DAMPING OF SIMPLE MODES OF HIGH-ENERGY NUCLEAR EXCITATIONS: DISPERSIVE OPTICAL MODELS AND THEIR IMPLEMENTATIONS

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A brief description of the recently developed particle-hole dispersive optical model (PHDOM) [1] is presented. Being a semi-microscopic model, the PHDOM is an extension of the standard and non-standard versions of the continuum-RPA on taking the spreading effect into account. The latter is described phenomenologically and in average over the energy in terms of the imaginary part of an effective optical-model potential, which contains also the spreading real part determined by a proper dispersive relationship. The unique features of the PHDOM are its abilities to describe direct-nucleon-decay properties of (p-h)-type states and the energy-averaged double transition density of these states at arbitrary (but high-enough) excitation energies, including giant resonances. Implementations of the PHDOM to the description of simplest photonuclear reactions [2] and of the isoscalar monopole double transition density [3] are demonstrated. The description of damping of deep-hole states within the single-quasiparticle dispersive optical model is also presented. The use of optical-model Green functions allows one to describe the single-hole strength functions at arbitrary (but high-enough) excitation energy [4].

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