Abstract Submitted
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1/f Flux Noise in Josephson Phase Qubits[1] ROBERT MCDERMOTT, UW-Madison Dept. of Physics, RADEK BIALCZAK, MARKUS ANSMANN, MAX HOFHEINZ, NADAV KATZ, ERIK LUCERO, MATTHEW NEELEY, AARON O'CONNELL, HAOHUA WANG, ANDREW CLELAND, JOHN MARTINIS, UCSB Dept. of Physics — We present the results of a novel measurement in a Josephson phase qubit that uses the resonant response of the qubit to directly measure the spectrum of low-frequency noise. This general method can be applied to any qubit system. By alternating the sense of the qubit bias, we show that the noise is predominantly flux-like, as opposed to a critical-current noise. The magnitude of the noise is compatible with previous measurements of excess low-frequency flux noise in SQUIDs cooled to millikelvin temperatures. We present the results of calculations of flux noise from paramagnetic defects in the native oxides of the superconductors, and show that the measured flux noise cannot be explained by the standard model of two-level state defects.

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