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Baryon-quark phase transition in rotating hybrid stars

In this work, we study the behavior of nuclear matter at high densities considering the hadronic and quark phases at zero temperature. We describe the hadron-meson phase using a phenomenological Lagrangian, which exhibits a parametrization, through mathematical constants, of the intensity of the several meson-nucleon couplings. We have included in the formalism the chemical equilibrium equations, lepton degrees of freedom, the fundamental octet of baryons degrees of freedom, and the charge neutrality conditions. In the quark matter study, we have considered the classic MIT bag model with a constant bag pressure. Phase transition is determined by the Gibbs criteria. The influence of the model couplings in the determination of the phase transition density is discussed. We have also calculated maximum mass and radius for rotating hybrid stars. Star rotation is implemented via the Lorene Code.

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