

Abstract Submitted
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Superconducting Microwave Resonators CHARLES NEILL, ANTHONY MEGRANT, MIKE LENANDER, RAMI BARENDS, JIM WENNER, TED WHITE, DANIEL SANK, YU CHEN, YI YIN, BEN CHIARO, JULIAN KELLY, PETER O'MALLEY, PEDRAM ROUSHAN, ERIK LUCERO, AMIT VAINSENER, JOERG BOCHMANN, MATTEO MARIANTONI, CHRIS AXLINE, JOHN MARTINIS, ANDREW CLELAND, UCSB — High quality factor superconducting microwave resonators play a key role in applications to quantum computation and single photon detection schemes. We have optimized our aluminum quarter wavelength coplanar waveguide resonators in an effort to improve energy decay times. As the characteristic decay times in our samples begin to approach the requirements set out by fault tolerant error correction algorithms, reproducibility becomes a growing focus. Consistent reproduction of high quality factor resonators requires reliable determination of device parameters independent of experimental imperfections and environmental influences. These measurements permit an improved understanding of the variations between nominally identical resonators as well as variations in an individual sample over time. Recent experimental results will be discussed.

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