

## **Astrophysics of strange matter**

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The search for strange matter and consequences of hadron-quark phase transition in the astrophysical scenario have been a subject of interest for a long time. On the one hand, the compact objects like neutron stars, due to very high density inside their core, are expected to undergo a phase transition to quark phase. On the other hand, universe itself is supposed to have undergone a quark to hadron phase transition few micro second after the big bang. Here we will discuss the possible mechanisms of phase transition including the effect of general theory of relativity and the consequences of such a phase transition. Specifically, the transition inside neutron stars can give rise to huge amount of energy in the form of neutrino which subsequently deposit these energy in the form electron-positron pair. The annihilation of these electron-positron pair may explain the phenomena of Gamma ray bursts, The beaming observed in GRBs may also be explained.

We will also discuss the early universe QCD phase transition and show that one can explain the dark matter and dark energy within the same framework.