

Physikalisches Kolloquium

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»Majorana fermions in a quantum spin Hall insulator«

Einführung: G. Schön

Topological insulators in proximity to a superconductor have been predicted to support Majorana zero- modes: midgap states with identical creation and annihilation operators and non-Abelian braiding statistics, that are presently under intense scrutiny. The conducting edge of a quantum spin Hall insulator (a quantum well with an inverted band gap) seems like an ideal system to search for these elusive particles in a transport experiment: Only a single mode propagates in each direction along the edge, unaffected by disorder since backscattering of these helical modes is forbidden by time-reversal symmetry. We discuss the prospects for the detection of Majoranas as a short-term application, and braiding as a longer term perspective.

Donnerstag, 08.01.2015, 17:30 Uhr,

KIT, Campus Süd,

Otto-Lehmann-Hörsaal, Physik-Flachbau (Geb. 30.22).

Anschließend Nachsitzung im Gastdozentenhaus „Heinrich Hertz“