Abstract Submitted
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Dramatic Distortion of the $4d$ Giant Resonance by the C_{60} Fullerene Shell[1] M. YA. AMUSIA, The Hebrew University, Israel, A.S. BALTENKOV, Arifov Institute of Electronics, Uzbekistan, L.V. CHERNYSHEVA, A. F. Ioffe Physical-Technical Institute, Russia, Z. FELFLI, A.Z. MSEZANE, Clark Atlanta University, USA — Giant resonances are universal features of the excitation of finite many-fermion systems: nuclei, atoms, fullerenes, and clusters. They represent collective, coherent oscillations of many particles and, most prominently manifest themselves in photon absorption cross sections or in the so-called "zero" sound in Fermi-liquids. The photoionization cross section for the endohedral Xe@C_{60} atom is investigated within the framework of representing the C_{60} by a delta-type potential. Results demonstrate that in Xe@C_{60} the $4d^{10}$ giant resonance is distorted significantly when compared with that of the isolated Xe atom. The reflection of the photoelectron waves by the C_{60} causes strong oscillations in the photoionization cross section resulting in the replacement of the Xe $4d$ giant resonance by four prominent peaks. The approximation of the C_{60} by an infinitely thin real potential preserves reasonably well the sum rule for the $4d$ electrons but modifies the dipole polarizability of the $4d$ shell.

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