

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Gapless Phase with Partial Fermi Surface in Superconductors with Spin-Orbit Coupling under Zeeman Field"

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Abstract: We study the general problem of an s-wave 2D superconductor with spin-orbit coupling (SOC) under the in-plane magnetic field, and find the gapless superconducting phase with the so-called partial Fermi surface can exist for a wide range of magnetic fields at zero temperature. By calculating the upper critical field and superfluid stiffness, we show that finite-momentum pairing can be ruled out and hence the partial Fermi surface can survive at high magnetic field. Possible platforms such as monolayer transition metal dichalcogenides and ultra thin metal films are also proposed.

12:00pm noon
Tuesday, February 6, 2018
Duboc Room (4-331)