Studies of decoherence in a large area Nb flux qubit

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Studies of decoherence in a large area Nb flux qubit

DOUGLAS BENNETT, LUIGI LONGOBARDI, VIJAY PATEL, WEI CHEN, DMITRI
AVERIN, ANTONIO DI LORENZO, VLADIMIR KUZNETSOV, JAAN MANNIK,
SHAWN POTTORF, KRISTIAN RABENSTEIN, JAMES LUKENS, Stony Brook
University, Department of Physics and Astronomy — We report measurements
using pulsed microwaves to investigate the decoherence mechanisms in a large area
Nb based flux qubit. Our qubit uses an rf-SQUID in a gradiometer configuration
and has independent, in situ, controls for the relative positions of levels in different
fluxoid wells and the barrier height between the wells. We present measurements
of decoherence times from coherent oscillations and microwave spectroscopy. These
measurements are well suited to evaluate potential improvements in the materials
and the fabrication process of both flux and phase qubits based on different flux
states.

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Douglas Bennett
Stony Brook University, Department of Physics and Astronomy

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