

Topology Seminar

Chris Schommer-Pries

of MIT will be speaking on

Dualizability and Locality in 3D Topological Field Theory

on September 27 at 4:30 in
MIT Room 2-131

In this talk I will report on recent work, joint with Christopher Douglas and Noah Snyder, on understanding the nature of fully extended (a.k.a. local) 3-dimensional topological quantum field theories. Specifically, we show that fusion categories are fully-dualizable objects in the 3-category of tensor categories, a natural categorification of the bicategory of algebras, bimodules, and bimodule maps. Fusion categories themselves are well-known and arise in several areas of mathematics and physics – conformal field theory, operator algebras, representation theory of quantum groups, and others. In light of Hopkins and Lurie’s work on the cobordism hypothesis, this provides a fully local TQFT for arbitrary fusion categories. Moreover, we will discuss how many familiar structures from the theory of fusion categories are given a natural explanation from this point of view.