Abstract Submitted
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Atom-fullerene hybridization, giant enhancement and correlation confinement resonances in the photoionization of Xe@C_{60}[1] MATTHEW MCCUNE, HOPPER DALE, HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468, MOHAMED MADJET, Free University, D-14195 Berlin , JAN MICHAEL ROST, MPIPKS, D-01187 Dresden, STEVE MANSON, Georgia State University, Atlanta, GA 30303 — A detailed theoretical study of the subshell photoionization of Xe endohedrally confined in C_{60} is presented. A powerful hybridization of the Xe 5*s* state with the bottom edge of C_{60} π band is found. Cross sections of these hybrid states exhibit rich structures and are radically different from the cross sections of free atomic or fullerene states [1]. The hybridization also affects the angular distribution asymmetry parameter of Xe 5*p* ionization near the Cooper minimum. The Xe 5*p* cross section, on the other hand, is greatly enhanced by borrowing considerable oscillator strength from the C_{60} giant plasmon resonance [2]. Beyond the plasmon energy range the Xe subshell cross sections display confinement-induced oscillations in which, over the large 4*d*shape resonance region, the dominant 4*d*oscillations induce their "clones" in all degenerate weaker channels known as correlation confinement resonances. [1] H. S. Chakraborty et al., *Phys. Rev.* A **79**, 061201(R) (2009); [2] M. E. Madjet et al., *Phys. Rev.* A, in press.

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