Abstract Submitted
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Electron interference effects in energetic photoelectrons from C_{60}@C_{240} probed by the Fourier spectroscopy[1] MEGHAN MCCREARY, HIMADRI CHAKRABORTY, Northwest Missouri State University — The ground state structure of the simplest two-fullerene onion system, the C_{60}@C_{240} molecule, is solved in the Kohn-Sham framework of local density approximation (LDA). Calculations are carried out with delocalized carbon valence electrons after modeling the onion ion-core of sixty C^{4+} ions from C_{60} and two hundred and forty of those from C_{240} in a smeared out jellium-type double-shell structure [1,2]. Ionization cross sections of all the levels are then calculated in both independent particle LDA and many-particle time dependent LDA approaches at photon energies above the plasmon resonances. These high-energy results exhibit rich structures of energy dependent oscillations from the quantum interference of electron waves produced at the edges of the fullerene layers. A detailed scrutiny of these structures is conducted by Fourier transforming the spectra to the configuration space [3] that relates the oscillations to the onion geometry.

[1] M.E. Madjet, H.S. Chakraborty, J.-M. Rost, and S.T. Manson, *J. Phys.* B **41**, 105101 (2008);
[2] M.A. McCune, R. De, M.E. Madjet, H.S. Chakraborty, and S.T. Manson, *J. Phys.* B Fast Track Comm. **44**, 241002 (2011); [3] M.A. McCune, M.E. Madjet, and H.S. Chakraborty, *Phys. Rev.* A **80**, 011201 (R) (2009).

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