MAR17-2016-020298

Abstract for an Invited Paper
for the MAR17 Meeting of
the American Physical Society

Transport signatures of chiral Majorana edge modes

STEPHAN RACHEL, Techische Universitaet Dresden

Majorana states in condensed matter physics hold unprecedented potential as a novel platform for quantum computing. Recent groundbreaking experiments have demonstrated that Majorana bound states can be realized at the end of chains of iron atoms located on a lead s-wave superconductor. A recent proposal focuses on the possibility to generalize from "Shiba chains" to "Shiba islands". The topological phases are expected to possess propagating Majorana edge states.

In this talk, I will demonstrate that the topological nature of such propagating Majorana edge states can be identified through transport measurement using a scanning tunneling microscope (STM). I will show that the differential conductance of Majorana edge states can be quantized, and in certain situations equal to the quantum of conductance times the magnitude of the Chern number. Implications of these results for future experiments are discussed.