

Abstract Submitted
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SQUID-tunable microwave lumped-element oscillators and distributed resonators¹ P. BHUPATHI, M.P. DEFEO, M. WARE, J.D. STRAND, B.L.T. PLOURDE, Syracuse University — We have fabricated lumped-element microwave oscillators and coplanar waveguide resonators consisting of a dc SQUID using submicron Al-AlO_x-Al junctions with resonance frequencies in the range of several GHz. The SQUID oscillators consist of a dc SQUID shunted with a capacitor formed from superconducting layers. The CPW resonators are formed from Nb $\lambda/2$ coplanar transmission lines with a center conductor interrupted by an Al dc SQUID at the current anti-node of the fundamental mode. The resonance frequency can be varied by tuning the Josephson inductance of the SQUID with on-chip flux and bias-current lines. We discuss applications employing these devices, including a new readout scheme for superconducting flux qubits and for the detection of microwave cavity photons.

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