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Fluxonium Qubit in a 3D Cavity: Measurement and Analysis[1] K. GEERLINGS, I.M. POP, N. MASLUK, A. KAMAL, Applied Physics Department, Yale University, G. CATELANI, Forschungszentrum Juelich, Peter Gruenberg Institut, L. GLAZMAN, M.H. DEVORET, Applied Physics Department, Yale University — We present measurements of a fluxonium qubit [1] in a 3D copper cavity. The fluxonium qubit is composed of a Josephson junction shunted by an array of 90 larger Josephson junctions approximating a linear inductor. In a manner similar to transmon qubits, the coherence times of fluxonium in a 3D cavity have increased when compared to on-chip resonator implementations. Additionally, the fluxonium Hamiltonian can be, by design, less sensitive to decoherence than the transmon. We present measurements of relaxation times for the entire range of flux variation and discuss energy relaxation in light of dielectric, inductive, and quasiparticle losses.

[1] Manucharyan et al., Science, 326 (2009)

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