C+	LS
74		$^3P-^3P^\circ$				9–9						1
			2 252.1	2 252.8	2 512 380–2 556 770	5–5	1.35+07	1.03−02	3.82−01	−1.288	C+	LS
			2 078.3	2 079.0	2 510 130–2 558 230	3–3	5.73+06	3.71−03	7.62−02	−1.954	C	LS
			2 180.3	2 181.0	2 512 380–2 558 230	5–3	8.25+06	3.53−03	1.27−01	−1.753	C	LS
			2 143.4	2 144.1	2 510 130–2 556 770	3–5	5.21+06	5.99−03	1.27−01	−1.745	C	LS
				[1 958.5]	2 507 170–2 558 230	1–3	9.10+06	1.57−02	1.01−01	−1.804	C	LS

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
75		$^1D-^1F^\circ$		1 979.78	2 532 420–2 582 930	5–7	9.66+07	7.95−02	2.59+00	−0.401	B+	1
76	$2p3p-2s4f$	$^3D-^3F^\circ$				15–21						1
				191.24	2 487 320–3 009 720	7–9	2.15+09	1.52−02	6.71−02	−0.973	C	LS
				191.424	2 487 350–3 009 720	7–7	2.40+08	1.32−03	5.82−03	−2.034	E+	LS
				191.424	2 487 320–3 009 720	7–5	9.48+06	3.72−05	1.64−04	−3.584	E	LS
77	$2p3p-2p4d$	$^3D-^3D^\circ$				15–15						1
				139.702	2 487 320–3 203 130	7–7	2.25+10	6.58−02	2.12−01	−0.337	C	LS
78		$^3D-^3P^\circ$				15–9						1
				[139.348]	2 487 320–3 204 950	7–5	2.84+09	5.90−03	1.89−02	−1.384	D	LS
79		$^3S-^3P^\circ$				3–9						1
				[141.939]	2 500 420–3 204 950	3–5	5.64+10	2.84−01	3.98−01	−0.070	C+	LS
80		$^3P-^3D^\circ$				9–15						1
				144.770	2 512 380–3 203 130	5–7	7.75+10	3.41−01	8.13−01	0.232	B	LS
81		$^3P-^3P^\circ$				9–9						1
				[144.390]	2 512 380–3 204 950	5–5	2.94+10	9.9−02	2.18−01	−0.338	C	LS
				[143.922]	2 510 130–3 204 950	3–5	9.89+09	5.12−02	7.28−02	−0.814	C	LS
82		$^1D-^1D^\circ$		[151.261]	2 532 420–3 193 530	5–5	2.75+10	9.43−02	2.35−01	−0.327	C	1
83		$^1D-^1F^\circ$		146.576	2 532 420–3 214 660	5–7	9.36+10	4.22−01	1.02+00	0.324	B	1
84	$2s3p-2p5d$	$^1D-^1F^\circ$		[102.135]	2 532 420–3 511 520	5–7	4.61+10	1.01−01	1.70−01	−0.297	C	1
85	$2s3d-2p3p$	$^1D^\circ-^1D$	13 546	13 550	2 525 040–2 532 420	5–5	5.20+04	1.43−03	3.19−01	−2.146	C+	1
86	$2p3d-2s4d$	$^3P^\circ-^3D$				9–15						1
				226.378	2 556 770–2 998 510	5–7	6.68+08	7.18−03	2.68−02	−1.448	D+	LS
				227.195	2 558 230–2 998 380	3–5	4.95+08	6.39−03	1.43−02	−1.717	D	LS
				226.444	2 556 770–2 998 380	5–5	1.67+08	1.28−03	4.77−03	−2.194	E+	LS
				227.195	2 558 230–2 998 380	3–3	2.75+08	2.13−03	4.78−03	−2.194	E+	LS
				226.44	2 556 770–2 998 380	5–3	1.85+07	8.55−05	3.19−04	−3.369	E	LS
87	$2p3d-2p4p$	$^3D^\circ-^3D$				15–15						1
				[158.471]	2 549 470–3 180 500	7–7	1.05+09	3.96−03	1.45−02	−1.557	D	LS
				[157.878]	2 547 100–3 180 500	5–7	1.33+08	6.97−04	1.81−03	−2.485	E+	LS
88		$^3D^\circ-^3P$				15–9						1
				[156.764]	2 549 470–3 187 370	7–5	4.90+09	1.29−02	4.66−02	−1.044	D+	LS
				[156.184]	2 547 100–3 187 370	5–5	8.83+08	3.23−03	8.30−03	−1.792	D	LS
89		$^3P^\circ-^3D$				9–15						1
				[160.326]	2 556 770–3 180 500	5–7	2.37+09	1.28−02	3.38−02	−1.194	D+	LS
90		$^1F^\circ-^1D$		[163.597]	2 582 930–3 194 190	7–5	7.33+09	2.10−02	7.92−02	−0.833	C	1
91	$2s4p-2s4d$	$^1P^\circ-^1D$	[4 160.3]	[4 161.5]	2 983 740–3 007 770	3–5	3.84+07	1.66−01	6.82+00	−0.303	B+	1
92	$2s4p-2p4p$	$^1P^\circ-^1D$		[475.172]	2 983 740–3 194 190	3–5	4.73+08	2.67−02	1.25−01	−1.096	C	1
93	$2s4p-2s5d$	$^1P^\circ-^1D$		[308.147]	2 983 740–3 308 260	3–5	1.93+10	4.57−01	1.39+00	1.37	B	1
94	$2s4d-2s4f$	$^3D-^3F^\circ$	*8 860*	*8 866*	*2 998 441–3 009 720*	15–21	2.58+06	4.26−02	1.87+01	−0.194	B+	1

TABLE 44. Transition probabilities of allowed lines for Si XI (references for this table are as follows; 1=Tully *et al.*,[107] 2=Froese Fischer,[34] 3=Safronova *et al.*,[89] 4=Safronova *et al.*,[92] 5=Fritzche and Grant,[33] 6=Zhang and Sampson,[117] 7=Johnson and Huang,[52] and 8=Ralchenko and Vainshtein.[88])—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
			8 918	8 921	2 998 510–3 009 720	7–9	2.54+06	3.89−02	8.00+00	−0.565	A	LS
			8 816	8 818	2 998 380–3 009 720	5–7	2.33+06	3.81−02	5.53+00	−0.720	B+	LS
			8 816	8 818	2 998 380–3 009 720	3–5	2.20+06	4.28−02	3.73+00	−0.891	B+	LS
			8 918	8 921	2 998 510–3 009 720	7–7	2.82+05	3.37−03	6.93−01	−1.627	B	LS
			8 816	8 818	2 998 380–3 009 720	5–5	4.09+05	4.77−03	6.92−01	−1.623	B	LS
			8 918	8 921	2 998 510–3 009 720	7–5	1.12+04	9.51−05	1.96−02	−3.177	D	LS
95	$2s4d-2p4d$	$^3D-^3D^{\circ}$				15–15						1
				488.711	2 998 510–3 203 130	7–7	1.03+09	3.69−02	4.16−01	−0.588	C+	LS
				488.400	2 998 380–3 203 130	5–7	1.30+08	6.47−03	5.22−02	−1.489	D+	LS
96		$^3D-^3P^{\circ}$				15–9						1
				[484.402]	2 998 510–3 204 950	7–5	1.34+09	3.36−02	3.75−01	−0.629	C+	LS
				[484.097]	2 998 380–3 204 950	5–5	2.39+08	8.41−03	6.70−02	−1.376	C	LS
				[484.097]	2 998 380–3 204 950	3–5	1.60+07	9.35−04	4.47−03	−2.552	E+	LS
97		$^1D-^1D^{\circ}$		[538.329]	3 007 770–3 193 530	5–5	8.84+08	3.84−02	3.40−01	−0.717	C+	1
98		$^1D-^1F^{\circ}$		483.349	3 007 770–3 214 660	5–7	1.73+08	8.48−03	6.75−02	−1.373	C	1
99	$2s4f-2s5d$	$^3F^{\circ}-^3D$				21–15						1
				339.351	3 009 720–3 304 400	9–7	8.79+08	1.18−02	1.19−01	−0.974	C	LS
				339.351	3 009 720–3 304 400	7–5	8.51+08	1.05−02	8.21−02	−1.134	C	LS
				339.351	3 009 720–3 304 400	7–7	7.59+07	1.31−03	1.02−02	−2.038	D	LS
				339.351	3 009 720–3 304 400	5–5	1.07+08	1.84−03	1.03−02	−2.036	D	LS
				339.351	3 009 720–3 304 400	5–7	2.14+06	5.18−05	2.89−04	−3.587	E	LS
100	$2p4p-2p4d$	$^3D-^3D^{\circ}$				15–15						1
			[4 417.7]	[4 418.9]	3 180 500–3 203 130	7–7	7.00+06	2.05−02	2.09+00	−0.843	B+	LS
101		$^3D-^3P^{\circ}$				15–9						1
			[4 088.8]	[4 090.0]	3 180 500–3 204 950	7–5	3.78+06	6.77−03	6.38−01	−1.324	B	LS
102		$^3P-^3D^{\circ}$				9–15						1
			[6 343]	[6 345]	3 187 370–3 203 130	5–7	8.40+06	7.10−02	7.42+00	−0.450	A	LS
103		$^3P-^3P^{\circ}$				9–9						1
			[5 687]	[5 688]	3 187 370–3 204 950	5–5	3.67+06	1.78−02	1.67+00	−1.051	B	LS
104		$^1D-^1F^{\circ}$	[4 883.8]	[4 885.2]	3 194 190–3 214 660	5–7	2.54+07	1.27−01	1.02+01	−0.197	A	1
105	$2p4p-2p5d$	$^1D-^1F^{\circ}$		[315.129]	3 194 190–3 511 520	5–7	1.91+10	3.98−01	2.68+00	0.299	B+	1
106	$2p4d-2p4p$	$^1D^{\circ}-^1D$		[660]	3 193 530–3 194 190	5–5	1.63+02	5.61−04	1.40+00	−2.552	B	1
107	$2p4d-2s5d$	$^3P^{\circ}-^3D$				9–15						1
				[1 005.53]	3 204 950–3 304 400	5–7	3.25+07	6.90−03	1.14−01	−1.462	C	LS
				[1 005.53]	3 204 950–3 304 400	5–5	8.11+06	1.23−03	2.04−02	−2.211	D	LS
108		$^1F^{\circ}-^1D$		1 068.38	3 214 660–3 308 260	7–5	2.99+07	3.65−03	8.99−02	−1.593	C	1
109	$2s5d-2p5d$	$^1D-^1f^{\circ}$		[491.981]	3 308 260–3 511 520	5–7	1.00+09	5.08−02	4.11−01	−0.595	C+	1

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

4.11.3. Forbidden Transitions for Si XI

The results of Froese Fischer[34] are the product of fully relativistic MCDHF calculations. Glass[41–43] used the CIV3 code; these results represent a rare situation where a second source of M2 calculations is available for comparison with those of Froese Fischer.[34] Majumder and Das[63] used a multiconfiguration Dirac-Fock approach with the extended optimal level approximation.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is cited in two of the references cited below.[34,41–43,63] Next we isoelectronically averaged the logarithmic quality factors observed for allowed Be-like lines from the lower-lying levels of Na VIII, Mg IX, Al X, and Si XI and applied the result to forbidden lines of Si XI using the method described in the introduction to Kelleher and Podobedova.[53]

4.11.4. References for Forbidden Transitions for Si XI

[34]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCDHF, *ab initio*, downloaded on April 20, 2004).

[41]R. Glass, Astrophys. Space Sci. **87**, 41 (1982).

[42]R. Glass, Astrophys. Space Sci. **91**, 417 (1983).

[43]R. Glass, Astrophys. Space Sci. **92**, 307 (1983).

[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

[63]S. Majumder and B. P. Das, Phys. Rev. A **62**, 042508 (2000).

TABLE 45. Wavelength finding list for forbidden lines of Si XI

Wavelength (vac) (Å)	Mult. No.
201.938	3
221.747	2
223.967	2
231.782	8
307.315	7
309.543	7
314.581	7
355.666	6
358.653	6
364.498	6
365.434	6
371.504	6
375.443	6
563.96	1
604.15	10
616.28	13
625.48	5
633.74	13
634.78	5
656.34	5
824.50	9
856.05	9
880.62	14
1940.6	12
Wavelength (air) (Å)	**Mult. No.**
2052.4	12
2259.9	12
13 301	4
13 704	11
19 322	4
Wavenumber (cm^{-1})	**Mult. No.**
4471	11
2 824	11
2 342	4

TABLE 46. Transition probabilities of forbidden lines for Si XI (references for this table are as follows: 1=Froese Fischer,[34] 2=Glass,[42] 3=Glass,[43] 4=Glass,[41] and 5=Majumder and Das[63])

No.	Transition array	Mult.	λ_{air} (Å)	λ_{vac} (Å) or σ (cm^{-1})	E_i-E_k (cm^{-1})	g_i-g_k	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source
1	$2s^2-2s2p$	$^1S-^3P^\circ$									
				563.96	0–177 318	1–5	M2	2.41−01	4.61+00	A	1,5
2	$2s^2-2p^2$	$^1S-^3P$									
				221.747	0–450 965	1–5	E2	1.91+01	4.57−05	C	1
				223.967	0–446 494	1–3	M1	2.11+01	2.63−05	C	1
3		$^1S-^1D$									
				201.938	0–495 201	1–5	E2	4.44+03	6.66−03	B	3
4	$2s2p-2s2p$	$^3P^\circ-^3P^\circ$									
			19 322	19 327	172 144–177 318	3–5	M1	1.87+00	2.50+00	A+	1
			19 322	19 327	172 144–177 318	3–5	E2	3.59−06	4.32−02	A	1
				2 342 cm^{-1}	169 802–172 144	1–5	MI	2.30−01	1.99+00	A+	1
			13 301	13 305	169 802–177 318	1–5	E2	1.03−05	1.91−02	B+	1
5		$^3P^\circ-^1P^\circ$									
				634.78	172 144–329 679	3–3	M2	2.96+01	8.43−04	B	1
				634.78	172 144–329 679	3–3	E2	2.14−01	5.91−05	C	1
				656.34	177 318–329 679	5–3	M1	4.37+01	1.37−03	B	1
				656.34	177 318–329 679	5–3	E2	8.53−02	2.78−05	C	1

TABLE 46. Transition probabilities of forbidden lines for Si XI (references for this table are as follows: 1=Froese Fischer,[34] 2=Glass,[42] 3=Glass,[43] 4=Glass,[41] and 5=Majumber and Das[63])—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	Type	A_{ki} (s^{-1})	S (a.u.)	Acc.	Source
				625.48	169 802–328 679	1–3	M1	3.96+01	1.08−03	B	1
6	$2s2p-2p^2$	$^3P°-^3P°$									
				365.434	177 318–450 965	5–5	M2	1.71+00	3.73+00	A	1
				364.498	172 144–446 494	3–3	M2	1.50+00	1.95+00	A	1
				375.443	177 318–443 670	5–1	M2	1.21+00	6.06−01	A	1
				371.504	177 318–446 494	5–3	M2	2.71−04	3.85−04	C	1
				358.653	172 144–450 965	3–5	M2	1.32−02	2.62−02	B	1
				355.666	169 802–450 965	1–5	M2	4.15−01	7.92−01	A	1
7		$^3P°-^1D$									
				307.315	169 802–49 201	1–5	M2	1.32+00	1.21+00	A	4
				309.543	172 144–49 201	3–5	M2	3.20+00	3.05+00	A	4
				314.581	177 318–49 201	5–5	M2	2.83+00	2.92+00	A	4
8		$^3P°-^1S$									
				231.782	177 318–608 758	5–1	M2	1.09+01	4.89−01	A	1
9		$^1P°-^3P$									
				856.05	329 679–446 494	3–3	M2	9.97−03	9.22−01	A	1
				824.50	329 679–450 965	3–5	M2	2.27−02	2.90+00	A	1
10		$^1P°-^1D$									
				604.15	329 679–495 201	3–5	M2	2.89−03	7.79−02	B	4
7	$2p^2-2p^2$	$^3P°-^3P$									
				4 471 cm^{-1}	446 494–450 965	3–5	M1	1.20+00	2.50+00	A+	1
				4 471 cm^{-1}	446 494–450 965	3–5	E2	1.65−06	4.11−02	A	1
				2 824 cm^{-1}	443 670–446 494	1–3	M1	4.40−01	2.00+00	A+	1
			13 704	13 708	443 670–450 965	1–5	E2	8.54−06	1.85−02	B+	1
12		$^3P-^1D$									
				1 940.6	443 670–495 201	1–5	E2	4.01−06	4.93−07	E+	3
			2 052.4	2 053.1	446 494–495 201	3–5	M1	1.02+01	1.63−02	B+	2
			2 052.4	2 053.1	446 494–495 201	3–5	E2	1.66−03	2.71−04	C	3
			2 259.9	2 260.6	450 965–495 201	5–5	M1	2.11+01	4.52−02	B+	2
			2 259.9	2 260.6	450 965–495 201	5–5	E2	7.04−03	1.86−03	C+	3
13		$^3P-^1S$		633.74	450 965–608 758	5–1	E2	2.57+00	2.35−04	C+	1
				616.28	446 494–608 758	3–1	M1	4.17+02	3.62−03	B	1
14		$^1D-^1S$		880.62	495 201–608 758	5–1	E2	1.41+02	6.69−02	B+	3

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

4.12. Si XII

Lithium isoelectronic sequence
Ground state: $1s^22s\ ^2S_{1/2}$
Ionization energy: 523.420 eV (4 221 670 cm^{-1})

4.12.1. Allowed Transitions for Si XII

In general the computed transition rates for this Li-like spectrum show excellent agreement, including the results of the OP.[85] Most of the compiled data below have been taken from this source. The high-quality data from the other references were available primarily for transitions involving lower-lying levels. Froese Fischer[35] has performed extensive MCHF calculations with Breit-Pauli corrections to order α^2. Yan *et al.*[116] used a relativistic fully correlated Hylleraas-type variational method; these state-of-the-art calculations provide uniquely high accuracy. Zhang *et al.*[118] performed relativistic distorted-wave calculations. Martin *et al.*[65] applied a relativistic MQDT method.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by two or more of the references,[35,65,85,116,118] as discussed in the introduction to Kelleher and Podobedova.[53] We then isoelectronically averaged the logarithmic quality factors observed for Li-like lines of Na IX, Mg X, Al XI, and Si XII using the method described in the introduction to Kelleher and Podobedova.[53] For the lines from the higher-lying levels and transitions from the OP, we scaled the logarithmic quality factor of the lines from the lower-lying levels.

A NIST compilation of far-UV lines of Si XII was published recently.[87] The estimated accuracies are somewhat different in some cases because a different method of evaluation was used.

4.12.2. References for Allowed Transitions for Si XII

[35]C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).
[53]D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[65]I. Martin, J. Karwowski, G. H. F. Diercksen, and C. Barrientos, Astron. Astrophys., Suppl. Ser. **100**, 595 (1993).
[84]G. Peach, H. E. Saraph, and M. J. Seaton, J. Phys. B **21**, 3669 (1988).
[85]G. Peach, H. E. Saraph, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Peach *et al.* (Ref. 84).
[87]I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[116]Z.-C. Yan, M. Tambasco, and G. W. F. Drake, Phys. Rev. A **57**, 1652 (1998).
[118]H. L. Zhang, D. H. Sampson, and C. J. Fontes, At. Data Nucl. Data Tables **44**, 31 (1990).

TABLE 47. Wavelength finding list for allowed lines of Si XII

Wavelength (vac) (Å)	Mult. No.
25.658	6
25.660	6
26.078	16
26.134	16
26.436	15
26.456	5
26.459	5
26.493	15
26.975	14
27.035	14
27.850	13
27.897	4
27.901	4
27.914	13
29.439	12
29.509	12
29.510	12
29.574	11
29.645	11
31.012	3
31.023	3
32.888	10
32.793	10
32.977	10
33.222	9
33.313	9
40.911	2
40.951	2
44.019	8
44.165	8
44.178	8
45.521	7
45.691	7
63.101	30
63.196	30
65.238	29
65.339	29
66.292	21
66.301	21
68.624	28
68.737	28
69.756	34
69.766	34
69.790	34
71.894	20
71.910	20
74.585	27
74.718	27
75.987	33
76.005	33
76.027	33
83.627	19
83.662	19
87.187	26
87.358	26
87.369	26
88.377	25
88.565	25
89.217	32
89.257	32
89.272	32
119.663	18
119.821	18
124.494	45
124.665	45
126.461	24
126.796	24
126.844	24
131.447	31
131.551	23
131.567	31
131.638	31
131.966	23
133.094	44
133.289	44
143.833	38
143.875	38
147.995	43
148.236	43
150.455	48
150.500	48
150.523	48
173.100	37
173.190	37
178.811	42
179.163	42

TABLE 47. Wavelength finding list for allowed lines of Si XII—Continued

Wavelength (vac) (Å)	Mult. No.
182.782	47
182.882	47
225.963	56
226.219	56
255.984	55
256.312	55
261.404	36
261.746	36
273.635	41
274.348	41
274.461	41
284.131	46
284.374	46
284.535	46
285.714	40
286.615	40
308.737	51
308.928	51
317.460	54
317.965	54
324.202	58
324.359	58
324.412	58
404.531	62
405.022	62
484.614	50
485.319	50
499.406	1
503.651	53
504.923	53
512.033	61
512.821	61
520.665	1
523.834	57

TABLE 47. Wavelength finding list for allowed lines of Si XII—Continued

Wavelength (vac) (Å)	Mult. No.
524.246	57
524.659	57
771.90	66
773.10	66
835.77	60
837.87	60
872.22	63
873.74	63
1 287.83	65
1 291.16	65
1 803.1	17
1 884.3	17
Wavelength (air) (Å)	**Mult. No.**
4 453.1	35
4 575.4	22
4 682.5	35
4 961.4	22
5 137.3	22
8 926	49
9 343	49
10 808	39
11 831	39
12 267	39
Wavenumber (cm^{-1})	**Mult. No.**
4 750	52
4 400	52
4 250	52
3 200	59
2 900	59
2 000	64
1 800	64

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])

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
1	$2s-2p$	$^2S-^2P^\circ$		*506.30*	0–*1 97 513*	2–6	9.19+08	1.06−01	3.53−01	−0.674	AA	3
				499.406	0–2 00 238	2–4	9.60+08	7.18−02	2.36−01	−0.843	AA	3
				520.665	0–1 92 062	2–2	8.41+08	3.42−02	1.17−01	−1.165	AA	3
2	$2s-3p$	$^2S-^2P^\circ$		*40.92*	0–*2 443 533*	2–6	4.52+11	3.40−01	9.16−02	−0.167	A	2,4,5
				40.911	0–2 444 330	2–4	4.51+11	2.26−01	6.10−02	−0.345	A	2,4,5
				40.951	0–2 441 940	2–2	4.53+11	1.14−01	3.07−02	−0.642	A	2,4,5
3	$2s-4p$	$^2S-^2P^\circ$		*31.02*	0–*3 224 183*	2–6	2.03+11	8.79−02	1.80−02	−0.755	A	4,5
				31.012	0–3 224 550	2–4	2.03+11	5.85−02	1.20−02	−0.932	A	4,5
				31.023	0–3 223 450	2–2	2.04+11	2.94−02	6.01−03	−1.231	B+	4,5
4	$2s-5p$	$^2S-^2P^\circ$		*27.90*	0–*3 584 483*	2–6	1.07+11	3.73−02	6.85−03	−1.127	B+	4
				27.897	0–3 584 650	2–4	1.06+11	2.48−02	4.56−03	−1.305	B+	4
				27.901	0–3 584 150	2–2	1.07+11	1.25−02	2.30−03	−1.602	B+	4

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
5	$2s-6p$	$^2S-^2P^\circ$		*26.46*	*0–3 779 700*	2–6	6.15+10	1.94−02	3.37−03	−1.411	B+	1
				26.456	0–3 779 800	2–4	6.15+10	1.29−02	2.25−03	−1.588	B+	LS
				26.459	0–3 779 500	2–2	6.15+10	6.45−03	1.12−03	−1.889	B	LS
6	$2s-7p$	$^2S-^2P^\circ$		*25.66*	*0–3 897 283*	2–6	3.88+10	1.15−02	1.94−03	−1.638	C+	1
				25.658	0–3 897 350	2–4	3.88+10	7.66−03	1.29−03	−1.815	C+	LS
				25.660	0–3 897 150	2–2	3.88+10	3.83−03	6.47−04	−2.116	C+	LS
7	$2p-3s$	$^2P^\circ-^2S$		*45.63*	*197 513–2 388 870*	6–2	1.99+11	2.07−02	1.87−02	−0.906	A	2,4
				45.691	200 238–2 388 870	4–2	1.33+11	2.08−02	1.25−02	−1.080	A	2,4
				45.521	192 062–2 388 870	2–2	6.61+10	2.05−02	6.15−03	−1.387	B+	2,4
8	$2p-3d$	$^2P^\circ-^2D$		*44.12*	*197 513–2 464 204*	6–10	1.37+12	6.68−01	5.82−01	0.603	A	2,4,5
				44.165	200 238–2 464 480	4–6	1.37+12	6.02−01	3.50−01	0.382	A	2,4,5
				44.019	192 062–2 463 790	2–4	1.15+12	6.68−01	1.94−01	0.126	A	2,4,5
				44.178	200 238–2 463 790	4–4	2.28+11	6.67−02	3.88−02	−0.574	A	2,4,5
9	$2p-4s$	$^2P^\circ-^2S$		*33.28*	*197 513*–3 202 100	6–2	7.84+10	4.34−03	2.85−03	−1.584	B+	2,4
				33.313	200 238–3 202 100	4–2	5.24+10	4.36−03	1.91−03	−1.758	B+	2,4
				33.222	192 062–3 202 100	2–2	2.60+10	4.30−03	9.40−04	−2.066	B+	2,4
10	$2p-4d$	$^2P^\circ-^2D$		*32.94*	*197 513–3 232 880*	6–10	4.56+11	1.24−01	8.05−02	−0.128	A	4,5
				32.973	200 238–3 233 000	4–6	4.56+11	1.12−01	4.84−02	−0.349	A	4,5
				32.888	192 062–3 232 700	2–4	3.81+11	1.24−01	2.68−02	−0.606	A	4,5
				32.977	200 238–3 232 700	4–4	7.45+10	1.21−02	5.28−03	−1.315	B+	4,5
11	$2p-5s$	$^2P^\circ-^2S$		*29.62*	*197 513*–3 573 450	6–2	3.88+10	1.70−03	9.95−04	−1.991	B	4
				29.645	200 238–3 573 450	4–2	2.58+10	1.70−03	6.64−04	−2.167	B	4
				29.574	192 062–3 573 450	2–2	1.30+10	1.70−03	3.31−04	−2.469	B	4
12	$2p-5d$	$^2P^\circ-^2D$		*29.49*	*197 513–3 588 990*	6–10	2.11+11	4.59−02	2.67−02	−0.560	B+	4
				29.509	200 238–3 589 050	4–6	2.11+11	4.13−02	1.60−02	−0.782	B+	4
				29.439	192 062–3 588 900	2–4	1.77+11	4.59−02	8.90−03	−1.037	B+	4
				29.510	200 238–3 588 900	4–4	3.52+10	4.60−03	1.79−03	−1.735	B+	4
13	$2p-6d$	$^2P^\circ-^2D$		*27.89*	*197 513–3 728 700*	6–10	1.14+11	2.22−02	1.22−02	−0.875	B+	1
				27.914	200 238–3 782 700	4–6	1.14+11	2.00−02	7.35−03	−1.097	B+	LS
				27.850	192 062–3 782 700	2–4	9.55+10	2.22−02	4.07−03	−1.353	B+	LS
				27.914	200 238–3 782 700	4–4	1.90+10	2.22−03	8.16−04	−2.052	B	LS
14	$2p-7d$	$^2P^\circ-^2D$		*27.02*	*197 513–3 899 150*	6–10	6.95+10	1.27−02	6.77−03	−1.118	C+	1
				27.035	200 238–3 899 150	4–6	6.94+10	1.14−02	4.06−03	−1.341	B	LS
				26.975	192 062–3 899 150	2–4	5.82+10	1.27−02	2.26−03	−1.595	C+	LS
				27.035	200 238–3 899 150	4–4	1.16+10	1.27−03	4.52−04	−2.294	C	LS
15	$2p-8d$	$^2P^\circ-^2D$		*26.47*	*197 513–3 974 800*	6–10	4.57+10	8.00−03	4.18−03	−1.319	C+	1
				26.493	200 238–3 974 800	4–6	4.56+10	7.19−03	2.51−03	−1.541	C+	LS
				26.436	192 062–3 974 800	2–4	3.82+10	8.01−03	1.39−03	−1.795	C+	LS
				26.493	200 238–3 974 800	4–4	7.59+09	7.99−04	2.79−04	−2.495	C	LS
16	$2p-9d$	$^2P^\circ-^2D$		*26.12*	*197 513–4 026 700*	6–10	3.16+10	5.39−03	2.78−03	−1.490	C	1
				26.134	200 238–4 026 700	4–6	3.16+10	4.85−03	1.67−03	−1.712	C	LS
				26.078	192 062–4 026 700	2–4	2.65+10	5.40−03	9.27−04	−1.967	C	LS

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
				26.134	200 238–4 026 700	4–4	5.26+09	5.39−04	1.85−04	−2.666	D+	LS
17	$3s-3p$	$^2S-^2P^\circ$		*1 829*	2 388 870–*2 443 533*	2–6	1.20+08	1.81−01	2.18+00	−0.441	A	2
				1 803.1	2 388 870–2 444 330	2–4	1.25+08	1.22−01	1.45+00	−0.613	A	2
				1 884.3	2 388 870–2 441 940	2–2	1.10+08	5.85−02	7.26−01	−0.932	A	2
18	$3s-4p$	$^2S-^2P^\circ$		*119.72*	2 388 870–*3 224 183*	2–6	5.76+10	3.71−01	2.92−01	−0.130	A	1
				119.663	2 388 870–3 224 550	2–4	5.75+10	2.47−01	1.95−01	−0.306	A	LS
				119.821	2 388 870–3 223 450	2–2	5.76+10	1.24−01	9.78−02	−0.606	A	LS
19	$3s-5p$	$^2S-^2P^\circ$		*83.64*	2 388 870–*3 584 483*	2–6	3.22+10	1.01−01	5.58−02	−0.695	A	1
				83.627	2 388 870–3 584 650	2–4	3.22+10	6.76−02	3.72−02	−0.869	A	LS
				83.662	2 388 870–3 584 150	2–2	3.22+10	3.38−02	1.86−02	−1.170	B+	LS
20	$3s-6p$	$^2S-^2P^\circ$		*71.90*	2 388 870–*3 779 700*	2–6	1.91+10	4.44−02	2.10−02	−1.052	B+	1
				71.894	2 388 870–3 779 800	2–4	1.91+10	2.96−02	1.40−02	−1.228	B+	LS
				71.910	2 388 870–3 779 500	2–2	1.91+10	1.48−02	7.01−03	−1.529	B+	LS
21	$3s-7p$	$^2S-^2P^\circ$		*66.29*	2 388 870–*3 897 283*	2–6	1.21+10	2.40−02	1.05−02	−1.319	B	1
				66.292	2 388 870–3 897 350	2–4	1.21+10	1.60−02	6.98−03	−1.495	B	LS
				66.301	2 388 870–3 897 150	2–2	1.21+10	7.99−03	3.49−03	−1.796	B	LS
22	$3p-3d$	$^2P^\circ-^2D$	*4 836*	*4 838*	*2 443 533–2 464 204*	6–10	5.07+06	2.97−02	2.83+00	−0.749	A	2
			4 961.4	4 962.8	2 444 330–2 464 480	4–6	4.70+06	2.60−02	1.70+00	−0.983	A	2
			4 575.4	4 576.7	2 441 940–2 463 790	2–4	5.00+06	3.14−02	9.46−01	−1.202	A	2
			5 137.3	5 138.7	2 444 330–2 463 790	4–4	7.05+05	2.79−03	1.89−01	−1.952	A	2
23	$3p-4s$	$^2P^\circ-^2S$		*131.83*	*2 443 533*–3 202 100	6–2	5.57+10	4.84−02	1.26−01	−0.537	A	2
				131.966	2 444 330–3 202 100	4–2	3.71+10	4.84−02	8.41−02	−0.713	A	2
				131.551	2 441 940–3 202 100	2–2	1.87+10	4.84−02	4.19−02	−1.014	A	2
24	$3p-4d$	$^2P^\circ-^2D$		*126.69*	*2 443 533–3 232 880*	6–10	1.45+11	5.83−01	1.46+00	0.544	A	1
				126.796	2 444 330–3 233 000	4–6	1.45+11	5.24−01	8.75−01	0.321	A	LS
				126.461	2 441 940–3 232 700	2–4	1.22+11	5.84−01	4.86−01	0.067	A	LS
				126.844	2 444 330–3 232 700	4–4	2.41+10	5.82−02	9.72−02	−0.633	A	LS
25	$3p-5s$	$^2P^\circ-^2S$		*88.50*	*2 443 533*–3 573 450	6–2	2.61+10	1.02−02	1.78−02	−1.213	B+	1
				88.565	2 444 330–3 573 450	4–2	1.73+10	1.02−02	1.19−02	−1.389	B+	LS
				88.377	2 441 940–3 573 450	2–2	8.71+09	1.02−02	5.94−03	−1.690	B+	LS
26	$3p-5d$	$^2P^\circ-^2D$		*87.30*	*2 443 533–3 588 990*	6–10	7.18+10	1.37−01	2.36−01	−0.085	A	1
				87.358	2 444 330–3 589 050	4–6	7.17+10	1.23−01	1.41−01	−0.308	A	LS
				87.187	2 441 940–3 588 900	2–4	6.01+10	1.37−01	7.86−02	−0.562	A	LS
				87.369	2 444 330–3 588 900	4–4	1.19+10	1.36−02	1.56−02	−1.264	B+	LS
27	$3p-6d$	$^2P^\circ-^2D$		*74.67*	*2 443 533–3 782 700*	6–10	4.00+10	5.58−02	8.23−02	−0.475	A	1
				74.718	2 444 330–3 782 700	4–6	4.00+10	5.02−02	4.94−02	−0.697	A	LS
				74.585	2 441 940–3 782 700	2–4	3.35+10	5.58−02	2.74−02	−0.952	A	LS
				74.718	2 444 330–3 782 700	4–4	6.66+09	5.57−03	5.48−03	−1.652	B+	LS
28	$3p-7d$	$^2P^\circ-^2D$		*68.70*	*2 443 533–3 899 150*	6–10	2.46+10	2.90−02	3.94−02	−0.759	B	1
				68.737	2 444 330–3 899 150	4–6	2.46+10	2.61−02	2.36−02	−0.981	B	LS
				68.624	2 441 940–3 899 150	2–4	2.06+10	2.91−02	1.31−02	−1.235	B	LS
				68.737	2 444 330–3 899 150	4–4	4.09+09	2.90−03	2.62−03	−1.936	C+	LS

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
29	$3p-8d$	$^2P^\circ-^2D$		*65.31*	*2 443 533–3 974 800*	6–10	1.63+10	1.74−02	2.24−02	−0.981	B	1
				65.339	2 444 330–3 974 800	4–6	1.62+10	1.56−02	1.34−02	−1.205	B	LS
				65.238	2 441 940–3 974 800	2–4	1.36+10	1.74−02	7.47−03	−1.458	B	LS
				65.339	2 444 330–3 974 800	4–4	2.70+09	1.73−03	1.49−03	−2.160	C+	LS
30	$3p-9d$	$^2P^\circ-^2D$		*63.16*	*2 443 533–4 026 700*	6–10	1.12+10	1.12−02	1.40−02	−1.173	C+	1
				63.196	2 444 330–4 026 700	4–6	1.12+10	1.01−02	8.41−03	−1.394	C+	LS
				63.101	2 441 940–4 026 700	2–4	9.38+09	1.12−02	4.65−03	−1.650	C+	LS
				63.196	2 444 330–4 026 700	4–4	1.87+09	1.12−03	9.32−04	−2.349	C	LS
31	$3d-4p$	$^2D-^2P^\circ$		*131.58*	*2 464 204–3 224 183*	10–6	8.61+09	1.34−02	5.81−02	−0.873	B+	1
				131.567	2 464 480–3 224 550	6–4	7.75+09	1.34−02	3.48−02	−1.095	A	LS
				131.638	2 463 790–3 223 450	4–2	8.62+09	1.12−02	1.94−02	−1.349	B+	LS
				131.447	2 463 790–3 224 550	4–4	8.61+08	2.23−03	3.86−03	−2.050	B+	LS
32	$3d-5p$	$^2D-^2P^\circ$		*89.26*	*2 464 204–3 584 483*	10–6	3.70+09	2.65−03	7.79−03	−1.577	B+	1
				89.272	2 464 480–3 584 650	6–4	3.33+09	2.65−03	4.67−03	−1.799	B+	LS
				89.257	2 463 790–3 584 150	4–2	3.70+09	2.21−03	2.60−03	−2.054	B+	LS
				89.217	2 463 790–3 584 650	4–4	3.70+08	4.42−04	5.19−04	−2.753	B	LS
33	$3d-6p$	$^2D-^2P^\circ$		*76.02*	*2 464 204–3 779 700*	10–6	1.92+09	1.00−03	2.50−03	−2.000	B	1
				76.027	2 464 480–3 779 800	6–4	1.73+09	1.00−03	1.50−03	−2.222	B+	LS
				76.005	2 463 790–3 779 500	4–2	1.93+09	8.34−04	8.35−04	−2.477	B	LS
				75.987	2 463 790–3 779 800	4–4	1.93+08	1.67−04	1.67−04	−3.175	B	LS
34	$3d-7p$	$^2D-^2P^\circ$		*69.78*	*2 464 204–3 897 283*	10–6	1.15+09	5.02−04	1.15−03	−2.299	C+	1
				69.790	2 464 480–3 897 350	6–4	1.03+09	5.02−04	6.92−04	−2.521	C+	LS
				69.766	2 463 790–3 897 150	4–2	1.15+09	4.19−04	3.85−04	−2.776	C	LS
				69.756	2 463 790–3 897 350	4–4	1.15+08	8.37−05	7.69−05	−3.475	C	LS
35	$4s-4p$	$^2S-^2P^\circ$	*4 527*	*4 528*	3 202 100–*3 224 183*	2–6	2.66+07	2.45−01	7.31+00	−0.310	A+	1
			4 453.1	4 454.3	3 202 100–3 224 550	2–4	2.79+07	1.66−01	4.87+00	−0.479	A+	LS
			4 682.5	4 683.8	3 202 100–3 223 450	2–2	2.40+07	7.91−02	2.44+00	−0.801	A+	LS
36	$4s-5p$	$^2S-^2P^\circ$		*261.52*	3 202 100–*3 584 483*	2–6	1.33+10	4.09−01	7.04−01	−0.087	A	1
				261.404	3 202 100–3 584 650	2–4	1.33+10	2.73−01	4.70−01	−0.263	A	LS
				261.746	3 202 100–3 584 150	2–2	1.32+10	1.36−01	2.34−01	−0.565	A	LS
37	$4s-6p$	$^2S-^2P^\circ$		*173.13*	3 202 100–*3 779 700*	2–6	8.41+09	1.13−01	1.29−01	−0.646	A	1
				173.100	3 202 100–3 779 800	2–4	8.41+09	7.56−02	8.62−02	−0.820	A	LS
				173.190	3 202 100–3 779 500	2–2	8.41+09	3.78−02	4.31−02	−1.121	A	LS
38	$4s-7p$	$^2S-^2P^\circ$		*143.85*	3 202 100–*3 897 283*	2–6	5.45+09	5.07−02	4.80−02	−0.994	B	1
				143.833	3 202 100–3 897 350	2–4	5.45+09	3.38−02	3.20−02	−1.170	B+	LS
				143.875	3 202 100–3 897 150	2–2	5.45+09	1.69−02	1.60−02	−1.471	B	LS
39	$4p-4d$	$^2P^\circ-^2D$	*11 500*	*11 498*	*3 224 183–3 232 880*	6–10	1.60+06	5.30−02	1.20+01	−0.498	A+	1
			11 831	11 834	3 224 550–3 233 000	4–6	1.47+06	4.63−02	7.22+00	−0.732	A+	LS
			10 808	10 811	3 223 450–3 232 700	2–4	1.61+06	5.63−02	4.01+00	−0.948	A+	LS
			12 267	12 270	3 224 550–3 232 700	4–4	2.20+05	4.96−03	8.01−01	−1.702	A	LS
40	$4p-5s$	$^2P^\circ-^2S$		*286.31*	*3 224 183*–3 573 450	6–2	1.86+10	7.61−02	4.30−01	−0.340	A	1
				286.615	3 224 550–3 573 450	4–2	1.23+10	7.60−02	2.87−01	−0.517	A	LS

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
				285.714	3 223 450–3 573 450	2–2	6.23+09	7.63−02	1.44−01	−0.816	A	LS
41	$4p-5d$	$^2P^\circ-^2D$		*274.12*	*3 224 183–3 588 990*	6–10	3.02+10	5.67−01	3.07+00	0.532	A	1
				274.348	3 224 550–3 589 050	4–6	3.01+10	5.10−01	1.84+00	0.310	A	LS
				273.635	3 223 450–3 588 900	2–4	2.53+10	5.68−01	1.02+00	0.055	A	LS
				274.461	3 224 550–3 588 900	4–4	5.01+09	5.66−02	2.05−01	−0.645	A	LS
42	$4p-6d$	$^2P^\circ-^2D$		*179.05*	*3 224 183–3 782 700*	6–10	1.79+10	1.44−01	5.08−01	−0.063	A	1
				179.163	3 224 550–3 782 700	4–6	1.79+10	1.29−01	3.04−01	−0.287	A	LS
				178.811	3 223 450–3 782 700	2–4	1.50+10	1.44−01	1.70−01	−0.541	A	LS
				179.163	3 224 550–3 782 700	4–4	2.97+09	1.43−02	3.37−02	−1.243	A	LS
43	$4p-7d$	$^2P^\circ-^2D$		*148.16*	*3 224 183–3 899 150*	6–10	1.11+10	6.11−02	1.79−01	−0.436	B+	1
				148.236	3 224 550–3 899 150	4–6	1.11+10	5.50−02	1.07−01	−0.658	B+	LS
				147.995	3 223 450–3 899 150	2–4	9.32+09	6.12−02	5.96−02	−0.912	B+	LS
				148.236	3 224 550–3 899 150	4–4	1.85+09	6.11−03	1.19−02	−1.612	B	LS
44	$4p-8d$	$^2P^\circ-^2D$		*133.22*	*3 224 183–3 974 800*	6–10	4.42+09	3.29−02	8.66−02	−0.705	B+	1
				133.289	3 224 550–3 974 800	4–6	7.41+09	2.96−02	5.20−02	−0.927	B+	LS
				133.094	3 223 450–3 974 800	2–4	6.19+09	3.29−02	2.88−02	−1.182	B+	LS
				133.289	3 224 550–3 974 800	4–4	1.24+09	3.29−03	5.77−03	−1.881	B	LS
45	$4p-9d$	$^2P^\circ-^2D$		*124.61*	*3 224 183–4 026 700*	6–10	5.16+09	2.00−02	4.92−02	−0.921	B	1
				124.665	3 224 550–4 026 700	4–6	5.15+09	1.80−02	2.95−02	−1.143	B	LS
				124.494	3 223 450–4 026 700	2–4	4.30+09	2.00−02	1.64−02	−1.398	C+	LS
				124.665	3 224 550–4 026 700	4–4	8.58+08	2.00−03	3.28−03	−2.097	C+	LS
46	$4d-5p$	$^2D-^2P^\circ$		*284.41*	*3 232 880–3 584 483*	10–6	4.57+09	3.33−02	3.12−01	−0.478	A	1
				284.374	3 233 000–3 584 650	6–4	4.12+09	3.33−02	1.87−01	−0.699	A	LS
				284.535	3 232 700–3 584 150	4–2	4.56+09	2.77−02	1.04−01	−0.955	A	LS
				284.131	3 232 700–3 584 650	4–4	4.59+08	5.56−03	2.08−02	−1.653	B+	LS
47	$4d-6p$	$^2D-^2P^\circ$		*182.88*	*3 232 880–3 779 700*	10–6	2.27+09	6.84−03	4.12−02	−1.165	B+	1
				182.882	3 233 000–3 779 800	6–4	2.05+09	6.84−03	2.47−02	−1.387	B+	LS
				182.882	3 232 700–3 779 500	4–2	2.27+09	5.70−03	1.37−02	−1.642	B+	LS
				182.782	3 232 700–3 779 800	4–4	2.28+08	1.14−03	2.74−03	−2.341	B+	LS
48	$4d-7p$	$^2D-^2P^\circ$		*150.51*	*3 232 880–3 897 283*	10–6	1.30+09	2.65−03	1.31−02	−1.577	B	1
				150.523	3 233 300–3 897 350	6–4	1.17+09	2.65−03	7.88−03	−1.799	B	LS
				150.500	3 232 700–3 897 150	4–2	1.30+09	2.21−03	4.38−03	−2.054	B	LS
				150.455	3 232 700–3 897 350	4–4	1.30+08	4.42−04	8.76−04	−2.753	C+	LS
49	$5s-5p$	$^2S-^2P^\circ$	*9 060*	*9 064*	3 573 450–3 584 483	2–6	8.31+06	3.07−01	1.83+01	−0.212	A+	1
			8 926	8 929	3 573 450–3 584 650	2–4	8.70+06	2.08−01	1.22+01	−0.381	A+	LS
			9 343	9 346	3 573 450–3 584 150	2–2	7.59+06	9.94−02	6.12+00	−0.702	A+	LS
50	$5s-6p$	$^2S-^2P^\circ$		*484.85*	3 573 450–*3 779 700*	2–6	4.27+09	4.51−01	1.44+00	−0.045	A	1
				484.614	3 573 450–3 779 800	2–4	4.27+09	3.01−01	9.60−01	−0.220	A	LS
				485.319	3 573 450–3 779 500	2–2	4.25+09	1.50−01	4.79−01	−0.523	A	LS
51	$5s-7p$	$^2S-^2P^\circ$		*308.80*	3 573 450–*3 897 283*	2–6	2.93+09	1.26−01	2.56−01	−0.599	B+	1
				308.737	3 573 450–3 897 350	2–4	2.93+09	8.38−02	1.70−01	−0.776	B+	LS
				308.928	3 573 450–3 897 150	2–2	2.93+09	4.19−02	8.52−02	−1.077	B+	LS

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
52	$5p-5d$	$^2P^\circ-^2D$		*4 507 cm^{-1}*	*3 584 483–3 588 990*	6–10	6.11+05	7.51−02	3.29+01	−0.346	A+	1
				4 400 cm^{-1}	3 584 650–3 589 050	4–6	5.67+05	6.59−02	1.97+01	−0.579	A+	LS
				4 750 cm^{-1}	3 584 150–3 588 900	2–4	5.95+05	7.91−02	1.10+01	−0.801	A+	LS
				4 250 cm^{-1}	3 584 650–3 588 900	4–4	8.53+04	7.08−03	2.19+00	−1.548	A+	LS
53	$5p-6d$	$^2P^\circ-^2D$		*504.50*	*3 584 483–3 782 700*	6–10	9.06+09	5.76−01	5.74+00	0.539	A+	1
				504.923	3 584 650–3 782 700	4–6	904+09	5.18−01	3.44+00	0.316	A+	LS
				503.651	3 584 150–3 782 700	2–4	7.59+09	5.77−01	1.91+00	0.062	A	LS
				504.923	3 584 650–3 782 700	4–4	1.50+09	5.75−02	3.82−01	−0.638	A	LS
54	$5p-7d$	$^2P^\circ-^2D$		*317.80*	*3 584 483–3 899 150*	6–10	5.94+09	1.50−01	9.42−01	−0.046	B+	1
				317.965	3 584 650–3 899 150	4–6	5.94+09	1.35−01	5.65−01	−0.268	A	LS
				317.460	3 584 150–3 899 150	2–4	4.96+09	1.50−01	3.14−01	−0.523	B+	LS
				317.965	3 584 650–3 899 150	4–4	9.90+08	1.50−02	6.28−02	−1.222	B+	LS
55	$5p-8d$	$^2P^\circ-^2D$		*256.20*	*3 584 483–3 974 800*	6–10	3.99+09	6.55−02	3.31−01	−0.406	B+	1
				256.312	3 584 650–3 974 800	4–6	3.99+09	5.89−02	1.99−01	−0.628	B+	LS
				255.984	3 584 150–3 974 800	2–4	3.33+09	6.55−02	1.10−01	−0.883	B+	LS
				256.312	3 584 650–3 974 800	4–4	6.65+08	6.55−03	2.21−02	−1.582	B	LS
56	$5p-9d$	$^2P^\circ-^2D$		*226.13*	*3 584 483–4 026 700*	6–10	2.80+09	3.58−02	1.60−01	−0.668	B	1
				226.219	3 584 650–4 026 700	4–6	2.80+09	3.22−02	9.59−02	−0.890	B	LS
				225.963	3 584 150–4 026 700	2–4	2.34+09	358−02	5.33−02	−1.145	B	LS
				226.219	3 584 650–4 026 700	4–4	4.65+08	3.57−03	1.06−02	−1.845	C+	LS
57	$5d-6p$	$^2D-^2P^\circ$		*524.36*	*3 588 990–3 779 700*	10–6	2.29+09	5.67−02	9.78−01	−0.246	A	1
				524.246	3 589 050–3 779 800	6–4	2.06+09	5.67−02	5.87−01	−0.468	A	LS
				524.659	3 588 900–3 779 500	4–2	2.29+09	4.72−02	3.26−01	−0.724	A	LS
				523.834	3 588 900–3 779 800	4–4	2.30+08	9.45−03	6.52−02	−1.423	A	LS
58	$5d-7p$	$^2D-^2P^\circ$		*324.37*	*3 588 990–3 897 283*	10–6	1.26+09	1.19−02	1.27−01	−0.924	B+	1
				324.359	3 589 050–3 897 350	6–4	1.13+09	1.19−02	7.62−02	−1.146	B+	LS
				324.412	3 588 900–3 897 150	4–2	1.26+09	9.92−03	4.24−02	−1.401	B+	LS
				324.202	3 588 900–3 897 350	4–4	1.26+08	1.98−03	8.45−03	−2.101	B	LS
59	$6p-6d$	$^2P^\circ-^2D$		*3 000 cm^{-1}*	*3 779 700–3 782 700*	6–10	3.95+05	1.10−01	7.23+01	−0.180	A+	1
				2 900 cm^{-1}	3 779 800–3 782 700	4–6	3.57+05	9.55−02	4.34+01	−0.418	A+	LS
				3 200 cm^{-1}	3 779 500–3 782 700	2–4	4.00+05	1.17−01	2.41+01	−0.631	A+	LS
				2 900 cm^{-1}	3 779 800–3 782 700	4–4	5.95+04	1.06−02	4.81+00	−1.373	A+	LS
60	$6p-7d$	$^2P^\circ-^2D$		*837.2*	*3 779 700–3 899 150*	6–10	3.42+09	5.98−01	9.89+00	0.555	A	1
				837.87	3 779 800–3 899 150	4–6	3.41+09	5.38−01	5.94+00	0.333	A	LS
				835.77	3 779 500–3 899 150	2–4	2.86+09	5.99−01	3.30+00	0.078	A	LS
				837.87	3 779 800–3 899 150	4–4	5.67+08	5.97−02	6.59−01	−0.622	A	LS
61	$6p-8d$	$^2P^\circ-^2D$		*512.66*	*3 779 700–3 974 800*	6–10	2.40+09	1.57−01	1.59+00	−0.026	A	1
				512.821	3 779 800–3 974 800	4–6	2.40+09	1.42−01	9.59−01	−0.246	A	LS
				512.033	3 779 500–3 974 800	2–4	2.00+09	1.57−01	5.29−01	−0.503	A	LS
				512.821	3 779 800–3 974 800	4–4	3.98+08	1.57−02	1.06−01	−1.202	B+	LS
62	$6p-9d$	$^2P^\circ-^2D$		404.86	*3 779 700–4 026 700*	6–10	1.69+09	6.94−02	5.55−01	−0.380	B+	1
				405.022	3 779 800–4 026 700	4–6	1.69+09	6.24−02	3.33−01	−0.603	B+	LS
				404.531	3 779 500–4 026 700	2–4	1.41+09	6.94−02	1.85−01	−0.858	B+	LS

TABLE 48. Transition probabilities of allowed lines for Si XII (references for this table are as follows: 1=Peach *et al.*,[85] 2=Forese Fischer,[35] 3=Yan *et al.*,[116] 4=Zhang *et al.*,[118] and 5=Martin *et al.*[65])—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
				405.022	3 779 800–4 026 700	4–4	2.82+08	6.93−03	3.70−02	−1.557	B	LS
63	$6d-7p$	$^2D-^2P^\circ$		*872.7*	*3 782 700–3 897 283*	10–6	1.20+09	8.20−02	2.35+00	−0.086	A	1
				872.22	3 782 700–3 897 350	6–4	1.08+09	8.20−02	1.41+00	−0.308	A	LS
				873.74	3 782 700–3 897 150	4–6	1.19+09	6.82−02	7.85−01	−0.564	A	LS
				872.22	3 782 700–3 897 350	4–4	1.20+08	1.37−02	1.57−01	−1.261	B+	LS
64	$7p-7d$	$^2P^\circ-^2D$		*1 867* cm^{-1}	*3 897 283–3 899 160*	6–10	1.82+05	1.30−01	1.38+02	−0.108	A	1
				1 800 cm^{-1}	3 897 350–3 899 150	4–6	1.63+05	1.13−01	8.27+01	−0.345	A+	LS
				2 000 cm^{-1}	3 897 150–3 899 150	2–4	1.85+05	1.39−01	4.58+01	−0.556	A	LS
				1 800 cm^{-1}	3 897 350–3 899 150	4–4	2.70+04	1.25−02	9.14+00	−1.301	A	LS
65	$7p-8d$	$^2P^\circ-^2D$		*1 290.0*	3 897 283–3 974 800	6–10	1.50+09	6.25−01	1.59+01	0.574	A	L
				1 291.16	3 897 350–3 974 800	4–6	1.50+09	5.62−01	9.56+00	0.352	A	LS
				1 287.83	3 897 150–3 974 800	2–4	1.26+09	6.26−01	5.31+00	0.098	A	LS
				1 291.16	3 897 350–3 974 800	4–4	2.50+08	6.24−02	1.06+00	−0.603	A	LS
66	$7p-9d$	$^2P^\circ-^2D$		*772.7*	*3 897 283–4 026 700*	6–10	1.11+09	1.65−01	2.52+00	−0.004	B	1
				773.10	3 897 350–4 026 700	4–6	1.11+09	1.49−01	1.52+00	−0.225	B	LS
				771.90	3 897 150–4 026 700	2–4	9.24+08	1.65−01	8.39−01	−0.481	B	LS
				773.10	3 897 350–4 026 700	4–4	1.84+08	1.65−02	1.68−01	−1.180	C+	LS

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

4.13. Si XIII

Helium isoelectronic sequence

Ground state: $1s^2\ ^1S_0$

Ionization energy: 2437.63 eV (19 660 800 cm^{-1})

4.13.1. Allowed Transitions for Si XIII

Not surprisingly, the computed transition rates for this heliumlike spectrum are very accurate. This includes the results of the OP.[30] Most of the compiled data below have been taken from this source. Khan *et al.*[54] started with hydrogenic wave functions and then applied the effective charge technique. Drake[25] performed a rigorous transformation between LS and relativistic *jj* coupling appropriate at large Z. Coutinho and Trigueiros[22] applied the COWAN code with least squares energy fitting.

To estimate accuracies, we pooled the RSDM of each of the lines for which a transition rate is given by both of the references cited below, as discussed in the introduction to Kelleher and Podobedova.[53] We then isoelectronically averaged the logarithmic quality factors observed for He-like lines of Na X and Mg XI using the method described in the introduction to Kelleher and Podobedova.[53] For the higher-lying lines and lines from the OP, we scaled the logarithmic quality factor of the lower-lying lines.

4.13.2. References for Allowed Transitions for Si XIII

[29]J. A. Fernley, K. T. Taylor, and M. J. Seaton, J. Phys. B **20**, 6457 (1987).

[30]J. A. Fernley, K. T. Taylor, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Fernley *et al.* (Ref. 29).

[54]F. Khan, G. S. Khandelwal, and J. W. Wilson, Astrophys. J. **329**, 493 (1988).

[25]G. W. F. Drake, Phys. Rev. A **19**, 1387 (1979).

[22]L. H. Coutinho and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **72**, 485 (2002).

[53]D. E. Kellecher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).

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

Wavelength (vac) (Å)	Mult. No.
5.135	9
5.146	8
5.162	7
5.186	6
5.223	5
5.286	4
5.405	3
5.681	2
6.648	1
21.557	26
21.762	24
22.055	22
22.056	22
22.103	50
22.112	50
22.140	27
22.147	50
22.321	48
22.330	48
22.356	25
22.365	48
22.498	20
22.499	20
22.560	51
22.632	46
22.641	46
22.664	23
22.678	46
22.784	49
23.103	44
23.106	47
23.113	44
23.128	21
23.151	44
23.217	18
23.218	18
23.219	18
23.593	45
23.835	42
23.845	42
23.870	40
23.880	40
23.883	19
23.885	42
23.886	42
23.921	40
24.370	43
24.385	41
24.517	16
24.520	16
24.521	16
25.198	38
25.209	38
25.248	17
25.254	38
25.255	38

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

Wavelength (vac) (Å)	Mult. No.
25.266	36
25.278	36
25.323	36
25.795	39
25.825	37
27.341	14
27.348	14
27.350	14
28.163	34
28.177	34
28.217	15
28.231	34
28.234	34
28.332	32
28.346	32
28.403	32
28.908	35
28.981	33
36.433	12
36.461	12
36.469	12
37.761	30
37.786	30
37.812	13
37.877	30
37.888	30
37.889	30
38.506	28
38.533	28
38.639	28
39.100	31
39.415	29
51.865	66
51.867	66
52.736	67
52.745	87
52.760	87
52.819	87
53.068	64
53.070	64
53.071	64
53.282	102
53.283	102
53.284	102
53.306	102
53.311	103
53.438	88
53.974	65
53.999	85
54.015	85
54.077	85
54.552	100
54.553	100
54.554	100
54.555	100
54.576	101

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

Wavelength (vac) (Å)	Mult. No.
54.777	100
54.717	86
54.847	62
54.850	62
54.851	52
55.805	63
55.859	83
55.875	83
55.942	83
56.434	98
56.435	98
56.438	98
56.449	99
56.461	98
56.611	84
57.669	60
57.675	60
57.676	60
58.710	61
58.818	81
58.836	81
58.910	81
59.423	97
59.426	96
59.427	96
59.432	96
59.433	96
59.456	96
59.625	82
62.639	58
62.650	58
62.652	58
63.806	79
63.828	79
63.911	79
63.915	79
64.059	77
64.081	77
64.169	77
64.672	95
64.718	94
64.719	94
64.729	94
64.730	94
54.731	94
64.753	94
64.849	80
64.958	78
73.100	56
73.125	56
73.131	56
74.609	75
74.613	57
74.639	75
74.747	75
74.757	75

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

Wavelength (vac) (Å)	Mult. No.
75.211	73
75.242	73
75.362	73
75.768	93
75.946	92
75.948	92
75.973	92
75.975	92
75.980	92
75.995	92
76.030	76
76.288	74
100.460	116
100.466	116
100.467	116
101.744	117
101.872	133
101.896	133
101.988	133
102.645	146
102.651	146
102.652	146
102.654	147
102.682	146
102.880	134
105.073	114
105.081	114
105.084	114
105.631	54
105.730	54
105.756	54
106.454	115
106.655	131
106.681	131
106.783	131
107.451	145
107.465	144
107.474	144
107.476	144
107.505	144
107.726	132
108.275	55
108.396	71
108.459	71
108.668	71
108.709	71
110.726	91
110.943	69
111.010	69
111.272	69
111.381	72
111.678	90
111.682	90
111.784	90
111.790	90
111.794	90

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

Wavelength (vac) (Å)	Mult. No.
111.819	90
112.284	112
112.299	112
112.302	112
112.472	70
113.820	113
114.161	129
114.191	129
114.307	129
114.960	143
115.021	142
115.036	142
115.039	142
115.067	142
115.325	130
124.786	110
124.811	110
124.818	110
126.594	111
127.245	127
127.282	127
127.427	127
128.006	141
128.174	140
128.202	140
128.209	140
128.232	140
128.563	128
150.650	108
150.710	108
150.726	108
153.058	109
153.149	125
153.202	125
153.388	125
153.412	125
154.613	123
154.668	123
154.882	123
155.127	139
155.586	126
155.617	138
155.681	138
155.698	138
155.702	138
156.216	124
176.305	158
176.323	158
176.328	158
178.208	159
178.638	171
178.676	171
178.822	171
179.632	183
179.707	182
179.726	182
179.731	182
179.765	182
180.077	172
191.023	156
191.051	156
191.059	156
193.178	157
193.888	169
193.932	169
194.104	169
194.853	181
195.023	180
195.053	180
195.061	180
195.091	180
195.468	170
216.277	154
216.329	154
216.343	154
218.882	155
220.205	167
220.262	167
220.484	167
221.034	179
221.419	178
221.474	178
221.488	178
221.507	178
220.012	168
229.711	106
229.952	106
230.015	106
234.253	107
234.718	121
234.844	121
235.239	121
235.338	121
239.134	137
240.409	122
240.786	119
240.920	119
241.439	119
241.462	136
241.667	136
241.729	136
241.798	136
243.007	120
267.988	152
268.107	152
268.138	152
271.584	153
274.687	165
274.776	165
274.905	177
275.121	165
275.918	176

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

Wavelength (vac) (Å)	Mult. No.
276.055	176
276.065	176
276.088	176
276.896	166
297.861	192
297.912	192
297.925	192
300.741	193
302.035	201
302.097	201
302.339	201
303.104	211
303.451	210
303.503	210
303.517	210
303.546	210
304.078	202
342.434	190
342.526	190
342.550	190
345.988	191
348.358	199
348.442	199
348.763	199
349.119	209
349.842	208
349.938	208
349.964	208
349.970	208
350.709	200
424.509	150
424.986	150
425.110	150
431.721	151
432.668	163
432.889	163
433.088	188
433.298	188
433.353	188
433.552	163
433.747	163
438.139	189
440.174	175
442.388	164
443.172	207
443.616	197
443.752	197
444.273	197
444.563	161
444.784	174
444.796	161
445.006	206
445.139	174
445.212	206
445.228	206
445.286	206

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

Wavelength (vac) (Å)	Mult. No.
445.307	174
445.444	174
445.702	161
446.486	198
447.519	162
508.606	218
508.753	218
508.792	218
513.294	219
517.119	224
517.234	224
517.679	224
520.064	225
653.95	216
654.29	216
654.38	216
660.79	217
669.56	222
669.75	222
670.50	222
673.14	223
705.82	186
706.64	186
706.86	186
716.43	187
729.99	205
738.03	204
738.60	204
738.83	195
738.93	204
739.17	204
739.21	195
740.65	195
742.45	196
814.69	10
865.05	10
878.62	10
938.57	230
939.07	230
939.21	230
947.52	231
960.70	234
960.97	234
962.00	234
965.00	234
1 089.46	214
1 090.79	214
1 091.13	214
1 104.41	215
1 140.11	220
1 140.67	220
1 142.83	220
1 144.27	221
1 200.67	11
1 591.22	228
1 593.19	228

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

Wavelength (vac) (Å)	Mult. No.
1 593.73	228
1 611.50	229
1 664.89	232
1 665.70	232
1 668.81	232
1 669.42	233
Wavelength (air) (Å)	**Mult. No.**
2 226.3	238
2 229.1	238
2 229.9	238
2 252.9	239
2 329.1	240
2 330.2	240
2 333.7	241
2 334.5	240
2 944.2	52
3 140.4	52
3 194.5	52
4 121.5	53
5 005.4	68
5 136.5	68
5 144.2	68
5 505.1	68
5 765	68
5 774	68
7 120	104
7 604	104
7 739	104
9 797	105
12 090	118
12 436	118
13 337	118
13 990	118
14 069	148
15 036	148
15 307	148
19 318	149

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

Wavenumber (cm^{-1})	Mult. No.
4 207	160
4 095	184
4 089	160
3 831	184
3 817	89
3 811	160
3 762	184
3 632	160
3 002	185
2 569	212
2 422	194
2 403	212
2 360	212
2 353	194
2 193	194
2 089	194
1 889	213
1 718	226
1 606	226
1 577	226
1 491	135
1 265	227
1 204	236
1 126	236
1 105	236
888	237
877	242
820	242
805	242
727	173
647	243
410	203

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25])

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
1	$1s^2-1s2p$	$^1S-^1P^\circ$		6.648	0–15 042 040	1–3	3.76+13	7.47−01	1.63−02	−0.127	A+	2,3
2	$1s^2-1s3p$	$^1S-^1P^\circ$		5.681	0–17 603 422	1–3	1.04+13	1.51−01	2.82−03	−0.821	A+	2
3	$1s^2-1s4p$	$^1S-^1P^\circ$		5.405	0–18 502 736	1–3	4.29+12	5.64−02	1.00−03	−1.249	A	2
4	$1s^2-1s5p$	$^1S-^1P^\circ$		5.286	0–18 919 421	1–3	2.18+12	2.73−02	4.76−04	−1.564	A	2
5	$1s^2-1s6p$	$^1S-^1P^\circ$		5.223	0–19 145 877	1–3	1.25+12	1.54−02	2.64−04	−1.812	A	2
6	$1s^2-1s7p$	$^1S-^1P^\circ$		5.186	0–19 282 456	1–3	7.86+11	9.51−03	1.62−04	−2.022	A	2
7	$1s^2-1s8p$	$^1S-^1P^\circ$		5.162	0–19 371 113	1–3	5.25+11	6.30−03	1.07−04	−2.201	A	2
8	$1s^2-1s9p$	$^1S-^1P^\circ$		5.146	0–19 431 902	1–3	3.68+11	4.39−03	7.44−05	−2.358	A	2
9	$1s^2-1s10p$	$^1S-^1P^\circ$		5.135	0–19 475 387	1–3	2.70+11	3.20−03	5.41−05	−2.495	C+	1
10	$1s2s-1s2p$	$^3S-^3P^\circ$		*837.7*	14 835 945–*14 955 317*	3–9	1.77+08	5.58−02	4.62−01	−0.776	A	1
				814.69	14 835 945–14 958 691	3–5	1.92+08	3.19−02	2.57−01	−1.019	A	LS
				865.00	14 835 945–14 951 545	3–3	1.60+08	1.80−02	1.54−01	−1.268	A	LS
				878.62	14 824 945–14 949 760	3–1	1.53+08	5.92−03	5.14−02	−1.751	A	LS
11		$^1S-^1P^\circ$		1 200.67	14 958 753–15 042 040	1–3	6.25+07	4.05−02	1.60−01	−1.393	A	1
12	$1s2s-1s3p$	$^3S-^3P^\circ$		*36.45*	14 835 945–*17 579 686*	3–9	6.50+11	3.88−01	1.40−01	0.066	A	1
				36.433	14 835 945–17 580 689	3–5	6.51+11	2.16−01	7.77−02	−0.188	A	LS
				36.461	14 835 945–17 578 568	3–3	6.47+11	1.29−01	4.65−02	−0.412	A	LS
				36.469	14 835 549–17 578 029	3–1	6.48+11	4.31−02	1.55−02	−0.888	B+	LS
13		$^1S-^1P^\circ$		37.812	14 958 753–17 603 422	1–3	6.27+11	4.03−01	5.02−02	−0.395	A	1
14	$1s2s-1s4p$	$^3S-^3P^\circ$		*27.34*	14 835 945–*18 493 008*	3–9	2.85+11	9.57−02	2.58−02	−0.542	B+	1
				27.341	14 835 945–18 493 430	3–5	2.85+11	5.32−02	1.44−02	−0.797	B+	LS
				27.348	14 835 945–18 492 537	3–3	2.85+11	3.19−02	8.62−03	−1.019	B+	LS
				27.350	14 835 945–18 492 307	3–1	2.84+11	1.06−02	2.86−03	−1.498	B+	LS
15		$^1S-^1P^\circ$		28.217	14 958 753–18 502 736	1–3	2.74+11	9.81−02	9.11−03	−1.008	B+	1
16	$1s2s-1s5p$	$^3S-^3P^\circ$		*24.52*	14 835 945–*18 914 503*	3–9	1.46+11	3.95−02	9.56−03	−0.926	B+	1
				24.517	14 835 945–18 914 719	3–5	1.46+11	2.19−02	5.30−03	−1.182	B+	LS
				24.520	14 835 945–18 914 262	3–3	1.46+11	1.32−02	3.20−03	−1.402	B+	LS
				24.521	14 835 945–18 914 144	3–1	1.46+11	4.38−03	1.06−03	−1.881	B+	LS
17		$^1S-^1P^\circ$		25.248	14 958 753–18 919 421	1–3	1.41+11	4.04−02	3.36−03	−1.394	B+	1
18	$1s2s-1s6p$	$^3S-^3P^\circ$		*23.22*	14 835 945–*19 143 054*	3–9	8.48+10	2.06−02	4.71−03	−1.209	B+	1
				23.217	14 835 945–19 143 179	3–5	8.46+10	1.14−02	2.61−03	−1.466	B+	LS
				23.218	14 835 945–19 142 915	3–3	8.49+10	6.86−03	1.57−03	−1.687	B+	LS
				23.219	14 835 945–49 142 846	3–1	8.50+10	2.29−03	5.25−04	−2.163	B+	LS
19		$^1S-^1P^\circ$		23.883	14 958 753–19 145 877	1–3	8.19+10	2.10−02	1.65−03	−1.678	B+	1
20	$1s2s-1s7p$	$^3S-^3P^\circ$		*22.50*	14 835 945–*19 280 685*	3–9	5.35+10	1.22−02	2.70−03	−1.437	B	1
				22.498	14 835 945–19 280 764	3–5	5.35+10	6.76−03	1.50−03	−1.693	B	LS
				22.499	14 835 945–19 280 598	3–3	5.35+10	4.06−03	9.02−04	−1.914	C+	LS
				22.499	14 835 945–19 280 555	3–1	5.34+10	1.35−03	3.00−04	−2.393	C+	LS
21		$^1S-^1P^\circ$		23.128	14 958 753–19 282 456	1–3	5.11+10	1.23−02	9.37−04	−1.910	C+	1
22	$1s2s-1s8p$	$^3S-^3P^\circ$		*22.06*	14 835 945–*19 369 931*	3–9	3.58+10	7.83−03	1.71−03	−1.629	C+	1

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —Continued

No.	Transition array	Mult.	λ_{air} (Å)	λ_{vac}(Å) orσ(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
				22.055	14 835 945–19 369 984	3–5	3.58+10	4.35−03	9.48−04	−1.884	C+	LS
				22.056	14 835 945–19 369 872	3–3	3.58+10	2.61−03	5.69−04	−2.106	C+	LS
				22.056	14 835 945–19 369 843	3–1	3.58+10	8.70−04	1.90−04	−2.583	C+	LS
23		$^1S-^1P^\circ$		22.664	14 958 753–19 371 113	1–3	3.45+10	7.96−03	5.94−04	−2.099	C+	1
24	1*s*2*s*−1*s*9*p*	$^3S-^3P^\circ$		*21.76*	14 835 945–*19 431 074*	3–9	2.51+10	5.34−03	1.15−03	−1.795	B+	1
				21.762	14 835 945–19 431 111	3–5	2.51+10	2.97−03	6.38−04	−2.050	B+	LS
				21.762	14 835 945–19 431 033	3–3	2.51+10	1.78−03	3.83−04	−2.272	B+	LS
				21.762	14 835 945–19 431 012	3–1	2.51+10	5.94−04	1.28−04	−2.749	B	LS
25		$^1S-^1P^\circ$		22.356	14 958 753–19 431 902	1–3	2.42+10	5.44−03	4.00−04	−2.264	B+	1
26	1*s*2*s*−1*s*10*p*	$^3S-^3P^\circ$		*21.56*	14 835 945–*19 474 784*	3–9	1.82+10	3.81−03	8.12−04	−1.942	B+	1
				21.557	14 835 945–19 474 811	3–5	1.83+10	2.12−03	4.51−04	−2.197	B+	LS
				21.557	14 835 945–19 474 754	3–3	1.82+10	1.27−03	2.70−04	−2.419	B	LS
				21.557	14 835 945–19 474 739	3–1	1.83+10	4.24−04	9.03−05	−2.896	B	LS
27		$^1S-^1P^\circ$		22.140	14 958 753–19 475 387	1–3	1.76+10	3.89−03	2.84−04	−2.410	B	1
28	1*s*2*p*−1*s*3*s*	$^3P^\circ-^3S$		*38.59*	*14 955 317*–17 546 734	9–3	2.27+11	1.69−02	1.93−02	−0.818	B+	1
				38.639	14 958 691–17 546 734	5–3	1.26+11	1.69−02	1.07−02	−1.073	B+	LS
				38.533	14 951 545–17 546 734	3–3	7.59+10	1.69−02	6.43−03	−1.295	B+	LS
				38.506	14 949 760–17 546 734	1–3	2.53+10	1.69−02	2.14−03	−1.772	B+	LS
29		$^1P^\circ-^1S$		39.415	15 042 040–17 579 166	3–1	2.13+11	1.65−02	6.42−03	−1.305	B+	1
30	1*s*2*p*−1*s*3*d*	$^3P^\circ-^3D$		*37.83*	*14 955 317–17 598 407*	9–15	1.90+12	6.80−01	7.63−01	0.787	A	1
				37.877	14 958 691–17 598 849	5–7	1.90+12	5.70−01	3.56−01	0.456	A	LS
				37.786	14 951 545–17 598 031	3–5	1.43+12	5.11−01	1.91−01	0.186	A	LS
				37.761	14 949 760–17 598 002	1–3	1.06+12	6.81−01	8.47−02	−0.167	A	LS
				37.888	14 958 691–17 598 031	5–5	4.74+11	1.02−01	6.36−02	−0.292	A	LS
				37.786	14 951 545–17 598 002	3–3	7.94+11	1.70−01	6.34−02	−0.292	A	LS
				37.889	14 958 691–17 598 002	5–3	5.26+10	6.79−03	4.23−03	−1.469	B+	LS
31		$^1P^\circ-^1D$		39.100	15 042 040–17 599 605	3–5	1.84+12	7.02−01	2.71−01	0.323	A	1
32	1*s*2*p*−1*s*4*s*	$^3P^\circ-^3S$		*28.38*	*14 955 317*–18 479 389	9–3	9.06+10	3.64−03	3.06−03	−1.485	B+	1
				28.403	14 958 691–18 479 389	5–3	5.02+10	3.64−03	1.70−03	−1.740	B+	LS
				28.346	14 951 545–18 479 389	3–3	3.03+10	3.65−03	1.02−03	−1.961	B+	LS
				28.332	14 949 760–18 479 389	1–3	1.01+10	3.65−03	3.40−04	−2.438	B+	LS
33		$^1P^\circ-^1S$		28.981	14 042 040–18 492 532	3–1	8.67+10	3.64−03	1.04−03	−1.962	B+	1
34	1*s*2*p*−1*s*4*d*	$^3P^\circ-^3D$		*28.21*	*14 955 317–18 500 739*	9–15	6.17+11	1.23−01	1.02−01	0.044	B+	1
				28.231	14 958 691–18 500 926	5–7	6.16+11	1.03−01	4.79−02	−0.288	A	LS
				28.177	14 951 545–18 500 576	3–5	4.63+11	9.19−02	2.56−02	−0.560	B+	LS
				28.163	14 949 760–18 500 576	1–3	3.45+11	1.23−01	1.14−02	−0.910	B+	LS
				28.234	14 958 691–18 500 576	5–5	1.53+11	1.83−02	8.50−03	−1.039	B+	LS
				28.177	14 951 545–18 500 576	3–3	2.57+11	3.06−02	8.52−03	−1.037	B+	LS
				28.234	14 958 691–18 500 576	5–3	1.70+10	1.22−03	5.67−04	−2.215	B+	LS
35		$^1P^\circ-^1D$		28.908	15 042 040–18 501 245	3–5	5.79+11	1.21−01	3.45−02	−0.440	A	1
36	1*s*2*p*−1*s*5*s*	$^3P^\circ-^3S$		*25.30*	*14 955 317*–18 907 613	9–3	4.48+10	1.43−03	1.08−03	−1.890	B+	1
				25.323	14 958 691–18 907 613	5–3	2.48+10	1.43−03	5.96−04	−2.146	B+	LS
				25.278	14 951 545–18 907 613	3–3	1.50+10	1.44−03	3.59−04	−2.364	B+	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				25.266	14 949 760–18 907 613	1–3	5.02+09	1.44−03	1.20−04	−2.842	B	LS
37		$^1P^\circ-^1S$		25.825	15 042 040–18 914 246	3–1	4.32+10	1.44−03	3.67−04	−2.365	B+	1
38	$1s2p-1s5d$	$^3P^\circ-^3D$		*25.23*	*14 955 317–18 918 435*	9–15	2.84+11	4.52−02	3.38−02	−0.391	B+	1
				25.254	14 958 691–18 918 530	5–7	2.83+11	3.79−02	1.58−02	−0.722	B+	LS
				25.209	14 951 545–18 918 351	3–5	2.13+11	3.39−02	8.44−03	−0.993	B+	LS
				25.198	14 949 760–18 918 351	1–3	1.58+11	4.52−02	3.75−03	−1.345	B+	LS
				25.255	14 958 691–18 918 351	5–5	7.08+10	6.77−03	2.81−03	−1.470	B+	LS
				25.209	14 951 545–18 918 351	3–3	1.19+11	1.13−02	2.81−03	−1.470	B+	LS
				25.255	14 958 691–18 918 351	5–3	7.86+09	4.51−04	1.87−04	−2.647	B	LS
39		$^1P^\circ-^1D$		25.795	15 042 040–18 918 694	3–5	2.63+11	4.37−02	1.11−02	−0.882	B+	1
40	$1s2p-1s6s$	$^3P^\circ-^3S$		*23.90*	*14 955 317*–19 139 084	9–3	2.56+10	7.30−04	5.17−04	−2.182	B	1
				23.921	14 958 691–19 139 084	5–3	1.42+10	7.29−04	2.87−04	−2.438	B	LS
				23.880	14 951 545–19 139 084	3–3	8.54+09	7.30−04	1.72−04	−2.660	B	LS
				23.870	14 949 760–19 139 084	1–3	2.85+09	7.31−04	5.74−05	−3.136	B	LS
41		$^1P^\circ-^1S$		24.385	15 042 040–19 142 875	3–1	2.47+10	7.34−04	1.77−04	−2.657	B	1
42	$1s2p-1s6d$	$^3P^\circ-^3D$		*23.87*	*14 955 317–19 145 317*	9–15	1.56+11	2.21−02	1.57−02	−0.701	B+	1
				23.885	14 958 691–19 145 372	5–7	1.55+11	1.86−02	7.31−03	−1.032	B+	LS
				23.845	14 951 545–19 145 268	3–5	1.17+11	1.66−02	3.91−03	−1.303	B+	LS
				23.835	14 949 760–19 145 268	1–3	8.69+10	2.22−02	1.74−03	−1.654	B+	LS
				23.886	14 958 691–19 145 268	5–5	3.88+10	3.32−03	1.31−03	−1.780	B+	LS
				23.845	14 951 545–19 145 268	3–3	6.50+10	5.54−03	1.30−03	−1.779	B+	LS
				23.886	14 958 691–19 145 268	5–3	4.31+09	2.21−04	8.69−05	−2.957	B	LS
43		$^1P^\circ-^1D$		24.370	15 042 040–19 145 467	3–5	1.43+11	2.12−02	5.10−03	−1.197	B+	1
44	$1s2p-1s7s$	$^3P^\circ-^3S$		*23.13*	*14 955 317*–19 278 195	9–3	1.59+10	4.25−04	2.91−04	−2.417	C+	1
				23.151	14 958 691–19 278 195	5–3	8.82+09	4.25−04	1.62−04	−2.673	C+	LS
				23.113	14 951 545–19 248 195	3–3	5.31+09	4.25−04	9.70−05	−2.894	C+	LS
				23.103	14 949 760–19 278 195	1–3	1.77+09	4.25−04	3.23−05	−3.372	C	LS
45		$^1P^\circ-^1S$		23.593	15 042 040–19 280 567	3–1	1.54+10	4.27−04	9.95−05	−2.892	C+	1
46	$1s2p-1s8s$	$^3P^\circ-^3S$		*22.66*	*14 955 317*–19 368 266	9–3	1.06+10	2.71−04	1.82−04	−2.613	C+	1
				22.678	14 958 691–19 368 266	5–3	5.86+09	2.71−04	1.01−04	−2.868	C+	LS
				22.641	14 951 545–19 368 266	3–3	3.54+09	2.72−04	6.08−05	−3.088	C	LS
				22.632	14 949 760–19 368 266	1–3	1.18+09	2.72−04	2.03−05	−3.565	C	LS
47		$^1P^\circ-^1S$		23.106	15 042 040–19 369 848	3–1	1.03+10	2.74−04	6.25−05	−3.085	C	1
48	$1s2p-1s9s$	$^3P^\circ-^3S$		*22.35*	*14 955 317*–19 429 907	9–3	7.41+09	1.85−04	1.23−04	−2.779	B	1
				22.365	14 958 691–19 429 907	5–3	4.11+09	1.85−04	6.81−05	−3.034	B	LS
				22.330	14 951 545–19 429 907	3–3	2.47+09	1.85−04	4.08−05	−3.256	B	LS
				22.321	14 949 760–19 429 907	1–3	8.26+08	1.85−04	1.36−05	−3.733	B	LS
49		$^1P^\circ-^1S$		22.784	15 042 040–19 431 014	3–1	7.17+09	1.86−04	4.19−05	−3.253	B	1
50	$1s2p-1s10s$	$^3P^\circ-^3S$		*22.13*	*14 955 317*–19 473 934	9–3	5.35+09	1.31−04	8.59−05	−2.928	B	1
				22.147	14 958 691–19 473 934	5–3	2.97+09	1.31−04	4.78−05	−3.184	B	LS
				22.112	14 951 545–19 473 934	3–3	1.79+09	1.31−04	2.86−05	−3.406	B	LS
				22.103	14 949 760–19 473 934	1–3	5.96+08	1.31−04	9.53−06	−3.883	B	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
51		$^1P^\circ - ^1S$		22.560	15 042 040–19 474 740	3–1	5.23+09	1.33−04	2.96−05	−3.399	B	1
52	$1s3s - 1s3p$	$^3S - ^3P^\circ$	*3 034*	*3 035*	17 546 734–*17 579 686*	3–9	2.27+07	9.40−02	2.82+00	−0.550	A	1
			2 944.2	2 945.1	17 546 734–17 580 689	3–5	2.48+07	5.38−02	1.56+00	−0.792	A	LS
			3 140.4	3 141.3	17 546 734–17 578 568	3–3	2.05+07	3.03−02	9.40−01	−1.041	A	LS
			3 194.5	3 195.4	17 546 734–17 578 029	3–1	1.94+07	9.91−03	3.13−01	−1.527	A	LS
53		$^1S - ^1P^\circ$	4 121.5	4 122.7	17 579 166–17 603 422	1–3	9.26+06	7.08−02	9.61−01	−1.150	A	1
54	$1s3s - 1s4p$	$^3S - ^3P^\circ$		*105.68*	17 546 734–*18 493 008*	3–9	8.47+10	4.25−01	4.44−01	0.106	A	1
				105.631	17 546 734–18 493 430	3–5	8.46+10	2.36−01	2.46−01	−0.150	A	LS
				105.730	17 546 734–18 492 537	3–3	8.47+10	1.42−01	1.48−01	−0.371	A	LS
				105.756	17 546 734–18 492 307	3–1	8.44+10	4.72−02	4.93−02	−0.849	A	LS
55		$^1S - ^1P^\circ$		108.275	17 579 166–18 502 736	1–3	8.40+10	4.43−01	1.58−01	−0.354	A	1
56	$1s3s - 1s5p$	$^3S - ^3P^\circ$		*73.11*	17 546 734–*18 914 503*	3–9	4.63+10	1.11−01	8.04−02	−0.478	A	1
				73.100	17 546 734–18 914 719	3–5	4.64+10	6.19−02	4.47−02	−0.731	A	LS
				73.125	17 546 734–18 914 262	3–3	4.63+10	3.71−02	2.68−02	−0.954	B+	LS
				73.131	17 546 734–18 914 144	3–1	4.64+10	1.24−02	8.96−03	−1.429	B+	LS
57		$^1S - ^1P^\circ$		74.613	17 579 166–18 919 421	1–3	4.55+10	1.14−01	2.80−02	−0.943	B+	1
58	$1s3s - 1s6p$	$^3S - ^3P^\circ$		*62.64*	17 546 734–*19 143 054*	3–9	2.71+10	4.78−02	2.96−02	−0.843	B+	1
				62.639	17 546 734–19 143 179	3–5	2.71+10	2.66−02	1.65−02	−1.098	B+	LS
				62.650	17 546 734–19 142 915	3–3	2.70+10	1.59−02	9.84−03	−1.321	B+	LS
				62.652	17 546 734–19 142 846	3–1	2.71+10	5.31−03	3.29−03	−1.798	B+	LS
59		$^1S - ^1P^\circ$		63.828	17 579 166–19 145 877	1–3	2.67+10	4.90−02	1.03−02	−1.310	B+	1
60	$1s3s - 1s7p$	$^3S - ^3P^\circ$		*57.67*	17 546 734–*19 280 685*	3–9	1.72+10	2.57−02	1.47−02	−1.113	B	1
				57.669	17 546 734–19 280 764	3–5	1.72+10	1.43−02	8.14−03	−1.368	B	LS
				57.675	17 546 734–19 280 598	3–3	1.72+10	8.57−03	4.88−03	−1.590	B	LS
				57.676	17 546 734–19 280 555	3–1	1.72+10	2.86−03	1.63−03	−2.067	B	LS
61		$^1S - ^1P^\circ$		58.710	17 579 166–19 282 456	1–3	1.70+10	2.63−02	5.08−03	−1.580	B	1
62	$1s3s - 1s8p$	$^3S - ^3P^\circ$		*54.85*	17 546 734–*19 369 931*	3–9	1.15+10	1.56−02	8.45−03	−1.330	B	1
				54.847	17 546 734–19 369 984	3–5	1.15+10	8.67−03	4.70−03	−1.585	B	LS
				54.850	17 546 734–19 369 872	3–3	1.15+10	5.20−03	2.82−03	−1.807	B	LS
				54.851	17 546 734–19 369 843	3–1	1.15+10	1.73−03	9.37−04	−2.285	C+	LS
63		$^1S - ^1P^\circ$		55.805	17 579 166–19 371 113	1–3	1.14+10	1.59−02	2.92−03	−1.799	B	1
64	$1s3s - 1s9p$	$^3S - ^3P^\circ$		*53.07*	17 546 734–*19 431 074*	3–9	8.10+09	1.03−02	5.38−03	−1.510	B+	1
				53.068	17 546 734–19 431 111	3–5	8.10+09	5.70−03	2.99−03	−1.767	B+	LS
				53.070	17 546 734–19 431 033	3–3	8.10+09	3.42−03	1.79−03	−1.989	B+	LS
				53.071	17 546 734–19 431 012	3–1	8.10+09	1.14−03	5.98−04	−2.466	B+	LS
65		$^1S - ^1P^\circ$		53.974	17 579 166–19 431 902	1–3	8.01+09	1.05−02	1.87−03	−1.979	B+	1
66	$1s3s - 1s10p$	$^3S - ^3P^\circ$		*51.87*	17 546 734–*19 474 784*	3–9	5.91+09	7.14−03	3.66−03	−1.669	B+	1
				51.865	17 546 734–19 474 811	3–5	5.91+09	3.97−03	2.03−03	−1.924	B+	LS
				51.867	17 546 734–19 474 754	3–3	5.90+09	2.38−03	1.22−03	−2.146	B+	LS
				51.867	17 546 734–19 474 739	3–1	5.91+09	7.95−04	4.07−4	−2.623	B+	LS
67		$^1S - ^1P^\circ$		52.736	17 579 166–19 475 387	1–3	5.84+09	7.30−03	1.27−03	−2.137	B+	1

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
68	$1s3p-1s3d$	$^3P^\circ-{}^3D$	*5 340*	*5 342*	*17 579 686–17 598 407*	9–15	3.20+06	2.28−02	3.61+00	−0.688	A	1
			5 505.1	5 506.6	17 580 689–17 598 849	5–7	2.92+06	1.86−02	1.69+00	−1.032	A	LS
			5 136.5	5 138.0	17 578 568–17 598 031	3–5	2.70+06	1.78−02	9.03−01	−1.272	A	LS
			5 005.4	5 006.8	17 578 029–17 598 002	1–3	2.16+06	2.44−02	4.02−01	−1.613	A	LS
			5 765	5 766	17 580 689–17 598 031	5–5	6.36+05	3.17−03	3.01−01	−1.800	A	LS
			5 144.2	5 145.6	17 578 568–17 598 002	3–3	1.49+06	5.92−03	3.01−01	−1.751	A	LS
			5 774	5 776	17 580 689–17 598 002	5–3	7.03+04	2.11−04	2.01−02	−2.977	B+	LS
69	$1s3p-1s4s$	$^3P^\circ-{}^3S$		*111.15*	17 579 686–18 479 889	9–3	6.36+10	3.92−02	1.29−01	−0.452	A	1
				111.272	17 580 689–18 479 389	5–3	3.52+10	3.92−02	7.18−02	−0.708	A	LS
				111.010	17 578 568–18 479 389	5–3	2.13+10	3.93−02	4.31−02	−0.928	A	LS
				110.943	17 578 029–18 479 389	1–3	7.10+09	3.93−02	1.44−02	−1.406	B+	LS
70		$^1P^\circ-{}^1S$		112.472	17 603 422–18 492 532	3–1	6.01+10	3.80−02	4.22−02	−0.943	A	1
71	$1s3p-1s4d$	$^3P^\circ-{}^3D$		*108.57*	*17 579 686–18 500 739*	9–15	2.01+11	5.92−01	1.91+00	0.727	A	1
				108.668	17 580 689–18 500 926	5–7	2.01+11	4.97−01	8.89−01	0.395	A	LS
				108.459	17 578 568–18 500 576	3–5	1.51+11	4.45−01	4.77−01	0.125	A	LS
				108.396	17 578 029–18 500 576	1–3	1.12+11	5.93−01	2.12−01	−0.227	A	LS
				108.709	17 580 689–18 500 576	5–5	5.01+10	8.87−02	1.59−01	−0.353	A	LS
				108.709	17 580 689–18 500 576	5–3	5.57+09	5.92−03	1.06−02	−1.529	B+	LS
72		$^1P^\circ-{}^1D$		111.381	17 603 422–18 501 245	3–5	2.03+11	6.28−01	6.91−01	0.275	A	1
73	$1s3p-1s5s$	$^3P^\circ-{}^3S$		*75.31*	*17 579 686*–18 907 613	9–3	3.09+10	8.75−03	1.95−02	−1.104	B+	1
				75.362	17 580 689–18 907 613	5–3	1.71+10	8.75−03	1.09−02	−1.359	B+	LS
				75.242	17 578 568–18 907 613	3–3	1.03+10	8.76−03	6.51−03	−1.580	B+	LS
				75.211	17 578 029–18 907 613	1–3	3.44+09	8.76−03	2.17−03	−2.057	B+	LS
74		$^1P^\circ-{}^1S$		76.288	17 603 422–18 914 246	3–1	2.94+10	8.54−03	6.43−03	−1.591	B+	1
75	$1s3p-1s5d$	$^3P^\circ-{}^3D$		*74.70*	*17 579 686–18 918 438*	9–15	9.83+10	1.37−01	3.03−01	0.091	A	1
				74.747	17 580 689–18 918 530	5–7	9.81+10	1.15−01	1.41−01	−0.240	A	LS
				74.639	17 578 568–18 918 351	3–5	7.40+10	1.03−01	7.59−02	−0.510	A	LS
				74.609	17 578 029–18 918 351	1–3	5.47+10	1.37−01	3.37−02	−0.863	A	LS
				74.757	17 580 689–18 918 351	5–5	2.45+10	2.05−02	2.52−02	−0.989	B+	LS
				74.639	17 578 568–18 918 351	3–3	4.09+10	3.42−02	2.52−02	−0.989	B+	LS
				74.757	17 580 689–18 918 351	5–3	2.73+09	1.37−03	1.69−03	−2.164	B+	LS
76		$^1P^\circ-{}^1D$		76.030	17 603 422–18 918 694	3–5	9.69+10	1.40−01	1.05−01	−0.377	A	1
77	$1s3p-1s6s$	$^3P^\circ-{}^3S$		*64.13*	*17 679 686*–19 139 084	9–3	1.72+10	3.54−03	6.73−03	−1.497	B+	1
				64.169	17 580 689–19 139 084	5–3	9.56+09	3.54−03	3.74−03	−1.752	B+	LS
				64.081	17 578 568–19 139 084	3–3	5.75+09	3.54−03	2.24−03	−1.974	B+	LS
				64.059	17 578 029–19 139 084	1–3	1.92+09	3.54−03	7.47−04	−2.451	B+	LS
78		$^1P^\circ-{}^1S$		64.958	17 603 422–19 142 875	3–1	1.65+10	3.47−03	2.23−03	−1.983	B+	1
79	$1s3p-1s6d$	$^3P^\circ-{}^3D$		*63.87*	*17 579 686–19 145 317*	9–15	5.48+10	5.59−02	1.06−01	−0.298	B+	1
				63.911	17 580 689–19 145 372	5–7	5.47+10	4.69−02	4.93−02	−0.630	A	LS
				63.828	17 578 568–19 145 265	3–5	4.12+10	4.19−02	2.64−02	−0.901	B+	LS
				63.806	17 578 029–19 145 268	1–3	3.05+10	5.59−02	1.17−02	−1.253	B+	LS
				63.915	17 580 689–19 145 268	5–5	1.37+10	8.37−03	8.81−03	−1.378	B+	LS
				63.828	17 578 568–19 145 268	3–3	2.29+10	1.40−02	8.83−03	−1.377	B+	LS
				63.915	17 580 689–19 145 268	5–3	1.52+09	5.58−04	5.87−04	−2.554	B+	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
80		$^1P^\circ-^1D$		64.849	17 603 422–19 145 467	3–5	5.34+10	5.61−02	3.59−02	−0.774	A	1
81	$1s3p-1s7s$	$^3P^\circ-^3S$		*58.88*	*17 579 686*–19 278 195	9–3	1.06+10	1.83−03	3.20−03	−1.783	B	1
				58.910	17 580 689–19 278 195	5–3	5.86+09	1.83−03	1.77−03	−2.039	B	LS
				58.836	17 578 568–19 278 195	3–3	3.55+09	1.84−03	1.07−03	−2.258	B	LS
				58.818	17 578 029–19 278 195	1–3	1.18+09	1.84−03	3.56−04	−2.735	C+	LS
82		$^1P^\circ-^1S$		59.625	17 603 422–19 280 567	3–1	1.01+10	1.80−03	1.06−03	−2.268	B	1
83	$1s3p-1s8s$	$^3P^\circ-^3S$		*55.91*	*17 579 686*–19 368 266	9–3	6.98+09	1.09−03	1.81−03	−2.008	C+	1
				55.942	17 580 689–19 368 266	5–3	3.87+09	1.09−03	1.00−03	−2.264	B	LS
				55.875	17 578 568–19 868 266	3–3	2.33+09	1.09−03	6.02−04	−2.485	C+	LS
				55.859	17 578 029–19 368 266	1–3	7.77+08	1.09−03	2.00−04	−2.963	C+	LS
84		$^1P^\circ-^1S$		56.611	17 603 422–19 369 848	3–1	6.68+09	1.07−03	5.98−04	−2.493	C+	1
85	$1s3p-1s9s$	$^3P^\circ-^3S$		*54.05*	*17 579 686*–19 429 907	9–3	4.84+09	7.06−04	1.13−03	−2.197	B+	1
				54.077	17 580 689–19 429 907	5–3	2.68+09	7.06−04	6.28−04	−2.452	B+	LS
				54.015	17 578 568–19 429 907	3–3	1.62+09	7.07−04	3.77−04	−2.673	B+	LS
				53.999	17 578 029–19 429 907	1–3	5.39+08	7.07−04	1.26−04	−3.151	B	LS
86		$^1P^\circ-^1S$		54.717	17 603 422–19 431 014	3–1	4.64+09	6.94−04	3.75−04	−2.682	B+	1
87	$1s3p-1s10s$	$^3P^\circ-^3S$		*52.79*	*17 579 686*–19 473 934	9–3	3.50+09	4.87−04	7.62−04	−2.358	B	1
				52.819	17 580 689–19 473 934	5–3	1.94+09	4.87−04	4.23−04	−2.614	B+	LS
				52.760	17 578 568–19 473 934	3–3	1.17+09	4.88−04	2.54−04	−2.834	B	LS
				52.745	17 578 029–19 473 934	1–3	3.90+08	4.88−04	8.47−05	−3.312	B	LS
88		$^1P^\circ-^1S$		53.438	17 603 422–19 474 740	3–1	3.37+09	4.81−04	2.54−04	−2.841	B	1
89	$1s3d-1s3p$	$^1D-^1P^\circ$		3 817 cm^{-1}	17 599 605–17 603 422	5–3	4.49+04	2.77−03	1.19+00	−1.859	A	1
90	$1s3d-1s4p$	$^3D-^3P^\circ$		*111.78*	*17 598 407–18 493 008*	15–9	1.14+10	1.28−02	7.06−02	−0.717	B+	1
				111.784	17 598 849–18 493 430	7–5	9.57+09	1.28−02	3.30−02	−1.048	A	LS
				111.794	17 598 031–18 492 537	5–3	8.53+09	9.59−03	1.76−02	−1.319	B+	LS
				111.819	17 598 002–18 492 307	3–1	1.14+10	7.10−03	7.84−03	−1.672	B+	LS
				111.682	17 598 031–18 493 430	5–5	1.71+09	3.20−03	5.88−03	−1.796	B+	LS
				111.790	17 598 002–18 492 537	3–3	2.84+09	5.33−03	5.88−03	−1.796	B+	LS
				111.678	17 598 002–18 493 430	3–5	1.14+08	3.56−04	3.93−04	−2.971	B+	LS
91		$^1D-^1P^\circ$		110.726	17 599 605–18 502 736	5–3	9.52+09	1.05−02	1.91−02	−1.280	B+	1
92	$1s3d-1s5p$	$^3D-^3P^\circ$		*75.98*	*17 598 407–18 914 503*	15–9	4.88+09	2.53−03	9.51−03	−1.421	B+	1
				75.995	17 598 849–18 914 719	7–5	4.09+09	2.53−03	4.43−03	−1.752	B+	LS
				75.975	17 598 031–18 914 262	5–3	3.66+09	1.90−03	2.38−03	−2.022	B+	LS
				75.980	17 598 002–18 914 144	3–1	4.89+09	1.41−03	1.06−03	−2.374	B+	LS
				75.948	17 598 031–18 914 719	5–5	7.33+08	6.34−04	7.93−04	−2.499	B+	LS
				75.973	17 598 002–18 914 262	3–3	1.22+09	1.06−03	7.95−04	−2.498	B+	LS
				75.946	17 598 002–18 914 719	3–5	4.88+07	7.04−05	5.28−05	−3.675	B	LS
93		$^1D-^1P^\circ$		75.768	17 599 605–18 919 421	5–3	4.11+09	2.12−03	2.64−03	−1.975	B+	1
94	$1s3d-1s6p$	$^3D-^3P^\circ$		*64.74*	*17 598 407–19 143 054*	15–9	2.55+09	9.60−04	3.07−03	−1.842	B+	1
				64.753	17 598 849–19 143 179	7–5	2.14+09	9.60−04	1.43−03	−2.173	B+	LS
				64.730	17 598 031–19 142 915	5–3	1.91+09	7.20−04	7.67−04	−2.444	B+	LS
				64.731	17 598 002–19 142 846	3–1	2.55+09	5.34−04	3.41−04	−2.795	B+	LS
				64.719	17 598 031–19 143 179	5–5	3.82+08	2.40−04	2.56−04	−2.921	B	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				64.729	17 598 002–19 142 915	3–3	6.37+08	4.00−04	2.56−04	−2.921	B	LS
				64.718	17 598 002–19 143 179	3–5	2.55+07	2.67−05	1.71−05	−4.096	B	LS
95		$^1D-^1P^\circ$		64.672	17 599 605–19 145 877	5–3	2.14+09	8.06−04	8.58−04	−2.395	B+	1
96	$1s3d-1s7p$	$^3D-^3P^\circ$		*59.44*	*17 598 407–19 280 685*	15–9	1.51+09	4.80−04	1.41−03	−2.143	C+	1
				59.456	17 598 849–19 280 764	7–5	1.27+09	4.80−04	6.58−04	−2.474	C+	LS
				59.433	17 598 031–19 280 598	5–3	1.13+09	3.60−04	3.52−04	−2.745	C+	LS
				59.433	17 598 002–19 280 555	3–1	1.51+09	2.67−04	1.57−04	−3.096	C+	LS
				59.427	17 598 031–19 280 764	5–5	2.27+08	1.20−04	1.17−04	−3.222	C+	LS
				59.432	17 598 002–19 280 598	3–3	3.78+08	2.00−04	1.17−04	−3.222	C+	LS
				59.426	17 598 002–19 280 764	3–5	1.51+07	1.33−05	7.81−06	−4.399	C	LS
97		$^1D-^1P^\circ$		59.423	17 599 605–19 282 456	5–3	1.27+09	4.04−04	3.95−04	−2.695	C+	1
98	$1s3d-1s8p$	$^3D-^3P^\circ$		*56.45*	*17 598 407–19 369 931*	15–9	9.73+08	2.79−04	7.77−04	−2.378	C+	1
				56.461	17 598 849–19 369 984	7–5	8.17+08	2.79−04	3.63−04	−2.709	C+	LS
				56.438	17 598 031–19 369 872	5–3	7.29+08	2.09−04	1.94−04	−2.981	C+	LS
				56.438	17 598 002–19 369 843	3–1	9.74+08	1.55−04	8.64−05	−3.333	C+	LS
				56.435	17 598 031–19 369 984	5–5	1.46+08	6.97−05	6.47−05	−3.458	C	LS
				56.438	17 598 002–19 369 872	3–3	2.43+08	1.16−04	6.47−05	−3.458	C	LS
				56.434	17 598 002–19 369 984	3–5	9.74+06	7.75−06	4.32−06	−4.634	C	LS
99		$^1D-^1P^\circ$		56.449	17 599 605–19 371 113	5–3	8.16+08	2.34−04	2.17−04	−2.932	C+	1
100	$1s3d-1s9p$	$^3D-^3P^\circ$		*54.57*	*17 598 407–19 431 074*	15–9	6.65+08	1.78−04	4.80−04	−2.573	B	1
				54.577	17 598 849–19 431 111	7–5	5.58+08	1.78−04	2.24−04	−2.904	B	LS
				54.555	17 598 031–19 431 033	5–3	5.01+08	1.34−04	1.20−04	−3.174	B	LS
				54.555	17 598 002–19 431 012	3–1	6.66+08	9.90−05	5.33−05	−3.527	B	LS
				54.553	17 598 031–19 431 111	5–5	9.97+07	4.45−05	4.00−05	−3.653	B	LS
				54.554	17 598 002–19 431 033	3–2	1.66+08	7.42−05	4.00−05	−3.652	B	LS
				54.552	17 598 002–19 431 111	3–5	6.66+06	4.95−06	2.67−06	−4.828	C+	LS
101		$^1D-^1P^\circ$		54.576	17 599 605–19 431 902	5–3	5.60+08	1.50−04	1.35−04	−3.125	B	1
102	$1s3d-1s10p$	$^3D-^3P^\circ$		*53.29*	*17 598 407–19 474 784*	15–9	4.75+08	1.21−04	3.19−04	−2.741	B	1
				53.306	17 598 849–19 474 811	7–5	3.98+08	1.21−04	1.49−04	−3.072	B	LS
				53.284	17 598 031–19 474 754	5–3	3.57+08	9.11−05	7.99−05	−3.342	B	LS
				53.284	17 598 002–19 474 739	3–1	4.76+08	6.75−05	3.55−05	−3.694	B	LS
				53.283	17 598 031–19 474 811	5–5	7.14−07	3.04−05	2.67−05	−3.818	B	LS
				53.284	17 598 002–19 474 754	3–3	1.19+08	5.06−05	2.66−05	−3.819	B	LS
				53.282	17 598 002–19 474 811	3–5	4.75+06	3.37−06	1.77−06	−4.995	C+	LS
103		$^1D-^1P^\circ$		53.311	17 599 605–19 475 387	5–3	3.99+08	1.02−04	8.95−05	−3.262	B	1
104	$1s4s-1s4p$	$^3S-^3P^\circ$	*7 340*	*7 343*	18 479 389–*18 493 008*	3–9	5.38+06	1.30−01	9.46+00	−0.409	A	1
			7 120	7 122	18 479 389–18 493 430	3–5	5.89+06	7.47−02	5.25+00	−0.650	A	LS
			7 604	7 606	18 479 389–18 492 537	3–3	4.84+06	4.20−02	3.15+00	−0.900	A	LS
			7 739	7 741	18 479 389–18 492 307	3–1	4.57+06	1.37−02	1.05+00	−1.386	A	LS
105		$^1S-^1P^\circ$	9 797	9 800	18 492 532–18 502 736	1–3	2.31+06	9.97−02	3.22+00	−1.001	A	1
106	$1s4s-1s5p$	$^3S-^3P^\circ$		*229.82*	18 479 389–*18 914 503*	3–9	2.00+10	4.75−01	1.08+00	0.154	A	1
				229.711	18 479 389–18 914 719	3–5	2.00+10	2.64−01	5.99−01	−0.101	A	LS
				229.952	18 479 389–18 914 262	3–3	1.99+10	1.58−01	3.59−01	−0.324	A	LS
				230.015	18 479 389–18 914 144	3–1	1.99+10	5.27−02	1.20−01	−0.801	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
107		$^1S-^1P°$		234.253	18 492 532–18 919 421	1–3	2.00+10	4.94−01	3.81−01	−0.306	A	1
108	$1s4s-1s6p$	$^3S-^3P°$		*150.68*	18 479 389–*19 143 054*	3–9	1.23+10	1.26−01	1.88−01	−0.423	A	1
				150.650	18 479 389–19 143 179	3–5	1.23+10	7.00−02	1.04−01	−0.678	A	LS
				150.710	18 479 389–19 142 915	3–3	1.23+10	4.20−02	6.25−02	−0.900	A	LS
				150.726	18 479 389–19 142 846	3–1	1.23+10	1.40−02	2.08−02	−1.377	B+	LS
109		$^1S-^1P°$		153.058	18 492 532–19 145 877	1–3	1.22+10	1.29−01	6.50−02	−0.889	A	1
110	$1s4s-1s7p$	$^3S-^3P°$		*124.80*	18 479 389–*19 280 685*	3–9	7.87+09	5.51−02	6.79−02	−0.782	B	1
				124.786	18 479 389–19 280 764	3–5	7.86+09	3.06−02	3.77−02	−1.037	B+	LS
				124.811	18 479 389–19 280 598	3–3	7.88+09	1.84−02	2.27−02	−1.258	B	LS
				124.818	18 479 389–19 280 555	3–1	7.86+09	6.12−03	7.54−03	−1.736	B	LS
111		$^1S-^1P°$		126.594	18 492 532–19 282 456	1–3	7.84+09	5.65−02	2.35−02	−1.248	B	1
112	$1s4s-1s8p$	$^3S-^3P°$		*112.29*	18 479 389–*19 369 931*	3–9	5.30+09	3.00−02	3.33−02	−1.046	B	1
				112.284	18 479 389–19 369 984	3–5	5.30+09	1.67−02	1.85−02	−1.300	B	LS
				112.299	18 479 389–19 369 872	3–3	5.29+09	1.00−02	1.11−02	−1.523	B	LS
				112.302	18 479 389–19 369 843	3–1	5.32+09	3.35−03	3.72−03	−1.998	B	LS
113		$^1S-^1P°$		113.820	18 492 532–19 371 113	1–3	5.29+09	3.08−02	1.15−02	−1.511	B	1
114	$1s4s-1s9p$	$^3S-^3P°$		*105.08*	18 479 389–*19 431 074*	3–9	3.74+09	1.86−02	1.93−02	−1.253	B+	1
				105.073	18 479 389–19 431 111	3–5	3.73+09	1.03−02	1.07−02	−1.510	B+	LS
				105.081	18 479 389–19 431 033	3–3	3.74+09	6.19−03	6.42−03	−1.731	B+	LS
				105.084	18 479 389–19 431 012	3–1	3.73+09	2.06−03	2.14+03	−2.209	B+	LS
115		$^1S-^1P°$		105.454	18 492 532–19 431 902	1–3	3.71+09	1.89−02	6.62−03	−1.724	B+	1
116	$1s4s-1s10p$	$^3S-^3P°$		*100.46*	18 479 389–*19 474 784*	3–9	2.73+09	1.24−02	1.23−02	−1.429	B+	1
				100.460	18 479 389–19 474 811	3–5	2.73+09	6.89−03	6.84−03	−1.685	B+	LS
				100.466	18 479 389–19 474 754	3–3	2.73+09	4.13−03	4.10−03	−1.907	B+	LS
				100.467	18 479 389–19 474 739	3–1	2.74+09	1.38−03	1.37−03	−2.383	B+	LS
117		$^1S-^1P°$		101.744	18 492 532–19 475 387	1–3	2.71+09	1.26−02	4.22−03	−1.900	B+	1
118	$1s4p-1s4d$	$^3P°-^2D$	*12 930*	*12 935*	*18 493 008–18 500 739*	9–15	9.75+05	4.08−02	1.56+01	−0.435	A	1
			13 337	13 340	18 493 430–18 500 926	5–7	8.89+05	3.32−02	7.29+00	−0.780	A	LS
			12 436	12 439	18 492 537–18 500 576	3–5	8.22+05	3.18−02	3.91+00	−1.020	A	LS
			12 090	12 093	18 492 307–18 500 576	1–3	6.63+05	4.36−02	1.74+00	−1.361	A	LS
			13 990	13 994	18 493 430–18 500 576	5–5	1.92+05	5.65−03	1.30+00	−1.549	A	LS
			12 436	12 439	18 492 537–18 500 576	3–3	4.57+05	1.06−02	1.30+00	−1.498	A	LS
			13 990	13 994	18 493 430–18 500 576	5–3	2.14+04	3.77−04	8.68−02	−2.725	A	LS
119	$1s4p-1s5s$	$^3P°-^3S$		*241.19*	*18 493 008*–18 907 613	9–3	2.19+10	6.38−02	4.56−01	−0.241	A	1
				241.439	18 493 430–18 907 613	5–3	1.21+10	6.37−02	2.53−01	−0.497	A	LS
				240.920	18 492 537–18 907 613	3–3	7.34+09	6.39−02	1.52−01	−0.717	A	LS
				240.786	18 492 307–18 907 613	1–3	2.45+09	6.39−02	5.07−02	−1.194	A	LS
120		$^1P°-^1S$		243.007	18 502 736–18 914 246	3–1	2.08+10	6.14−02	1.47−01	−0.735	A	1
121	$1s4p-1s5d$	$^3P°-^3D$		*235.06*	*18 493 008–18 918 435*	9–15	4.19+10	5.78−01	4.03+00	0.716	A	1
				235.239	18 493 430–18 918 530	5–7	4.18+10	4.85−01	1.88+00	0.385	A	LS
				234.844	18 492 537–18 918 351	3–5	3.15+10	4.34−01	1.01+00	0115	A	LS
				234.718	18 492 307–18 918 351	1–3	2.34+10	5.79−01	4.47−01	−0.237	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				235.338	18 493 430–18 918 351	5–5	1.04+10	8.66−02	3.35−01	−0.364	A	LS
				234.844	18 492 537–18 918 351	3–3	1.75+10	1.45−01	3.36−01	−0.362	A	LS
				235.338	18 493 430–18 918 351	5–3	1.16+09	5.77−03	2.24−02	−1.540	B+	LS
122		$^1P^\circ-^1D$		240.409	18 502 736–18 918 694	3–5	4.31+10	6.22−01	1.48+00	0.271	A	1
123	$1s4p-1s6s$	$^3P^\circ-^3S$		*154.78*	*18 493 008*–19 139 084	9–3	1.20+10	1.43−02	6.58−02	−0.890	B+	1
				154.882	18 493 430–19 139 084	5–3	6.63+09	1.43−02	3.65−02	−1.146	A	LS
				154.668	18 492 537–19 139 084	3–3	4.02+09	1.44−02	2.20−02	−1.365	B+	LS
				154.613	18 492 307–19 139 084	1–3	1.34+09	1.44−02	7.33−03	−1.842	B+	LS
124		$^1P^\circ-^1S$		156.216	18 502 736–19 142 875	3–1	1.15+10	1.40−02	2.16−02	−1.377	B+	1
125	$1s4p-1s6d$	$^3P^\circ-^3D$		*153.30*	*18 493 008–19 145 317*	9–15	2.47+10	1.45−01	6.59−01	0.116	A	1
				153.388	18 493 430–19 145 372	5–7	2.47+10	1.22−01	3.08−01	−0.215	A	LS
				153.202	18 492 537–19 145 268	3–5	1.86+10	1.09−01	1.65−01	−0.485	A	LS
				153.149	18 492 307–19 145 268	1–3	1.37+10	1.45−01	7.31−02	−0.839	A	LS
				153.412	18 493 430–19 145 268	5–6	6.15+09	2.17−02	5.48−02	−0.965	A	LS
				153.202	18 492 537–19 145 268	3–3	1.03+10	3.62−02	5.48−02	−0.964	A	LS
				153.412	18 493 430–19 145 268	5–3	6.85+08	1.45−03	3.66−03	−2.140	B+	LS
126		$^1P^\circ-^1D$		155.586	18 502 736–19 145 467	3–5	2.48+10	1.50−01	2.30−01	−0.347	A	1
127	$1s4p-1s7s$	$^3P^\circ-^3S$		*127.36*	*18 493 008*–19 278 195	9–3	7.26+09	5.88−03	2.22−02	−1.276	B	1
				127.427	18 493 430–19 278 195	5–3	4.03+09	5.88−03	1.23−02	−1.532	B	LS
				127.282	18 492 537–19 278 195	3–3	2.43+09	5.89−03	7.40−03	−1.753	B	LS
				127.245	18 492 307–19 278 195	1–3	8.09+08	5.89−03	2.47−03	−2.230	B	LS
128		$^1P^\circ-^1S$		128.563	18 502 736–19 280 567	3–1	6.95+09	5.74−03	7.29−03	−1.764	B	1
129	$1s4p-1s8s$	$^3P^\circ-^3S$		*114.25*	*18 493 008*–19 368 266	9–3	4.72+09	3.08−03	1.04−02	−1.557	B	1
				114.307	18 493 430–19 368 266	5–3	2.62+09	3.08−03	5.80−03	−1.812	B	LS
				114.191	18 492 537–19 368 266	3–3	1.58+09	3.08−03	3.47−03	−2.034	B	LS
				114.161	18 492 307–19 368 266	1–3	5.25+08	3.08−03	1.16−03	−2.511	B	LS
130		$^1P^\circ-^1S$		115.325	18 502 736–19 369 848	3–1	4.53+09	3.01−03	3.43−03	−2.044	B	1
131	$1s4p-1s9s$	$^3P^\circ-^3S$		*106.74*	*18 493 008*–19 429 907	9–3	3.28+09	1.85−03	5.85−03	−1.779	B+	1
				106.783	18 493 430–19 429 907	5–3	1.80+09	1.85−03	3.25−03	−2.034	B+	LS
				106.681	18 492 537–19 429 907	3–3	1.08+09	1.85−03	1.95−03	−2.256	B+	LS
				106.655	18 492 307–19 429 907	1–3	3.62+08	1.85−03	6.50−04	−2.733	B+	LS
132		$^1P^\circ-^1S$		107.726	18 502 736–19 431 014	3–1	3.12+09	1.81−03	1.93−03	−2.265	B+	1
133	$1s4p-1s10s$	$^3P^\circ-^3S$		*101.94*	*18 493 008*–19 473 934	9–3	2.33+09	1.21−03	3.65−03	−1.963	B+	1
				101.988	18 493 430–19 473 934	5–3	1.29+09	1.21−03	2.03−03	−2.218	B+	LS
				101.896	18 492 537–19 473 934	3–3	7.77+08	1.21−03	1.22−03	−2.440	B+	LS
				101.872	18 492 307–19 473 934	1–3	2.59+08	1.21−03	4.06−04	−2.917	B+	LS
134		$^1P^\circ-^1S$		102.880	18 502 736–19 474 740	3–1	2.25+09	1.19−03	1.21−03	−2.447	B+	1
135	$1s4d-1s4p$	$^1D-^1P^\circ$		1 491 cm^{-1}	18 501 245–18 502 736	5–3	1.14+04	4.61−03	5.09+00	−1.637	A	1
136	$1s4d-1s5p$	$^3D-^3P^\circ$		*241.68*	*18 500 739–18 914 503*	15–9	6.05+09	3.18−02	3.79−01	−0.321	A	1
				241.667	18 500 926–18 914 719	7–5	5.08+09	3.18−02	1.77−01	−0.652	A	LS
				241.729	18 500 576–18 914 262	5–3	4.53+09	2.38−02	9.47−02	−0.924	A	LS
				241.798	18 500 576–18 914 144	3–1	6.06+09	1.77−02	4.23−02	−1.275	A	LS
				241.462	18 500 576–18 914 719	5–5	9.10+08	7.95−03	3.16−02	−1.401	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —Continued

No.	Transition array	Mult.	λ_{air} (Å)	λ_{vac}(Å) orσ(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
				241.729	18 500 576–18 914 262	3–3	1.51+09	1.32−02	3.15−02	−1.402	A	LS
				241.462	18 500 576–18 914 719	3–5	6.07+07	8.84−04	2.11−03	−2.576	B+	LS
137		$^1D-^1P^\circ$		239.134	18 501 245–18 919 421	5–3	5.17+09	2.66−02	1.05−01	−0.876	A	1
138	1*s*4*d*−1*s*6*p*	$^3D-^3P^\circ$		*155.69*	*18 500 739–19 143 054*	15–9	3.01+09	6.57−03	5.05−02	−1.006	B+	1
				155.702	18 500 926–19 143 179	7–5	2.53+09	6.57−03	2.36−02	−1.337	B+	LS
				155.681	18 500 576–19 142 915	5–3	2.26+09	4.93−03	1.26−02	−1.608	B+	LS
				155.698	18 500 576–19 142 846	3–1	3.01+09	3.65−03	5.61−03	−1.961	B+	LS
				155.617	18 500 576–19 143 179	5–5	4.52+08	1.64−03	4.20−03	−2.086	B+	LS
				155.681	18 500 576–19 142 915	3–3	7.54+08	2.74−03	4.21−03	−2.085	B+	LS
				155.617	18 500 576–19 143 179	3–5	3.02+07	1.83−04	2.81−04	−3.260	B	LS
139		$^1D-^1P^\circ$		155.127	18 501 245–19 145 877	5–3	2.60+09	5.62−03	1.44−02	−1.551	B+	1
140	1*s*4*d*−1*s*7*p*	$^3D-^3P^\circ$		*128.21*	*18 500 739–19 280 685*	15–9	1.72+09	2.55−03	1.61−02	−1.417	B	1
				128.232	18 500 926–19 280 764	7–5	1.45+09	2.55−03	7.54−03	−1.748	B	LS
				128.202	18 500 576–19 280 598	5–3	1.29+09	1.91−03	4.03−03	−2.020	B	LS
				128.209	18 500 576–19 280 555	3–1	1.73+09	1.42−03	1.80−03	−2.371	B	LS
				128.174	18 500 576–19 280 764	5–5	2.59+08	6.37−04	1.34−03	−2.497	B	LS
				128.202	18 500 576–19 280 598	3–3	4.30+08	1.06−03	1.34−03	−2.498	B	LS
				128.174	18 500 576–19 280 764	3–5	1.72+07	7.08−05	8.96−05	−3.673	C+	LS
141		$^1D-^1P^\circ$		128.006	18 501 245–19 282 456	5–3	1.49+09	2.20−03	4.64−03	−1.959	B	1
142	1*s*4*d*−1*s*8*p*	$^3D-^3P^\circ$		*115.05*	*18 500 739–19 369 931*	15–9	1.09+09	1.29−03	7.34−03	−1.713	B	1
				115.067	18 500 926–19 369 984	7–5	9.10+08	1.29−03	3.42−03	−2.044	B	LS
				115.036	18 500 576–19 369 872	5–3	8.16+08	9.71−04	1.84−03	−2.314	B	LS
				115.039	18 500 576–19 369 843	3–1	1.09+09	7.19−04	8.17−04	−2.666	C+	LS
				115.021	18 500 576–19 369 984	5–5	1.63+08	3.24−04	6.13−04	−2.790	C+	LS
				115.036	18 500 576–19 369 872	3–3	2.72+08	5.39−04	6.12−04	−2.791	C+	LS
				115.021	18 500 576–19 369 984	3–5	1.09+07	3.60−05	4.09−05	−3.967	C	LS
143		$^1D-^1P^\circ$		114.960	18 501 245–19 371 113	5–3	9.34+08	1.11−03	2.10−03	−2.256	B	1
144	1*s*4*d*−1*s*9*p*	$^3D-^3P^\circ$		*107.49*	*18 500 739–19 431 074*	15–9	7.31+08	7.60−04	4.03−03	−1.943	B+	1
				107.505	18 500 926–19 431 111	7–5	6.14+08	7.60−04	1.88−03	−2.274	B+	LS
				107.474	18 500 576–19 431 033	5–3	5.49+08	5.70−04	1.01−03	−2.898	B+	LS
				107.465	18 500 576–19 431 111	5–5	1.10+08	1.90−04	3.36−04	−3.022	B+	LS
				107.465	18 500 576–19 431 111	3–5	7.31+06	2.11−05	2.24−05	−4.199	B	LS
145		$^1D-^1P^\circ$		107.451	18 501 245–19 431 902	5–3	6.32+08	6.56−04	1.16−03	−2.484	B+	1
146	1*s*4*d*−1*s*10*p*	$^3D-^3P^\circ$		*102.66*	*18 500 739–19 474 784*	15–9	5.18+08	4.91−04	2.49−03	−2.133	B+	1
				102.682	18 500 926–19 474 811	7–5	4.35+08	4.91−04	1.16−03	−2.464	B+	LS
				102.651	18 500 576–19 474 754	5–3	3.88+08	3.68−04	6.22−04	−2.735	B+	LS
				102.652	18 500 576–19 474 739	3–1	5.18+08	2.73−04	2.77−04	−3.087	B	LS
				102.645	18 500 576–19 474 811	5–5	7.79+07	1.23−04	2.08−04	−3.211	B	LS
				102.651	18 500 576–19 474 754	3–3	1.30+08	2.05−04	2.08−04	−3.211	B	LS
				102.645	18 500 576–19 474 811	3–5	5.17+06	1.36−05	1.38−05	−4.389	B	LS
147		$^1D-^1P^\circ$		102.654	18 501 245–19 475 387	5–3	4.47+08	4.24−04	7.16−04	−2.674	B+	1
148	1*s*5*s*−1*s*5*p*	$^3S-^3P^\circ$	*14 510*	*14 514*	18 907 613–*18 914 503*	3–9	1.74+06	1.65−01	2.37+01	−0.305	A	1
			14 069	14 073	18 907 613–18 914 719	3–5	1.91+06	9.46−02	1.31+01	−0.547	A	LS
			15 036	15 040	18 907 613–18 914 262	3–3	1.57+06	5.31−02	7.89+00	−0.798	A	LS
			15 307	15 312	18 907 613–18 914 144	3–1	1.49+06	1.74−02	2.63+00	−1.282	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
149		$^1S-^1P^\circ$	19 318	19 324	18 914 246–18 919 421	1–3	7.44+05	1.25−01	7.95+00	−0.903	A	1
150	$1s5s-1s6p$	$^3S-^3P^\circ$		*427.73*	18 907 613–*19 143 054*	3–9	6.52+09	5.29−01	2.22+00	0.201	A	1
				424.509	18 907 613–19 143 179	3–5	6.53+09	2.94−01	1.23+00	−0.055	A	LS
				424.986	18 907 613–19 142 915	3–3	6.50+09	1.76−01	7.39−01	−0.277	A	LS
				425.110	18 907 613–19 142 846	3–1	6.50+09	5.87−02	2.46−01	−0.754	A	LS
151		$^1S-^1P^\circ$		431.721	18 914 246–19 145 877	1–3	6.55+09	5.49−01	7.80−01	−0.260	A	1
152	$1s5s-1s7p$	$^3S-^3P^\circ$		*268.04*	18 907 613–*19 280 685*	3–9	4.34+09	1.40−01	3.72−01	−0.377	B+	1
				267.988	18 907 613–19 280 764	3–5	4.35+09	7.80−02	2.06−01	−0631	B+	LS
				268.107	18 907 613–19 280 598	3–3	4.34+09	4.68−02	1.24−01	−0.853	B+	LS
				268.138	18 907 613–19 280 555	3–1	4.34+09	1.56−02	4.13−02	−1.330	B+	LS
153		$^1S-^1P^\circ$		271.584	18 914 246–19 282 456	1–3	4.34+09	1.44−01	1.29−01	−0.842	B+	1
154	$1s5s-1s8p$	$^3S-^3P^\circ$		*216.30*	18 907 613–*19 369 931*	3–9	2.95+09	6.21−02	1.33−01	−0.730	B+	1
				216.277	18 907 613–19 369 984	3–5	2.95+09	3.45−02	7.37−02	−0.985	B+	LS
				216.329	18 907 613–19 369 872	3–3	0.95+09	2.07−02	4.42−02	−1.207	B+	LS
				216.343	18 907 613–19 369 843	3–1	2.95+09	6.90−03	1.47−02	−1.684	B	LS
155		$^1S-^1P^\circ$		218.882	18 914 246–19 371 113	1–3	2.95+09	6.35−02	4.58−02	−1.197	B+	1
156	$1s5s-1s9p$	$^3S-^3P^\circ$		*191.04*	18 907 613–*19 431 074*	3–9	2.08+09	3.41−02	6.43−02	−0.990	B+	1
				191.023	18 907 613–19 431 111	3–5	2.07−09	1.89−02	3.57−02	−1.246	A	LS
				191.051	18 907 613–19 431 033	3–3	2.08+09	1.14−02	2.15−02	−1.466	B+	LS
				191.059	18 907 613–19 431 012	3–1	2.08+09	3.79−03	7.15−03	−1.944	B+	LS
157		$^1S-^1P^\circ$		193.178	18 914 246–19 431 902	1–3	2.08+09	3.49−02	2.22−02	−1.457	B+	1
158	$1s5s-1s10p$	$^3S-^3P^\circ$		*176.31*	18 907 613–*19 474 784*	3–9	1.52+09	2.12−02	3.70−02	−1.197	B+	1
				176.305	18 907 613–19 474 811	3–5	1.52+09	1.18−02	2.05−02	−1.451	B+	LS
				176.323	18 907 613–19 474 754	3–3	1.52+09	7.07−03	1.23−02	−1.673	B+	LS
				176.328	18 907 613–19 474 739	3–1	1.52+09	2.36−03	4.11−03	−2.150	B+	LS
159		$^1S-^1P^\circ$		178.208	18 914 246–19 475 387	1–3	1.51+09	2.16−02	1.27−02	−1.666	B+	1
160	$1s5p-1s5d$	$^3P^\circ-^3D$		*3 932 cm^{-1}*	*18 914 503–18 918 435*	9–15	3.45+05	5.58−02	4.20+01	−0.299	A	1
				3 811 cm^{-1}	18 914 719–18 918 530	5–7	3.14+05	4.54−02	1.96+01	−0.644	A	LS
				4 089 cm^{-1}	18 914 262–18 918 351	3–5	2.91+05	4.35−02	1.05+01	−0.884	A	LS
				4 207 cm^{-1}	18 914 144–18 918 351	1–3	2.35+05	5.97−02	4.67+00	−1.224	A	LS
				3 632 cm^{-1}	18 914 719–18 918 351	5–5	6.80+04	7.73−03	3.50+00	−1.413	A	LS
				4 089 cm^{-1}	18 914 262–18 918 351	3–3	1.62+05	1.45−02	3.50+00	−1.362	A	LS
				3 632 cm^{-1}	18 914 719–18 918 351	5–3	7.55+03	5.15−04	2.33−01	−2.589	A	LS
161	$1s5p-1s6s$	$^3P^\circ-^3S$		*445.27*	*18 914 503*–19 139 084	9–3	9.01+9	8.93−02	1.18+00	−0.095	A	1
				445.702	18 914 719–19 139 084	5–3	4.99+09	8.92−02	6.54−01	−0.351	A	LS
				444.795	18 914 262–19 139 084	3–3	3.01+09	8.94−02	3.93−01	−0.572	A	LS
				444.563	18 914 144–19 139 084	1–3	1.01+09	8.94−02	1.31−01	−1.049	A	LS
162		$^1P^\circ-^1S$		447.519	18 919 421–19 142 875	3–1	8.59+09	8.60−02	3.80−01	−0.588	A	1
163	$1s5p-1s6d$	$^3P^\circ-^3D$		*433.25*	*18 914 503–19 145 317*	9–15	1.25+10	5.88−01	7.55+00	0.724	A	1
				433.552	18 914 719–19 145 372	5–7	1.25+10	4.94−01	3.53+00	0.393	A	LS
				432.889	18 914 262–19 145 268	3–5	9.42+09	4.41−01	1.89+00	0.122	A	LS
				432.668	18 914 144–19 145 268	1–3	7.00+09	5.89−01	8.39−01	−0.230	A	LS
				433.747	18 914 719–19 145 268	5–5	3.12+09	8.81−02	6.29−01	−0.356	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				432.889	18 914 262–19 145 268	3–3	5.23+09	1.47−01	6.28−01	−0.356	A	LS
				433.747	18 914 719–19 145 268	5–3	3.47+08	5.87−03	4.19−02	−1.532	A	LS
164		$^1P^\circ-^1D$		442.388	18 919 421–19 145 467	3–5	1.30+10	6.38−01	2.79+00	0.282	A	1
165	$1s5p-1s7s$	$^3P^\circ-^3S$		*274.96*	*18 914 503*–19 278 195	9–3	5.35+09	2.02−02	1.65−01	−0.740	B+	1
				275.121	18 914 719–19 278 195	5–3	2.97+09	2.02−02	9.15−02	−0.996	B+	LS
				274.776	18 914 262–19 278 195	3–3	1.78+09	2.02−02	5.48−02	−1.218	B+	LS
				274.687	18 914 144–19 278 195	1–3	5.98+08	2.03−02	1.84−02	−1.693	B	LS
166		$^1P^\circ-^1S$		276.896	18 919 421–19 280 567	3–1	5.14+09	1.97−02	5.39−02	−1.228	B+	1
167	$1s5p-1s8s$	$^3P^\circ-^3S$		*220.38*	*18 914 503*–19 368 266	9–3	3.43+09	8.32−03	5.44−02	−1.126	B	1
				220.484	18 914 719–19 368 266	5–3	1.90+09	8.32−03	3.02−02	−1.381	B+	LS
				220.262	18 914 262–19 368 266	3–3	1.15+09	8.33−03	1.81−02	−1.602	B	LS
				220.205	18 914 144–19 368 266	1–3	3.82+08	8.33−03	6.04−03	−2.079	B	LS
168		$^1P^\circ-^1S$		222.012	18 919 421–19 369 848	3–1	3.29+09	8.11−03	1.78−02	−1.614	B	1
169	$1s5p-1s9s$	$^3P^\circ-^3S$		*194.02*	*18 914 503–19 429 907*	9–3	2.33+09	4.39−03	2.52−02	−1.403	B+	1
				194.104	18 914 719–19 429 907	5–3	1.30+09	4.39−03	1.40−02	−1.659	B+	LS
				193.932	18 914 262–19 429 907	3–3	7.79+08	4.39−03	8.41−03	−1.880	B+	LS
				193.888	18 914 144–19 429 907	1–3	2.60+08	4.40−03	2.81−03	−2.357	B+	LS
170		$^1P^\circ-^1S$		195.468	18 919 421–19 431 014	3–1	2.26+09	4.31−03	8.32−03	−1.888	B+	1
171	$1s5p-1s10s$	$^3P^\circ-^3S$		*178.75*	*18 914 503–19 473 934*	9–3	1.67+09	2.66−03	1.41−02	−1.621	B+	1
				178.822	18 914 719–19 473 934	5–3	9.25+08	2.66−03	7.83−03	−1.876	B+	LS
				178.676	18 914 262–19 473 934	3–3	5.56+08	2.66−03	4.69−03	−2.098	B+	LS
				178.638	18 914 144–19 473 934	1–3	1.85+08	2.66−03	1.56−03	−2.575	B+	LS
172		$^1P^\circ-^1S$		180.077	18 919 421–19 474 740	3–1	1.60+09	2.60−03	4.62−03	−2.108	B+	1
173	$1s5d-1s5p$	$^1D-^1P^\circ$		727 cm^{-1}	18 918 694–18 919 421	5–3	3.61+03	6.15−03	1.39+01	−1.512	A	1
174	$1s5d-1s6p$	$^3D-^3P^\circ$		*445.20*	*18 918 435–19 143 054*	15–9	3.05+09	5.44−02	1.20+00	−0.088	A	1
				445.139	18 918 530–19 143 179	7–5	2.56+09	5.44−02	5.58−01	−0.419	A	LS
				445.307	18 918 351–19 142 915	5–3	2.29+09	4.08−02	2.99−01	−0.690	A	LS
				445.444	18 918 351–19 142 846	3–1	3.05+09	3.02−02	1.33−01	−1.043	A	LS
				444.784	18 918 351–19 143 179	5–5	4.59+08	1.36−02	9.96−02	−1.167	A	LS
				445.307	18 918 351–19 142 915	3–3	7.64+08	2.27−02	9.98−02	−1.167	A	LS
				444.784	18 918 351–19 143 179	3–5	3.05+07	1.51−03	6.63−03	−2.344	B+	LS
175		$^1D-^1P^\circ$		440.174	18 918 694–19 145 877	5–3	2.65+09	4.62−02	3.35−01	−0.636	A	1
176	$1s5d-1s7p$	$^3D-^3P^\circ$		*276.05*	*18 918 435–19 280 685*	15–9	1.68+09	1.15−02	1.57−01	−0.763	B+	1
				276.065	18 918 530–19 280 764	7–5	1.41+09	1.15−02	7.32−02	−1.094	B+	LS
				276.055	18 918 351–19 280 598	5–3	1.26+09	8.65−03	3.93−02	−1.364	B+	LS
				276.088	18 918 351–19 280 555	3–1	1.68+09	6.41−03	1.75−02	−1.716	B	LS
				275.928	18 918 351–19 280 764	5–5	2.53+08	2.89−03	1.31−02	−1.840	B	LS
				276.055	18 918 351–19 280 598	3–3	4.21+08	4.81−03	1.31−02	−1.841	B	LS
				275.928	18 918 351–19 280 764	3–5	1.69+07	3.21−04	8.75−04	−3.016	C+	LS
177		$^1D-^1P^\circ$		274.905	18 918 694–19 282 456	5–3	1.47+09	1.00−02	4.53−02	−1.301	B+	1
178	$1s5d-1s8p$	$^3D-^3P^\circ$		*221.49*	*18 918 435–19 369 931*	15–9	1.03+09	4.53−03	4.96−02	−1.168	B	1
				221.507	18 918 530–19 869 984	7–5	8.62+08	4.53−03	2.31−02	−1.499	B	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				221.474	18 918 351–19 869 872	5–3	7.71+08	3.40−03	1.24−02	−1.770	B	LS
				221.488	18 918 351–19 369 843	3–1	1.03+09	2.52−03	5.51−03	−2.121	B	LS
				221.419	18 918 351–19 369 984	5–5	1.54+08	1.13−03	4.12−03	−2.248	B	LS
				221.474	18 918 351–19 369 872	3–3	2.57+08	1.89−03	4.13−03	−2.246	B	LS
				221.419	18 918 351–19 369 984	3–5	1.03+07	1.26−04	2.76−04	−3.423	C+	LS
179		$^1D-^1P^\circ$		221.034	18 918 694–19 371 113	5–3	9.01+08	3.96−03	1.44−02	−1.703	B	1
180	$1s5d-1s9p$	$^3D-^3P^\circ$		*195.07*	*18 918 435–19 431 074*	15–9	6.78+08	2.32−03	2.24−02	−1.458	B+	1
				195.091	18 918 530–19 431 111	7–5	5.69+08	2.32−03	1.04−02	−1.789	B+	LS
				195.053	18 918 351–19 431 033	5–3	5.08+08	1.74−03	5.59−03	−2.060	B+	LS
				195.061	18 918 351–19 431 012	3–1	6.78+08	1.29−03	2.49−03	−2.412	B+	LS
				195.023	18 918 351–19 431 111	5–5	1.02+08	5.80−04	1.86−03	−2.538	B+	LS
				195.053	18 918 351–19 431 033	3–3	1.70+08	9.67−04	1.86−03	−2.537	B+	LS
				195.023	18 918 351–19 431 111	3–5	6.79+06	6.45−05	1.24−04	−3.713	B	LS
181		$^1D-^1P^\circ$		194.853	18 918 694–19 431 902	5–3	5.97+08	2.04−03	6.54−03	−1.991	B+	1
182	$1s5d-1s10p$	$^3D-^3P^\circ$		*179.74*	*18 918 435–19 474 784*	15–9	4.72+08	1.37−03	1.22−02	−1.687	B+	1
				179.765	18 918 530–19 474 811	7–5	3.96+08	1.37−03	5.68−03	−2.018	B+	LS
				179.726	18 918 351–19 474 754	5–3	3.54+08	1.03−03	3.05−03	−2.288	B+	LS
				179.731	18 918 351–19 474 739	3–1	4.73+08	7.63−04	1.35−03	−2.640	B+	LS
				179.707	18 918 351–19 474 811	5–5	7.11+07	3.44−04	1.02−03	−2.764	B+	LS
				179.726	18 918 351–19 474 754	3–3	1.18+08	5.72−04	1.02−03	−2.765	B+	LS
				179.707	18 918 351–19 474 811	3–5	4.73+06	3.82−05	6.78−05	−3.941	B	LS
183		$^1D-^1P^\circ$		179.632	18 918 694–19 475 387	5–3	4.13+08	1.20−03	3.55−03	−2.222	B+	1
184	$1s6s-1s6p$	$^3S-^3P^\circ$		*3 970 cm^{-1}*	19 139 084–19 143 054	3–9	7.03+05	2.00−01	4.99+01	−0.222	A	1
				4 095 cm^{-1}	19 139 084–19 143 179	3–5	7.72+05	1.15−01	2.77+01	−0.462	A	LS
				3 831 cm^{-1}	19 139 084–19 142 915	3–3	6.30+05	6.44−02	1.66+01	−0.714	A	LS
				3 762 cm^{-1}	19 139 084–19 142 846	3–1	5.98+05	2.11−02	5.54+00	−1.199	A	LS
185		$^1S-^1P^\circ$		3 002 cm^{-1}	19 142 875–19 145 877	1–3	3.07+05	1.53−01	1.68+01	−0.815	A	1
186	$1s6s-1s7p$	$^3S-^3P^\circ$		*706.2*	19 139 084–*19 280 685*	3–9	2.60+09	5.83−01	4.06+00	0.243	B+	1
				705.82	19 139 084–19 280 764	3–5	2.60+09	3.24−01	2.26+00	−0.012	B+	LS
				706.64	19 139 084–19 280 598	3–3	2.59+09	1.94−01	1.35+00	−0.235	B+	LS
				706.86	19 139 084–19 280 555	3–1	2.59+09	6.46−02	4.51−01	−0.713	B+	LS
187		$^1S-^1P^\circ$		716.43	19 142 875–19 282 456	1–3	2.63+09	6.06−01	1.43+00	−0.218	B+	1
188	$1s6s-1s8p$	$^3S-^3P^\circ$		*433.19*	19 139 084–*19 369 931*	3–9	1.84+09	1.55−01	6.64−01	−0.333	B+	1
				433.088	19 139 084–19 369 984	3–5	1.84+09	8.62−02	3.69−01	−0.587	B+	LS
				433.298	19 139 084–19 369 872	3–3	1.84+09	5.17−02	2.21−01	−0.809	B+	LS
				433.353	19 139 084–19 369 843	3–1	1.83+09	1.72−02	7.36−02	−1.287	B+	LS
189		$^1S-^1P^\circ$		438.139	19 142 875–19 871 113	1–3	1.84+09	1.59−01	2.29−01	−0.799	B+	1
190	$1s6s-1s9p$	$^3S-^3P^\circ$		*342.48*	19 139 084–*19 431 074*	3–9	1.30+09	6.87−02	2.33−01	−0.686	A	1
				342.434	19 139 084–19 431 111	3–5	1.30+09	3.82−02	1.29−01	−0.941	A	LS
				342.526	19 139 084–19 431 033	3–3	1.30+09	2.29−02	7.75−02	−1.163	A	LS
				342.550	19 139 084–19 431 012	3–1	1.30+09	7.64−03	2.58−02	−1.640	B+	LS
191		$^1S-^1P^\circ$		345.988	19 142 875–19 431 902	1–3	1.31+09	7.03−02	8.01−02	−1.153	A	1
192	$1s6s-1s10p$	$^3S-^3P^\circ$		*297.89*	19 139 084–*19 474 784*	3–9	9.47+08	3.78−02	1.11−01	−0.945	A	1

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				297.861	19 139 084–19 474 811	3–5	9.47+08	2.10−02	6.18−02	−1.201	A	LS
				297.912	19 139 084–19 474 754	3–3	9.47+08	1.26−02	3.71−02	−1.423	A	LS
				297.925	19 139 084–19 474 739	3–1	9.45+08	4.19−03	1.23−02	−1.901	B+	LS
193		$^1S - ^1P^\circ$		300.741	19 142 875–19 475 387	1–3	9.54+08	3.88−02	3.84−02	−1.411	A	1
194	$1s6p - 1s6d$	$^3P^\circ - ^3D$		*2 263 cm^{-1}*	*19 143 054–19 145 317*	9–15	1.44+05	7.05−02	9.23+01	−0.198	A	1
				2 193 cm^{-1}	19 143 179–19 145 372	5–7	1.32+05	5.74−02	4.31+01	−0.542	A	LS
				2 353 cm^{-1}	19 142 915–19 145 268	3–5	1.22+05	5.50−02	2.31+01	−0.783	A	LS
				2 422 cm^{-1}	19 142 846–19 145 268	1–3	9.83+04	7.54−02	1.02+01	−1.123	A	LS
				2 089 cm^{-1}	19 143 179–19 145 268	5–5	2.84+04	9.76−03	7.69+00	−1.312	A	LS
				2 353 cm^{-1}	19 142 915–19 145 268	3–3	6.76+04	1.83−02	7.68+00	−1.260	A	LS
				2 089 cm^{-1}	19 143 179–19 145 268	5–3	3.15+03	6.50−04	5.12−01	−2.488	A	LS
195	$1s6p - 1s7s$	$^3P^\circ - ^3S$		*740.0*	*19 143 054–19 278 195*	9–3	4.22+09	1.15−01	2.53+00	0.015	B+	1
				740.65	19 143 179–19 278 195	5–3	2.33+09	1.15−01	1.40+00	−0.240	B+	LS
				739.21	19 142 915–19 278 195	3–3	1.42+09	1.16−01	8.47−01	−0.458	B+	LS
				738.83	19 142 846–19 278 195	1–3	4.72+08	1.16−01	2.82−01	−0.936	B+	LS
196		$^1P^\circ - ^1S$		742.45	19 145 877–19 280 567	3–1	4.03+09	1.11−01	8.14−01	−0.478	B+	1
197	$1s6p - 1s8s$	$^3P^\circ - ^3S$		*444.03*	*19 143 054*–19 368 266	9–3	2.66+09	2.62−02	3.45−01	−0.627	B+	1
				444.273	19 143 179–19 368 266	5–3	1.48+09	2.62−02	1.92−01	−0.883	B+	LS
				443.752	19 142 915–19 368 266	3–3	8.87+08	2.62−02	1.15−01	−1.105	B+	LS
				443.616	19 142 846–19 368 266	1–3	2.97+08	2.63−02	3.84−02	−1.580	B+	LS
198		$^1P^\circ - ^1S$		446.486	19 145 877–19 369 848	3–1	2.56+09	2.55−02	1.12−01	−1.116	B+	1
199	$1s6p - 1s9s$	$^3P^\circ - ^3S$		*348.61*	*19 143 054*–19 429 907	9–3	1.78+09	1.08−02	1.12−01	−1.012	A	1
				348.763	19 143 179–19 429 907	5–3	9.87+08	1.08−02	6.20−02	−1.268	A	LS
				348.442	19 142 915–19 429 907	3–3	5.93+08	1.08−02	3.72−02	−1.489	A	LS
				348.358	19 142 846–19 429 907	1–3	1.98+08	1.08−02	1.24−02	−1.967	B+	LS
200		$^1P^\circ - ^1S$		350.709	19 145 877–19 431 014	3–1	1.71+09	1.05−02	3.64−02	−1.502	A	1
201	$1s6p - 1s10s$	$^3P^\circ - ^3S$		*302.22*	*19 143 054*–19 473 934	9–3	1.26+09	5.73−03	5.13−02	−1.288	B+	1
				302.399	19 143 179–19 473 934	5–3	6.97+08	5.73−03	2.85−02	−1.543	A	LS
				302.097	19 142 915–19 473 934	3–3	4.20+08	5.74−03	1.71−02	−1.764	B+	LS
				302.035	19 142 846–19 473 934	1–3	1.40+08	5.74−03	5.71−03	−2.241	B+	LS
202		$^1P^\circ - ^1S$		304.078	19 145 877–19 474 740	3–1	1.21+09	5.60−03	1.68−02	−1.775	B+	1
203	$1s6d - 1s6p$	$^1D - ^1P^\circ$		410 cm^{-1}	19 145 467–19 145 877	5–3	1.43+03	7.63−03	3.06+01	−1.419	A	1
204	$1s6d - 1s7p$	$^3D - ^3P^\circ$		*738.7*	*19 145 317–19 280 685*	15–9	1.61+09	7.92−02	2.89+00	0.075	B+	1
				738.60	19 145 372–19 280 764	7–5	1.36+09	7.93−02	1.35+00	−0.256	B+	LS
				738.93	19 145 268–19 280 598	5–3	1.21+09	5.94−02	7.23−01	−0.527	B+	LS
				739.17	19 145 268–19 280 555	3–1	1.61+09	4.40−02	3.21−01	−0.879	B+	LS
				738.03	19 145 268–19 280 764	5–5	2.42+08	1.98−02	2.41−01	−1.004	B+	LS
				738.93	19 145 268–19 280 598	3–3	4.03+08	3.30−02	2.41−01	−1.004	B+	LS
				738.03	19 145 268–19 280 764	3–5	1.62+07	2.20−03	1.60−02	−2.180	B	LS
205		$^1D - ^1P^\circ$		729.99	19 145 467–19 282 456	5–3	1.41+09	6.78−02	8.15−01	−0.470	B+	1
206	$1s6d - 1s8p$	$^3D - ^3P^\circ$		*445.21*	*19 145 317–19 369 931*	15–9	9.58+08	1.71−02	3.76−01	−0.591	B+	1
				445.212	19 145 372–19 369 984	7–5	8.06+08	1.71−02	1.75−01	−0.922	B+	LS
				445.228	19 145 268–19 869 872	5–3	7.18+08	1.28−02	9.38−02	−1.194	B+	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				445.286	19 145 268–19 369 843	3–1	9.57+08	9.48−03	4.17−02	−1.546	B+	LS
				445.006	19 145 268–19 369 984	5–5	1.44+08	4.27−03	3.13−02	−1.671	B+	LS
				445.228	19 145 268–19 369 872	3–3	2.39+08	7.11−03	3.13−02	−1.671	B+	LS
				445.006	19 145 268–19 369 984	3–5	9.58+06	4.74−04	2.08−03	−2.847	B	LS
207		$^1D-^1P^\circ$		443.172	19 145 467–19 371 113	5–3	8.43+08	1.49−02	1.09−01	−1.128	B+	1
208	1*s*6*d*−1*s*9*p*	$^3D-^3P^\circ$		*349.95*	*19 145 317–19 431 074*	15–9	6.11+08	6.76−03	1.16−01	−0.996	B+	1
				349.970	19 145 372–19 431 111	7–5	5.13+08	6.73−03	5.43−02	−1.327	A	LS
				349.938	19 145 268–19 431 033	5–3	4.58+08	5.05−03	2.91−02	−1.598	A	LS
				349.964	19 145 268–19 431 012	3–1	6.11+08	3.74−03	1.29−02	−1.950	B+	LS
				349.842	19 145 268–19 431 111	5–5	9.16+07	1.68−03	9.67−03	−2.076	B+	LS
				349.938	19 145 268–19 431 033	3–3	1.53+08	2.81−03	9.71−03	−2.074	B+	LS
				349.842	19 145 268–19 431 111	3–5	6.11+06	1.87−04	6.46−04	−3.251	B+	LS
209		$^1D-^1P^\circ$		349.119	19 145 467–19 431 902	5–3	5.44+08	5.96−03	3.43−02	−1.526	A	1
210	1*s*6*d*−1*s*10*p*	$^3D-^3P^\circ$		*303.52*	*19 145 317–19 474 784*	15–9	4.21+08	3.49−03	5.23−02	−1.281	B+	1
				303.546	19 145 372–19 474 811	7–5	3.54+08	3.49−03	2.44−02	−1.612	B+	LS
				303.503	19 145 268–19 474 754	5–3	3.16+08	2.62−03	1.31−02	−1.883	B+	LS
				303.517	19 145 268–19 474 739	3–1	4.21+08	1.94−03	5.82−03	−2.235	B+	LS
				303.451	19 145 268–19 474 811	5–5	6.32+07	8.72−04	4.36−03	−2.361	B+	LS
				303.503	19 145 268–19 474 754	3–3	1.05+08	1.45−03	4.35−03	−2.362	B+	LS
				303.451	19 145 268–19 474 811	3–5	4.21+06	9.69−05	2.90−04	−3.537	B	LS
211		$^1D-^1P^\circ$		303.104	19 145 467–19 475 387	5–3	3.73+08	3.08−03	1.54−02	−1.812	B+	1
212	1*s*7*s*−1*s*7*p*	$^3S-^3P^\circ$		*2 490 cm^{-1}*	19 278 195–*19 280 685*	3–9	3.22+05	2.34−01	9.28+01	−0.154	A	1
				2 569 cm^{-1}	19 278 195–19 280 764	3–5	3.54+05	1.34−01	5.15+01	−0.396	A	LS
				2 403 cm^{-1}	19 278 195–19 280 598	3–3	2.90+05	7.53−02	3.09+01	−0.646	A	LS
				2 360 cm^{-1}	19 278 195–19 280 555	3–1	2.74+05	2.46−02	1.03+01	−1.132	A	LS
213		$^1S-^1P^\circ$		1 889 cm^{-1}	19 280 567–19 282 456	1–3	1.43+05	1.80−01	3.14+01	−0.745	A	1
214	1*s*7*s*−1*s*8*p*	$^3S-^3P^\circ$		*1 090.1*	19 278 195–*19 369 931*	3–9	1.20+09	6.39−01	6.88+00	0.283	B+	1
				1 089.46	19 278 195–19 369 984	3–5	1.20+09	3.55−01	3.82+00	0.027	B+	LS
				1 090.79	19 278 195–19 369 872	3–3	1.19+09	2.13−01	2.29+00	−0.194	B+	LS
				1 091.13	19 278 195–19 369 843	3–1	1.19+09	7.09−02	7.64−01	−0.672	B+	LS
215		$^1S-^1P^\circ$		1 104.41	19 280 567–19 371 113	1–3	1.21+09	6.64−01	2.41+00	−0.178	B+	1
216	1*s*7*s*−1*s*9*p*	$^3S-^3P^\circ$		*654.1*	19 278 195–*19 431 074*	3–9	8.80+08	1.69−01	1.09+00	−0.295	B+	1
				653.95	19 278 195–19 431 111	3–5	8.81+08	9.41−02	6.08−01	−0.549	B+	LS
				654.29	19 278 195–19 431 033	3–3	8.79+08	5.64−02	3.64−01	−0.772	B+	LS
				654.38	19 278 195–19 431 012	3–1	8.79+08	1.88−02	1.22−01	−1.249	B+	LS
217		$^1S-^1P^\circ$		660.79	19 280 567–19 431 902	1–3	8.86+08	1.74−01	3.79−01	−0.759	B+	1
218	1*s*7*s*−1*s*10*p*	$^3S-^3P^\circ$		*508.68*	19 278 195–*19 474 784*	3–9	6.46+08	7.51−02	3.78−01	−0.647	B+	1
				508.606	19 278 195–19 474 811	3–5	6.47+08	4.18−02	2.10−01	−0.902	B+	LS
				508.753	19 278 195–19 474 754	3–3	6.44+08	2.50−02	1.26−01	−1.125	B+	LS
				508.792	19 278 195–19 474 739	3–1	6.45+08	8.35−03	4.20−02	−1.601	B+	LS
219		$^1S-^1P^\circ$		513.294	19 280 567–19 475 387	1–3	6.49+08	7.69−02	1.30−01	−1.114	B+	1
220	1*s*7*p*−1*s*8*s*	$^3P^\circ-^3S$		*1 141.8*	*19 280 685*–19 368 266	9–3	2.18+09	1.42−01	4.80+00	0.107	B+	1
				1 142.83	19 280 764–19 368 266	5–3	1.21+09	1.42−01	2.67+00	−0.149	B+	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
				1 140.67	19 280 598–19 368 266	3–3	7.28+08	1.42−01	1.60+00	−0.371	B+	LS
				1 140.11	19 280 555–19 368 266	1–3	2.43+08	1.42−01	5.33−01	−0.848	B+	LS
221		$^1P^\circ-^1S$		1 144.27	19 282 456–19 369 848	3–1	2.09+09	1.37−01	1.55+00	−0.386	B+	1
222	$1s7p-1s9s$	$^3P^\circ-^3S$		670.1	*19 280 685*–19 429 907	9–3	1.44+09	3.23−02	6.42−01	−0.537	B+	1
				670.50	19 280 764–19 429 907	5–3	7.99+08	3.23−02	3.56−01	−0.792	B+	LS
				669.75	19 280 598–19 429 907	3–3	4.82+08	3.24−02	2.14−01	−1.012	B+	LS
				669.56	19 280 555–19 429 907	1–3	1.61+08	3.24−02	7.14−02	−1.489	B+	LS
223		$^1P^\circ-^1S$		673.14	19 282 456–19 431 014	3–1	1.39+09	3.14−02	2.09−01	−1.026	B+	1
224	$1s7p-1s10s$	$^3P^\circ-^3S$		*517.47*	*19 280 685*–19 473 934	9–3	9.94+08	1.33−02	2.04−01	−0.922	B+	1
				517.679	19 280 764–19 473 934	5–3	5.52+08	1.33−02	1.13−01	−1.177	B+	LS
				517.234	19 280 598–19 473 934	3–3	3.32+08	1.33−02	6.79−02	−1.399	B+	LS
				517.119	19 280 555–19 473 934	1–3	1.11+08	1.33−02	2.26−02	−1.876	B	LS
225		$^1P^\circ-^1S$		520.064	19 282 456–19 474 740	3–1	9.62+08	1.30−02	6.68−02	−1.409	B+	1
226	$1s8s-1s8p$	$^3S-^3P^\circ$		*1 665* cm^{-1}	19 368 266–*19 369 931*	3–9	1.66+05	2.69−01	1.59+02	−0.093	A	1
				1 718 cm^{-1}	19 368 266–19 369 984	3–5	1.82+05	1.54−01	8.85+01	−0.335	A	LS
				1 606 cm^{-1}	19 368 266–19 369 872	3–3	1.49+05	8.64−02	5.31+01	−0.586	A	LS
				1 577 cm^{-1}	19 368 266–19 369 843	3–1	1.41+05	2.83−02	1.77+01	−1.071	A	LS
227		$^1S-^1P^\circ$		1 265 cm^{-1}	19 369 848–19 371 113	1–3	7.33+04	2.06−01	5.36+01	−0.686	A	1
228	$1s8s-1s9p$	$^3S-^3P^\circ$		*1 592.2*	19 368 266–*19 431 074*	3–9	6.11+08	6.96−01	1.09+01	0.320	B+	1
				1 591.22	19 368 266–19 431 111	3–5	6.12+08	3.87−01	6.08+00	0.065	B+	LS
				1 593.19	19 368 266–19 431 033	3–3	6.10+08	2.32−01	3.65+00	−0.157	B+	LS
				1 593.73	19 368 266–19 431 012	3–1	6.08+08	7.72−02	1.22+00	−0.635	B+	LS
229		$^1S-^1P^\circ$		1 611.50	19 369 848–19 431 902	1–3	6.20+08	7.24−01	3.84+00	−0.140	B+	1
230	$1s8s-1s10p$	$^3S-^3P^\circ$		*938.8*	19 368 266–*19 474 784*	3–9	4.63+08	1.84−01	1.70+00	−0.258	B+	1
				938.57	19 368 266–19 474 811	3–5	4.63+08	1.02−01	9.46−01	−0.514	B+	LS
				939.07	19 368 266–19 474 754	3–3	4.64+08	6.13−02	5.69−01	−0.735	B+	LS
				939.21	19 368 266–19 474 739	3–1	4.63+08	2.04−02	1.89−01	−1.213	B+	LS
231		$^1S-^1P^\circ$		947.52	19 369 848–19 475 387	1–3	4.68+08	1.89−01	5.90−01	−0.724	B+	1
232	$1s8p-1s9s$	$^3P^\circ-^3S$		*1 667.3*	*19 369 931*–19 429 907	9–3	1.22+09	1.69−01	8.35+00	0.182	B+	1
				1 668.81	19 369 984–19 429 907	5–3	6.75+08	1.69−01	4.64+00	−0.073	B+	LS
				1 665.70	19 369 872–19 429 907	3–3	4.06+08	1.69−01	2.78+00	−0.295	B+	LS
				1 664.89	19 369 843–19 429 907	1–3	1.36+08	1.69−01	9.26−01	−0.772	B+	LS
233		$^1P^\circ-^1S$		1 669.42	19 371 113–19 431 014	3–1	1.16+09	1.62−01	2.67+00	−0.313	B+	1
234	$1s8p-1s10s$	$^3P^\circ-^3S$		*961.5*	*19 369 931*–19 473 934	9–3	8.32+08	3.84−02	1.10+00	−0.461	B+	1
				962.00	19 369 984–19 473 934	5–3	4.61+08	3.84−02	6.08−01	−0.717	B+	LS
				960.97	19 369 872–19 473 934	3–3	2.78+08	3.85−02	3.65−01	−0.937	B+	LS
				960.70	19 369 843–19 473 934	1–3	9.27+07	3.85−02	1.22−01	−1.415	B+	LS
235		$^1P^\circ-^1S$		965.00	19 371 113–19 474 740	3–1	8.02+08	3.73−02	3.55−01	−0.951	B+	1
236	$1s9s-1s9p$	$^3S-^3P^\circ$		*1 167* cm^{-1}	19 429 907–*19 431 074*	3–9	9.19+04	3.03−01	2.57+02	−0.041	A	1
				1 204 cm^{-1}	19 429 907–19 431 111	3–5	1.01+05	1.74−01	1.43+02	−0.282	A	LS
				1 126 cm^{-1}	19 429 907–19 431 033	3–3	8.25+04	9.76−02	8.56+01	−0.533	A	LS
				1 105 cm^{-1}	19 429 907–19 431 012	3–1	7.79+04	3.19−02	2.85+01	−1.019	A	LS

TABLE 50. Transition probabilities of allowed lines for Si XIII (references for this table are as follows: 1=Fernley *et al.*,[30] 2=Khan *et al.*,[54] and 3=Drake.[25]) —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
237		$^1S-^1P^\circ$		888 cm^{-1}	19 431 014–19 431 902	1–3	4.07+04	2.32−01	8.60+01	−0.635	A	1
238	$1s9s-1s10p$	$^3S-^3P^\circ$	*2 228*	*2 228*	19 429 907–*19 474 784*	3–9	3.38+08	7.56−01	1.66+01	0.356	A	1
			2 226.3	2 227.0	19 429 907–19 474 811	3–5	3.39+08	4.20−01	9.24+00	0.100	A	LS
			2 229.1	2 229.8	19 429 907–19 474 754	3–3	3.38+08	2.52−01	5.55+00	−0.121	A	LS
			2 29.9	2 230.5	19 429 907–19 474 739	3–1	3.37+08	8.39−02	1.85+00	−0.599	A	LS
239		$^1S-^1P^\circ$	2 252.9	2 253.6	19 431 014–19 475 387	1–3	3.43+08	7.84−01	5.82+00	−0.106	A	1
240	$1s9p-1s10s$	$^3P^\circ-^3S$	*2 332*	*2 333*	*19 431 074*–19 473 934	9–3	7.18+08	1.95−01	1.35+01	0.244	A	1
			2 334.5	2 335.2	19 431 111–19 473 934	5–3	3.98+08	1.95−01	7.50+00	−0.011	A	LS
			2 330.2	2 330.9	19 431 033–19 473 934	3–3	2.41+08	1.96−01	4.51+00	−0.231	A	LS
			2 329.1	2 329.8	19 431 012–19 473 934	1–3	8.03+07	1.96−01	1.50+00	−0.708	A	LS
241		$^1P^\circ-^1S$	2 333.7	2 334.4	19 431 902–19 474 740	3–1	6.90+08	1.88−01	4.33+00	−0.249	A	1
242	$1s10s-1s10p$	$^3S-^3P^\circ$		*850* cm^{-1}	19 473 934–*19 474 784*	3–9	5.44+04	3.39−01	3.93+02	0.007	A	1
				877 cm^{-1}	19 473 934–194 474 811	3–5	5.97+04	1.94−01	2.18+02	−0.235	A	LS
				820 cm^{-1}	19 473 934–194 474 754	3–3	4.89+04	1.09−01	1.31+02	−0.485	A	LS
				805 cm^{-1}	19 473 934–19 474 739	3–1	4.62+04	3.56−02	4.37+01	−0.971	A	LS
243		$^1S-^1P^\circ$		647 cm^{-1}	19 474 740–19 475 387	1–3	2.40+04	2.58−01	1.31+02	−0.588	A	1

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

5. Collective References for Si

[1] K. M. Aggarwal, Astrophys. J., Suppl. Ser. **118**, 589 (1998).
[2] C. W. Allen, *Allen's Astrophysical Quantities*, 4th ed. (Springer New York, 2000).
[3] M. A. Almaraz, A. Hibbert, C. Lavin, I. Martin, and K. L. Bell, J. Phys. B **33**, 3277 (2000).
[4] K. L. Baluja and C. J. Zeippen, J. Phys. B **21**, 15 (1988).
[5] K. L. Baluja and C. J. Zeippen, J. Phys. B **21**, 1455 (1988).
[6] S. R. Becker, K. Butler, and C. J. Zeippen, Astron. Astrophys. **221**, 375 (1989).
[7] S. D. Bergeson and J. E. Lawler, Astrophys. J. **414**, L137 (1993).
[8] H. G. Berry, J. Bromander, L. J. Curtis, and R. Buchta, Phys. Scr. **3**, 125 (1971).
[9] F. Blanco, B. Botho, and J. Campos, Phys. Scr. **52**, 628 (1995).
[10] P. Bogdanovich, R. Karpuškiené, A. Momkauskaite, and A. Udris, Lith. Phys. J. **39**, 9 (1999).
[11] V. M. Burke and D. L. Lennon, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[12] K. Butler, C. Mendoza, and C. J. Zeippen, J. Phys. B **26**, 4409 (1993).
[13] K. Butler, C. Mendoza, and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Butler et al (Ref. 12).
[14] K. Butler and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[15] A. G. Calamai, P. L. Smith, and S. D. Bergeson, Astrophys. J. **415**, L59 (1993).
[16] G. H. Cavalcanti, F. O. Borges, A. J. Mania, R. V. Orloski, and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **90**, 291 (2005).
[17] G. H. Cavalcanti, F. R. T. Luna, and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **64**, 5 (2000).
[18] E. Charro, S. Lopez-Ferrero, and I. Martin, J. Phys. B **34**, 4243 (2001).
[19] E. Charro and I. Martín, Astrophys. J., Suppl. Ser. **126**, 551 (2000).
[20] L. H. Coutinho and A. G. Trigueiros, Astrophys. J., Suppl. Ser. **121**, 591 (1999).
[21] L. H. Coutinho and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **75**, 357 (2002).
[22] L. H. Coutinho and A. G. Trigueiros, J. Quant. Spectrosc. Radiat. Transf. **72**, 485 (2002).
[23] R. D. Cowan, *The Theory of Atomic Structure and Spectra* (University of California Press, Berkeley, CA, 1981).
[24] L. J. Curtis and W. H. Smith, Phys. Rev. A **9**, 1537 (1974).
[25] G. W. F. Drake, Phys. Rev. A **19**, 1387 (1979).
[26] P. L. Dufton, F. P. Keenan, A. Hibbert, R. P. Stafford, P. B. Byrne, and D. Agnew, Mon. Not. R. Astron. Soc. **253**, 474 (1991).
[27] J. A. Fernley, A. Hibbert, A. E. Kingston, and M. J. Seaton, J. Phys. B **32**, 5507 (1999).
[28] J. A. Fernley, A. Hibbert, A. E. Kingston, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[29] J. A. Fernley, K. T. Taylor, and M. J. Seaton, J. Phys. B **20**, 6457 (1987).
[30] J. A. Fernley, K. T. Taylor, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[31] W. Fielder Jr., D. L. Lin, and D. Ton-That, Phys. Rev. A **19**, 741 (1979); **20**, 1738 (1979); (relativistic).
[32] H.-J. Flaig, K.-H. Schartner, E. Träbert, and P. H. Heckmann, Phys. Scr. **31**, 255 (1985).
[33] S. Fritzsche and I. P. Grant, Phys. Scr. **50**, 473 (1994).
[34] C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCDHF, *ab initio*, downloaded on April 20, 2004).
[35] C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).
[36] C. Froese Fischer, http:www.//vuse.vanderbilt.edu/~cff/mchf_collection/ (nonorthogonal spline CI, *ab initio*, downloaded on April 20, 2004).
[37] G. Gaigalas, J. Kaniauskas, R. Kisielius, G. Merkelis, and M. J. Vilkas, Phys. Scr. **49**, 135 (1994).
[38] M. E. Galavís, C. Mendoza, and C. J. Zeippen, Astron. Astrophys., Suppl. Ser. **131**, 499 (1998).
[39] R. H. Garstang, *Planetary Nebulae* edited by D. E. Osterbrock and C. R. O'Dell (Reidel, Dordrecht, 1968), pp. 143–152.
[40] T. Garz, Astron. Astrophys. **26**, 471 (1973).
[41] R. Glass, Astrophys. Space Sci. **87**, 41 (1982).
[42] R. Glass, Astrophys. Space Sci. **91**, 417 (1983).
[43] R. Glass, Astrophys. Space Sci. **92**, 307 (1983).
[44] M. Godefroid and C. F. Fischer, J. Phys. B **17**, 681 (1984).
[45] M. Godefroid, C. E. Magnusson, P. O. Zetterberg, and I. Joelsson, Phys.

Scr. **32**, 125 (1985).
[46] J. Granzow, P. H. Heckmann, and E. Träbert, Phys. Scr. **49**, 148 (1994).
[47] A. Hibbert, Phys. Scr. **39**, 574 (1989).
[48] A. Hibbert, M. Le Dourneuf, and M. Mohan, At. Data Nucl. Data Tables **53**, 24 (1993).
[49] A. Hibbert and M. P. Scott, J. Phys. B **27**, 1315 (1994).
[50] A. Hibbert and M. P. Scott, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[51] W. Hofmann, Z. Naturforsch. A **24**, 990 (1969).
[52] W. R. Johnson and K.-N. Huang, Phys. Rev. Lett. **48**, 315 (1982).
[53] D. E. Kelleher and L. I. Podobedova, J. Phys. Chem. Ref. Data **37**, 267 (2008).
[54] F. Khan, G. S. Khandelwal, and J. W. Wilson, Astrophys. J. **329**, 493 (1988).
[55] B. Kundu and P. K. Mukherjee, Phys. Rev. A **35**, 980 (1987).
[56] H. S. Kwong, B. C. Johnson, P. L. Smith, and W. H. Parkinson, Phys. Rev. A **27**, 3040 (1983).
[57] D. A. Landman, J. Quant. Spectrosc. Radiat. Transf. **34**, 365 (1985).
[58] A. E. Livingston, P. D. Dumont, Y. Baudinet-Robinet, H. P. Garnir, E. Biémont, and N. Grevesse, *Beam-Foil Spectroscopy*, edited by I. A. Sellin and D. J. Pegg (Plenum, New York, 1976), Vol. 1, pp. 339–346.
[59] A. E. Livingston, J. A. Kernahan, D. J. G. Irwin, and E. H. Pinnington, J. Phys. B **9**, 389 (1976).
[60] D. Luo and A. K. Pradhan, J. Phys. B **22**, 3377 (1989).
[61] D. Luo and A. K. Pradhan, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Luo and Pradhan (Ref. 60).
[62] D. McPeake and A. Hibbert, J. Phys. B **33**, 2809 (2000).
[63] S. Majumder and B. P. Das, Phys. Rev. A **62**, 042508 (2000).
[64] S. T. Maniak, E. Träbert, and L. J. Curtis, Phys. Lett. A **173**, 407 (1993).
[65] I. Martin, J. Karwowski, G. H. F. Diercksen, and C. Barrientos, Astron. Astrophys., Suppl. Ser. **100**, 595 (1993).
[66] W. C. Martin and R. Zalubas, J. Phys. Chem. Ref. Data **2**, 323 (1983).
[67] P. Matheron, A. Escarguel, R. Redon, A. Lesage, and J. Richou, J. Quant. Spectrosc. Radiat. Transf. **69**, 535 (2001).
[68] C. Mendoza, W. Eissner, M. Le Dourneuf, and C. J. Zeippen, J. Phys. B **28**, 3485 (1995).
[69] C. Mendoza, W. Eissner, M. Le Dourneuf, and C. J. Zeippen, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Mendoza et al (Ref. 68).
[70] C. Mendoza and C. J. Zeippen, Mon. Not. R. Astron. Soc. **199**, 1025 (1982).
[71] C. Mendoza, C. J. Zeippen, and P. J. Storey, Astron. Astrophys., Suppl. Ser. **135**, 159 (1999).
[72] G. Merkelis, I. Martinson, R. Kisielius, and M. J. Vilkas, Phys. Scr. **59**, 122 (1999).
[73] G. Merkelis, J. J. Vilkas, G. Gaigalas, and R. Kisielius, Publ. Astron. Soc. Jpn. **51**, 233 (1995).
[74] G. Merkelis, M. J. Vilkas, R. Kisielius, G. Gaigalas, and I. Martinson, Phys. Scr. **56**, 41 (1997).
[75] M. Mohan and M. Le Dourneuf, Phys. Rev. A **41**, 2862 (1990).
[76] P. J. Mohr and B. N. Taylor, 2002 CODATA Recommended Values of the Fundamental Physical Constants, http://physics.nist.gov/constants
[77] S. N. Nahar, At. Data Nucl. Data Tables **68**, 183 (1998).
[78] S. N. Nahar and A. K. Pradhan, J. Phys. B **26**, 1109 (1993).
[79] S. N. Nahar and A. K. Pradhan, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project). See Nahar and Pradhan (Ref. 78).
[80] NIST Atomic Spectra Database (ASD), http://physics.nist.gov/PhysRefData/ASD/index.html.
[81] NIST Atomic Transition Probability Bibliographic Database, http://www.physics.nist.gov/PhysRefData/Fvalbib/html/.
[82] V. H. Nussbaumer, Astron. Astrophys. **155**, 205 (1986).
[83] T. R. O'Brian and J. E. Lawler, Phys. Rev. A **44**, 7134 (1991).
[84] G. Peach, H. E. Saraph, and M. J. Seaton, J. Phys. B **21**, 3669 (1988).
[85] G. Peach, H. E. Saraph, and M. J. Seaton, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[86] E. R. Peck and K. Reeder, J. Opt. Soc. Am. **62**, 958 (1972).
[87] L. I. Podobedova, D. E. Kelleher, J. Reader, and W. L. Wiese, J. Phys. Chem. Ref. Data **33**, 471 (2004).
[88] Yu. V. Ralchenko and L. A. Vainshtein, Phys. Rev. A **52**, 2449 (1995).
[89] U. I. Safronova, A. Derevianko, M. S. Safronova, and W. R. Johnson, J. Phys. B **32**, 3527 (1999). A complete data listing was made available by private communication.
[90] U. I. Safronova, W. R. Johnson, and H. G. Berry, Phys. Rev. A **61**, 052503 (2000). A complete list of data was obtained by private communication from Safronova.
[91] U. I. Safronova, W. R. Johnson, and A. E. Livingston, Phys. Rev. A **60**, 996 (1999). A complete data listing was made available by private communication.
[92] U. I. Safronova, W. R. Johnson, M. S. Safronova, and A. Derevianko, Phys. Scr. **59**, 286 (1999).
[93] H. P. Saha and E. Trefftz, J. Phys. B **15**, 1089 (1982).
[94] H. P. Saha and E. Trefftz, Astron. Astrophys. **116**, 224 (1982).
[95] W. Siegel, J. Migdalek, and Y.-K. Kim, At. Data Nucl. Data Tables **68**, 303 (1998).
[96] P. L. Smith, M. C. E. Huber, G. P. Tozzi, H. E. Griesinger, B. L. Cardon, and G. G. Lombardi, Astrophys. J. **322**, 573 (1987).
[97] G. Tachiev and C. Froese Fischer, J. Phys. B **33**, 2419 (2000).
[98] G. Tachiev and C. Froese Fischer, Can. J. Phys. **79**, 955 (2001).
[99] G. Tachiev and C. Froese Fischer, Astron. Astrophys. **385**, 716 (2002).
[100] G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, *ab initio*, downloaded on April 20, 2004).
[101] G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/~cff/mchf_collection/ (MCHF, energy adjusted, downloaded on April 20, 2004).
[102] G. Tachiev and C. Froese Fischer, http://www.vuse.vanderbilt.edu/_cff/mchf_collection/ (MCHF, *ab initio*, downloaded on May 16, 2004).
[103] C. E. Theodosiou and L. J. Curtis, Phys. Rev. A **38**, 4435 (1988).
[104] E. Träbert, Phys. Scr. **53**, 167 (1996).
[105] E. Träbert, G. Schneider, and P. H. Heckmann, Phys. Scr. **27**, 407 (1983).
[106] J. A. Tully, M. J. Seaton, and K. A. Berrington, J. Phys. B **23**, 3811 (1990).
[107] J. A. Tully, M. J. Seaton, and K. A. Berrington, http://legacy.gsfc.nasa.gov/topbase, downloaded on July 28, 1995 (Opacity Project).
[108] T. R. Verhey, B. P. Das, and W. F. Perger, J. Phys. B **20**, 3639 (1987).
[109] M. Vajed-Samii, D. Ton-That, and L. Armstrong, Jr., Phys. Rev. A **23**, 3034 (1981).
[110] M. J. Vilkas, I. Martinson, G. Merkelis, G. Gaigalas, and R. Kisielius, Phys. Scr. **54**, 281 (1996).
[111] M. J. Vilkas, G. Merkelis, R. Kisielius, G. Gaigalas, A. Bernotas, and Z. Rudzikas, Phys. Scr. **49**, 592 (1994).
[112] B. Warner, Z. Astrophys. **69**, 399 (1968).
[113] W. L. Wiese, J. R. Fuhr, and T. M. Deters, *Atomic Transition Probabilities of Carbon, Nitrogen, and Oxygen*, JPCRD Monograph 7 (AIP, New York, 1996).
[114] W. L. Wiese, M. W. Smith, and B. M. Miles, *Atomic Transition Probabilities, Vol. II: Sodium through Calcium*, NSRDS-NBS Vol. 22 (U.S. GPO, Washington, D.C., 1969). The first updated compilation of NIST transition probabilities has been published. See Wiese et al (Ref. 113).
[115] M. Wilson, Z. Phys. D: At., Mol. Clusters **21**, 7 (1991).
[116] Z.-C. Yan, M. Tambasco, and G. W. F. Drake, Phys. Rev. A **57**, 1652 (1998).
[117] H. L. Zhang and D. H. Sampson, At. Data Nucl. Data Tables **52**, 143 (1992).
[118] H. L. Zhang, D. H. Sampson, and C. J. Fontes, At. Data Nucl. Data Tables **44**, 31 (1990).