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Squeezed Light Generation Using a Josephson Traveling Wave Parametric Amplifier in Three-Wave Mixing[1] YANJIE QIU, ANDREW EDDINS, KEVIN O'BRIEN, IRFAN SIDDIQI, Quantum Nanoelectronics Laboratory — The generation of highly-squeezed states using superconducting amplifiers is a valuable tool for quantum optics and quantum metrology in the microwave domain. However, conventional Josephson parametric amplifiers can be limited with respect to squeezing strength, often due to the relatively strong nonlinearity of cavity-based devices. Recently, Josephson traveling-wave parametric amplifiers (JTWPA) have been developed exhibiting large dynamic range with a 1dB compression point around -100dBm at the input of the JTWPA and over 3 GHz bandwidth [1]. The high saturation power of these devices makes them promising candidates for generating highly squeezed states. In this talk, we present a novel scheme for operating a JTWPA in three-wave mixing mode, and discuss our investigations of the JTWPA squeezing performance. *[1] C. Macklin, K. O'Brien, D. Hover, M. E. Schwartz, V. Bolkhovsky, X. Zhang, W. D. Oliver, and I. Siddiqi, Science 350, 307 (2015)*

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