

## **Contributed Talk - (dS) Hartle-Hawking wave function from Lorentzian path integral - Shubhashish Mallik, CHEP, IISc**

*Saturday 23 August 2025 17:00 (30 minutes)*

The (H-H) no boundary proposal is a very natural and mathematically elegant proposal for computing the wavefunction of the universe. Although this proposal has existed since 1990, it is not clear how to get it as a saddle geometry of the quantum gravity path integral. In the first part of the talk, I will briefly describe how to get that following the recent work and our work as well. I will use the Picard-Lefschetz method and the Lorentzian contour prescription. I will also emphasise the importance of the initial boundary choices which leads to no boundary.

In the second part of my talk, I will focus on the small fluctuation around the no-boundary universe (going beyond)

Session Chair : Gaurav Narain