Towards Testing Quantum Mechanics with Micro-Optomechanical Systems

DUSTIN KLECKNER, SUSANNA THON, University of California - Santa Barbara, EVAN JEFFREY, University of Leiden, DIRK BOUWMEESTER, University of California - Santa Barbara and University of Leiden — We review our work in micro-optomechanical systems. Motivation for work on these systems is based in proposals to test quantum mechanics in new regimes. Although extremely challenging, creating a quantum superposition of a micro-mechanical oscillator coupled to an optical cavity seems experimentally feasible with current technology. Additionally, the optomechanical systems used for this type of research have other applications, such as optical cooling, as recently demonstrated by several independent groups. Finally we will briefly discuss the direction of our research in the near future, including the use of conventional cryogenics to cool the resonator and the prospects for several related types of devices.

Supported by NSF Grant PHY-0504825

Dustin Kleckner
University of California - Santa Barbara

Date submitted: 27 Nov 2007

Electronic form version 1.4