



## ICTS Thesis Defense Seminar

**Title** : On the formal moduli of  $E_n$ -monoidal categories

**Speaker** : Bhanu Kiran Sandepudi (ICTS-TIFR, Bengaluru)

**Date** : Wednesday, 05 March 2025

**Time** : 11:00 AM (IST)

**Abstract** : In topological field theories, extended operators organise into an algebraic structure known as an  $E_n$ -algebra. Inspired by this, we study the deformations of  $E_n$ -monoidal  $k$ -linear  $\infty$ -categories, where  $k$  is a field. During this talk, I will review  $E_n$ -algebras, their formalisation through operads and Jacob Lurie's framework of derived deformation theory. I will discuss the curvature problem encountered in the deformation of  $E_n$ -algebras and show that, under suitable conditions, deformations of a  $E_n$ -monoidal  $k$ -linear  $\infty$ -category  $C$  over the formal power series  $k[[t]]$  avoid this issue. More precisely, I will prove that deformations of  $C$  over the formal power series  $k[[t]]$  are equivalent to the actions of  $k[u]$  on  $C$ , where  $u$  is a degree  $-n - 2$  variable. This talk is based on work done in collaboration with Pranav Pandit.

**Venue** : Feynman Lecture Hall

Zoom Link: <https://icts-res-in.zoom.us/j/93172534538?pwd=3que0i6jTb8rNhaMMoQdSxD6HbMujg.1>

Meeting ID: 931 7253 4538

Passcode: 050607