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Particle-hole dispersive optical model for open-shell nuclei. Implementations for describing 0^+ giant resonances in tin isotopes

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The semi-microscopic particle-hole dispersive optical model (PHDOM), in which main relaxation modes of high-energy particle-hole-type nuclear excitations are together taken into account [1], has been implemented for describing various giant resonances in medium-heavy closed-shell nuclei (see, e.g., Refs. [2,3]).
A lot of experimental data concerned with giant resonances in medium-heavy open-shell spherical nuclei makes reasonable an extension of PHDOM for taking nucleon pairing into account. In the present work, an extended PHDOM version is developed in a "high-energy limit"employing the simplest BCS-model.
The proposed version is implemented for describing main properties of Isoscalar Giant Monopole Resonance (ISGMR) and Isobaric Analog Resonance (IAR) in a number of tin isotopes.
From studies of ISGMR in a chain of tin isotopes one gets information about isotopic dependence of nuclear-matter incompressibility coefficient (see, e.g., Ref. [4]).
Existence and properties of IAR are closely related to the isospin and symmetry in nuclei. Using previous studies of ISGMR [2], IAR and its overtone [3] as a base, we employ the extended PHDOM version for describing strength function, projected transition density, probabilities of direct one-nucleon decay of ISGMR, and main relaxation parameters of IAR (partial proton and spreading widths, resonance-mixing phase).
The obtained results are compared with respective experimental data related to ISGMR (Ref. [4] and references therein) and IAR [5].
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