

Abstract Submitted  
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**Simulation and measurement of a fluxonium qubit inductively coupled to a readout resonator**<sup>1</sup> W.C. SMITH, A. KOU, U. VOOL, I.M. POP, R.J. SCHOELKOPF, M.H. DEVORET, Department of Applied Physics, Yale University — Prototypical circuit QED experiments can be performed using a fluxonium qubit that shares a portion of its superinductance with an on-chip LC oscillator, dubbed an “antenna,” that is used as a readout resonator. However, the complete fluxonium-antenna artificial atom had not been previously understood in all coupling regimes. We have measured Hamiltonian parameters and decay rates by channeling microwave pulses into a rectangular waveguide containing the antenna-qubit system. Accurate modeling of energy spectra, dispersive shifts, and Purcell loss is achieved by diagonalizing the effective circuit Hamiltonian. We will present spectroscopy data, coherence times, and simulation results.

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