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Nonstatistical Branching Ratios in the Photoionization of Spin-Orbit Doublets Far Above Threshold DAVID KEATING, STEVEN MANSON, Georgia State University, PRANAWA DESHMUKH, Indian Institute of Technology-Tirupati. — Relativistic interactions are very important contributors to atomic properties. Of particular interest is the alterations made to the wave functions, i.e., the dynamics. These dynamical changes can greatly affect the photoionization cross section of heavy (high Z) atoms. To explore the extent of these dynamic effects a theoretical study of the photoionization cross section branching ratios of various spin-orbit split subshells in various atoms have been performed using the relativistic random phase approximation (RRPA) methodology [1]. In the absence of relativistic effects, the branching ratios of the spin-orbit split subshells should be the respective statistical ratio. Interchannel coupling can obscure these dynamic effects by affecting each of the spin-orbit doublet subshells differently. Therefore, it is also necessary to perform calculations without coupling included. This is possible thanks to the RRPA model being able to calculate truncated cross sections. Comparisons are presented between calculations with and without various levels of interchannel coupling. The results show significant deviations from the statistical ratio even very far above threshold. [1] W. R. Johnson and C. D. Lin, Phys. Rev. A 20, 964 (1979).

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