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Enhanced nuclear dipole polarizability and continuity of shell effects in the quasi-continuum of medium-mass nuclei

Assuming the validity of the Brink-Axel hypothesis, the puzzling low-energy enhancement or up-bend in the photon-strength function of medium-mass nuclides with $A \approx 50$ contributes to a substantial induction of the nuclear dipole polarizability in the quasi-continuum region. Revealing shell effects are manifested by drops of polarizability in the ground states of semi-magic nuclei with $N = 50, 82$ and 128 . Similar drops in the up-bend contribution at $N = 28$ may reflect the continuing influence of shell closures below the nucleon separation energy. The low-energy enhancement for the available heavy nuclei presents, however, a negligible contribution to the nuclear polarizability.

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