



ICTS String Seminar (HYBRID)

Title : Canonical Purification, Bulk reconstruction and the Quantum extremal shock

Speaker : Onkar Parrikar (TIFR Mumbai)

Date : Wednesday 29th March, 2023

Time : 04:00 pm (IST)

Abstract : We will discuss the canonical purification (with respect to one of the parties) of pure, bi-partite states obtained by turning on sources in the Euclidean path integral. In holographic conformal field theories, the Lorentzian bulk dual of the canonical purification consists of the corresponding entanglement wedge glued to its CPT image at the quantum extremal surface. However, the mismatch in the classical expansions at the QES due to quantum corrections needs to be supported by a shock in the bulk matter stress tensor in order for the bulk to satisfy Einstein's equations. Working perturbatively to first order in double-trace sources around the thermofield double state, we will demonstrate that the state of the bulk matter in the dual to the canonically purified boundary CFT state precisely has this quantum extremal shock in the bulk stress tensor. Along the way, we will discuss applications of these results to entanglement wedge reconstruction beyond HKLL.

Venue : **Offline:** Emmy Noether Seminar Room (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