Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Temperature dependent spin-diffusion as a mechanism of intrinsic flux noise in in SQUIDs[1] ROGERIO DE SOUSA, S.-F. CHEN, STEPHANIE LAFOREST, Department of Physics and Astronomy, University of Victoria, BC, TREVOR LANTING, D-Wave Systems Inc., MOHAMMAD AMIN, D-Wave Systems Inc. and Department of Physics, Simon Fraser University, BC — The intrinsic flux noise observed in superconducting quantum interference devices (SQUIDs) is thought to be due to the fluctuation of electron spin impurities, but the frequency and temperature dependence observed in experiments do not agree with the usual 1/f models. We present theoretical calculations of flux noise in rf-SQUID flux qubits that shows how these observations can be interpreted in terms of a spin-diffusion constant that increases with temperature. A comparison of our theory to measurements of flux noise in the 20-80 mK temperature range allows the extraction of the spin-diffusion constant and its temperature dependence, suggesting that the spin system is close to a phase transition. See our paper at http://arxiv.org/abs/1306.1512.

[1]Research supported by the NSERC Engage program.

Rogerio de Sousa
Department of Physics and Astronomy, University of Victoria, BC

Date submitted: 07 Nov 2013 Electronic form version 1.4