

SONDERSEMINAR/SPECIAL SEMINAR
LMU/MPQ

am: Thursday, March 19, 2015

Uhrzeit: 10:00 a.m. s.t.

spriicht: Mr. Sergey Fedorov
P.N. Lebedev Physical Institute and
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Thema: Spectroscopy of Laser-Cooled Thulium Atoms

Ort: Discussion Room H 311
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gez. Prof. T.W. Hänsch

Abstract

Spectroscopy of laser-cooled Thulium atoms

I will report on current progress of laser cooling, trapping and spectroscopy of Thulium atoms at P.N. Lebedev Physical Institute. Study of ultracold rare-earth elements attracts strong interest not only because of their high ground-state magnetic moments and rich physics of atom-atom interactions [1,2], but also due to vast opportunities for high-precision spectroscopy. Our project aims for study of ground-state magnetic dipole transition at 1.14 μm for optical clock applications and in parallel study of ultracold Tm-Tm collisions.

In this talk I will present methods of laser cooling Thulium atoms in two stages and trapping the atoms in magnetic and optical dipole traps (lattice) [3]. First observation and preliminary study of the clock transition at 1.14 μm and corresponding calculations of the magic wavelength will also be presented.

[1]Nature, **507**, 475 (2014)

[2]Physical Review A, **89**, 020701(R) (2014)

[3]Quantum Electron., **44**, 507-514 (2014)