

Abstract Submitted
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Narrow band microwave radiation from a biased single-Cooper-pair transistor OFER NAAMAN, JOSÉ AUMENTADO, NIST, Boulder — We have spectroscopically measured narrow-band microwave radiation emitted from a single-Cooper-pair transistor (SCPT) electrometer biased in its sub-gap region. This radiation was detected by photon-assisted quasiparticle tunneling in a nearby SCPT, in a configuration that closely mimics a qubit-electrometer integrated circuit. In addition to the usual Josephson radiation generated by the electrometer, we also find emission lines whose frequency depend on both the gate charge and bias voltage of the electrometer, and attribute these lines to radiative Cooper-pair transport processes in the biased transistor. Our results suggest that the dissipative operation of an SCPT electrometer, when used as a qubit readout device, may severely disrupt the system it attempts to measure. This radiative coupling between Josephson charge devices, which dominates when coupling in the charge channel is negligible, may impose design constraints on a large scale multi-qubit quantum computer.

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