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Proximitized-superconducting quasiparticle traps for circuit QED devices[1] K. SERNIAK, G. DE LANGE, U. VOOL, M. HAYS, L.D. BURKHART, Y.Y. GAO, Department of Applied Physics, Yale University, I.M. POP, Department of Applied Physics, Yale University, and Physikalisches Institut, Karlsruhe Institute of Technology, L. FRUNZIO, L.I. GLAZMAN, R.J. SCHOELKOPF, M.H. DEVORET, Department of Applied Physics, Yale University
— Recent experiments have shown that the density of quasiparticles in superconducting quantum circuits exceeds the expected thermal density. In Josephson junction based superconducting qubits, these non-equilibrium quasiparticles can tunnel through the junctions of the circuit, causing decoherence. Quasiparticle traps aim to reduce the density of quasiparticles near the junctions, and therefore the rate of energy loss and dephasing due to tunneling events. Using the proximity effect between titanium and aluminum, one can selectively reduce the superconducting gap away from the Josephson junctions of a circuit, creating quasiparticle traps. In this talk, we will discuss progress in the design and characterization of these proximitized-superconducting quasiparticle traps and their effect on quasiparticle dynamics.

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