

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The photon shuttle FLORIAN MARQUARDT, GEORG HEINRICH, Department of Physics, ASC, and CeNS, LMU Munich, JACK HARRIS, Department of Physics, Yale University — Optomechanics deals with the interaction between localized optical and vibrational modes in micro- and nanomechanical setups. We show how a partially transparent membrane, placed inside an optical cavity, can shuttle photons between the two halves of the cavity when it is made to vibrate. The resulting dynamics induces mechanically driven Rabi oscillations in the photonic two-state system and shows the rich interference effects known as Landau-Zener-Stueckelberg oscillations. A wealth of other phenomena known from strongly driven atomic systems could be implemented as well in mechanically driven optomechanical circuits.

Florian Marquardt
Department of Physics, ASC, and CeNS, LMU Munich

Date submitted: 20 Nov 2009

Electronic form version 1.4