Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

K-shell Fluorescence Yields of Li- to F-like Ions S.T. MANSON, Department of Physics and Astronomy, Georgia State University, Atlanta, GA 30303, M.F. HASOGLU, T.W. GORCZYCA, Department of Physics, Western Michigan University, Kalamazoo, MI 49008-5252, N.R. BADNELL, Department of Physics, University of Strathclyde, Glasgow, G4 0NG, UK, D.W. SAVIN, Columbia Astrophysics Laboratory, Columbia University, New York, NY 10027 — We have investigated the accuracy of the commonly-used fluorescence/Auger database. These data were determined from configuration average, LS, singly-charged atomic physics calculations and were then scaled up through Z=30 for all isoelectronic sequences through the iron peak elements. We have carried out new calculations, using the AUTOSTRUCTURE package, and demonstrate the significance of including properly such physical effects as correct configuration averaging (CA), semi-relativistic (i.e., spin-orbit) effects, and the previously-overlooked need to tailor the CA itself to the specific physical process of interest, showing that the extant database includes significant inaccuracies. Finally, we have completed an investigation of the isoelectronic sequences of all second-row ions. This work was supported in part by NASA APRA and SHP SR&T programs.

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Date submitted: 06 Feb 2007 Electronic form version 1.4