

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

“Topological superconductors in multiple flavors: gapped and gapless, in wires and 2DEGs”

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Abstract: In this talk, I will discuss new aspects of topological superconductivity. I will first present a novel route to topological superconductivity in one dimension, based on Josephson junctions in which two superconductors are separated by a two-dimensional electron system with strong spin-orbit coupling. Remarkably, in these systems, a phase bias can induce a robust topological superconducting phase in the junction, requiring no fine-tuning of other parameters, in contrast to the more commonly studied wire realization. Moreover, we identify a regime of parameters for which the system can tune itself into the topological phase via a first-order phase transition. In the second part of my talk, I will address the question of the existence of a gapless topological superconducting phase in one dimension. I will argue that in presence of time-reversal symmetry this notion is well defined, and show how it can be realized.

12:00pm
Thursday, November 10, 2016
Duboc Room (4-331)