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Photoionization of Atoms and Ions Confined by Negatively-Charged C_{60} V.K. DOLMATOV, University of North Alabama, S.T. MANSON, Georgia State University — Recent studies of the photoionization of atoms and ions endohedrally confined in C_{60} have uncovered a wealth of new physics concerning how the atomic properties are modified by the confinement [1]. In a continuation of these investigations, the effects of a negatively-charged C_{60}^{-q} cage on the photoionization of confined N $2p$ and Li^+ $1s$ have been investigated using Hartree-Fock and Spin-Polarized Random-Phase Approximation with Exchange methodologies. Our results for N $2p$ with q=2 show that the lowest energy "confinement resonance" [2] at about 20 eV is increased by about a factor of five and narrowed somewhat by the charge on the cage. For Li^+ $1s$, calculations with q=1 to 3 show a modest increase with q in the lowest resonance at about 90 eV, plus an entirely new and unexpected series of much narrower resonances that increase in amplitude with q. In addition, the threshold behavior is altered dramatically in going from q=0 to 3. Since each initial state is smaller than the C_{60} radius, i.e., unaltered by the confinement, this phenomenology is due to the final state wave function, the emerging photoelectron interacting with the combined ionic and confinement potential. This work was supported by NSF and CRDF. [1] V. K. Dolmatov, A. S. Baltenkov, J.-P. Connerade and S. T. Manson, Radiation Phys. Chem. **70**, 417 (2004). [2] M. Ya. Amusia, A. S. Baltenkov, V. K. Dolmatov, S. T. Manson and A. Z. Msezane, Phys. Rev. A **70**, 023201 (2004).

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