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Reflectometry measurements of 1/f noise in SQUID phase qubits at mK temperatures[1] B. K. COOPER, R. M. LEWIS, CNAM and JQI, University of Maryland, B. S. PALMER, V. ZARETSKEY, Laboratory for Physical Sciences, A. J. PRZYBYSZ, H. KWON, J. R. ANDERSON, C. J. LOBB, F. C. WELLSTOOD, CNAM and JQI, University of Maryland — We measure 1/f noise spectra in dc SQUID phase qubits using a microwave reflectometry technique. One of the SQUID junctions is shunted by a large capacitor, forming a microwave frequency resonator biased and driven to show nonlinear response, typically at 1.5 GHz. This nonlinearity means small current or flux fluctuations produce large changes in reflected phase which we can measure using homodyne detection. Measurements from aluminum qubits on sapphire are compared to previous measurements of 1/f flux noise in SQUIDs and a similarly designed Nb/AlOx/Nb on silicon dc SQUID qubit fabricated by Hypres; data was taken at temperatures ranging from 50 mK to 500 mK.

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B. K. Cooper
CNAM and JQI, University of Maryland

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