

Colloquium
Dahlem Center for Complex Quantum Systems

Current at a distance, resonant transparency and disorder (in)sensitivity in Weyl semi-metals

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Time: Tuesday, May 24, 2016, 17:00 c.t.

Location: Hörsaal A (1.3.14)

Abstract:

Surface Fermi arcs are the most prominent manifestation of the topological nature of Weyl semimetals. In the presence of a static magnetic field oriented perpendicular to the sample surface, their existence leads to unique inter-surface cyclotron orbits. We propose two experiments which directly probe the Fermi arcs: a magnetic field dependent non-local DC voltage and sharp resonances in the transmission of electromagnetic waves at frequencies controlled by the field. We show that these experiments do not rely on quantum mechanical phase coherence, which renders them far more robust and experimentally accessible than quantum effects. We also comment on the effects of disorder on such transport phenomena.