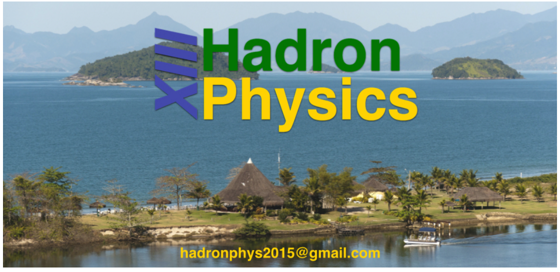

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Electrically charged strange quark stars: equilibrium and stability

We investigate the hydrostatic equilibrium configuration and the stability versus radial perturbation of electrically charged strange quark stars composed by a charged perfect fluid. We consider that the pressure of the fluid is computed from the MIT bag model equation of state and the charge distribution from a power-law function of the radial coordinate. These studies are possible through the numerical solutions of the hydrostatic equilibrium equation (Tolman-Oppenheimer-Volkoff equation) and the Chandrasekhar's equation pulsation, both equations are modified of their original versions for the inclusion of the electric charge. We consider only electrical charge values that affects appreciably the star structure, which implies an electric field around $10^{20}[\mathrm{V/cm}]$. Compared to the radial pressure, the electrical energy density associated to this electric field is appreciable near the surface of the star. We found that for some range of parameters the electric charge helps to grow the stability of the objects under study. We determine that the zero frequency of oscillation is found in a central energy density larger than the one considered to obtain the maximum mass reached for the charged strange star.

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