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Fast, single-photon detection with a superconducting Nb nanowire[1] ANTHONY ANNUNZIATA, ANDREW MACK, JOEL CHUDOW, DANIEL SANTAVICCA, Yale University, AVIAD FRYDMAN, Bar Ilan University, MICHAEL ROOKS, IBM - Watson Research Center, LUIGI FRUNZIO, DANIEL PROBER, Yale University — We investigate the performance of a superconducting nanowire detector made from an ultra-thin, pure Nb film. Single photon counting performance is shown with good quantum efficiency at 470 nm. We report the reset time, jitter, and dark count rate for single photon detection. We compare these results to reports for NbN detectors. The Nb detector has a faster reset time for the same size active area, with similar quantum efficiency. These detectors have a variety of potential applications ranging from VLSI circuit diagnostics to quantum communication and single molecule spectroscopy. This work is supported by NSF – EPDT and IBM research.

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