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Scalar-isovector channel of the nucleon-nucleon interaction in the RMF theory and massive compact stars

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We discuss the role of scalar-isovector channel of nucleon-nucleon interaction in the framework of RMF theory to describe the equation of state of neutron star matter. It is shown that taking into account of this channel of interaction leads to a more stiff equation of state of hadronic component and, consequently, to an increase in the maximum mass of a compact star. Influence of scalar-isovector channel of interaction on the parameters of the quark-hadron phase transition is also studied. The integral parameters of the hybrid star are compared to each other with and without considering this type of interaction. The results obtained for the maximum mass of compact stars are compared to the values of the mass of recently observed massive neutron stars.

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