

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Microwave Photon Counter Based on Josephson Junctions Y.-F. CHEN, D. HOVER, S. SENDELBACH, L. MAURER, R. MCDERMOTT, University of Wisconsin, S.T. MERKEL, E.J. PRITCHETT, F.K. WILHELM, Institute for Quantum Computing, University of Waterloo — We describe a microwave photon counter based on current-biased Josephson junctions. The absorption of a single microwave photon causes a junction to switch to the voltage state, producing a large and easily measured classical signal. With a two-junction circuit, we have performed a microwave version of the Hanbury Brown and Twiss experiment at 4 GHz, and demonstrated a clear signature of photon bunching for a thermal source. The design is readily scalable to tens of parallelized junctions, a configuration that would allow number-resolved counting of microwave photons. We discuss possible applications to cavity state readout and to measurement of the counting statistics of microwave photons emitted by mesoscopic conductors.

David Hover
University of Wisconsin

Date submitted: 22 Dec 2010

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