



ICTS String Seminar (HYBRID)

Title : Microscopic origin of the entropy of black holes in general relativity

Speaker : Vijay Balasubramaniam (University of Pennsylvania)

Date : Wednesday, 3rd May, 2023

Time : 03:00 pm (IST)

Abstract : I will construct an infinite family of microstates with geometric interiors for eternal black holes in general relativity with negative or vanishing cosmological constant in any dimension. Wormholes in the Euclidean path integral for gravity cause these states to have small, but non-zero, quantum mechanical overlaps that have a universal form. The overlaps have a dramatic consequence: the microstates span a Hilbert space of log dimension equal to the Bekenstein-Hawking entropy. The semiclassical microstates we construct contain Einstein-Rosen bridges of arbitrary size behind their horizons. Our results imply that all these bridges can be interpreted as quantum superpositions of wormholes of size at most exponential in the entropy.

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>

Meeting ID: 880 9276 6911

Passcode: 232322