

Speaker: Sean Hartnoll (Stanford)

Title: Hydrodynamic theory of phase-fluctuating superconductivity

Abstract: Superconductors can support dissipationless electric current due to macroscopic phase coherence. Vortices are the enemy of superconductivity: as vortices move around the sample, they can disorder the coherent phase and destroy superconductivity. It turns out that several deep and controversial issues in condensed matter physics have to do with whether 'phase-disordered' superconductors can exist at zero temperature, as I will review. I will describe an effective field theory approach to this problem that clarifies some of the issues and leads to an elegant rederivation of some known results.