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Study on the properties of a proto-neutron star with SU(6) symmetry

It is of great importance to study the properties of a proto-neutron star (PNS) because of its complex evolution into a cold NS. Under the framework of relativistic mean field theory, the repulsion and attraction between hyperons and hyperons are considered simultaneously. In addition, the hyperon-meson couplings satisfy SU(6) symmetry. By considering entropy, temperature and neutrino, respectively, we investigate the properties of a PNS, and find that compared with entropy and temperature, neutrino has more obvious influence on the star's mass. In fact, the proportion and interaction force of hyperons in different cases are different, which ultimately leads to different equations of state and properties of the star. The gravitational redshifts of PNSs in different cases are also presented.

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