Coherent Revival of Ramsey Oscillations in the Fluxonium Qubit Coupled to a bath of Harmonic Oscillators

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We studied different fluxonium qubits in 2D and 3D cavity-structures and reached the state of the art for coherence and relaxation times. We observed a systematic increase of the relaxation time both in 3D and 2D at the optimal point of the qubit, when quasi-particle tunneling is strongly reduced. We aim to realize a 2D fluxoniums coupled to few on-chip lumped element resonators. We use a fast flux line to control the coupling between the fluxonium qubit and the resonators. We have studied theoretically the emerging spin-boson Hamiltonian for this particular circuit with the perspective of measuring revival effects in the coherent oscillations of the qubit. We started to implement measurements, revealing the effect on the qubit dynamics of a dissipative bath formed by a discrete set of harmonic oscillators.