

Abstract Submitted
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Noise Characteristics of the Josephson Amplifiers by Stochastic Calculus¹ WENSHUO LIU, ROBERT MCDERMOTT, MAXIM VAVILOV, University of Wisconsin, Madison — We present theoretical studies of the noise performance of non-reciprocal gain elements based on Josephson junctions including the SQUID and the SLUG. We develop a perturbative approach by means of stochastic calculus which combines both analytical and numerical methods, and calculate the noise characteristics of the amplifiers in the thermal regime. We show that noise in the amplifiers originates mainly from the diffusive behavior of phase slips. This new method could help with the optimization of Josephson amplifiers for high-fidelity multiplexed qubit readout.

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