Neutron Star Structure in a Nonlinear Realization of Chiral SU(3) Spontaneous Breaking Model

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Abstract: We investigate neutron star properties by constructing a chiral SU(3) spontaneous breaking Lagrangian and using relativistic mean-field approximation. The results show that π^{-} condensate appears at some baryon densities, and hyperons Σ^{-} and Λ exist in neutron star matter at high density. In this model, neutron star's maximum mass is $1.12M_s$ with corresponding radius about 8 km.

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