

Abstract Submitted
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Josephson-Majorana cycle in topological single-electron hybrid transistors¹ NICOLAS DIDIER, Universite de Sherbrooke and McGill University, MARCO GIBERTINI, Scuola Normale Superiore, ALI G. MOGHADDAM, University of Duisburg-Essen and IASBS Zanjan, JUERGEN KOENIG, University of Duisburg-Essen, ROSARIO FAZIO, Scuola Normale Superiore — Charge transport through a small topological superconducting island in contact with a normal and a superconducting electrode occurs through a cycle which involves coherent oscillations of Cooper pairs and tunneling in/out the normal electrode through a Majorana bound state, the Josephson-Majorana cycle. We illustrate this mechanism by studying the current-voltage characteristics of a superconductor - topological superconductor - normal metal single-electron transistor. At low bias and temperature the Josephson-Majorana cycle is the dominant mechanism for transport. We discuss a three-terminal configuration that constitutes a direct probe of the non-local character of the Majorana bound states. Non-local cotunneling dominates over the local contributions and the current noise is maximally correlated independently of the length of the wire. Preprint: arXiv:1202.6357

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