

Abstract Submitted
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Single photoionization with excitation and double photoionization of He endofullerenes¹ T.-G. LEE, J.A. LUDLOW, M.S. PINDZOLA, Physics Department, Auburn University — Recently, using a non-perturbative time-dependent close-coupling (TDCC) method we investigated and confirmed the existence of these resonances in the double photoionization cross section of He@C₆₀ [1, 2]. Here, we extend our previous studies to examine confinement resonances not only in the double photoionization process, but in the process of single photoionization with excitation for various He endofullerenes, namely He@C₃₆, He@C₆₀ and He@C₈₂. We found He@C₈₂ also displays confinement resonances in the double photoionization cross sections; while for He@C₃₆ the confinement resonances are suppressed. For single photoionization leaving the He⁺ ion in its ground state, we found the magnitude of the cross sections for the endofullerenes is comparable to that of helium. For single photoionization with excitation to the n=2 shell, the endofullerene cross sections showed a reduction as compared to bare He atoms; while for photoionization with excitation to the n=3 shell, the cross sections for the endofullerenes showed an enhancement. In addition, we also found confinement resonances in the single photoionization with excitation cross sections.

[1] J A Ludlow, T-G Lee, and M S Pindzola, Phys. Rev. A 81, 023407 (2010)

[2] J A Ludlow, T-G Lee and M S Pindzola, J. Phys. B: At. Mol. Opt. Phys. 43 235202 (2010)

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