Abstract Submitted
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Long-lived metastable anions in fullerene molecules.[1] ALFRED MSEZANE, ZINEB FELFLI, Clark Atlanta University — The Regge pole method is benchmarked on the measured electron affinities of C_{60}, C_{70}, C_{76}, C_{82} and C_{92} through the calculated electron elastic scattering total cross sections in the electron energy range $0.02 \leq E \leq 10.0$ eV. The method is then used to explore core-polarization induced long-lived metastable negative ions formation as resonances in these fullerenes. Indeed, the calculated total elastic cross sections for these fullerenes have been found to behave very much like those of their ground states. They are characterized generally by Ramsauer-Townsend (R-T) minima, shape resonances and dramatically sharp resonances manifesting long-lived metastable negative ion formation at 1.86 eV, 1.77 eV, 2.20 eV, 1.72 eV and 2.35 eV for C_{60}, C_{70}, C_{76}, $C_{82}$and C_{92}, respectively. These core polarization-induced long-lived metastable cross sections, with their second R-T minima and resonance positions close to those of their respective ground states, demonstrate the importance of identifying and delineating the resonance structures in low-energy electron scattering from fullerenes in general.

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