

Condensed Matter Physics Seminar Series

Berry curvature and thermo-spin response of superconducting quasiparticles

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We construct a semiclassical theory of superconducting quasiparticles for proximity-induced superconducting systems with spin-orbit coupling. We unveil that the Bloch band spin-orbit coupling and superconducting pairing function are entangled in shaping the superconducting Berry curvatures rather than in an additive manner. We propose two Berry curvature induced thermos-spin responses: the thermal Edelstein effect and the spin Nernst effect. We calculate these two thermo-spin responses with model systems where Rashba spin-orbit coupling, proximity induced superconductivity and magnetic order are coexisting and demonstrate the qualitative enhancement of the response signal in presence of the Bogoliubov Fermi surface.

**Friday, February 6th at 10am
4-330 PAB**