

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Nonreciprocal frequency conversion in a multimode microwave optomechanical circuit A.K. FEOFANOV, N.R. BERNIER, L.D. TOTH, A. KOOTTANDAVIDA, T.J. KIPPENBERG, Ecole Polytechnique Federale de Lausanne — Nonreciprocal devices such as isolators, circulators, and directional amplifiers are pivotal to quantum signal processing with superconducting circuits. In the microwave domain, commercially available nonreciprocal devices are based on ferrite materials. They are barely compatible with superconducting quantum circuits, lossy, and cannot be integrated on chip. Significant potential exists for implementing non-magnetic chip-scale nonreciprocal devices using microwave optomechanical circuits. Here we demonstrate a possibility of nonreciprocal frequency conversion in a multimode microwave optomechanical circuit using solely optomechanical interaction between modes. The conversion scheme and the results reflecting the actual progress on the experimental implementation of the scheme will be presented.

Alexey Feofanov
Ecole Polytechnique Federale de Lausanne

Date submitted: 11 Nov 2016

Electronic form version 1.4