Physics Seminar: Theo Jacobson
Wednesday, April 9 · 2:00 – 3:00pm

Location: 313

Title: Chiral boson at the edge of lattice Chern-Simons theory

Abstract: Regulating chiral quantum field theories on the lattice has been an outstanding problem since the inception of lattice gauge theory. In this talk, I describe a Hamiltonian lattice realization of the 1+1d chiral boson, which is one of the simplest examples of a chiral theory. This theory (both in the continuum and on the lattice) does not strictly speaking exist in isolation, but only as the boundary of a non-trivial topologically ordered 2+1d phase. I will show how to realize (Maxwell) Chern-Simons theory as a Hamiltonian lattice gauge theory, and show that it hosts a chiral edge mode on spatial lattices with boundary --- in essence, providing a lattice regularization of the fractional quantum hall effect.