



The asymmetric nuclear matter correlated states in the LOCV framework

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Abstract

The nucleon-nucleon correlations of asymmetric nuclear matter (ASM) in the 3S_1 - 3D_1 and the 3P_2 - 3F_2 states with the AV18 and the AV χ 6 potentials are studied in the lowest order constrained variational (LOCV) method. In these computations, the tensor (or the spin-orbit) correlations are considered in the 3S_1 - 3D_1 (3P_2 - 3F_2) state. The energy, as well as the healing distance of the ASM in the mentioned states, are reported. It is demonstrated that by decreasing the proton to neutron ratio, the non-central correlations (healing distances) of the coupled states grow. It is shown that the ASM non-central correlations and energies in the 3P_2 - 3F_2 state are more sensitive to the interaction than those of 3S_1 - 3D_1 state.

Keywords: nucleon-nucleon correlation, coupled states, asymmetric nuclear matter, LOCV

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