Abstract Submitted
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Thermodynamics of Neutron Stars ROBERT GEDIES, R.M. SATISH, SAMINA MASOOD, University of Houston Clear Lake — We examine finite temperature and density (FTD) effects and corrections to the Thomas-Fermi model; also examined are the non-linear models of Boguta-Bodmer (BB) and Walecka coupled with the general relativistic Tolman-Oppenheimer-Volkoff (TOV) equations of state (EOS). The coupling of these equations of state with the BB and Walecka models helps to analyze the thermodynamic properties of the neutron star system. In the Thomas-Fermi model, the introduction of finite temperature plasma effects (i.e. Coulomb effect) invites FTD corrections. In both the BB and Walecka model, the Baryon octet and 2 different forms of lepton inclusion are included into the corresponding lagrangian density. The BB model includes various leptonic degrees of freedom; while the Walecka model includes the assumption of an ideal Fermi gas of electrons and negatively charged muons. Together with FTD corrections and use of the Sommerfeld approximation, we will get a deeper knowledge of neutron star composition and its thermodynamic properties can be achieved.

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