Topological and Transport Properties of Spin—Orbit Coupled Josephson Junctions

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Abstract: The experimental pieces of evidence for the existence of Majorana states in topological superconductors have so far been inconclusive despite intense research in the past two decades. Combined with promising applications in quantum computing and the resulting technological development of society, the elusiveness of Majorana states keeps motivating theoretical and experimental research to this day. Our analytical findings and numerical explorations in new topological superconducting platforms suggest several tools and solutions for their future realisation in condensed matter systems.