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Conductance of a superconducting Coulomb blockade nanowire at finite temperature CHING-KAI CHIU, The University of Maryland, College Park — By applying a magnetic field, a superconducting proximity nanowire in the presence of spin-orbital coupling can pass through topological phase transition and possesses Majorana bound states on the ends. One of the promising platforms to detect the Majorana modes is a Coulomb blockade island by measuring its two-terminal conductance. Here, we study the transportation of a single electron across the superconducting Coulomb blockade nanowire at finite temperature to obtain the generic conductance equation. By considering all possible scenarios that Majorana modes appear in the nanowire, we compute the nanowire conductance as the magnetic field and the gate voltage of the nanowire vary. The oscillation behavior of the conductance peak is temperature independent and the oscillation amplitude of the conductance peak spacings increases as the magnetic field increases.

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