NORAD-ATOMIC-DATA
- Sultana N. Nahar
Astronomy Department, Ohio State University

Description of Photoionization data

i. File for Total Photoionization Cross sections:

Typical name for a photoionization cross sections file is "ion.px.txt"

Contents of the file of ion X^+:

X^+ : Total Photoionization Cross Sections of ground & excited levels

(photoionized ion - in ground or in various excited levels)

Process: $X^+ + h\nu - > X^{2+} + e$

Explanation of the data:

• Atomic levels are specified numerically.

• Spectroscopic designation of each level is given in the energy file.

• Each fine structure level has the follwoing set of atomic data

line 1: zz=nuclear charge, nn=no of electrons in the residual ion, ntg=number of target/core excitations included in the wavefunction

Lines : List of core energies (Ry, relative to ground) in the wavefunction

Line : is, 2j, ip, ns $- >$ is=0 (irrelevant), j=total angular momentum, ip(parity)=0 for even & 1 for odd), ns=energy position of the level in the symmetry, Jpi Ex: 0 1 0 1 (= is 2j ip ns) $\rightarrow$ The first level of symmetry j=1/2 e

Line : BE, ntot $\rightarrow$-¿ Binding energy (Ry), ntot=Number of photon energy points

Line : ac $\rightarrow$ internal accuracy number (ignore ac)

Lines, ntot in total: E=photon energy(Ry), Epe=photoelectron energy (Ry), signd(Mb)=photoionization cross section(no radiation damp), sig(Mb)=photoionization cross section with radiation damping
Note: May choose damped cross sections for highly charged ions