National Institute of Technology Rourkela

Progress Seminar

Seminar Title	: Studying Non-Radial Oscillations in Neutron Stars with Δ-Baryons and σ-cut Scheme
Speaker	: Probit Jyoti Kalita (Rollno : 522ph1008)
Supervisor	: Dr. Bharat Kumar
Venue	: MC126
Date and Time	: 12 Feb 2025 (4:00 PM)
Abstract	: Neutron stars are compact objects formed from massive star remnants after a core-collapse supernova and are composed of extremely dense nuclear matter. This dense matter is not well understood and makes neutron stars a rare probe into the low temperature, high density region of the QCD phase diagram. We delve into the intricate physics of neutron stars, focusing on their internal structure, particle composition, and the equation of state (EoS) that governs their properties. Utilizing the Relativistic Mean Field (RMF) theory, we explore the impact of exotic particles, such as hyperons and delta baryons, on the EoS and the resulting macroscopic properties of neutron stars. We also examine the effects of the &sigma-cut scheme on stiffening the EoS at high densities. Through detailed analysis, our results provide insights into neutron star oscillations, tidal deformability in binary systems, and thermal evolution, contributing to a deeper understanding of dense nuclear matter.