

Recent developments in Generalized Symmetries

Friday, June 7, 2024 9:20 AM (1 hour)

I will review recent progress on generalized symmetries, focusing on non-invertible (or higher categorical) symmetries and their properties.

Two questions have recently been the focus in this subject: What replaces the notion of “representation” for group-like symmetries, i.e. what are the generalized charges? What are the IR imprints of non-invertible symmetries? To answer these questions, it is crucial to study the Symmetry Topological Field Theory (SymTFT), which has close relations to string theoretic and holographic realizations of generalized symmetries. Generalized charges are the topological defects of the SymTFT, which also encodes the action of the symmetry. Using the SymTFT, a generalized or categorical Landau paradigm for phases and second order phase transitions in the presence of non-invertible symmetries can be formulated, leading to new phases in quantum systems in various space-time dimensions.

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