

Abstract Submitted
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Dependence of low frequency flux noise on SQUID-washer dimensions¹ J. BIRENBAUM, S.M. ANTON, A.D. FEFFERMAN, S.R. O'KELLEY, J. CLARKE, UC Berkeley, H-M CHO, G.C. HILTON, K.D. IRWIN, NIST Boulder, F.C. WELLSTOOD, Univ. of Maryland — The $1/f$ spectral density of low frequency magnetic flux noise at 1 Hz in dc SQUIDs and qubits varies slowly with the dimensions of the superconducting loop, in reasonably good agreement with predictions. Previous measurements on SQUIDs fabricated from a variety of superconductors under different conditions and in a variety of geometries, however, showed that the slope of the power spectrum varied considerably. We report flux noise measurements on six resistively-shunted dc SQUIDs fabricated simultaneously on a single Si chip using a Nb-trilayer process. The noise spectra of all six devices were measured using a SQUID in a single cool-down of our dilution refrigerator. The linewidths of the SQUID loops were varied systematically by a factor of more than 30. The variation in noise power at 1 Hz was small compared with the variation in line width, while the slope varied significantly, from approximately -0.5 to -1. Furthermore, for a given SQUID, the slope depended on temperature.

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