

Abstract Submitted
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Quarkyonic Matter Equation of State in Beta-equilibrium.

TIANQI ZHAO, stony brook university — Quarkyonic matter as a crossover transition from uniform nuclear matter to asymptotic free quark sea could exist in the core of neutron star. Baryons in this model are viewed as triple pair of quarks at Fermi surface. We build quarkyonic matter equation of state consists of with realistic asymmetric nuclear matter, 2-flavor quarks and leptons. We discover that quarkyonic matter has higher lepton fraction(Y_e) than uniform nuclear matter(npeu) under beta-equilibrium. As a consequence, direct Urca process is allowed around 2 to 4 times saturation density.

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