

Abstract Submitted
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Effects of nonlinearity in the emission spectrum of the driven nonlinear oscillator MICHAEL MARTHALER, STEPHAN ANDRE, LINGZHEN GUO, Institut für Theoretische Festkörperphysik, Karlsruhe, VITTORIO PEANO, Department of Physics and Astronomy, Michigan State University, East Lansing, GERD SCHÖN, Institut für Theoretische Festkörperphysik, Karlsruhe — Motivated by many experiments on nonlinear driven systems realized using superconducting circuits we investigate the properties of a coherently driven nonlinear resonator. By using Josephson junctions in superconducting circuits, strong nonlinearities can be engineered, which lead to a relatively low number of photons in the resonator and the appearance of pronounced nonlinear effects. Based on a master equation approach, which takes into account the quantum nature of noise, we determine the emission spectrum and observe for typical circuit QED parameters, in addition to the primary side-peaks, second-order peaks not predicted by a linearized theory.

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