ICTS String Seminar (HYBRID)

Title : Quantum Corrections to near-extremal black hole thermodynamics

Speaker : Muktajyoti Saha (IISER Bhopal)

Date : Wednesday, 16th August, 2023

Time : 03:00 PM (IST)

Abstract : We consider a spherically symmetric near-extremal black hole in 4D Einstein-Maxwell theory, which is a very small temperature deviation of an extremal black hole. In such low temperatures, the quantum corrections become large enough to cause a breakdown of semi-classical physics. These result in logarithm of temperature corrections in thermodynamic entropy, which was computed from an effective lower dimensional description. Presence of these corrections gives a smooth density of states near extremality. We compute these corrections from the one-loop contribution to 4D Euclidean path integral on the near-horizon region of near-extremal background. To compute the one-loop determinant, we invoke first-order perturbation theory, exploiting the enhanced symmetries of the near-horizon region of an extremal black hole. We also discuss a heat kernel approach to compute these corrections.

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