

Abstract Submitted  
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**Josephson Phase Qubit with a Distributed Reactance** ANTHONY PRZYBYSZ, DAVID FERGUSON, OFER NAAMAN, JOEL STRAND, JAMES MEDFORD, AARON PESETSKI, Northrop Grumman Corporation — We present our characterization of a novel phase qubit design in which the capacitance across the Josephson junction and the inductance of the SQUID are provided by a microstrip resonator instead of lumped circuit elements. The spectroscopic data from this device clearly shows a behavior with respect to applied flux that cannot be accurately described by a simple SQUID model. We present measurements of the devices coherence times and anharmonicity, and compare the spectrum to a theoretical model that treats the phase drop across the length of the resonator as a continuous field.

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