

T_CSUH Special Seminar

Texas Center for Superconductivity at the University of Houston

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Room 102, University of Houston Science Center
12:00 p.m. – 1:00 p.m.

{Non-linear Tunnelling Characteristics into the Bulk and Bound States of $\{it p\}$ -wave Superconductors}

Abstract

We reconsidered the problem of point-contact tunnel junctions involving low-dimensional superconductors and introduced a simple scheme for computing the full current-voltage characteristics within the framework of non-equilibrium Keldysh-Schwinger Green functions. We extended the formalism from s-wave to p-wave symmetry and proposed ways of determining, by looking at the Zeeman response, when the superconducting states correspond to spin-triplet pairing. Next, we directed our attention to the zero-energy bound states at the edges or vortex cores of p-wave superconductors; these are predicted to be Majorana fermions. We introduced a model Hamiltonian that describes the tunnelling processes when electrons are injected into such states and we found exact analytic expressions for the tunnelling current and noise. We identified experimental signatures that would confirm the Majorana nature of the bound states.

Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.



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