

Research in Optical Science

19-21 MARCH 2012 BERLIN, GERMANY

High-Intensity lasers & High-Field Phenomena (HILAS)

CHAIRS:

Andrius Baltuska, TU Vienna, Austria
John Dudley, Univ. Franche-Comté, France

The aim of the High-Intensity Sources and High-Field Phenomena meeting is to assemble a multi disciplinary group of participants to present and exchange breakthrough ideas relating to the physics and applications of high field sources, and related developments in high intensity lasers and related technology.

The conference topics include both fundamental science and applications of high field phenomena, as well as technical aspects related to source development. High quality experimental and theoretical contributions are solicited in any topical area related to the coverage of the conference, including the following:

- High-peak power lasers and high-intensity laser-matter interactions
- Recent progress in terawatt to petawatt lasers and the amplification of few cycle pulses
- Laser technology for fusion and laser based EUV and X-ray sources
- Strong field laser science including interactions with atoms, molecules, clusters, and plasmas
- Advances in attosecond science
- High harmonic generation, high-field rescattering physics, relativistic nonlinear phenomena, intense pulse propagation
- Plasmas in ultrahigh fields, and laser based particle acceleration

2nd International Conference on Ultrafast Structural Dynamics (ICUSD)

CHAIRS:

Thomas Elsaesser, Max Born Inst., Germany
Majed Chergui, École Polytechnique Fédérale de Lausanne, Switzerland

The meeting covers the new and rapidly developing field of structure research in the ultrafast, i.e., femto- to picosecond time domain. Light induced structural dynamics are mapped in real-time by techniques such as x-ray diffraction, electron diffraction, and x-ray absorption, using femtosecond x-ray and/or electron pulses synchronized with optical pulses. Such structure research is complemented by nonlinear multidimensional spectroscopy to observe microscopic interactions and measure their strength. Structural dynamics in a very broad range of systems is elucidated and basic physical, chemical and biological processes are analyzed in a quantitative way, including theoretical calculations and simulations. Address-

ing such complex scientific problems requires the combination of knowledge and methodology from different fields in an interdisciplinary approach. The meeting serves as a platform for discussing the latest research in this area, for establishing new cooperations and for giving early stage researchers the opportunity to present their work and get in touch with a broader community.

Topics covered include short-wavelength and x-ray optics, nonlinear spectroscopy, physics, chemistry, materials science, and photobiology.

International Conference on Quantum Information (ICQI)

CHAIRS:

Robert Boyd, Univ. of Ottawa, Canada, and
Univ. of Rochester, USA
Alexander Sergienko, Boston Univ., USA

Quantum information is an exciting, rapidly growing area of scientific interest and development, attracting cutting-edge theoretical and experimental research worldwide. Entanglement is a key resource for quantum information and quantum computing, whereas decoherence is the main adversary. Optical methods play a key role in many implementations of quantum information. The meeting will concentrate on entanglement, decoherence and optical methods, but contributions from all areas of quantum information science are welcome.

- Entanglement
- Decoherence
- Quantum imaging and lithography
- Quantum communication and cryptography, quantum channels, quantum repeaters
- Quantum control and error correction
- Algorithms, walks on graphs, spin chains, phase transitions, chaos, and localization
- Emerging topics: cluster states, adiabatic quantum computing, topological quantum computing
- Implementations: linear optics, cavity QED, ion traps, solid state, etc.
- Quantum state reconstruction, super-resolution
- Precision quantum measurements and metrology
- Storage and transfer of quantum information
- Novel practical quantum applications and technologies

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