Quantum-anomalous-Hall current patterns and interference in thin slabs of chiral topological superconductors

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The chiral topological superconductor, which supports propagating nontrivial edge modes while maintaining a gapped bulk, can be realized hybridizing a quantum-anomalous-Hall thin slab with an ordinary *s*-wave superconductor [1]-[2]. We show that by sweeping the voltage bias in a normal-hybrid-normal double junction, the pattern of differential conductance and electric currents in the normal leads spans three main regimes [3].
At low bias, the differential conductance is half-quantized to the value $e^2/2h$ and the electric current is localized on the edges, due to the presence of unpaired Majorana edge modes. At intermediate voltages, the current remains edge-localized, but the differential conductance exhibits large oscillations between 0 and e^2/h, produced by interference patterns due to the superconducting pairing. Finally, at large bias, the electric transport becomes diffusive, with electric current propagating through delocalized modes within the bulk of the film.

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