

## Investigating Sexaquark as a candidate for dark matter constraining the parameters of nLNJL model when Bayesian analysis of neutron stars mass and radius is performed.

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A stable sexaquark state with quark content (uuddss) is investigated as a candidate for dark matter in the core of neutron star. We find that there is a “sexaquark dilemma” (analogous to the hyperon dilemma) for which the dissociation of the sexaquark in quark matter is a viable solution fulfilling all present constraints from multi-messenger astronomy. Furthermore, the mass of sexaquark is constrained using a generalized relativistic mean-field approach called DD2Y for describing hadronic matter in the core of neutron star. The parameters of the covariant nonlocal Nambu–Jona-Lasinio (nLNJL) model which describes the color superconducting quark matter phase, are provided by a systematic Bayesian analysis of hybrid neutron star equations of state (EoS). We find the squared speed of sound at high densities to be about 0.5 for the optimized parameters.

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