

NIST's Bibliographic Databases on Atomic Spectra

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Abstract. In June 2006, the Atomic Spectroscopy Data Center of the National Institute of Standards and Technology (NIST) released three new Bibliographic Databases containing references to papers with data on atomic properties needed for controlled fusion research, modeling and diagnostics of astrophysical and terrestrial plasmas, and fundamental properties of electronic spectra of atoms and atomic ions.

The NIST Atomic Energy Levels and Spectra Bibliographic Database [1] is the first online version of the NIST bibliographic resources on atomic energy levels and spectra, earlier published on paper as NIST Special Publication 363, last published in 1985. This database includes references to articles on energy levels, transition wavelengths, ionization potentials, isotopic shifts, hyperfine structure, quantum field effects, and Zeeman and Stark splittings in atoms and atomic ions. The main emphasis is given to experimental papers. It also includes papers containing high-precision theoretical calculations of these atomic properties. The database is fairly complete for the period 1967 through 2004. Work is currently in progress to include papers for the period 2005 through 2006. The total number of references is more than 9200.

The NIST Atomic Transition Probability Database, version 8.1 [2], is an update of the previously published version 7.0 of this database published in October 2003. The database is now fairly complete for the period 1964 through 2005. For the new version, about 700 new references have been added, bringing the total number of references to more than 7200.

The NIST Spectral Line Broadening Bibliographic Database, version 2.0 [3], is a major upgrade of the previous online version 1.0. The total number of references is more than 3600, while version 1.0 contained only 800 references. The database is fairly complete for the period 1978 through 2005.

All three databases are now maintained in a unified database management system based on a MySQL server. This system allows us to quickly update the contents of the databases. Any new reference added to the database becomes available to the public on the next day. A robust Data Entry module makes it easy to enter the data and classify the papers by relevant categories.

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REFERENCES

1. <http://physics.nist.gov/Elevbib>.
2. <http://physics.nist.gov/Fvalbib>
3. <http://physics.nist.gov/Linebrbib>