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Quantum Young's double-slit-type interferences in atomic photoelectrons from atom@C_{60} molecules HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468, MOHAMED MADJET, Freie Universitaet, D-14195 Berlin, Germany, JAN-MICHAEL ROST, MPIPKS, D-08117 Dresden, Germany, STEVE MANSON, Georgia State University, Atlanta, GA 30303
— The photoionization cross section of an endohedrally confined atom exhibits oscillations [1]. The effect can be best interpreted by the quantum interference of electron waves scattered from inner and outer edges of the confining shell [2]. For some atom@C_{60} compounds, from beyond the collective plasmon energy region to the carbon K-shell ionization threshold, we Fourier-analyze calculated photo cross sections to determine oscillation frequencies. Since the underlying mechanism is a quantum analogue of a classical double-slit interference in photoelectron momentum space, with the central atom being the light source and the opposite sides of the shell being the slits, it is shown that the information can be used to extract geometric details. The competing role of the Coulomb and the cage potentials governs the effect. [1] J.-P. Connerade et al., *J. Phys.* B **33**, 2279 (2000); [2] Ruedel et al., Phys. Rev. Letts. **89**, 125503 (2002).

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