

Abstract Submitted
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Quasiparticle poisoning induced by a biased SET electrometer

JOSÉ AUMENTADO, OFER NAAMAN, NIST — In this talk, we will present measurements of the quasiparticle “poisoning” rate induced in a superconducting Cooper pair transistor (SCPT) due to the biasing of an adjacent SCPT. We operate the first SCPT as a quasiparticle detector biased on its supercurrent branch, while we bias the drain-source and gate voltages on the second SCPT to generate quasiparticles in the first SCPT.¹ Using radio-frequency methods, we are able to study the poisoning in the time domain and correlate it with resonant features in the current-voltage characteristic of the second SCPT. In this way, we study the quasiparticle generation rate that a similarly biased electrometer may induce in a Cooper pair box. We will discuss the possible mechanisms for this quasiparticle generation and its implications for charge qubit readout.

¹this was first noted J.Männik and J.E.Lukens, Phys. Rev. Lett. **92** 057004 (2004)

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