

Abstract Submitted
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Chip Mount Design as a Dissipation-Limiting Factor in High Quality Superconducting Resonators BROOKS CAMPBELL, R. BARENDS, J. BOCHMANN, YU CHEN, Z. CHEN, B. CHIARO, A. DUNSWORTH, I. HOI, E. JEFFREY, J. KELLY, A. MEGRANT, J. MUTUS, C. NEIL, P. O'MALLEY, C. QUINTANA, P. ROUSHAN, D. SANK, A. VAINSENER, J. WENNER, T. WHITE, A.N. CLELAND, J.M. MARTINIS, Univ of California - Santa Barbara — Superconducting quantum computing technology continues to make progress with regards to both materials quality and circuit complexity. We have found that chip mount design can become a coherence-limiting factor for superconducting coplanar resonators with an internal quality factor above 1 million. Understanding the impact of chip-to-mount coupling will aid in both proper mount design for higher density circuits as well as the further improvement of coherence times. These coplanar resonators provide an ideal test circuit as they are sensitive to a variety of loss mechanisms including radiation, infrared light, and magnetic fields which also affect more complex superconducting circuits. I will present results relating the coherence and performance of resonators to box design, box material, and chip layout.

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