Abstract Submitted
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Frequency-tunable Quantum Dissipators[1] CHRIS WILEN, Univ of Wisconsin, Madison, CLEMENT WONG, Laboratory for Physical Sciences, NAVEEN NEHRA, IVAN PECHENEZHSKIY, ALEX OPREMCAK, Univ of Wisconsin, Madison, JJ NELSON, CALEB HOWINGTON, BRITTON PLOURDE, Syracuse University, MAXIM VAVILOV, ROBERT MCDERMOTT, Univ of Wisconsin, Madison — We describe the design and implementation of tunable dissipative modes based on lossy nonlinear resonators. When the dissipator is tuned into resonance with a weakly damped quantum mode, the weakly damped mode relaxes at a rate that is orders of magnitude faster than its intrinsic relaxation rate. We describe the optimal parameters for realization of the tunable dissipator, and we discuss device fabrication and characterization. We examine application of the dissipator to two problems in circuit quantum electrodynamics: spurious population of the qubit 1 state and dephasing from photon shot noise in the qubit readout resonator.

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