

Phonon-exchange nuclear interactions in the theory of nuclear polarizability.

! [Fig. 1 Phonon-exchange interactions between nucleons. The rectangle means the effective interaction F of Landau-Migdal. Straight and wavy lines correspond to single-particle and phonon Green functions, circles with a wavy line stand for the amplitude of phonon production g .] [1]

The phonon-exchange nuclear interactions (see Fig.1) are investigated and compared to the effective interaction F of Landau-Migdal. They have been obtained in order to consistently take into account the phonon coupling in the equation for the effective field, which determines nuclear polarizability. This generalization of the self-consistent theory of finite Fermi systems considers only complex $1p1h$ phonon configurations. The interactions shown in Fig.1 contain the interaction F and square of the phonon creation amplitude g . They have very similar structures and, at the first sight, they should be comparable to each other. Since 1983 [1], the first graph has been always considered within the Green function method in the known "time blocking approximation" [2] including the latest articles (for example, see [3]). The other graphs are new. The contributions of these phonon-exchange nuclear interactions to the characteristics of M1 resonance in ^{208}Pb are estimated.

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