ID de Contribution: **295** Type: **Poster**

Effect of strangeness on the Neutron star f-mode Oscillations in general relativistic calculations

mardi 4 juin 2024 19:08 (1 minute)

We study quasinormal $f-$mode oscillations in neutron star(NS) interiors within the linearized General Relativistic formalism. We utilize approximately 9000 nuclear Equations of State (EOS) using spectral representation techniques, incorporating constraints on nuclear saturation properties, chiral Effective Field Theory(χEFT) for pure neutron matter, and perturbative Quantum Chromodynamics (pQCD) for densities pertinent to NS cores. Our study reveals a weak correlation between f-mode frequencies and individual nuclear saturation properties, but a robust linear relationship between the radii and $f-$mode frequencies with extreme masses ($1.34M_\odot$ and $2.0M_\odot$). However, for different masses on the NICER data, it has minimal overlap in the radius domain and differs in the frequency domain with our nucleonic EOS set. Interestingly, the same analysis corresponding a set of EOS with hadron-quark phase transition lie very well within our NICER-derived constraints in the radius as well as the $f-$mode frequency domain, indicating a preference of strange hybrid EOS over the purely nucleonic ones for the first time.

Auteurs principaux: M. GUHA ROY, Debanjan (BITS Pilani); BANIK, Sarmistha (BITS Pilani); Dr MALIK, Tuhin (CFisUC, Department of Physics, University of Coimbra)

Orateur: BANIK, Sarmistha (BITS Pilani)

Classification de Session: Posters

Classification de thématique: Strangeness in Astrophysics, Other topics