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Non-Fermi-Liquid Manifold in a Majorana Device

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Abstract:

We propose and study a setup realizing a stable manifold of non-Fermi liquid states. The device consists of a mesoscopic superconducting island hosting three or more Majorana bound states tunnel-coupled to normal leads, with a Josephson contact to a bulk superconductor. We find a nontrivial interplay between multi-channel Kondo and resonant Andreev reflection processes, which results in the fixed point manifold. The scaling dimension of the leading irrelevant perturbation changes continuously within the manifold and determines the power-law scaling of the temperature-dependent conductance.