

Abstract Submitted
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Improving dc SQUID Phase Qubit Lifetimes through Increased Isolation from Bias Leads¹ ANTHONY PRZYBYSZ, TAUNO PALOMAKI, SUDEEP DUTTA, FRED WELLSTOOD, RUPERT LEWIS, HANHEE PAIK, HYEOKSHIN KWON, BEN COOPER, KAUSHIK MITRA, BOB ANDERSON, ALEX DRAGT, CHRIS LOBB, JQI, University of Maryland — The dc SQUID phase qubit has been plagued by a relatively short coherence time, T_2 , and relaxation time, T_1 (tens of ns). By using a sapphire substrate and small ($15 \mu\text{m}^2$ or less) Al/ AlO_x /Al junctions the performance of the qubit has improved to the point where the impedance of the bias leads is the main source of dissipation and decoherence in the device. We identify the main circuit parameters that effect the isolation (junction capacitance, loop inductance, etc.), and present designs to improve the qubits isolation from the bias leads.

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