Condensed Matter Theory Center Seminar

Tuesday, September 13
11:00 am – 12:00 pm
2205 John S. Toll Physics Building

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"Ising anyons in frustration-free Majorana-dimer models"

Abstract: Dimer models have long been a fruitful playground for understanding topological physics. We introduce a new class of dimer models -- termed Majorana-dimer models -- where the dimers represent pairs of Majorana modes, to capture the physics of strongly interacting Majoranas. We find that the simplest examples of such systems realize an intriguing, intrinsically fermionic phase of matter that can be viewed as the product of a chiral Ising theory, which hosts deconfined non-Abelian Ising quasiparticles, and a topological (p − ip) superconductor. While the bulk anyons are described by a single copy of the Ising theory, the edge remains fully gapped. Consequently, this phase can arise in exactly solvable, frustration-free lattice models. We present parent Hamiltonians for this phase and unambiguously identify the topological order from entanglement measurements.

Host: Yang-Le Wu

Web: http://www.physics.umd.edu/cmtc/seminars.html