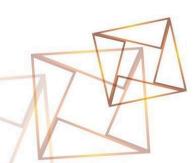
TATA INSTITUTE OF FUNDAMENTAL RESEARCH



## **ICTS Thesis Defense Seminar**

**Title**: Holographic Fluctuations at Finite Density

**Speaker**: Shivam Kumar Sharma (ICTS-TIFR, Bengaluru)

Date: Friday, 28 November 2025

**Time** : 10:00 AM (IST)

**Abstract**: Understanding fluctuations in strongly coupled, finite-density systems poses a significant

challenge. The AdS/CFT correspondence offers a robust framework for exploring these systems via their gravitational duals. In this talk, I will present recent advancements in constructing an open Effective Field Theory (EFT) for probes interacting with finite-density holographic systems. I will also explore the deep connection between Hawking fluctuations and quasinormal mode dissipation, as captured by fluctuation-dissipation relations (FDRs). Notably, we have derived non-linear FDRs at finite density—results that are challenging to obtain through other methods—providing

new insights into the dynamics of strongly coupled systems.

**Venue**: Chern Lecture Hall

Zoom link: https://icts-res-in.zoom.us/j/98256293097?pwd=ZsMeFZqCgg1keCQlQ0k4olCRKjwXvt.1

Meeting ID: 982 5629 3097

Passcode: 202010