Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Exploring the thermodynamic limit of optomechanical systems STEPHEN RAGOLE, Joint Quantum Institute, Univ of Maryland-College Park/NIST, Joint Center for Quantum Information and Computer Science, Univ of Maryland-College Park, HAITAN XU, Yale University, JOHN LAWALL, National Institute of Standards and Technology, JACOB TAYLOR, Joint Quantum Institute, Univ of Maryland-College Park/NIST, Joint Center for Quantum Information and Computer Science, Univ of Maryland-College Park — Optomechanical systems have allowed exciting explorations combining precise engineering in the optical and mechanical domains. Recently, symmetric membrane-in-the-middle systems have been shown to have stable buckling configurations, where the membrane will spontaneously break the Z_2 symmetry and buckle to a fixed position. We identify a parameter regime in which a natural thermodynamic limit arises for the optical spring. In this regime, we describe the phase diagram for the experimental system, a many-mode membrane with two optical modes. We discuss generalizations to other symmetries.

Stephen Ragole
Univ of Maryland-College Park/NIST

Date submitted: 18 Nov 2016 Electronic form version 1.4