NORAD-ATOMIC-DATA for Radiative Processes at the Ohio State University

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Abstract. NORAD-Atomic-Data is an on-line database based at the Ohio State University containing data for radiative atomic processes, such as photoionization, electron-ion recombination, radiative transitions, lifetimes, etc. Significant part of the atoimc data corresponds to new and improved work including relativistic effects under the international Opacity Project and the Iron Project. It contains large sets of energy levels, photoionization cross sections, recombination cross sections and rate coefficients, oscillator strengths and other transition parameters. It also gives lifetimes and some collision strengths for electron-impact excitations. The data sets consider large number of bound levels, typically going up to n=10 for complete astrophysical models. The results are mainly from large scale R-matrix calculations by Nahar et al.. All files are in standard ascii character format for use in models and diagnostics of astrophysical and laboratory plasmas.. The database currently contains data for over 80 atomic species of elements H, He, C, N, O, F, Ne, etc going up to Ni.

The atomic data can be downloaded for direct applications. Spectroscopic information for all levels and transitions are provided. They are usually given in the energy tables and the numerical codes connect them to the transitions and levels in the cross section and rate coefficient files.

The x-ray K-alpha transition of elements, particularly of heavier ones, have been of great interest for various astronomical, biomedical, fusion plasma application There are 112 K-L transitions possible for each element. A new addition to NORAD-Atomic-Data will be these transitions for a large number of elements.

NORAD-Atomic-Data can be accessed from various database pages, such as, at CfA-Harvard (http://www.cfa.harvard.edu/amp/ampdata/databases.html), Internationl Atomic Energy Agency: (http://www-amdis.iaea.org/databases.php), CFADC of Oak Ridge National Lab. (http://www-cfadc.phy.ornl.gov/databases.html)