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Topological states and braiding statistics using quantum circuits XIAO-FENG SHI, Fudan University, JIANQIANG YOU, Fudan University & RIKEN, FRANCO NORI, University of Michigan & RIKEN — Using superconducting quantum circuits, we propose an approach to construct a Kitaev lattice, i.e., an anisotropic spin model on a honeycomb lattice with three types of nearest-neighbor interactions. We study two particular cases to demonstrate topological states (i.e., the vortex and bond states) and show how the braiding statistics can be revealed. Our approach provides an experimentally realizable many-body system for demonstrating exotic properties of topological phases.

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