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Dynamic Effects in the Photoionization of the 6s Subshell of Radon and Nobelium DAVID KEATING, STEVEN MANSON, Georgia State University, PRANAWA DESHMUKH, Indian Institute of Technology-Tirupati and Indian Institute of Science Eduation and Research — Relativistic interactions are very important contributors to atomic properties. Of 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 6s photoionization cross section of both radon (Z = 86) and nobelium (Z = 102) have been performed using the relativistic random phase approximation (RRPA) methodology [1]. These two cases have been selected because they offer the clearest picture of the effects in question. In order to determine which features in the photoionization cross section are due to relativity, calculations using the (nonrelativistic) random phase approximation with exchange method (RPAE) [2] are performed for comparison. Interchannel coupling can obscure the dynamic effects by "pulling" minima out of the discrete spectrum and into the continuum or by inducing minima. Therefore it is necessary to perform calculations without coupling included. This is possible thanks to the RRPA and RPAE codes being able to calculate cross sections with particular channels omitted. Comparisons are presented between calculations with and without interchannel coupling. Work supported by DOE and NSF. [1] W. R. Johnson and C. D. Lin, Phys. Rev. A 20, 964 (1979); [2] M. Ya. Amusia, Atomic Photoeffect (Plenum, NY, 1990).

David Keating
Georgia State University

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