

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

1/f noise driven qubit dynamics in presence of a bosonic thermostat KOSTYANTYN KECHEDZHI, FEDIR VASKO, ANDRE PETUKHOV, NASA Ames Research Center, Mail Stop 269-3, Moffet Field, CA 94035, VADIM SMELYANSKIY, Google, Venice, CA 90291, US — Motivated by observations of distinct sources of noise in superconducting flux qubits over a wide frequency range, we analyze a qubit, a two level system, coupled to two microscopic sources of noise: 1/f low frequency noise and the Ohmic high frequency noise. The noise sources are treated as independent and characterized by different temperatures. We analyze the steady state regime of the resulting out-of-equilibrium dynamics focusing in particular on the effects of the interplay of the two types of noise on spectroscopic characteristics of the qubit. We calculate both analytically and numerically the steady state population of the qubit energy levels, relaxation and dephasing times and effective renormalization of the qubit's energy level splitting.

Kostyantyn Kechedzhi
NASA Ames Research Center

Date submitted: 06 Nov 2015

Electronic form version 1.4