

Abstract Submitted
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Attosecond time delay and confinement resonances in photoionization of endohedral atoms: Xe@C₆₀ P.C. DESHMUKH, A. MANDAL, S. SAHA, IIT-Madras, A.S. KHEIFETS, The Australian National University, V.K. DOLMATOV, University of North Alabama, S.T. MANSON, Georgia State University — A theoretical study of Wigner time delay [1] has been applied to the investigation of confinement resonances [2] that occur generally in the photoionization of confined atoms. Calculations have been performed on the 4d subshell of Xe@C₆₀ where the existence of confinement resonances has recently been verified experimentally [3]. The random phase approximation in both the nonrelativistic [4] and relativistic [5] versions, which include significant initial and final state correlation, have been employed in the study. The influence of the C₆₀ cage on the atom is represented by a spherical annular well [6], which should be good for inner atomic shells at energies significantly higher than the C₆₀ plasmons. The results show that the confinement resonances exhibit significant time delay, as compared to the free atom, confirming the interpretation in terms of multiple scattering of the photoelectron off the walls of the confining shell.

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