

Abstract Submitted
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Dephasing **of**
a superconducting flux qubit¹ KOSUKE KAKUYANAGI, NTT Basic Research
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SHNIRMAN, Institut für Theoretische Festk — In order to gain a better understand-
ing of the origin of decoherence in superconducting flux qubits, we have measured
the magnetic field dependence of the characteristic energy relaxation time T_1 and
echo phase relaxation time T_2^{echo} near the optimal operating point of a flux qubit.
We have measured T_2^{echo} by means of the phase cycling method. At the optimal
point, we found the relation $T_2^{echo} \sim 2T_1$. This means that the echo decay time
is limited by the energy relaxation (T_1 process). Moving away from the optimal
point, we observe a linear increase of the phase relaxation rate ($1/T_2^{echo}$) with the
applied external magnetic flux. This behavior can be well explained by the influence
of magnetic flux noise with a $1/f$ spectrum on the qubit.

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