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Flux-dependent loss in aluminum nanobridge SQUID resonators¹ E. M. LEVENSON-FALK, R. VIJAY, I. SIDDIQI, QNL, UC Berkeley — Unlike traditional tunnel junctions, nanobridge Josephson junctions have weaker nonlinearity, higher transmittivity, and relatively few conduction channels. These parameters carry with them their own intrinsic loss mechanisms. In particular, quasiparticle trapping has been recently shown [1] to be prevalent in quantum point contact junctions operating in a similar parameter regime. We investigate losses in resonant circuits comprised of nanobridge SQUIDs. We observe an increase in loss and an anomalous frequency shift as the SQUIDs are flux-biased, which we speculate to be the result of quasiparticle trapping in a phase-biased nanobridge. We present detailed measurements of this effect, and discuss efforts towards eliminating it. [1] Bretheau et al., PRL 106, 257003 (2011)

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