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**Microwave Response of Superconducting Resonant Circuits based on 3D Aluminum Nanobridge Josephson Junctions** ELI LEVENSON-FALK, R. VIJAY, KATER MURCH, IRFAN SIDDIQI, QNL, UC Berkeley — Metallic weak links are attractive candidates for low loss superconducting circuits as they offer a route to realize Josephson junctions without the need for an amorphous tunnel barrier-a potential source of both low and high frequency noise. We discuss microwave measurements of high quality factor resonators incorporating both single nanobridges and nanobridge-based SQUIDs. Our results indicate low loss and strong nonlinearity, suggesting the future utility of these devices in qubit and amplifier circuits. Our data are in quantitative agreement with numerically computed nanobridge current-phase relations and dc transport measurements. We show preliminary results on nanobridge-based qubits and parametric amplifiers.

Eli Levenson-Falk
QNL, UC Berkeley

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