

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Fourier analysis of subshell photoionizations: Pristine C_{60} and atoms endohedrally confined in C_{60} ¹ MATT MCCUNE, Northwest Missouri State University, Maryville, MO 64468, MOHAMED MADJET, Free University, D-14195 Berlin, Germany, HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468 — Theory and experiment have confirmed oscillations in the photoionization from two highest occupied orbitals of free C_{60} [1]. It is however not known if the oscillations from inner orbitals also show the same spectral “morphology”. We found using a Fourier analysis approach that the oscillation spectacularly alters by the centrifugal barrier created by a high angular momentum inner electron [2]. Theory has also predicted oscillations in the photo cross section of atoms confined in C_{60} . Most of the studies however modeled the confining shell by a simplistic one-active-electron potential. A method has recently been established that treats the C_{60} electrons in a sophisticated multi-electron frame which we use to perform calculations of closed-shell atoms in C_{60} . Employing the Fourier analysis we unravel the unique interplay between specific ionization modes that induces oscillations in the cross section of the confined atom. [1] Ruedel et al., Phys. Rev. Letts. **89**, 125503 (2002); [2] McCune et al., J. Phys. B FTC **41**, 201003 (2008).

¹The work is funded by the NSF.

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Date submitted: 22 Jan 2009

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