

New Databases for Atomic Spectra

The Atomic Spectra Database (ASD) has been updated in both presentation and content with the release of version 3.0. This database of critically compiled spectral lines and atomic energy levels is now the world's primary resource for such data. It continues to be very popular with academic, governmental, and industrial researcher with an average number of data requests per month in excess of 45,000 (Figure 4.3). Version 3.0 has 60% more wavelength values and 10% more energy level values than its predecessor, with an emphasis on data that are important for the development of fusion energy. This includes data for all stages of ionization of tungsten, which will be used as a plasma-facing material in ITER*, along with data for iron, neon, argon, krypton, and xenon. The web interface for version 3.0 features several new tools for queries, display, and export to facilitate access to the data.

In addition to ASD, new auxiliary databases have been introduced to meet the needs of specific research communities. The Spectrum of Th-Ar Hollow Cathode Lamps, analogous to the existing Spectrum of Platinum Lamps for Ultraviolet Spectrograph Calibration, is used by astronomers to calibrate new infrared telescopes. The new NLTE4 Plasma Population Kinetics Database is used by computer modelers of high energy-density plasmas to benchmark their calculations for plasmas that are not in local thermodynamic equilibrium. This includes magnetic and inertial confinement fusion plasmas as well as astrophysical plasmas.

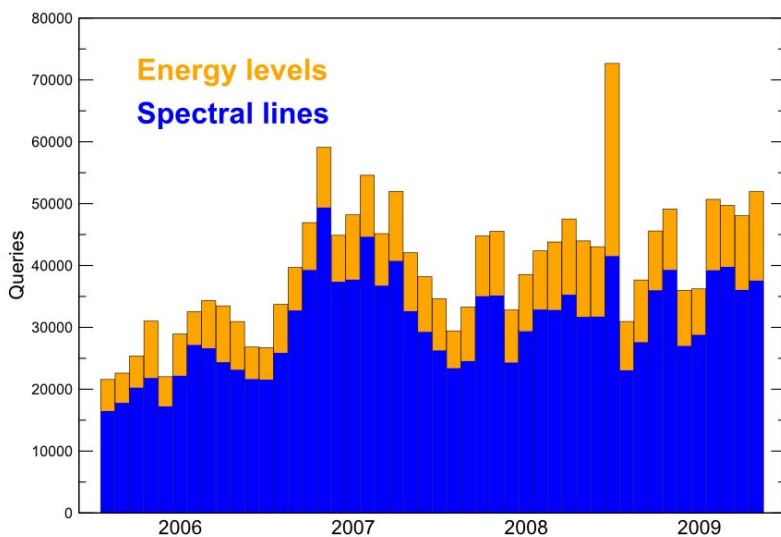


Figure 4.3: The number of external data requests submitted to ASD per month for the last 46 months. Requests for wavelength values are shown in blue and requests for energy level values are shown in orange.

*ITER is the next generation fusion machine being constructed by a multi-billion dollar international collaboration involving the U.S. and other countries. It will be significant step forward in the demonstration of controlled nuclear fusion as a clean, unlimited source of energy.

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