

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

**“Classifying Topological Crystalline Superconductors
and Majorana Bound States at Lattice Defects”**

Jeffrey Teo
University of Illinois, Urbana-Champaign

Abstract: Majorana bound states (MBS) are zero energy point-like excitations that support robust non-local storage of quantum information and non-abelian unitary operations. MBS can arise at lattice defects, such as disclinations and dislocations, of a topological crystalline superconductor. This relies on a lattice symmetry protected topology in the bulk. We completely classify lattice rotation symmetric BCS superconductors in two dimensions, and propose a \mathbb{Z}_2 -topological index that determines the MBS number parity at a general disclination-dislocation composite defect. This predicts the appearance of MBS at lattice defects in superconducting strontium ruthenate and doped graphene.

2:00 pm
Wednesday, November 20, 2013
Duboc Seminar Room (4-331)