# ICTS Synopsis Seminar

**Title** : Aspects of celestial amplitude and flat-space limit of AdS/CFT

**Speaker** : Sarthak Duary (ICTS -TIFR, Bengaluru)

**Date** : Tuesday, 26th March 2024

**Time** : 1:30 PM (IST)

**Abstract** : I will talk about two key aspects of flat-space holography: celestial holography and the flat-space limit of AdS/CFT.

In the first part, I will talk about celestial holography ideas in 2d. This setting serves as an excellent testing ground, as we have exact $\mathcal{S}$-matrices to play with in 2d and try to learn lessons from. I will show that the celestial amplitude is just the Fourier transform of the 2d $\mathcal{S}$-matrix in terms of rapidity. For the Sinh-Gordon model, the pole at the origin of the complex rapidity-plane leads to two types of perturbative celestial amplitude. I will translate the crossing and unitarity conditions into the conditions on the celestial amplitude and utilize the bootstrap method to derive higher-order celestial amplitudes from lower-order ones.

The IR divergence in the $\mathcal{S}$-matrix is due to asymptotic decoupling; relaxing this assumption introduces the Faddeev-Kulish state, ensuring an infrared-finite $\mathcal{S}$-matrix by including soft photon modes in the scattering state, thus addressing long-range electromagnetic interaction. In the second part, I will construct the Faddeev-Kulish dressed state to incorporate AdS radius correction.

The talk is based on the papers 1. JHEP 12 (2022) 060 2. JHEP 05 (2023) 079.

**Venue** : Chern Lecture Hall & Online
Zoom link: https://icts-res-in.zoom.us/j/95010219852?pwd=SjFQcko4b2ljeGY3NXc3SnZvM0RyQT09
Meeting ID: 950 1021 9852
Passcode: 262626