Contribution ID: **17** Type: **not specified**

Equation of State and composition of compact stars with hyperons and Delta-resonances: Three-dimensional tables

The equation of state (EoS) and composition of Δ-resonance admixed hypernuclear, neutrino-trapped matter is studied over a wide range of baryon densities, temperatures and electron fractions, covering the characteristic conditions encountered in neutron star binary merger remnants and supernovas.We adopt the covariant density functional (CDF) formalism, adjusting it appropriately to include the full $J^P = 1/2^+$ baryon octet as well as the non-strange members of $J^P = 3/2^+$ decuplet. The density-dependent coupling parameters have been selected according to the existing laboratory and astrophysical data. The emergence of Δ-resonances at finite temperatures is found to result in a softer EoS of hypernuclear matter at intermediate densities and a stiffer one at high densities. Moreover, at higher temperatures the softening effect due to the hyperons and Δ particles becomes more distinct. An additional consequence of increased temperature is that for all the particles of the baryon octet and the non-strange resonances included in our models, their respective onset baryon density decreases. Finally, it is noteworthy that the presence of hyperons and Δ-resonances at temperatures associated to supernovas and binary neutron star merger events could be capable of leaving a traceable implication on the neutrino signal emitted during these astrophysical phenomena.

Primary author: TSIOPELAS, Stefanos (University of Wrocław)

Co-author: Prof. SEDRAKIAN, Armen (University of Wrocław, Frankfurt Institute for Advanced Studies)

Presenter: TSIOPELAS, Stefanos (University of Wrocław)

Session Classification: Poster flash talks