

Special Seminar
MPQ/LMU

Date: Friday, January 10, 2014

Time: 10 a.m., s.t.

Presentation: Mahdi Hosseini, PhD
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Title: Hot and Cold Atomic Memories
to Store and Manipulate Light;
Multimode Optical Quadrature Cooling
and High-Resolution Sensing Using Nanomechanics

Location: Chair Professor Theodor W. Hänsch
LMU, Faculty of Physics
Discussion Room H 311

Division of Laserspectroscopy, Director Professor Theodor W. Hänsch

ABSTRACT

I will present experimental results for storage and manipulation of light using gradient echo memory technique. We show that light pulses can be stored efficiently and noiselessly in an atomic ensemble. Furthermore, we demonstrate that optical information can be coherently controlled and manipulated while stopped inside the memory.

In the second half of my talk, I will present experimental result of multimode cooling of the oscillation modes of a nanorod at room temperature down to a few Kelvin (5 ± 1 K) by means of active control of bolometric forces and without the aid of an optical cavity. We also investigate the effect of cyclic feedback cooling on sensing of weak impulsive forces and show that signal-to-noise ratio can in fact be improved in transient cooling regime, and compare this technique with estimation theories.