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# Hadron-Quark phase transition in low mass neutron stars in a Modified Quark Meson Coupling model

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**Abstract:** The hadron-quark phase transition is studied in the interior of low mass neutron stars. Such a neutron star is considered here as a hybrid star with neutron matter and quark matter. The EOS for the neutron matter has been considered by using a modified quark meson coupling (MQMC) model. In MQMC model we realize the hadrons as a composite of quarks confined by a phenomenological average potential of equal scalar and vector parts. The nucleon nucleon interactions are realized by taking into consideration the exchange of isoscalar-scalar $\sigma$, isoscalar-vector $\omega$ and isovector-vector $\rho$ mesons.To study the phase transition from hadron matter to quark matter we consider the quark matter EOS as derived by Kapusta and have restricted the quark degrees of freedom only to u and d quarks in SU(2) level and with electrons to take care of charge neutrality for hadronic matter. In order to notice the phase transition from hadronic matter to quark matter we have considered the variation of Pressure with chemical potential. It has been observed that at a chemical potential of 1121 MeV and density of 0.25 $fm^{-3}$ there is a phase transition from hadron to quark matter. For neutron-quark hybrid star, TOV equations are solved using the EOS for quark matter and neutron matter. We observe a star mass of 1.46 $M_o$ with a radius of 10.34 km.

**Keywords:** Neutron stars, hadron-quark phase transition, MQMC model.

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