ICTS Astrophysics & Relativity Seminar

Title : Perturbing the perturbed: Stability of the QNMs for asymptotically de Sitter black holes

Speaker : Sumanta Chakraborty (Indian Association for the Cultivation of Science, Kolkata)

Date : Monday, 27th May 2024

Time : 3:00 PM (IST)

Abstract : In this talk, I wish to address the question -- whether the quasi-normal modes, the characteristic frequencies associated with perturbed black hole spacetimes, central to the stability of these black holes, are themselves stable? For this purpose, I will provide a general method of transforming to the hyperboloidal coordinate system, for both asymptotically flat and asymptotically de Sitter spacetimes, which neatly captures the dissipative boundary conditions, and the differential operator becomes non-self-adjoint. Employing the pseudo-spectrum analysis and numerically implementing the same through Chebyshev's spectral method, we present how the quasi-normal modes will drift away from their unperturbed values under external perturbation of the scattering potential. We also discuss the implications of the instability of the fundamental quasi-normal mode on the strong cosmic censorship conjecture.

Venue : Emmy Noether Seminar Room

Zoom link: https://icts-res-in.zoom.us/j/99092547925?pwd=OXBId0ZtMGJRci9PS2lvbGIzYTFNdz09
Meeting ID: 990 9254 7925
Passcode: 232324