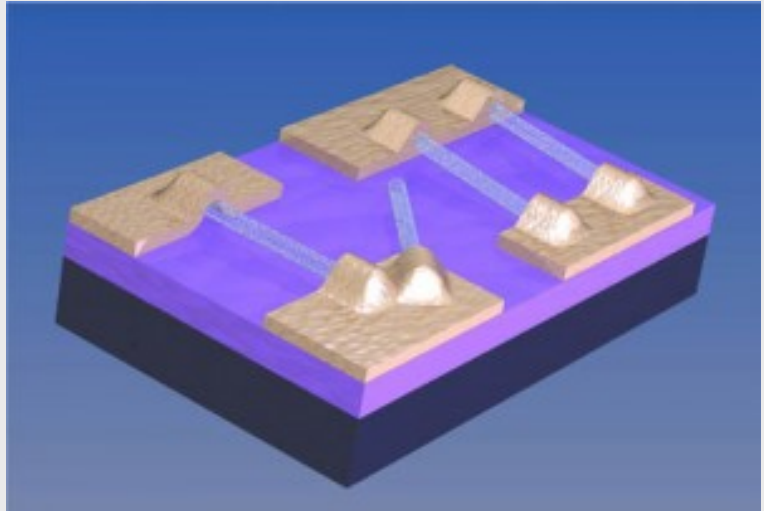


Superconductor Nanowire Superconductor Junctions as Useful Platforms to Study Topological Superconductivity and Majorana Bound States

Date: Friday, 7th February 2014.



Time: 12:00h

Place: Departamento de Física de la Materia Condensada, Facultad Ciencias, Módulo 3 , Aula de Seminarios (5ª Planta).

Ramón Aguado (Instituto de Ciencia de Materiales de Madrid-CSIC).

ABSTRACT:

Recent experiments have reported conductance measurements in semiconducting nanowire-based systems that support the existence of Majorana bound states (MBS) at normal-superconductor (NS) junctions.

Although these experiments are partially consistent with the Majorana interpretation, other mechanisms such as disorder, Kondo physics, or Andreev bound states cannot be completely ruled out. It has thus become urgent to study alternative “smoking gun” measurement protocols. In this talk, I will argue that SNS junctions based on nanowires are extremely useful platforms to perform such alternative measurements.

Physical quantities that provide relevant information about MBS in such junctions include ac Josephson currents, multiple Andreev reflection (MAR) currents and supercurrents in multiband systems. Remarkably, the emergence and annihilation of MBS in multiband junctions is reflected in strong even-odd effects in the critical current I_c under specific conditions. This effect allows for a full mapping between I_c and the topological phase diagram of the junction.

[More information on IFIMAC Website](#)