Seminarankündigung
(gem. mit Seminar AG Fabian)

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Thema: Non-Abelian states from k-space vortex

Abstract

k-space vortex are closely related to topological insulators and quantum anomalous Hall insulators. They can exist in some two-dimensional systems, such as single Dirac cone on the surface of topological insulators and quadratic band touching in checkerboard lattices. They are usually protected by time-reversal and/or space-inversion symmetry. However, once they exist they are topologically stable. We show that how non-Abelian states (pairing states characterized by odd Chern number and zero-energy Majorana fermions) emerges from systems with a single k-space vortex from both superconducting proximity effect and pairing from attractive interactions. We also show how those systems can be achieved in reality: in semiconductors and in ultracold optical lattices. Some nice properties of the systems will also be revealed.

Ansprechpartner: J. Fabian