

Physics Seminar: Anton Kapustin. ZOOM lecture

Wednesday, February 5 · 2:00 – 3:00pm

This talk will take place on zoom and streamed in room 313

Title: Topological invariants of quantum lattice systems and 't Hooft anomalies.

Abstract: The conjectured relationship between gapped lattice systems and TQFT implies that such systems may have topological invariants: numerical quantities which do not vary under deformations which do not close the gap. An example of such an invariant is zero-temperature Hall conductance of 2d systems with  $U(1)$  symmetry. In this talk I will explain that such invariants can be interpreted as obstructions to promoting a symmetry of a gapped state to a local symmetry, i.e. as lattice avatars of 't Hooft anomalies. To make this precise, I axiomatize the notion of a local symmetry. This axiomatization may be useful not only in quantum statistical mechanics, but also in QFT.