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Tensor force in effective shell model interaction NAOFUMI TSUNODA, TAKAHARU OTSUKA, KOSHIRO TSUKIYAMA, The University of Tokyo
— Tensor force interaction in effective shell model interaction is investigated. It has been known in recent years that tensor force causes important effect on the structure of exotic nuclei, for example, neutron rich nuclei. Monopole part of the tensor force varies the effective single particle energy in the shell model calculation. In early studies on this subject, the tensor force in the shell model interaction has been taken, as a modeling, to be the bare NN potential generated by $\pi + \rho$ meson exchange potential. We propose a justification of this modeling by presenting the behavior of the tensor force in the effective interaction obtained from microscopic theory. We obtain effective interactions for shell model calculation in two steps. We first integrate out the high momentum part and obtain potential called V_{lowk} defined in low momentum. With this potential, we then perform folded-diagram expansion which includes the effect caused by the truncation to a small model space, for example, the effect of the core-polarization. After obtaining an effective shell model interaction by such a microscopic theory, we decompose it to central, spin-orbit and tensor parts and analyze the basic robust properties of the tensor part. This study will suggest which tensor force should be appropriate for the calculations of nuclear structure.

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