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**Operations of Majorana Bound States in Charge-qubit Arrays** TING MAO, ZIDAN WANG, Univ of Hong Kong — The experimental pursuit of Majorana bound state (MBS) in one-dimensional (1D) solid state systems has been brought into the limelight since the proposal of Kitaev's toy lattice model. Here we use the inductively coupled charge-qubit array to realize a tunable Kitaev model. With the advantages of the superconducting-qubit circuit, we can manipulate the parameters of Kitaev model and change the symmetry class to which the model Hamiltonian belongs from the class D to the class BDI. We also discuss a simple class DIII model constructed by coupling two copies of the class D charge-qubit array. Using the time reversal symmetry and a residual U(1) spin rotation symmetry of the model, we explore the possibility of implementing universal single topological qubit operations.

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