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Spin-Orbit Activated Confinement Resonances DAVID KEATING, STEVEN MANSON, Georgia State University, PRANAWA DESHMUKH, Indian Institute of Technology-Madras — At high enough Z relativistic effects become important contributors to even the qualitative nature of atomic properties. This is likely to be true for confined atoms as well. One relativistic effect of interest is the spin-orbit activated interchannel coupling of a pair of spin-orbit doublet channels. This interaction is possible owing to the spin-orbit interaction breaking the degeneracy among the electrons of a subshell [1] allowing, for example, the 5p3/2 and 5p1/2 subshells of mercury (Z=80) and the 6p3/2 and 6p1/2 of radon (Z=86), to interact. To explore the effect confinement has on spin-orbit activated interchannel coupling, a theoretical study of the 5p subshell of mercury and the 6p subshell of radon both confined in a C60 cage has been performed using the relativistic-random-phase approximation (RRPA) methodology [2]. The effects of the C60 potential modeled by a static spherical well which is reasonable in the energy region well above the C60 plasmons [3]. It is found in the photoionization cross sections of the 5p3/2 of confined mercury and the 6p3/2 of confined radon an extra confinement resonance due to spin-orbit activated interchannel coupling with the respective np1/2 photoionization channels. [1] M. Ya. Amusia, et al, Phys. Rev. Lett 88, 9 (2002); [2] W. R. Johnson and C. D. Lin, Phys. Rev. A 20, 964 (1979); [3] V. K. Dolmatov, Adv. Quantum. Chem. 58, 13 (2009)

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