ICTS String Seminar (HYBRID)

Title : Theory dependence of black hole interior reconstruction and improved strong subadditivity.

Speaker : Roji Pius (The Institute of Mathematical Sciences, Chennai)

Date : Monday, 14ᵗʰ August, 2023

Time : 03:00 PM (IST)

Abstract : An AdS eternal black hole in equilibrium with a finite temperature bath presents a Hawking-like information paradox due to a continuous exchange of radiation with the bath. The non-perturbative gravitational effect, the replica wormholes, cures this paradox by introducing a non-trivial entanglement wedge for the bath after Page time. In this talk, we will discuss the theory dependence of this non-perturbative effect by randomising the boundary conditions of some of the bulk matter fields. We explicitly analyse this in JT gravity by introducing a matter CFT with random boundary conditions drawn from a distribution. Using the island formula and the improved strong subadditivity due to Carlen and Lieb, we show that at late times the entanglement wedge of the random boundary conditions contains the black hole interior. Consequently, the reconstruction of the region near the singularity of a black hole from radiation requires detailed knowledge of the theory.

Venue : **Offline:** Madhava Lecture Hall (ICTS)

Online: Please click the below link to join the seminar

https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09