ON PROPERTIES OF HIGH-ENERGY ISOSCALAR MONOPOLE (p-h)-TYPE EXCITATIONS IN MEDIUM-HEAVY MASS SPHERICAL NUCLEI

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Continuing interest in experimental and theoretical studies of high-energy isoscalar monopole (ISM) (*p-h*)-type excitations in medium-heavy mass nuclei is due to the possibility of extracting information concerning the nuclear matter incompressibility coefficient. The strength distribution, corresponding to the external field r^2Y_{00}, directly determines the incompressibility modulus. To deduce this strength from experimental (α, α')-reaction cross sections, it is usually assumed that the ISM strength is concentrated in a vicinity of the ISM giant resonance (ISGMR) and the properly normalized collective model transition density of the ISGMR can be used in the analysis of experimental data (see, e.g. Ref. [1]). However, due to Landau damping the radial dependence of the (semi)microscopic transition density is changed with increasing of the excitation energy from the ISGMR to its overtone.

In the present work we use the (*p-h*) dispersive optical model developed recently to describe in a semi-microscopic way, and in average over the energy, the main properties of high-energy (*p-h*)-type nuclear excitations [2]. Within the model the main relaxation modes of these excitations (Landau-damping, coupling with the single-particle continuum, the spreading effect) are commonly taken into account. Using this model, we evaluate the energy-averaged ISM double transition density (i.e., the product of transition densities taken at different points). Being doubly convoluted with an external ISM external field, the double transition density determines the corresponding energy-averaged strength function. We hope that the suggested approach can be exploited in description of the corresponding experimental data with the use of the method developed in Ref. [3].

This work is partially supported by RFBR (grant No. 12-02-01303-a) and by Special NRNU MEPhI Program (section 2.3).

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