

Abstract Submitted
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Subshell-resolved ultraviolet photoionization of C_{60} : angular momentum versus cavity oscillations GEORGE KLENKLEN, JUSTIN SCHMELZER, Northwest Missouri State University, Maryville, MO 64468, MOHAMED MADJET, Freie Universitaet, D-14195 Berlin, Germany, HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468 — Photoelectron intensities from the valence subshells of C_{60} exhibit oscillations – the cavity oscillations [1]. From beyond the collective plasmon energy region to the carbon K-shell ionization threshold, we calculate in the local density approximation the cross sections for ionization from all occupied subshells of C_{60} . Fourier transformation of the cross sections as a function of photoelectron momentum reveals four frequencies of oscillations. However, the relative strength of the signal for different oscillations is found to sensitively depend on the initial angular momentum of the electron. As an extreme example, the cross section of the highest possible angular momentum state oscillates in practically one single frequency, since signals from others are too weak. The role of the centrifugal barrier potential to determine the effect is uncovered. [1] Ruedel et al., Phys. Rev. Letts. **89**, 125503 (2002).

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