

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

“Transport in bilayer graphene near charge neutrality: Which scattering mechanisms are important?”

Glenn Wagner, Oxford University

Abstract: Motivated by recent experiments on suspended bilayer graphene, we study transport in bilayer graphene near charge neutrality. We use the semiclassical quantum Boltzmann equation (QBE) to numerically calculate the dc transport properties. We find that phonon scattering is crucial even at temperatures below 40 K. Nonetheless, electron-electron scattering still dominates over phonon collisions allowing a hydrodynamic approach. We introduce a simple two-fluid hydrodynamic model of electrons and holes interacting via Coulomb drag and compare our results to the full QBE calculation. We show that the two-fluid model produces quantitatively accurate results for conductivity, thermopower, and thermal conductivity.

12:00pm noon
Tuesday, February 11, 2020
Duboc Seminar Room (4-331)

Host: Leonid Levitov