

Massachusetts Institute of Technology
Department of Physics

INFORMAL CONDENSED MATTER SEMINAR

**“Edge Ferromagnetism from Majorana Flatbands -
Application to High-Tc Cuprates”**

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Abstract: In the absence of interactions, the edges of superconductors with nodal d-wave pairing (such as the High-Tc cuprates) are expected to exhibit dispersionless Majorana fermion bands at zero-energy. These bands would give rise to diverging entropy at zero-temperature, in violation of the 3rd law of thermodynamics. Such a situation is highly unstable to perturbations, and I will argue that repulsive interactions lead to edge-ferromagnetism. This modern topological perspective offers a new explanation for the experimentally observed time-reversal symmetry breaking in cuprate edge-tunneling, which I will argue is more natural than previously proposed explanations. I will close with a discussion of experimental implications.

4:00 PM
Wednesday, April 17, 2013
Room 4-331