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Circuit QED with multi-pole microwave cavity filters LEV BISHOP, JQI and CMTTC, University of Maryland, College Park, P. C. REINHOLD, D. I. SCHUSTER, Physics Department and James Franck Institute, University of Chicago — Circuit QED has proven to be a successful architecture for quantum computing and quantum optics. In this architecture multiple superconducting qubits are coupled to a high-Q microwave resonator, allowing for control, coupling and read-out of qubit states. However, as we scale to larger systems and longer coherence times, reducing residual couplings become more important. We discuss multi-pole cavity filters as isolating elements between qubits, used as a technique for producing improved gates.

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