
Engineering Majoranas

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Abstract

The goal of making Majorana states in the lab requires bringing together very different and sometimes incompatible physical phenomena: superconductivity, magnetic field, and one-dimensional systems. The reward is high-creating and controlling the first non-Abelian anyons, exotic particles, but so is the challenge. I will show how different physical phenomena impact the creation of Majoranas. I will show how the coupling strength to the superconductor impacts the properties of Majoranas and how the orbital effect of magnetic field influences the spin-orbit physics. Looking ahead, I will show how to detect these physical phenomena using the nonlocal conductance as a bulk probe of induced superconductivity.

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