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Suppression of confinement oscillations in photoionization cross sections of endohedral atoms A.S. BALTENKOV, Arifov Institute of Electronics, U. BECKER, Fritz-Haber-Institute, S.T. MANSON, Georgia State University, A.Z. MSEZANE, Clark Atlanta University — Using a model representing the C_{60} cage as a spherical shell formed by smeared carbon atoms, the effect of the shape of potential U(r) on the photoionization of atom A localized inside the C_{60} cage has been studied. It is shown that for potential shell thickness not exceeding 1.3-1.5 atomic units, confinement oscillations [1] in the photoionization cross section of endohedral atom A@C_{60} weakly depend on the shape of U(r). With increasing width of the potential well the confinement resonances disappear. In addition, it is demonstrated that displacing the doped atom from the center of the C_{60} cavity also diminishes the amplitude of confinement resonances and results in their disappearance with increasing displacement. The nature of the suppression of confinement oscillation amplitudes is different in the two cases. In the first case, it is due to weakening of the connection of photoelectron wave function oscillations inside and outside the fullerene shell as the thickness of the spherical resonator wall increases. For the off-center position of the atom, it is due to mixing and mutual cancellation of confinement oscillations corresponding to different photoelectron trajectories inside the fullerene cavity. This could be the reason confinement effects were not observed in the experiments on 4d photoionization of the Ce atom in Ce@C_{82}^{+} [2], because this atom is off-center, adhering to the inner surface of the strongly non-spherical C_{82} cage. [1] V. K. Dolmatov, A. S. Baltenkov, J.-P. Connerade and S. T. Manson, Radiat. Phys. Chem. 70, 417 (2004); [2] A. Müller *et al,* Phys. Rev. Lett. 101, 133001 (2008)

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