Seminar: Hard Condensed Matter Theory

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Room: Galilei Raum, 01-128 (Staudinger Weg 9)
Time: April 30th, 2019 at 14:00

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The Superconductivity of Topologically Protected Surface States

The superconducting proximity effect induced in materials in close contact with a superconductor is well established. We reveal that similarly the topologically protected surface states recently found on the surfaces of special crystals can leak into appropriate adjoining materials. We bring these two effects into proximity and study how superconductivity and topologically protected surface states interact with each other, a situation of interest in the search for Majorana bound states. We look at the scanning tunneling microscopy of a large topological insulator with superconducting islands deposited on the surface, and analyze theoretical models which capture the hybridization between the topological surface states and the superconducting states. The density of states of both the topological insulator and the superconductor turn out to exhibit interesting proximity effects and open up new possibilities for observing Majoranas.

All interested are cordially welcome!
