PD-1: Postdeadline 1

Chair: Jörg Schreiber, Ludwig-Maximilians-Universität and Max Planck Institute for Quantum Optics, Garching, Germany

Time: Wednesday, 19:00–20:30 Location: ROOM 13a ICM

Oral PD-1.1 19:00 ROOM 13a ICM

27-fs, 166-MW pulses at 98 W average power from highly efficient thin-disk oscillator driven nonlinear compressor — •Chia-Lun Tsai[1], Frank Meyer[2], Alan Omar[2], Yicheng Wang[2], An-Yuan Liang[1], Chih-Hsuan Lu[1], Shang-Da Yang[1], and Clara J. Saraceno[2] — [1]National Tsing Hua University, Hsinchu, Taïwan — [2]Ruhr University Bochum, Bochum, Germany

We demonstrate efficient nonlinear compression of a high-power thin-disk oscillator based on a two-stage (multi-pass-cell and multiple-plate) compression setup. We achieve 98W average power with 27fs pulses at 13.4MHz, resulting in 166MW peak power.

Oral PD-1.2 19:10 ROOM 13a ICM

10 PetaWatt Laser System for Extreme Light Physics — •François Lureau[1], Guillaume Matras[1], Sébastien Laux[1], Christophe Radier[1], Olivier Chalus[1], Olivier Casagrande[1], Christophe Derycke[1], Sandrine Ricaud[1], Laurent Boudjemaa[1], Christophe Simon-Boisson[1], Florin Jipa[2], Liviu Neagu[2], Daniel Ursescu[2], and Ioan Dancus[2] — [1]Thales LAS, Elancourt, France — [2]Horia Holubei Institute of Nuclear Physics, Magurele, Romania

We report first 10 PW light from the ELI-NP laser. We have obtained at 1 shot/min pulses with 332 J energy before compression and 22.3 fs duration leading to a peak power of 10.9 PW

Oral PD-1.3 19:20 ROOM 13a ICM

Generation of 0.3-TW few-cycle driver pulses via efficient cascaded Raman frequency down conversion — •PAOLO ANTONIO CARPEGGIANI and GUANGYU FAN — PHOTONIK - TU WIEN, WIEN, Austria

We demonstrate a single-stage, SRS-enabled cascaded frequency down-conversion enebling generation of high-energy, few-cycle, shortwave-IR pulses. 10mJ, 220fs pulses at 1030nm are red-shifted to 1230nm in a 5.5m-long waveguide with 82.5% efficiency, and subsequently compressed to 19fs.

Oral PD-1.4 19:30 ROOM 13a ICM

Milliwatt-Class MHz Repetition-Rate THz Source Driven by a sub-100 fs High-Power Thin-Disk Laser — •Frank Meyer, Negar Hekmat, Tim Vogel, Alan Omar, Samira Mansourzadeh, Felix Fobbe, Martin Hoffmann, Yicheng Wang, and Clara Saraceno — Ruhr-University Bochum, Bochum, Germany

We demonstrate optical rectification in GaP, driven by a 100 W-class thin-disk oscillator, nonlinearly compressed to sub-100 fs. We measure a record-high average power of 1.35 mW for a table-top, single-cycle THz source at MHz repetition rate.

Oral PD-1.5 19:40 ROOM 13a ICM

Fully Phase Stabilized Quantum Cascade Laser Frequency Comb — •Saverio Bartalini[1,4], Luigi Consolino[1], Malik Hafa[1], Francesco Cappelli[1], Katia Giarrasi[2], Francesco P. Mezzapesa[2], Miriam S. Vitiello[2], Lianhe Li[3], A. Giles Davies[3], Edmund H. Linfield[3], and Paolo De Natale[1,4] — [1]CNR - Istituto Nazionale di Ottica and LENS, Sesto Fiorentino, Italy — [2]NEST, CNR - Istituto Nanoscienze and Scuola Normale Superiore, Pisa, Italy — [3]School of Electronics and Electrical Engineering, Leeds, United Kingdom — [4]ppqSense S.r.l., Campi Bisenzio, Italy

We present for the first time the full phase stabilization and independent control of the two comb degrees of freedom (offset and spacing) of a mode-locked multi-frequency THz QCL, finally proving its true comb nature.

Oral PD-1.6 19:50 ROOM 13a ICM

Mid-Infrared Frequency Comb from a Ring Quantum Cascade Laser — •Bo Meng, Mattias Beck, and Jérôme Faist — ETH, Zurich, Switzerland

Mid-infrared frequency comb from ring cavity quantum cascade laser has been demonstrated. Both intermode beatnoting (less than 1 kHz linewidth) and multiheterodyne spectra verify the frequency comb nature of the device.

Oral PD-1.7 20:00 ROOM 13a ICM

Birefringent Surface Gratings for Ultrafast Spin-VCSELs — •Tobias Pusch[1], Pierluigi Debernardi[2], Markus Lindemann[3], Nils C. Gerhardt[3], Martin R. Hofmann[3], and Rainer Michalzik[1] — [1]Functional Nanosystems, Ulm, Germany — [2]IEIIT, Turin, Italy — [3]Photonics and Terahertz Technology, Bochum, Germany

We present the first truly integrated approach for incorporating birefringence in a VCSEL cavity to enable spin-based ultrafast optical communications. Up to 98 GHz polarization mode splitting is achieved using a tailored surface grating.

Oral PD-1.8 20:10 ROOM 13a ICM

Quantitative phase microscopy with molecular vibrational sensitivity — •Miu Tamamitsu[1], Keiichiro Toda[1], Ryoichi Horisaki[2,3], and Takuro Ideguchi[3,4] — [1]Department of Physics, The University of Tokyo, Tokyo, Japan — [2]Graduate School of Information Science and Technology, Osaka University, Osaka, Japan — [3]PRESTO, Japan Science and Technology Agency, Saitama, Japan — [4]Institute for Photon Science and Technology, The University of Tokyo, Tokyo, Japan

We propose and demonstrate quantitative phase imaging method that yields label-free molecular-vibrational spectroscopic contrasts in the molecular-fingerprint region, which works by measuring the optical-phase-delay change induced upon molecular-vibrational absorption of a mid-infrared optical pulse.

Oral PD-1.9 20:20 ROOM 13a ICM

A silicon photonic design concept for a chip-to-fibre orbital angular momentum mode-division multiplexer — •Jan Markus Baumann, Kasper Ingerslev, Yunhong Ding, Lars Hagedorn Frandsen, Leif Katsuo Oxenløwe, and Toshio Morioka — DTU Fotonik, Technical University of Denmark, Lyngby, Denmark

A chip is presented for multiplexing to orbital angular momentum modes in air hole fibres in the C-band. The coupling to modes with topological charges of L = 5, 6 and 7 is demonstrated.