



Seminar: Optics/Photonics SoSe 2015

Hot Topics in Theory and Experiment

In this seminar, we introduce and discuss modern concepts in optics and photonics. Each talk will focus on a recently published research highlight. All presentations are in English, but we allow for German as exceptions as well. The seminar is part of the *Optik-Spezialisierungsmodul P23.4.2 Optik/Photonik*.

Time and date: Thursdays 15-17 Uhr in NEW 14, 1'14.

The first meeting with introduction and distribution of the topics is Thursday, 16.04., 15:15 Uhr in NEW 14, 1'14.

Selection of possible topics:

- Optical nanomagnetometry with diamond defect centers (OB)
- The spaser – A laser with plasmons (OB)
- Entangled photons from semiconductor nanostructures for quantum information (OB)
- Imaging nuclear motion on the sub-femtosecond and sub-ångstrom scales (AS)
- Quantum simulators based on ultracold atoms in optical lattices (AS)
- Physics with ultra-intense lasers: towards the vacuum breakdown (AS)
- Untersuchung der plasmonischen Eigenschaften metallischer Nano-Teilchen mittels Elektronenenergie-Verlustspektroskopie (KB)
- Simulation nano-photonischer mit der Discontinuous Galerkin Time-Domain Methode (KB)
- Hyperbolic metamaterials (SK)
- Polaritons in microcavities - Lasing without inversion (SS, SB)
- Accelerator-based sources for short wave radiation (TE)
- Generation and application of Terahertz radiation (TE)
- Ultra-short x-ray and electron diffraction (TE)
- Femtosekundenlaser als optische Frequenzkämme für Astronomie und Kosmologie (AP)
- Quantum optomechanics: Exploring quantum effects in macroscopic mechanical oscillators (AP)
- LIGO – towards the detection of gravitational waves using kilometer-scale optical interferometers (AP)
- High harmonic generation spectroscopy of multi-electron dynamics in molecules (MI)
- Coherent control of quantum systems dynamics with tailored laser pulses (MI)
- Time delays in ionization: how long does it take an atom to absorb a photon? (MI)
- High resolution terahertz spectroscopy with quantum cascade lasers (HWH)