ICTS Astrophysics & Relativity Seminar

Title : Study of Phase Transition in Dynamical Systems of Neutron Stars

Speaker : Shamim Haque (IISER Bhopal, Madhya Pradesh)

Date : Thursday , 09 July 2026

Time : 3:30 PM (IST)

Abstract : Neutron stars gain pressing priority when it comes to understanding the behaviour of matter at high density and low temperatures. The merging events of these compact objects further unbox the matter in their cores. In these contexts, we will discuss two major questions. - Is there a favoured twin in the family? It is unclear which of the twin star solutions, arising from the hadron-to-quark phase transition, is favoured; i.e, which of the two configurations is expected to be found in nature. With general-relativistic simulations, we evaluate the response of twins to perturbations. - Can merger remnants sing of their phase transitions? From numerical relativity simulations, we present possible imprints in the GW signal arising from the nature of the phase transition in merger events. Post-merger GW emissions reveal specific signatures in the spectrogram and power spectral density, serving as a distinct signature of equations of state with mixed phases.

Venue : Feynman Lecture Hall
Zoom Meeting: https://icts-res-in.zoom.us/j/94677844084?pwd=VZ70gh58fIitaPxegBFO5indzb2jfI.1
Meeting ID: 946 7784 4084
Passcode: 090908