

Condensed Matter Theory Center Seminar



Wednesday, March 11
11:00 am – 12:00 pm
2205 Toll Physics Building

Raquel Queiroz

Max Planck Institute, Stuttgart

“Strongly disordered topological superconductors without inversion center”

Noncentrosymmetric superconductors with strong spin-orbit coupling and the B phase of He-3 are possible realizations of topological superconductors with time-reversal symmetry. The nontrivial topology manifests itself at the material's surface in terms of surface bound states, strongly dependent on the momentum dependence of the order parameter. We show that disorder can be a useful tool to experimentally identify and distinguish different types of surface states, and, using extensive numerical simulations, we investigate the stability and properties of such states under strong surface disorder, influencing both bulk and surface states.

Of particular interest are the linearly dispersive helical Majorana modes of fully gapped superconductors, protected from disorder weaker than the superconducting gap. A critical crossover from weak to strong disorder is observed in both two and three dimensions, through which an extended state exactly at zero energy always persists. We contrast these results with the linear dispersive surface states of Z₂ topological insulators.

Host: Philip Brydon

Web: <http://www.physics.umd.edu/cmte/seminars.html>

(All are welcome to attend)

