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Microwave Photon Counter Based on Josephson Junctions GUILHEM RIBEILL, UMESHKUMAR PATEL, JOSEPH SUTTLE, ROBERT MCDERMOTT, University of Wisconsin - Madison Department of Physics — We describe progress in the development of a microwave photon counter based on the current biased Josephson junction; absorption of a single photon causes the junction to switch to the voltage state, producing a large and easily measured classical signal. We discuss a self-resetting bias scheme based on a superconducting kinetic inductor that causes the junction to reset automatically to the active state following photon absorption. We investigate detector quantum efficiency and dark rate, and discuss applications to mesoscopic noise and circuit quantum electrodynamics.

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