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Dependence of maximum mass on finite strange quark mass of anisotropic strange quark star in Finch-Skea geometry

A class of relativistic compact objects is analysed in modified Finch-Skea geometry described by modified MIT bag model equation of state of the interior matter. The bag constant B plays an important role in determining the physical features of strange star. In this work we have considered the effect of finite strange quark ($m_s \neq 0$) on the stability of quark matter inside a star. We have noted that inclusion of strange quark mass affects the gross properties of stellar configuration such as maximum mass, compactness, surface red-shift, radius of strange quark stars. We have considered three compact objects which are supposed to be strange stars namely (i) 4U 1820-30 (ii) VELA X-1 and (iii) PSR J 1903+327 for physical application. It is noted that the range of B is restricted from 57.55 to $B_{max} (MeV/fm^3)$ for which strange matter might be stable relative to iron (^{56}Fe). However, we have also observed that the metastable and unstable strange matter depends on B and m_s . All energy conditions held well in this approach. Stability in terms of TOV equation, Herrera cracking condition, adiabatic index and Lagrangian perturbation of radial pressure are studied in this paper.

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