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Impact of nondipole effects on spin-polarization of photoelectrons from fullerene anions A. EDWARDS, C. LANE, V. DOLMATOV, University of North Alabama — The present work provides the initial insight into the impact of a nondipole part of low-photon-energy photodetachment on the degree of spin-polarization (SP) of photoelectrons from fullerene anions C_N^-. This problem is interesting. A fullerene anion has a much bigger size than that of a free atom, and a C_N cage is a resonator to the outgoing photoelectron wave. All this might increase significantly the impact of nondipole effects on the degree of photoelectron's SP from C_N^-s. The study focuses on the impact of an electric dipole-quadrupole (E1-E2) part of photodetachment on the degree of photoelectron's SP from C_N^-s with progressively increasing sizes: $N = 60$, 240, 540, and 1500. The focus is on a very low, only few-tens-eV photon-energy domain. Different photoelectron angular- and spin-geometries are considered. Calculations are performed in a model approximation, where a C_N cage is modeled by a spherical-well potential. It is demonstrated that the contribution of E1-E2 effects to the the degree of photoelectron's SP from C_N^-s can be on the order of 10%, at certain energies. Importantly, this is found to occur at only few-tens-eV-photon-energy, in contrast to hundreds-eV-photon-energy in the case of atoms.

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