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Negative hybridization: How to cure imperfect Majorana modes

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Majorana modes (MMs), the elementary building blocks for the quantum bits of topological quantum computers, are known to suffer from hybridization when they get too close to each other. In that case, their wavefunctions start to overlap and the energy of the MMs is pushed to finite energies, causing errors during the braiding process of the MMs. Here we introduce *negative hybridization*, a fundamental property of MMs which can be thought of as an intrinsic error correction mechanism of MMs.

We discuss several instructive cases where the phenomenon of negative hybridization improves the braiding performance, thus allowing *imperfect* Majorana modes to be braided with negligible braiding error.

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