

NIST's Bibliographic Databases on Atomic Spectra

A.E. Kramida, J.R. Fuhr, J. Reader, W.C. Martin, E.B. Saloman, K. Olsen, S. Kotochigova

National Institute of Standards and Technology, Gaithersburg, MD, USA

Alexander.Kramida@nist.gov

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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 1994. The work is currently in progress to include papers for the period 1994 through 2006. Total number of references is more than 8400.

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. About 500 new references have been added compared to the previous version, bringing the total number of stored references to more than 7000.

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 3550, 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. This work is supported in part by the National Aeronautics and Space Administration and by the Office of Fusion Energy Sciences of the U. S. Department of Energy.

[1] <http://physics.nist.gov/Elevbib>

[2] <http://physics.nist.gov/Fvalbib>

[3] <http://physics.nist.gov/Linebrbib>