

THE UNIVERSITY OF DENVER

Department of Physics & Astronomy

Presents

Quantum measurement of a macroscopic mechanical oscillator

Wednesday, February 1, 2012

4:00 PM

F.W. Olin Hall Room 105

2190 E. Iliff Avenue

Presented by

Jennifer Harlow

Graduate Student

University of Colorado & JILA

Coupling a mechanical oscillator to a high-Q optical or microwave cavity enables very sensitive readout and control of the mechanical oscillator. Such an optomechanical system has applications as an ultra-sensitive force and displacement detector. Additionally, as these detectors become more and more sensitive, they can also be used to study the limits quantum mechanics puts on measurement. The optical/microwave fields can also be used to control the state of the mechanical oscillator, either amplifying its motion or cooling it. I will describe how we recently cooled a drum-like MHz mechanical oscillator coupled to a GHz microwave cavity into the quantum regime, and how our current experiments will further explore the quantum nature of such a macroscopic object.

HOST: Dr. Mark Siemens, (303) 871-3541, Mark.Siemens@du.edu

Join us for refreshments & follow-up discussions in Physics Building Room 116, 5:00-6:00 PM