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# Vector-interaction-enhanced bag model

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For studies of quark matter in astrophysical scenarios the thermodynamic bag model (tdBag) is commonly employed. This model approximates the effect of quark confinement, but it lacks other important properties of Quantum Chromodynamics. The vector-interaction-enhanced bag model (vBAG) improves the tdBAG approach by taking into account dynamical chiral symmetry breaking and repulsive vector interactions. The latter is of particular importance to studies of dense matter in beta-equilibrium in order to explain the 2 solar mass maximum mass constraint for neutron stars. Another particular feature of vBag is the determination of the deconfinement bag constant (Bdc) from a given hadronic equation of state (EoS) in order to ensure that chiral and deconfinement transitions coincide. The model can be derived from the QCD based framework of Dyson-Schwinger equations by assuming a simple quark-quark contact interaction. This work will focus on the resulting neutron star equations of state.

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