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Measurement of low frequency flux noise in superconducting flux qubits[1] WEI QIU, BO MAO, Department of Physics and Astronomy, University of Kansas, Lawrence, KS 66045, YANG YU, Department of Physics, Nanjing University, Nanjing 210093, China, SHAOXIONG LI, SIYUAN HAN, Department of Physics and Astronomy, University of Kansas, Lawrence, KS 66045, DEPARTMENT OF ELECTRONICS SCIENCE AND ENGINEERING, NANJING UNIVERSITY COLLABORATION — The development of superconducting quantum interference devices (SQUIDs) as flux qubits for scalable quantum computation has been impeded significantly in the last several years by excessive low frequency flux noise which has become the dominant decoherence mechanism in several experiments. We measured the low frequency flux noise in SQUIDs with inductance ranging from about 30 pH to 1 nH. We found that for the Nb SQUIDs fabricated with the same process the measured rms low frequency flux noise has a linear dependence on the inductance of the SQUIDs. Implications of the result on material, design, fabrication of flux qubit will be discussed.

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