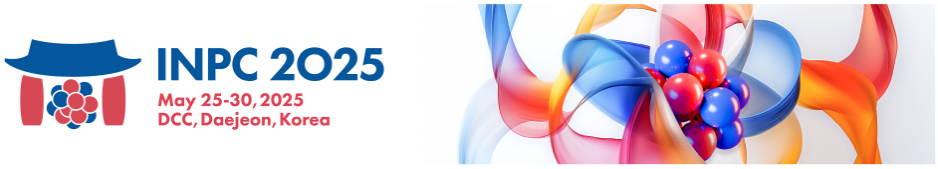

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Study of Effective mass of nucleons for Neutron star's maximum mass

The maximum mass of neutron stars and the central baryonic density corresponding to this maximum are investigated within the relativistic mean field framework. The need for new equations of state (EoS) and theoretical frameworks to describe dense matter physics is requested by recent observations of massive neutron stars (M > 2M_sun). Until recently, Observational data from GW170817 and NICER have often been incorporated to constrain nuclear interaction parameters, specifically the symmetry energy coefficient (J) and its slope (L). However, the role of the nucleon effective mass in determining the maximum mass has not been systematically explored. In this study, we demonstrate that the effective mass is one of the most critical factors in determining the maximum mass of neutron stars. Furthermore, the relative value of the central baryonic density is found to be constrained by the effective mass, which is likey linked to the validity of effective theories.

Consent

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