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Density Dependent B-parameter model of Compact object with Strange Quark Matter

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A class of relativistic solutions for compact cold objects with strange quark matter in a pseudo-spheroidal space-time is presented here. Considering strange matter equation of state namely, $p = \frac{1}{3}(\rho - 4B)$, where ρ, p and B are energy density, pressure and MIT Bag parameter respectively, stellar models are obtained. Stellar models are explored where the Bag parameter varies with the energy density (ρ) inside the compact object in presence of anisotropy with a pseudo-spheroidal geometry described by Vaidya-Tikekar metric. The density dependence of B for different anisotropy including isotropic case is determined here. It is noted that although B varies with anisotropy inside the star, finally at the surface it attains a value which is independent of the anisotropy. The Bag parameter B is found to increase with an increase in anisotropy for a given compactness factor (M/b) and spheroidicity parameter (λ). It is also noted that for a star with given mass (M) and radius (b), the parameter B increases with the increase of λ and finally at large value of λ it attains a constant value. We note that in this model equation of state (EoS) obtained from geometrical consideration with allowable value of 'B' is similar to that obtained by earlier investigators from consideration of microphysics. The stability of the stellar models for compact objects with anisotropy in hydro-static equilibrium is also studied.

Secondary track (number)

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