

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Design and Calibration of an Improved Josephson Parametric Amplifier WILLIAM F. KINDEL, HSIANG-SHENG KU, University of Colorado, FRANCOIS MALLET, JILA, LEILA R. VALE, GENE C. HILTON, KENT D. IRWIN, National Institute of Standards and Technology, KONRAD W. LEHNERT, JILA — Phase sensitive amplifiers are of interested because in principal they can amplify one quadrature of a tone without any added noise, unlike phase insensitive amplifiers which amplify both quadratures but must add half a quanta of noise. In situations where a signal of interest is encoded in the modulation of only one quadrature of a tone, phase sensitive detection is clearly dvantageous. With the goal of creating a microwave-frequency phase-sensitive amplifier that adds no noise, we will present the design and performance of a recently tested Josephson Parametric Amplifier (JPA). Initial measurements indicate that the JPAs added noise is no greater than 0.1 quanta. This is a substantial improvement over a previous design for which the added noise was 0.3 quanta [1]. I will discuss changes made to the design and possible reason for the improvement.

[1] M. A. Castellanos-Beltran et al, Nature Phys. 4 929 (2008). M. A. Castellanos-Beltran

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Date submitted: 03 Jan 2011

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