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Explanation of the recent results on photoionization of endohedral atoms MIRON AMUSIA, Racah Institute of Physics, Hebrew University, Jerusalem, Israel, LARISSA CHERNYSHEVA, Physical-Technical Institute, St. Petersburg, Russia, EUGENIY DRUKAREV, Konstantinov Petersburg Nuclear Physics Institute, St. Petersburg, Russia — We explain the recently observed discrepancy between experimental and theoretical results on ionization of atoms, encapsulated into the fullerenes by photons with the energies of about 80-190eV [1]. Calculations strongly overestimated the experimental data. This is a manifestation of very low probability of photoionization without an inelastic process in the fullerenes shell (FS) at relatively high photon energies [2]. We demonstrate that photoionization of the caged atom without excitation of FS has a low probability also at intermediate and low photon energies. Very important consequence of this results is that description of interaction of the photoelectron with the FS by a simple effective potential is not justified even at energies of several dozens of eV. The large role of the inelastic processes prompts that it should be rather an optical potential, similar to that employed in nuclear physics.

[1]. R. A. Phaneuf, A. L. D. Kilcoyne, N. B. Aryal et al, Rhys. Rev. A **88**, 053402 (2013).
[2] M. Ya. Amusia and E. G. Drukarev, Phys. Rev. A **89**, 013412 (2014).

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