ICTS Synopsis Seminar

Title : On the formal moduli of $\mathbb{E}_n$-monoidal categories

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

Date : Friday, 12th July 2024

Time : 4:00 PM (IST)

Abstract : Extended operators in a topological field theories organise into an algebraic structure called an $\mathbb{E}_n$-algebra. A central example for us is the 3-dimensional Rozansky-Witten (RW) topological field theory. Anton Kapustin, Lev Rozansky and Natalia Saulina proposed that line operators in the quantised RW theory are described by deformations of monoidal categories. Motivated by this, for k a field, we study the deformations of $\mathbb{E}_n$-monoidal k-linear ∞-categories. We use the framework of derived deformation theory, as developed by Jacob Lurie, to show that under a suitable hypothesis, deformations of En-monoidal k-linear ∞-categories over the formal power series k[[t]] are equivalent to actions of k[u] on the category. Here u is a variable in degree $-n$ -2. In this talk, I will review En-algebraic structures, their formalisation using the language of operads, the motivation coming from the RW theory and Lurie's framework of derived deformation theory. Following this I will formulate the problem in Lurie's framework, discuss the hypothesis under which our results hold and sketch the proof. This talk is based on work done in collaboration with Pranav Pandit.

Venue : Online
Zoom link: https://icts-res-in.zoom.us/j/97809595404?pwd=0JHpSRs9cvuYy4DsxamjGC9Da6Cc5C.1
Meeting ID: 978 0959 5404
Passcode: 121213