

Abstract Submitted
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Fabrication and Characterization of Aluminum Airbridges for Superconducting Qubit Circuits ZIJUN CHEN, ANTHONY MEGRANT, JULIAN KELLY, RAMI BARENDS, JOERG BOCHMANN, YU CHEN, BENJAMIN CHIARO, ANDREW DUNSWORTH, EVAN JEFFREY, JOSHUA MUTUS, PETER O'MALLEY, CHARLES NEILL, PEDRAM ROUSHAN, DANIEL SANK, AMIT VAINSENER, JAMES WENNER, THEODORE WHITE, ANDREW CLELAND, JOHN MARTINIS, Univ of California - Santa Barbara — Superconducting circuits based on coplanar waveguides (CPWs) are susceptible to parasitic slotline modes which can lead to loss and decoherence. We motivate the use of superconducting airbridges as a reliable method for preventing the propagation of these modes. We describe the fabrication of these airbridges on superconducting resonators, which we use to measure the loss due to placing airbridges over CPW lines. We find that the additional loss at single photon levels is small, and decreases at higher drive powers. These results pave the way for building airbridge crossovers on more complex qubit circuits.

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