



ICTS Synopsis Seminar

Title : Open quantum mechanics for cosmological observers

Speaker : Omkar Sanjay Shetye (ICTS-TIFR, Bengaluru)

Date : Thursday, 27 March 2025

Time : 4:00 PM (IST)

Abstract : In this talk, I will present a novel geometric method to obtain the open system dynamics of a localised observer in de Sitter spacetime. This dynamics is encoded in a Schwinger-Keldysh effective action that describes the observer's radiation reaction as well as fluctuations associated with de Sitter Hawking radiation. I will discuss the computation of such an action for observers coupled to scalar and electromagnetic fields. We will find that the action provides a Langevin description of the observer at cosmologically long time-scales, whereas the near-flat space expansion reproduces the Abraham-Lorentz-Dirac force with cosmological corrections. On our way to understanding these results, we will also discuss scalar and electromagnetic multipole moments, a modified post-Newtonian expansion in the presence of a cosmological constant, and some new results about vector spherical harmonics on arbitrary dimensional spheres.

Venue : Emmy Noether Seminar Room

Zoom Link: <https://icts-res-in.zoom.us/j/94625768077?pwd=b5GpVhmIWkvyek4feNUNCZyRwrNNIZ.1>

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