

Abstract Submitted
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Anomalous behavior of Auger and radiative rates and fluorescence yields along the $1s2s^22p^3$ K-shell isoelectronic sequence¹ MUHAMMET FATIH HASOGLU, DRAGAN NIKOLIĆ, THOMAS W. GORCZYCA, Department of Physics, Western Michigan University, Kalamazoo, Michigan 49008, STEVEN T. MANSON, Department of Physics and Astronomy, Georgia State University, Atlanta, GA 30303, MAU HSIUNG CHEN, Lawrence Livermore National Laboratory, Livermore, CA 94550, NIGEL BADNELL, Department of Physics, University of Strathclyde, Glasgow, G4 0NG, UK — Calculations using two different methodologies have revealed anomalous behaviour of the radiative and Auger rates, and the associated fluorescence yields, of the six electron $1s2s^22p^3$ K-shell vacancy isoelectronic sequence as a function of Z from the neutral to Z of 30. This behavior is explained in terms of an accidental degeneracy, an avoided-crossing of two nearly-degenerate spin-orbit coupled states. The results also demonstrate the importance of including both multielectron correlation and spin-orbit effects even at low- Z , and that interpolation of computed fluorescence data is inaccurate in general.

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