TOPOLOGY SEMINAR

Survey of 3-Dimensional TQFTs and Quantum Invariants of 3-Manifolds

By

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Abstract: In this talk, I will give a gentle overview of 3-dimensional topological quantum field theories (TQFTs) and the corresponding quantum invariants of closed 3-manifolds. After briefly recalling essential algebraic notions such as pivotal, fusion, and modular categories, I will describe the two main constructions of 3-dimensional TQFTs: the surgery approach (Witten–Reshetikhin–Turaev invariants) and the state-sum approach (Turaev–Viro–Barrett–Westbury invariants). I will then summarize the key comparison result involving the categorical center construction, illustrating how these two approaches yield isomorphic TQFTs. If time permits, I will close by briefly mentioning extensions to homotopy quantum field theories (HQFTs) and highlight some recent developments in this direction.

Date: May 5, Monday, 2025
Time: 13:30
Place: ZOOM

To request the event link, please send a message to cihan.okay@bilkent.edu.tr