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Optimized pulse shapes for a resonator-induced phase gate[1] ANDREW CROSS, JAY GAMBETTA, STEFANO POLETTO, DOUG MCCLURE, OLIVER DIAL, MATTHIAS STEFFEN, IBM T. J. Watson Research Center — The resonator-induced phase gate is a multi-qubit controlled-phase gate for superconducting qubits. Through off-resonant driving of a bus cavity, coupled qubits acquire a state-dependent phase and are not excited outside of the qubit manifold. However, cavity loss leads to dephasing during the gate and any residual entanglement between the cavity and qubits after the gate leads to decoherence. In this talk we present strategies for shaping the drive pulse to minimize dephasing and reduce the pulse duration.

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