Overtones of Isoscalar Giant Resonances in Medium-Heavy and Heavy Nuclei

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Abstract

A semi-microscopic approach based on both the continuum-random-phase-approximation (CRPA) method and a phenomenological treatment of the spreading effect is extended and applied to describe the main properties (particle-hole strength distribution, energy-dependent transition density, partial direct-nucleon-decay branching ratios) of the isoscalar giant dipole, second monopole, and second quadrupole resonances. Abilities of the approach are checked by description of gross properties of the main-tone resonances. Calculation results obtained for the resonances in a few singly- and doubly-closed-shell nuclei are compared with available experimental data. 24.30.Cz, 21.60.Jz, 23.50.+z