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Majorana qubit rotations in microwave cavities CHRISTOPH BRUDER, ANDREAS NUNNENKAMP, THOMAS L. SCHMIDT, Department of Physics, University of Basel, Klingelbergstrasse 82, CH-4056 Basel, Switzerland — Majorana bound states have been proposed as building blocks for qubits on which certain operations can be performed in a topologically protected way using braiding. However, the set of these protected operations is not sufficient to realize universal quantum computing. We show that the electric field in a microwave cavity can induce Rabi oscillations between adjacent Majorana bound states. These oscillations can be used to implement an additional single-qubit gate. Supplemented with one braiding operation, this gate allows to perform arbitrary single-qubit operations.

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