

Quantum transport of electrons through topological superconductors

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In the last decade, research on the search for and characterization of Majorana zero modes in topological superconductors has become one of the most outstanding topics in the scientific community in Condensed Matter Physics. In this seminar, we will present some recent results on the quantum transport of electrons through quantum rings and quantum dots, coupled to topological superconductors that support Majorana zero modes. Besides, we will discuss the connection between Majorana zero modes and their possible applications in quantum computing.

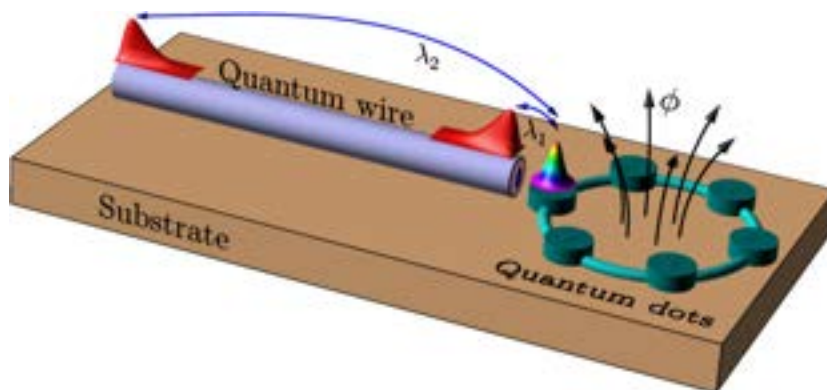


Fig 1. Schematic representation of the system under study. A nanowire driven into a superconducting regime supports a Majorana Zero Modes at each edge and influences the persistent currents of a quantum ring, threaded by a magnetic flux.

[1] A. Y. Kitaev Physics-Uspekhi 44, 131 (2001)

[2] V. Mourik, K. Zuo, S. M. Frolov, S. Plissard, E. P. Bakkers, and L. P. Kouwenhoven Science 336(6084), 1003–1007 (2012)

[3] Medina, Fabian; Martinez, Dunkan; Diaz-Fernandez, Alvaro; Dominguez-Adame, Francisco; Rosales, Luis; Orellana, Pedro A. SCIENTIFIC REPORTS 12 1071 2022

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