ICTS Seminar

Title : Tensor Categories and Their Applications to Vertex Operator Algebras

Speaker : Harshit Yadav (University of Alberta, Canada)

Date : Thursday, 06 November 2025

Time : 9:30 AM (IST)

Abstract : Tensor categories give a shared algebraic language for how objects combine, how duals behave, and how exchange or 'twist' data appear. They arise naturally in two-dimensional conformal field theory (CFT). At the start, I will briefly point out how fusion, braiding, twists, and modular constraints connect to topics such as topological phases of matter and braid-based approaches to quantum computation, to set context for the broader ICTS audience.

The main focus is logarithmic CFT and the representation categories of vertex operator algebras (VOAs). A useful approach is to study a few key families (building on work of Feigin, Frenkel, Kazhdan, Lusztig, etc) and then relate many further examples by using constructions like extensions, cosets, and orbifolds. I will concentrate on VOA extensions and the categorical mechanism behind them: commutative algebra objects and their local modules. This gives a clean way to carry properties such as rationality and rigidity from one VOA to another (which we will illustrate in examples).

Venue : Online
Zoom Link: https://icts-res-in.zoom.us/j/96419966420?pwd=1VWojfqUpPruUSbTxu5vyD6hSnW8pd.1
Meeting ID: 964 1996 6420
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