

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Opto-mechanics with sub-wavelength grating-membranes¹ HAITAN XU, UTKU KEMIKTARAK, JQI, Univ of Maryland-College Park and NIST, COREY STAMBAUGH, MATHIEU DURAND, JOHN LAWALL, NIST, JACOB TAYLOR, JQI, Univ of Maryland-College Park and NIST — We fabricate highly reflective sub-wavelength grating membranes using stoichiometric silicon nitride. We achieve a grating reflectivity of 99.6% with a membrane mechanical frequency of ~ 1 MHz. We integrate the grating-membrane into a Fabry-Perot cavity and investigate its opto-mechanical properties. We also consider the prospect of using them for three mode opto-mechanics experiments where the two optical cavity modes are coupled through a mechanical mode.

¹We acknowledge support from DARPA QuASAR and the NSF-funded Physics Frontier Center at the Joint Quantum Institute, and also CNST at NIST.

Haitan Xu
Univ of Maryland-College Park

Date submitted: 15 Nov 2013

Electronic form version 1.4