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Vector-interaction-enhanced bag model

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For quark matter studies in astrophysics the thermodynamic bag model (tdBag) has been widely used. It approximates the effect of quark confinement, but does not explicitly account for the breaking of chiral symmetry, an important property of Quantum Chromodynamics (QCD). It also doesn't account for repulsive vector interaction necessary for astrophysical studies. vBag extends the tdBag approach by considering both dynamical chiral symmetry breaking and vector interactions. In this talk the impact of this novel approach on the QCD phase diagram and protoneutron star equation of state will be discussed as well as a finite temperature extension of the model for use in core-collapse supernova simulations.

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