



Contribution ID: 5

Type: not specified

Equation of State table with exotic matter for supernova and neutron star merger

Wednesday, September 29, 2021 4:05 PM (35 minutes)

We develop a new equation of state (EoS) table involving thermal (anti)kaons, Bose-Einstein condensate of K^- mesons and Λ -hyperons for core-collapse supernova and neutron star merger simulations. This EoS table is based on a finite temperature density-dependent relativistic hadron field theory where baryon-baryon interaction is mediated by scalar σ , vector ω and ρ mesons, using the parameter set DD2 for nucleons. The repulsive hyperon-hyperon interaction is mediated by an additional strange ϕ meson. The EoS for the K^- condensed matter is also calculated within the framework of relativistic mean field model, whereas the low-density, inhomogeneous matter is calculated in the extended Nuclear Statistical Equilibrium model (NSE). The EoS table is generated for a wide range of values of three parameters - baryon density (10^{-12} to $\sim 1 \text{ fm}^{-3}$), positive charge fraction (0.01 to 0.60) and temperature (0.1 to 158.48 MeV).

Primary author: BANIK, SARMISTHA (Birla Institute of Technology and Sciences)

Presenter: BANIK, SARMISTHA (Birla Institute of Technology and Sciences)