Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Valence photoionization of small alkaline earth atoms endohedrally confined in C_{60}: From the many-electron collectivity to single-electron interferences[1] MOHAMMAD JAVANI, Georgia State University, MEGHAN MCCREARY, AAKASH PATEL, Northwest Missouri State University, MOHAMED MADJET, CFEL/DESY, Hamburg, Germany, HIMADRI CHAKRABORTY, Northwest Missouri State University, STEVE MANSON, Georgia State University — Results of a theoretical study of the photoionization from outermost orbitals of Be, Mg and Ca atoms endohedrally confined in C_{60} are presented. The fullerene ion-core of sixty C^{4+} ions is smudged into a continuous jellium distribution while the delocalized cloud of carbon valence electrons, *plus* the encaged atom, are treated in the time-dependent local density approximation (TDLDA) [1]. Systematic evolution of the mixing of outer atomic level with the C_{60} band is detected along the sequence. This is found to influence the plasmon-driven enhancement at low energies and the geometry-revealing confinement oscillations from multi-path interferences at high energies in significantly different ways. The study paints the first comparative picture of the atomic valence photospectra for alkaline earth metallofullerenes in a dynamical many-electron framework [2].

[1] M.E. Madjet et al., *Phys. Rev.* A **81**, 013202 (2010)
[2] M.H. Javani et al., *to be published*.

[1]Supported by the NSF and US DoE.

Himadri Chakraborty
Northwest Missouri State University

Date submitted: 24 Jan 2012 Electronic form version 1.4