# ICTS String Seminar

**Title** : Quantum Fields on Maximal Slices

**Speaker** : Anurag Kaushal (ICTS-TIFR, Bengaluru)

**Date** : Monday, 17 March 2025

**Time** : 2:30 PM (IST)

**Abstract** : We study the semi-classical dynamics of a scalar field in the background of a black hole in asymptotically AdS spacetime, in the Hamiltonian formulation of GR. The small diffeomorphisms generated by Hamiltonian and momentum constraints are completely fixed by the maximal slicing and Dirac gauge conditions. Focusing on d=2, we present the explicit solution for smooth maximal slicing of the fully extended BTZ black hole where the spatial slices cut across the horizons and asymptote to the usual Schwarzschild slices. We solve the scalar field wave equation in this gauge in terms of its boundary values which correspond to boundary CFT operators. We explicitly construct the time-dependent Hamiltonian in terms of a discrete set of mode functions that are smooth across the horizons of the BTZ black hole. This Hamiltonian is an operator in the product of the two boundary CFTs and describes the time evolution of CFT operators.

**Venue** : Chern Lecture Hall
Zoom Link: https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09
Meeting ID: 880 9276 6911
Passcode: 232322