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Interfacing Superconducting Qubits and Resonator Qudit FREDERICK STRAUCH, Williams College, XIAOTING WANG, KURT JACOBS, University of Massachusetts at Boston — We consider methods to transfer multi-qubit states into the higher-dimensional state space of a superconducting resonator, acting as a qudit. Several methods are proposed, using different combinations of resonant, dispersive, and auxiliary interactions. The complexity of such schemes are explored using analytical and numerically optimized control sequences. Extension to resonator measurement and qudit logic will be also be described.

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