

Abstract Submitted  
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**Local comb generation in nonlinear TiN superconducting resonators**<sup>1</sup> DAVID PAPPAS, MICHAEL R. VISSERS, ROBERT ERICKSON, MARTIN SANDBERG, JIANSONG GAO, NIST - Boulder — Low loss superconducting nonlinear resonators are extensively used for qubit readout as well as photon detectors. These devices are typically capacitively coupled to a launch line. When driven at high power, a shift in resonant frequency is observed due to the kinetic inductance of the TiN superconductor. At higher power, the resonant frequency mixes with the drive tone to produce a series of peaks that are observed to be equally spaced at the detuning frequency, i.e. a “local comb.” The full circuit analysis of this system is derived. The renormalized resonant frequency is obtained and the local comb is derived from a first order successive approximation.

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