





Manipulating photonics signals and quantum interference effects in hybrid light-matter systems

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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 of the system. 1D waveguide coupled to a WGR. The blue and red solid arrows represent the WGMs *a* and *b*, respectively. The green arrow denotes the coupling between the waveguide and the WGR, ξ_1 . The orange line represents the hopping between two nearest-neighbor cavities in the discrete waveguide, ξ_0 .

- 1. M. Ahumada , P. A. Orellana ,and A. V. Malyshev, Manipulating photonic signals by a multipurpose quantum junction PRA 05, 043502 (2022).
- 2. M. Ahumada, P. A. Orellana, and J. C. Retamal **Bound states in the continuum in whispering** gallery resonators PRA A **98**, 023827 (2018).

Día: Miércoles, 31 de mayo de 2023 Hora: 12:00 horas Lugar: Áula IV (Trilingüe)