

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

**“Chiral Spin Liquid and Emergent Anyons
in a Kagome Lattice Mott Insulator”**

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Abstract: Topological phases in frustrated quantum spin systems have fascinated researchers for decades. One of the earliest proposals for such a phase was the chiral spin liquid put forward by Kalmeyer and Laughlin in 1987 as the bosonic analogue of the fractional quantum Hall effect. Elusive for many years, recent times have finally seen a number of models that realize this phase. However, these models are somewhat artificial and unlikely to be found in realistic materials. Here, we take an important step towards the goal of finding a chiral spin liquid in nature by examining a physically motivated model for a Mott insulator on the Kagome lattice with broken time-reversal symmetry. We present an unambiguous numerical identification and characterization of the universal topological properties of the phase, including ground state degeneracy, edge physics, and anyonic bulk excitations, by using a variety of powerful numerical probes, including the entanglement spectrum and modular transformations.

**12:00noon
Tuesday, April 29, 2014
Duboc Seminar Room (4-331)**