



## ICTS String Seminar

**Title** : An Inflationary Cosmology from (AdS) Wormholes

**Speaker** : Panos Betzios (Ghent University, Belgium)

**Date** : Monday, 07 April 2025

**Time** : 3:30 PM (IST)

**Abstract** : In the context of inflationary cosmology, a natural question arises on what precedes inflation itself. We review aspects of the Hartle-Hawking (no boundary) and Vilenkin (tunneling) proposals. These raise some paradoxes that are complementary in nature and in clash with observations. On the other hand, theories of quantum gravity are better defined in the presence of a negative cosmological constant. I will propose a new type of wavefunction of the universe with asymptotically AdS boundary conditions in the far (Euclidean) past. In the semiclassical limit, it describes a Euclidean (half)-wormhole geometry with properties that result in an expanding universe upon analytic continuation to Lorentzian signature. Finally I will discuss how such wormholes can catalyze the onset of inflation in the standard model coupled to general relativity, when the inflaton is identified with the Higgs boson.

**Venue** : Online

Zoom Link: <https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09>

Meeting ID: 880 9276 6911

Passcode: 232322