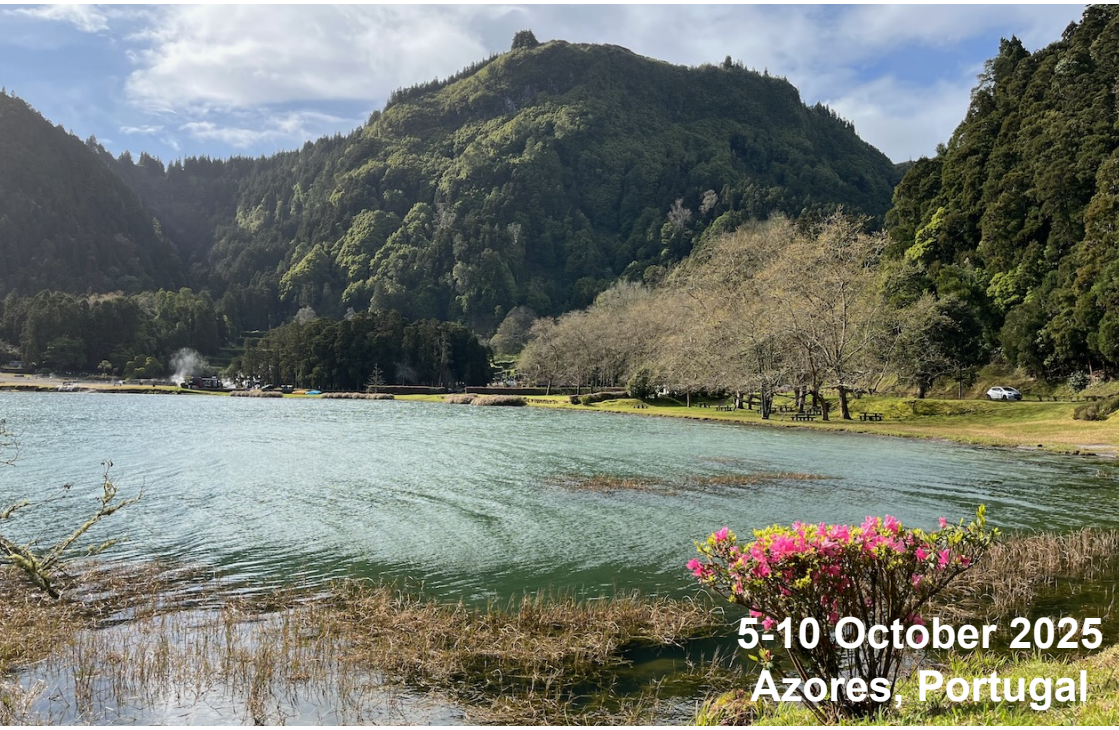
UltrafastOptics UFO XIV

Program Book



	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
08:45						
09:00		Opening Remarks	**Plenary 1:** Matthias Kling	**W1** Spatio-temporal manipulation and ultrashort pulse characterization	**Plenary 2:** Anne L'Huillier	**F1** High average power ultrafast lasers, Coherent beam combining
09:15		**M1** Novel methods for generating and manipulating ultrashort pulses				
09:30						
09:45			**Tu1** Ultrafast spectroscopy and quantum photonics		**Th1** Attosecond science and pulse generation I	
10:00						
10:15						
10:30						
10:45		Coffee break	Coffee break	Coffee break + Picture	Coffee break	Coffee break
11:00						
11:15		**M2** Spectral broadening and pulse compression I	**Tu2** Spectral broadening and pulse compression II	**W2** Machine learning and artificial intelligence for ultrafast optics	**Th2** Attosecond science and pulse generation II	**F2** Ultrafast applications: novel methods and technology II
11:30						
11:45						
12:00						
12:15						
12:30						Lunch + SCM
12:45		Lunch + Poster session 1	Lunch + Poster display 1	Lunch + Poster session 2	Lunch + Poster display 2	
13:00						
13:15						
13:30						
13:45						
14:00			**Tu3** High repetition rate sources and dual comb techniques	**W3** Methods for shaping and measuring ultrashort pulses	Excursion	**F3** Ultrafast applications: novel methods and technology III
14:15		**M3** Frequency-combs and carrier envelope phase control				
14:30						
14:45						
15:00						
15:15						Coffee break
15:30						
15:45		Coffee break	Coffee break	Coffee break		**F4** Ultrafast optics with x-rays and electrons
16:00						
16:15		**M4** Ultrafast Mid-infrared and Terahertz sources	**Tu4** Ultrafast applications: novel methods and technology I	**W4** Ultrahigh peak-power laser systems and related technologies		
16:30						
16:45						
17:00						
17:15						Conference closure
17:30						
17:45						
18:00	Reception		Drinks and Aperitif			
18:15						
18:30			Industry session			
18:45						
19:00						
19:15						
19:30					Conference Banquet	
20:30						
21:30						
22:30						

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Tu4	07/10	16:15 - 18:00	Ultrafast applications: novel methods and technology I	35-38
IS	07/10	18:30 - 20:30	Industry session	39-41
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About the Ultrafast Optics conference

Since the first edition in Monterey, California, in 1997, Ultrafast Optics (UFO) has been a dedicated forum for scientists and researchers to discuss the science and technology of ultrashort laser pulses. UFO thrives thanks to the dedicated efforts of its general chairs, program chairs, and local organizers, with guidance from an executive committee of past chairs. Its intentionally small size (typically 150–200 attendees), single-session format, strong involvement from exhibitors, inspiring locations, and engaging social activities all work together to create a welcoming, interactive, and tightly connected international ultrafast optics community.

Over the years, UFO has journeyed across the globe, bringing together the international ultrafast optics community in a series of inspiring locations:

I:	1997 -	Monterey, California, USA
II:	1999 -	Ascona, Switzerland
III:	2001 -	Château Montebello, Quebec, Canada
IV:	2003 -	Vienna, Austria
V:	2005 -	Nara, Japan
VI:	2007 -	Santa Fe, New Mexico, USA
VII:	2009 -	Arcachon, France
VIII:	2011 -	Monterey, California, USA
IX:	2013 -	Davos, Switzerland
X:	2015 -	Beijing, China
XI:	2017 -	Jackson Hole, Wyoming, USA
XII:	2019 -	Bol, Croatia
XIII:	2023 -	Bariloche, Argentina

The 14th edition in the Azores provides a special opportunity to reconnect and share the latest advances, as well as enjoy the breathtaking island landscapes while forging lasting collaborations. We hope you take full advantage of the program, discussions, and unique environment to learn about the latest advances in the field.

São Miguel, the largest island in the **Azores** archipelago, is often called "the Green Island" thanks to its lush landscapes, volcanic lakes, and rolling pastures. Located in the middle of the Atlantic Ocean, this island is a remarkable blend of natural beauty, rich history, and vibrant culture. Measuring about 62 kilometers in length and 16 kilometers at its widest point, São Miguel is home to nearly half of the Azorean population, with its capital, Ponta Delgada, serving as the main gateway to the archipelago.

What makes São Miguel so special is its unique volcanic origin, which has shaped both the geography and the lifestyle of its inhabitants. The island boasts stunning calderas such as Sete Cidades and Furnas, each home to emerald and sapphire-colored lakes nestled within steep crater walls. Visitors are often captivated by the view from Vista do Rei, overlooking the twin lakes of Sete Cidades, a scene that has become one of the most iconic images of the Azores. In Furnas, volcanic activity is still very much alive, with bubbling hot springs, fumaroles, and geysers scattered across the valley. Locals have turned this geothermal energy into tradition by cooking the famous Cozido das Furnas, a hearty stew slow-cooked underground by volcanic steam.

Nature lovers find São Miguel a paradise. The island is covered with endemic vegetation, colorful hydrangeas lining country roads, and tea plantations that are unique in Europe. The Gorreana and Porto Formoso tea estates have been producing black and green tea for over a century, offering a glimpse into the island's agricultural heritage. The climate, mild and humid year-round, allows for an extraordinary variety of plant life, giving São Miguel its characteristic green appearance in every season.

The coastline of São Miguel is equally impressive. Dramatic cliffs rise above the Atlantic, interspersed with natural pools, sandy beaches, and fishing villages that still preserve their charm. Surfers are drawn to Santa Bárbara beach, while others enjoy swimming in the warm, iron-rich waters of Caldeira Velha or relaxing in the oceanfront

hot pools of Ferraria, naturally heated by underwater volcanic vents. Whale watching is another highlight, as the waters around the island are one of the best places in the world to spot both resident and migratory species, from playful dolphins to majestic sperm and blue whales.

Beyond its natural wonders, São Miguel offers a rich cultural experience. The capital, Ponta Delgada, combines modernity with tradition: cobblestone streets, whitewashed churches with black basalt trim, and lively squares filled with cafés and restaurants. Throughout the year, festivals bring the community together, with the Festas do Senhor Santo Cristo dos Milagres being the largest religious celebration in the Azores. The local cuisine is another attraction, featuring fresh seafood, locally grown pineapples, and the signature volcanic-cooked stew.

São Miguel is more than just a beautiful island—it is a place where nature and people live in harmony, shaped by centuries of resilience and connection to the sea. Whether hiking along crater rims, soaking in hot springs, tasting unique teas and wines, or simply enjoying the hospitality of its people, visitors leave with the sense that São Miguel is both timeless and alive.

A word to our sponsors:

We would like to express our deepest gratitude to our sponsors for their invaluable support of this year's UFO conference. Their contributions have not only made this gathering possible, but have also helped create an environment where scientists, students, and industry partners can share their latest discoveries, spark new collaborations, and inspire future directions in the field. The advancement of ultrafast science depends on strong partnerships between academia, industry, and the wider community, and we are truly grateful to our sponsors for recognizing the importance of investing in this endeavor. Their commitment ensures that we can continue to celebrate innovation, nurture the next generation of researchers, and strengthen the global ultrafast optics community.

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Anne L'Huillier, Lund University, Sweden
The world of atoms at the attosecond time scale

Abstract: Extreme Ultraviolet light sources based on high-order harmonic generation in gases consist of extremely short light bursts, in the 100-attosecond range, allowing for outstanding temporal resolution. Attosecond pulses enable the study of atoms in an entirely new way. It is now possible to measure tiny time delays in photoionization, the phase change across a resonance, or the quantum state of a photoelectron. This presentation will outline some of the main steps of attosecond science, from the sources to the applications.

About the speaker: Anne L'Huillier is a Swedish/French researcher in attosecond science. She started her career at the Commissariat à l'Énergie Atomique, in Saclay, France, as a PhD student until 1986, then as a permanent researcher until 1995. She moved to Lund University, Sweden, and became full professor there in 1997. Her research is focused on high-order harmonic generation in gases and its applications, particularly in attosecond science. She was awarded the Nobel Prize in Physics 2023 with Pierre Agostini and Ferenc Krausz "for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter".

Sponsored by Light Conversion.

Matthias Kling, SLAC, Stanford University, USA
Breaking Boundaries: Next-Generation Ultrafast Lasers for Transformative Research

Abstract: Ultrafast laser technology is fundamental to breakthroughs in scientific research, enabling applications that range from probing fundamental atomic processes at the attosecond scale to generating and manipulating bright particle beams. However, many established laser systems are approaching their performance limits, highlighting the need for innovative approaches to enhance capabilities in intensity, wavelength diversity, and high average power. This presentation will outline recent advancements in both table-top and free-electron laser systems and emphasize the required architectures, components, and techniques critical for driving transformative discoveries across various scientific disciplines.

About the speaker: Matthias Kling is a leading expert in ultrafast science, serving as Professor of Photon Science and Applied Physics (by courtesy) at Stanford University and Director of the Science and R&D Division at the Linac Coherent Light Source (LCLS) at SLAC National Accelerator Laboratory. With a background spanning physics, laser physics, and physical chemistry, he earned degrees from the Universities of Göttingen and Jena before completing postdoctoral research at UC Berkeley and AMOLF in Amsterdam. From 2007 to 2021, he led a research group within the Laboratory of Attosecond Physics at the Max Planck Institute of Quantum Optics and held faculty positions at Kansas State University and the University of Munich. Since joining SLAC and Stanford in 2021, he has been shaping the scientific program at LCLS, advancing cutting-edge research in ultrafast dynamics. Matthias also chaired the 2023 Basic Research Needs Workshop on Laser Technology, contributing to the strategic direction of the field.

Sponsored by Thorlabs.

Invited Speakers

Benjamin Wetzel, XLIM Research Institute - Photonics Department, Limoges, France

Birgitta Bernhardt, Technische Universität Graz, Austria

Carmen Menoni, Colorado State University, USA

Caterina Vozzi, Politecnico di Milano, Italy

Charles Durfee, Colorado School of Mines, USA

Clara Saraceno, Ruhr Universität Bochum, Germany

Christopher Barty, Lumitron/University of California Irvine, USA

Cristina Hernandez-Gomez, Central Laser Facility, STFC, UK

Darko Zibar, Danish Technical University, Copenhagen, Denmark

Derryck T. Reid, Heriot-Watt University, Edinburgh, UK

Jens Biegert, ICFO, Spain

Jinping Yao, Shanghai Institute of Optics and Fine Mechanics, Shanghai, China

John Travers, Heriot-Watt University, Edinburgh, UK

Laura Sinclair, NIST, University of Colorado, USA

Lucia Caspani, Università degli Studi dell'Insubria, Italy

Marc Hanna, Institut d'Optique, Palaiseau, France

Maria Chernysheva, Leibniz Institute of Photonics Technology, Jena, Germany

Ming-Chang Chen, National Tsing Hua University, Taiwan

Pieter Nethling, University of Stellenbosch, South Africa

Regina Gumenyuk, Tampere University, Finland

Tamas Nagy, Max-Born Institute, Berlin, Germany

Zsuzsanna Heiner, Humboldt University, Berlin, Germany

Sunday, October 5th
18:00 - 20:30
Conference Reception

Monday, October 6th
09:00 - 10:45
M1: Novel methods for generating and manipulating ultrashort pulses
Chair: Bruno Schmidt

09:00 - 09:15

Welcome and Opening Remarks

09:15 - 09:45 INVITED (M1.1)

Advances in soliton-driven light sources and their characterisation

John C Travers (Heriot-Watt University), Nikoleta Kotsina (Heriot-Watt University), Michael Heynck (Heriot-Watt University), Joleik Nordmann (Heriot-Watt University), Teodora Grigorova (Heriot-Watt University), Deepjyoti Satpathy (Heriot-Watt University), Mohammed Sabbah (Heriot-Watt University), Martin Gebhardt (Heriot-Watt University), Christian Brahms (Heriot-Watt University)

We will provide a perspective on the latest advances in soliton-driven light sources, their characterisation, their applications, and their future direction. Highlights include high-energy few-cycle pulses across the far ultraviolet, field-resolved measurements of optical attosecond pulses at the terawatt scale, miniaturised sources with compact pump lasers, and a plethora of application demonstrations.

09:45 - 10:15 INVITED (M1.2)

High-repetition-rate 1-µm pumped mid-IR OPAs for interface-specific spectroscopy

Zsuzsanna Heiner (Humboldt-Universität zu Berlin), Valentin Petrov (Max-Born-Institut), Mark Mero (Max-Born-Institut)

We demonstrate efficient broadband mid-infrared generation using wide-bandgap sulfur-based crystals in supercontinuum-seeded few-cycle OPAs, achieving µJ-level output up to 13 µm. Building on this, we present the first MHz-repetition-rate broadband VSFG spectrometer, enabling ultrafast, interface-sensitive microscopy of 2D and hybrid materials with unprecedented sensitivity, resolution, and spectral coverage.

10:15 - 10:30 ORAL (M1.3)

A 52 W few-cycle OPCPA for soft X-ray generation

Daniel Walke (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH), Azize Koç (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH), Florian Gores (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH), Minjie Zhan (Ultrafast Innovations GmbH), Nicolas Forget (FASTLITE), Raman Maksimenka (FASTLITE), Iain Wilkinson (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)

We present a high-average-power (52 W), few-cycle, CEP stable, short-wave infrared (2.1 µm central wavelength) optical parametric chirped pulse amplifier. This system is applied to generate soft x-rays in helium, resulting in a low-divergence broadband soft x-ray emission extending beyond 600 eV.

10:30 - 10:45 ORAL (M1.4)

Terawatt-scale optical attosecond pulses and 30 GW-scale far-ultraviolet pulses through extreme soliton dynamics

Nikoleta Kotsina (Heriot-Watt University), Michael Heynck (Heriot-Watt University), Joleik Nordmann (Heriot-Watt University), Martin Gebhardt (Heriot-Watt University), Teodora Grigorova (Heriot-Watt University), Christian Brahms (Heriot-Watt University), John C Travers (Heriot-Watt University)

We describe the XSOL (Extreme Soliton) beamline designed to up-scale soliton dynamics, delivering new drivers for strong-field physics. We have generated and characterised terawatt-scale sub-femtosecond self-compressed pulses and sub-3 fs deep ultraviolet pulses with greater than 170 µJ energy through resonant dispersive-wave emission. Tunability to 140 nm has been achieved.

Coffee Break

Monday, October 6th
11:15 - 12:45
M2: Spectral broadening and pulse compression I
Chair: Anne-Lise Viotti

11:15 - 11:45 INVITED (M2.5)

Multipass cells: multimode behavior and soliton self-frequency shift

Marc Hanna (Université Paris-Saclay), Giovanni Cichelli (Politecnico di Milano), Gautier Parize (Université Paris-Saclay), Ania Ierano (Université Paris-Saclay), Michele Natile (Amplitude), Xavier Delen (Université Paris-Saclay), Paolo Laporta (Politecnico di Milano), Nicola Coluccelli (Politecnico di Milano), Patrick Georges (Université Paris-Saclay)

In a first part, we describe how higher-order Laguerre-Gaussian modes and multimode beams propagate in nonlinear multipass cells, and how this could be used to scale the energy of post-compression setups. In a second part, an experimental effort aiming at observing soliton self-frequency shift inside a multipass cell is reported.

11:45 - 12:00 ORAL (M2.6)

10 mJ Compression in Gas-Filled and Bulk-Based Multipass Cells of a kHz Thin-Disk Laser

Jonas Manz (TRUMPF Scientific Lasers GmbH + Co. KG), Gaia Barbiero (TRUMPF Scientific Lasers GmbH + Co. KG), Sandro Klingebiel (TRUMPF Scientific Lasers GmbH + Co. KG), Michael Rampp (TRUMPF Scientific Lasers GmbH + Co. KG), Catherine Y. Teisset (TRUMPF Scientific Lasers GmbH + Co. KG), Haochuan Wang (TRUMPF Scientific Lasers GmbH + Co. KG), Dominik Ertel (TRUMPF Scientific Lasers GmbH + Co. KG), Ronak N. Shah (TRUMPF Scientific Lasers GmbH + Co. KG), Martin Hoffmann (Ruhr University Bochum), Clara J. Saraceno (Ruhr University Bochum), Thomas Metzger (TRUMPF Scientific Lasers GmbH + Co. KG)

We present spectral broadening experiments for 10 mJ, 50 W pulses of a Yb-doped thin-disk amplifier using a gas- and bulk-based multipass cell setup. Compressability to sub-40 fs and sub-50 fs pulse duration is shown for the gaseous and solid approach, respectively.

12:00 - 12:15 ORAL (M2.7)

Yb-based multi-pass cell post-compression scheme reaching 0.6 TW limited by quasi-phase-matched four-wave mixing

Victor Koltalo (Laboratoire d'Optique Appliquée (LOA)), Louis Daniault (Laboratoire d'Optique Appliquée (LOA)), Cédric Sire (SourceLAB), François Sylla (SourceLAB), Rodrigo Lopez-Martens (Laboratoire d'Optique Appliquée (LOA))

We show the implementation of a 4 m-long multi-pass cell (MPC) that increases the peak power of a kHz Ytterbium (Yb) laser up to 0.6 TW (21 fs, 15.9 mJ). We experimentally show that the main factor limiting post-compression down to shorter pulses is quasi-phase-matched four-wave mixing.

12:15 - 12:30 ORAL (M2.8)

Towards a New HHG Driver Laser Platform: Post-Compression of Q-Switched Lasers in Multi-Pass Cells

Peer Biesterfeld (Leibniz University Hannover), Marc Seitz (Deutsches Elektronen-Synchrotron DESY), Arthur Schönberg (Deutsches Elektronen-Synchrotron DESY), Nayla Jimenez (Deutsches Elektronen-Synchrotron DESY), Prannay Balla (Deutsches Elektronen-Synchrotron DESY), Sven Fröhlich (Leibniz University Hannover), Philip Mosel (Leibniz University Hannover), Lutz Winkelmann (Deutsches Elektronen-Synchrotron DESY), Tino Lang (Deutsches Elektronen-Synchrotron DESY), Marcus Seidel (Deutsches Elektronen-Synchrotron DESY), Ingmar Hartl (Deutsches Elektronen-Synchrotron DESY), Francesca Calegari (Deutsches Elektronen-Synchrotron DESY), Uwe Morgner (Leibniz University Hannover), Milutin Kovacev (Leibniz University Hannover), Christoph M. Heyl (Deutsches Elektronen-Synchrotron DESY), Andrea Trabattoni (Leibniz University Hannover)

We demonstrate post-compression of 0.5ns pulses to 24ps in a bulk-rod multi-pass cell. This novel approach overcomes limitations of previous post-compression approaches in the nanosecond region, representing a very promising method for reaching the parameter regime of mode-locked lasers using compact Q-switched laser sources.

12:30 - 12:45 ORAL (M2.9)

High-energy, blue shifted 100x spectral broadening from strong space-time focusing in a dispersion-managed hybrid multi-pass cell

Ross Powell (Rutherford Appleton Laboratory), Ana Silva (Univ. do Porto), Pedro Oliveira (Rutherford Appleton Laboratory), Helder Crespo (Rutherford Appleton Laboratory)

We demonstrate the generation of high-energy, blue shifted broadband spectra with 800-1100 nm via strong space-time focusing in a dispersion-managed hybrid multi-pass cell (MPC) pumped by 450 fs pulses at 1030 nm. This source and spectra show promise as seed for petawatt laser systems.

Monday, October 6th
12:45 - 14:15
Lunch + **Poster Session 1** (Page 78-91)

Monday, October 6th
14:15 - 15:45
M3: Frequency-combs and carrier envelope phase control
Chair: Ursula Keller

14:15 - 14:45 INVITED (M3.10)

New technologies for visible to infrared astrocombs

Derryck T. Reid (Heriot-Watt University)

14:45 - 15:00 ORAL (M3.11)

How to Generate XUV Frequency Combs Without Enhancement Resonators?

Muhammad Thariq (Max-Planck-Institut für Quantenoptik), Johannes Weitenberg (Max-Planck-Institut für Quantenoptik), Theodor W. Hänsch (Max-Planck-Institut für Quantenoptik), Thomas Udem (Max-Planck-Institut für Quantenoptik), Akira Ozawa (Max-Planck-Institut für Quantenoptik)

We have performed high harmonic generation of a frequency comb without enhancement resonators. This is achieved by reducing the repetition rate to 40 kHz using an AOM-based pulse-picking scheme and a low noise solid-state amplifier. This method simplifies the laser system and enables easier accessibility for extreme ultraviolet frequency metrology.

15:00 - 15:15 ORAL (M3.12)

Generation of sub 100 fs femtosecond pulses with tunable repetition rates up to 1 THz at 1030 nm

Abdelkrim Bendahmane (CNRS-IOGS-Université Bordeaux), Fedele Pisani (CNRS-IOGS-Université Bordeaux), Gianluca Galzerano (Istituto di Fotonica e Nanotecnologie – CNR), Giorgio Santarelli (CNRS-IOGS-Université Bordeaux), Eric Cormier (CNRS-IOGS-Université Bordeaux)

We report on the generation of bursts of sub 100 fs pulses at tunable repetition rates ranging from 300 GHz up to 1 THz at a wavelength of 1030 nm. The repetition rates i.e. the comb free spectral range is stabilized with a feedback loop.

15:15 - 15:30 ORAL (M3.13)

Gauging Vacuum Fluctuations: Rogue Wave Emergence in Optical Parametric Generation

Wenbin Chen (Tianjin University), Haosen Shi (East China Normal University), Günter Steinmeyer (Max-Born-Institut), Yuanbo Lu (Humboldt University), Jintao Fan (Tianjin University), Minglie Hu (Tianjin University)

Using real-time measurement techniques for recording spectra and spectral interferograms, we measure the statistical distributions of timing jitter, carrier-envelope phase, spectral shifts, and pulse energies of an optical parametric generator. The latter exhibit the emergence of rogue events as has been predicted for short-crested ocean waves.

15:30 - 15:45 ORAL (M3.14)

Efficient SHG from a Low-noise GHz Yb:CYA femtosecond oscillator

Li Zheng (Shaanxi University of Technology), Junxiao Bai (Xidian University), Geyang Wang (Xidian University), Wenlong Tian (Xidian University), Zhiyi Wei (Chinese Academy of Sciences), Jiangfeng Zhu (Xidian University)

We present a low-noise Kerr-lens modelocking Yb:CYA oscillator providing 8.2 W average power with a pulse duration of 108 fs at a repetition rate of 1.08 GHz. The second harmonic generation with average power of 4.5 W from the GHz oscillator is demonstrated, corresponding a frequency doubling efficiency of 56%.

Coffee Break

Monday, October 6th
16:15 - 17:30
M4: Ultrafast Mid-infrared and Terahertz sources
Chair: Clara Saraceno

16:15 - 16:45 INVITED (M4.15)

Advances and challenges of mid-infrared ultrafast all-fibre lasers

Maria Chernysheva (Leibniz Institute of Photonic Technology)

While only several mid-IR laser technologies have matured beyond 2.5 µm, fibre lasers are rapidly emerging as a compelling platform for high-brightness sources, opening new possibilities for a wide application range. This talk focuses on the properties and design potential of ultrafast fluoride-based fibre lasers and outlines future development directions.

16:45 - 17:00 ORAL (M4.17)

Integrated terahertz generation with high spectral brightness

Nadia Berndt (MIT), David Rohrbach (MIT), Xi Zhang (MIT), Keith Nelson (MIT)

We present a novel approach for generating multicycle terahertz (THz) pulses using a nonlinear slab waveguide, optimized for on-chip THz spectroscopy and signal processing. Our method produces spectrally bright THz pulses with more than 20 cycles, each with a peak amplitude surpassing 10 kV/cm.

17:00 - 17:15 ORAL (M4.18)

High-power, few-cycle, short-wave infrared source for high-flux, soft X-ray generation at 200 kHz repetition rate

Caroline Juliano (Lund University), Ivan Sytcevich (Lund University), Chen Guo (Lund University), Roya Garayeva (Lund University), Nikolas Rupp (Lund University), Anne-Lise Viotti (Lund University), Anne L'Huillier (Lund University), Cord L. Arnold (Lund University)

We present a 200 kHz, high average power, ytterbium-based optical parametric chirped pulse amplification system delivering CEP-stable, few-cycle pulses around 2 µm with an anticipated average power of 50W. The source is designed to drive a pump-probe beamline with high-flux, soft X-ray attosecond pulses.

17:15 - 17:30 ORAL (M4.19)

High-energy self-CEP-stable seeder for a 2.2 µm OPCPA

Ugaitz Elu (FHI-MPG – Fritz-Haber-Institut der Max-Planck-Gesellschaft), Marcel Krenz (FHI-MPG – Fritz-Haber-Institut der Max-Planck-Gesellschaft), Maria Pawliszewska (FHI-MPG – Fritz-Haber-Institut der Max-Planck-Gesellschaft), Michael H. Frosz (Max Planck Institute for the Science of Light), Francesco Tani (Max Planck Institute for the Science of Light), Philip Russell (Max Planck Institute for the Science of Light), Jens Biegert (ICFO – Institut de Ciencies Fotoniques), Martin Wolf (FHI-MPG – Fritz-Haber-Institut der Max-Planck-Gesellschaft)

We present a novel front-end for self-CEP-stable 2.2 µm OPCPA driven by Yb lasers. Gas-filled ARPCFs broaden the narrowband pulses, which are then compressed with chirped mirrors followed by intra-pulse-DFG. This design provides robustness and high energy seeding for contrast-improved OPCPA, crucial for plasma physics, wakefield acceleration, and attosecond physics.

Tuesday, October 7th
08:45 - 09:45
Plenary Talk I (Page 13)

Breaking Boundaries: Next-Generation Ultrafast Lasers for Transformative Research

Matthias Kling (Stanford University)

Tuesday, October 7th
09:45 - 10:45
Tu1: Ultrafast spectroscopy and quantum photonics
Chair: Günter Steinmeyer

09:45 - 10:15 INVITED (Tu1.1)

Enhanced Entangled Second Harmonic Generation Beyond the Photon Pairs Regime

Thomas Dickinson (Università dell'Insubria), Ivi Afxenti (University of Glasgow), Giedre Astrauskaite (University of Glasgow), Lennart Hirsch (University of Glasgow), Samuel Nerenberg (University of Glasgow), Ottavia Jedrkiewicz (Università dell'Insubria), Daniele Faccio (University of Glasgow), Caroline Müllenbroich (University of Glasgow), Alessandra Gatti (Istituto di Fotonica e Nanotecnologie del CNR), Matteo Clerici (Università dell'Insubria), Lucia Caspani (Università dell'Insubria)

We report quantum-enhanced second harmonic generation driven by parametric down-conversion, with efficiencies surpassing those of classical light beyond the photon-pair regime. Experiments confirm a persistent quantum advantage up to 10 photons per mode, extending nonlinear quantum enhancement toward practical applications.

10:15 - 10:45 INVITED (Tu1.2)

Air Lasing: from strong-field molecular physics to ultrafast spectroscopy

Jinping Yao (Chinese Academy of Sciences)

Air lasing, as a novel ultrafast phenomenon, has attracted considerable interests in recent years. Here, we report on enhancement of N2+ lasing induced by the synergistic interplay between tunnel ionization and multiphoton resonances, and show basic principle and applications of air-lasing-based coherent Raman spectroscopy.

Coffee Break

Tuesday, October 7th
11:15 - 12:45
Tu2: Spectral broadening and pulse compression II
Chair: Benjamin Alonso

11:15 - 11:45 INVITED (Tu2.3)

Full characterization of tunable few-fs vacuum ultraviolet pulses

José R. C. Andrade (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Martin Kretschmar (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Rostyslav Danylo (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Stefanos Carlström (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Tobias Witting (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Alexandre Mermillod-Blondin (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Serguei Patchkovskii (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Misha Yu Ivanov (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Marc J. J. Vrakking (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Arnaud Rouzée (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy), Tamas Nagy (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy)

We fully characterize above-µJ, sub-3-fs pulses tuned across the vacuum ultraviolet generated by resonant dispersive-wave emission in a stretched capillary. We use the electron-FROG technique for the pulse measurement and for exploring electron dynamics in small molecules, such as ethylene.

11:45 - 12:00 ORAL (Tu2.4)

Bulk self-compression of millijoule 5 µm pulses to 37 fs in the spatio-temporal soliton regime

Martin Bock (Max Born Institute), Günter Steinmeyer (Max Born Institute), Uwe Griebner (Max Born Institute)

Temporal soliton self-compression with simultaneous formation of a radial Townes profile is reported in ZnS, leading to the generation of two-cycle pulses at 4.9 µm with 2.0 mJ energy at 1-kHz repetition rate.

12:00 - 12:15 ORAL (Tu2.5)

525-MW peak power, 100-kHz, sub-100 femtosecond Holmium laser at 2.1 µm

Boldizsar Kassai (Ruhr-Universität Bochum), Anna Suzuki (Ruhr-Universität Bochum), Alan Omar (Ruhr-Universität Bochum), Yicheng Wang (Ruhr-Universität Bochum), Sergei Tomilov (Ruhr-Universität Bochum), Martin Hoffmann (Ruhr-Universität Bochum), Clara J. Saraceno (Ruhr-Universität Bochum)

We present a high-peak-power 2.1-µm laser system consisting of a Ho:CALGO regenerative amplifier and a Herriott-type bulk multi-pass cell (MPC) for external pulse compression. The amplifier generates 9.2-W, 92-µJ, 750-fs pulses at 100-kHz repetition rate, and the MPC provides sub-100-fs pulses with 92% optical transmission, resulting in >500-MW peak power.

12:15 - 12:30 ORAL (Tu2.6)

Generation of 1.5-cycle optical pulses with 60 µJ energy at 3.2 µm.

Rajaram Shrestha (ELI ERIC, ALPS Facility), Katalin Pirisi (ELI ERIC, ALPS Facility), Zoltan Kis (ELI ERIC, ALPS Facility), Levente Abrok (ELI ERIC, ALPS Facility), Jie Meng (ELI ERIC, ALPS Facility), Eric Cormier (ELI ERIC, ALPS Facility), Bálint Kiss (ELI ERIC, ALPS Facility)

We experimentally demonstrated the post-compression of 45 fs, 3.2 µm laser pulses in mm-thick BaF_2 and Si optical windows followed by re-compression in CaF_2/BaF_2 bulk and third-order compensation mirrors resulting in 1.5 optical cycle with 60 µJ of clean compressed pulses with excellent long-term stability, enabling advanced high-intensity applications.

12:30 - 12:45 ORAL (Tu2.7)

Ytterbium-laser-driven resonant dispersive emission generating wavelength-tuneable few-femtosecond far-ultraviolet pulses

Christian Brahms (Heriot-Watt University), Deepjyoti Satpathy (Heriot-Watt University), Nikoleta Kotsina (Heriot-Watt University), John C. Travers (Heriot-Watt University)

We present a setup to compress laser pulses from an Yb-based laser to 10 fs and to generate few-femtosecond resonant dispersive wave pulses in the far-ultraviolet (100-350 nm) at up to 100 kHz repetition rate. We characterise the far-ultraviolet pulses using in-vacuum transient-grating frequency-resolved optical gating.

Tuesday, October 7th
12:45 - 14:00
Lunch + **Poster Display 1** (Page 78-91)

Tuesday, October 7th
14:00 - 15:45
Tu3: High repetition rate sources and dual comb techniques
Chair: Derryck T. Reid

14:00 - 14:30 INVITED (Tu3.8)

UV/VIS Frequency Combs for Novel Applications in Dual Comb Spectroscopy

Alexander Eber (Graz University of Technology), Lukas Fürst (Graz University of Technology), Christoph Gruber (Graz University of Technology), Adrian Kirchner (Graz University of Technology), Armin Speletz (Graz University of Technology), Robert di Vora (Graz University of Technology), Emily Hruska (Graz University of Technology), Mithun Pal (Graz University of Technology), Marcus Ossiander (Graz University of Technology), Birgitta Bernhardt (Graz University of Technology)

This contribution demonstrates different UV/VIS laser frequency combs and dual comb spectroscopy's ability to rapidly and precisely study molecular gasses and their dynamics, e.g. providing insights into formaldehyde's optical properties and urban nitrogen dioxide concentration changes, both pollution gasses of high environmental impact.

14:30 - 14:45 ORAL (Tu3.9)

Ultrafast 1-GHz dual-comb optical parametric oscillator from a single cavity

Carolin P. Bauer (ETH Zurich), Benjamin Willenberg (ETH Zurich), Justinas Pupeikis (ETH Zurich), Ursula Keller (ETH Zurich)

We present a femtosecond dual-comb optical parametric oscillator (OPO) at 1 GHz. The singly-resonant single-cavity dual-comb OPO is synchronously pumped by a Yb:CaF2 solid-state single-cavity dual-comb laser. The OPO exhibits high power-per-comb line and an ultra-low timing jitter of 7.1 fs [100 Hz, 10 kHz]; ideal for sensitive open-path spectroscopy.

14:45 - 15:00 ORAL (Tu3.10)

Dual-comb Fiber Laser with Dual-phase-biased Nonlinear Amplifying Loop Mirror

Jiayang Chen (Tsinghua University), Yuxuan Ma (Tsinghua University), Oliver Heckl (University of Vienna), Guanhao Wu (Tsinghua University)

We demonstrate a polarization-multiplexed dual-comb fiber laser with a dual-phase-biased nonlinear amplifying loop mirror. The laser generates two orthogonal pulse trains with a tunable repetition rate difference. A proof-of-principle dual-comb ranging experiment using the time-of-flight method achieved micro-level precision in all free-running operation.

15:00 - 15:15 ORAL (Tu3.11)

Dual-comb modelocked Er:Yb:glass oscillator at 500 MHz

Benjamin Willenberg (ETH Zurich), Justinas Pupeikis (ETH Zurich), Moritz Seidel (ETH Zurich), Marco Gaulke (ETH Zurich), Matthias Golling (ETH Zurich), Ursula Keller (ETH Zurich)

We demonstrate a spatially multiplexed dual-comb mode-locked Er:Yb:glass solid-state oscillator at 500 MHz. The laser outputs two coherent pulse trains (40 mW, 230 fs), enabling high-resolution dual-comb spectroscopy without any stabilization.

15:15 - 15:30 ORAL (Tu3.12)

Single-Cavity Free-Running Kerr-Lens Mode-Locked Dual-Comb Laser at 2.1 µm

Mykyta Redkin (Ruhr Universität Bochum), Yicheng Wang (Ruhr Universität Bochum), Sergei Tomilov (Ruhr Universität Bochum), Clara Saraceno (Ruhr Universität Bochum)

We demonstrate a free-running, soft-aperture Kerr-lens mode-locked dual-comb laser system operating at 2.1 µm. Utilizing a Ho:CALGO gain medium, it generates sub-100-fs pulses with >(2x)1W output power. The system enables high-speed interferometry, highlighting its potential for precision measurements in the mid-infrared region.

15:30 - 15:45 ORAL (Tu3.13)

Generation of burst of pulses at 3 µm with widely tunable multi GHz repetition rate

Andrea Monzani (CNRS-IOGS-Université Bordeaux), Peyo Planche (CNRS-IOGS-Université Bordeaux), David Horain (Bloom Lasers), Damien Espitallier (Bloom Lasers), Eric Freysz (Laboratoire Ondes et Matiere d'Aquitaine (LOMA)), Julien Didierjean (Bloom Lasers), Julien Saby (Bloom Lasers), Abdelkrim Bendahmane (CNRS-IOGS-Université Bordeaux), Giorgio Santarelli (CNRS-IOGS-Université Bordeaux), Eric Cormier (CNRS-IOGS-Université Bordeaux)

We report on the generation and control of high-power trains of midIR pulses with adjustable pulse repetition rates ranging from 1 to 15 GHz at a wavelength around 3 µm.

Coffee Break

Tuesday, October 7th
16:15 - 18:00
Tu4: Ultrafast applications: novel methods and technology I
Chair: Sterling Backus

16:15 - 16:45 INVITED (Tu4.14)

Attosecond technology deciphering a chemical reaction

S. Severino (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology), K.M. Ziems (Institute of Physical Chemistry and Max Planck School of Photonics), M. Reduzzi (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology), A. Summers (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology), H.-W. Sun (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology), Y.-H. Chien (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology), S. Gräfe (Institute of Physical Chemistry and Max Planck School of Photonics), J. Biegert (Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology)

We use attosecond soft X-ray pulses—the shortest yet achieved—to track many-body interactions among electrons, holes, and nuclei in real time. Core-level spectroscopy disentangles coherent and incoherent processes, revealing ultrafast energy dissipation pathways in furan. This approach opens new opportunities for chemical, material, and non-equilibrium physics.

16:45 - 17:00 ORAL (Tu4.15)

Multi-Modal X-ray Probing of Catalytic Activity in Photo-driven Nanosystems

Samuel Sahel-Schackis (SLAC National Accelerator Laboratory), Adam Summers (SLAC National Accelerator Laboratory), Tom Linker (SLAC National Accelerator Laboratory), Ritika Dagar (SLAC National Accelerator Laboratory), Alexandra Feinberg (SLAC National Accelerator Laboratory), Paul Tuemmler (Universität Rostock), Hendrik Tackenberg (Universität Rostock), Jeffrey Powell (Institut national de la recherche scientifique), Martin Grassl (SLAC National Accelerator Laboratory), Ilana Porter (SLAC National Accelerator Laboratory), Regina Leiner (Saarland University), Simon Dold (European XFEL), Yevheniy Ovcharenko (European XFEL), Rebecca Boll (European XFEL), Razib Obaid (SLAC National Accelerator Laboratory), James Cryan (SLAC National Accelerator Laboratory), Avijit Duley (Kansas State University), Chris Aikens (Kansas State University), Cesar Costa Vera (Escuela Politecnica Nacional), Felix Gerke (Freie Universität Berlin), Markus Gallei (Saarland University), Christian Peltz (Universität Rostock), Thomas Fennel (Universität Rostock), Daniel Rolles (Kansas State University), Artem Rudenko (Kansas State University), Eckart Ruehl (Freie Universität Berlin), Matthias Kling (SLAC National Accelerator Laboratory)

We present a multi-modal method combining single-shot 3D momentum-resolved ion emission spectra, X-ray photoelectron spectroscopy, and coherent diffraction imaging (CDI) to investigate catalytic activity in photo-driven nanosystems. This approach enables simultaneous characterization of charge dynamics, chemical reactions, and nanoparticle morphology, advancing insights into nanoscale photocatalysis.

17:00 - 17:15 ORAL (Tu4.16)

Ångström-scale surface metrology enabled by a compact milliwatt-class HHG source

Daniel Santiago Penagos Molina (Friedrich-Schiller-University Jena), Mahmoud Abdelaal (Friedrich-Schiller-University Jena), Wilhelm Eschen (Friedrich-Schiller-University Jena), Soo Hoon Chew (Fraunhofer Institute for Applied Optics and Precision Engineering), Robert Klas (Friedrich-Schiller-University Jena), Jens Limpert (Friedrich-Schiller-University Jena), Jan Rothhardt (Friedrich-Schiller-University Jena)

Our work demonstrates nearly diffraction-limited lateral resolution, record 1 Ångström axial resolution and record 10 Mpix/h throughput. This performance is enabled by a milliwatt-class HHG source paired with a high-speed sCMOS detector and a structured illumination, promising the investigation of millimeter-scale samples with sub-100 nm lateral- and sub-Ångström-scale axial resolution.

17:15 - 17:30 ORAL (Tu4.17)

Ultrafast Field Sampling Reveals Sub-Cycle Absorption

Václav Hanus (HUN-REN Wigner Research Centre for Physics), Eszter Papp (HUN-REN Wigner Research Centre for Physics), Beatrix Fehér (HUN-REN Wigner Research Centre for Physics), Peter Sándor (HUN-REN Wigner Research Centre for Physics), Zsuzsanna Pápa (HUN-REN Wigner Research Centre for Physics), Peter Dombi (HUN-REN Wigner Research Centre for Physics)

By simultaneous driving of PHz currents and measuring the light field evolution using TIPTOE field-sampling technique, we extract the temporal evolution of nonlinear polarization and energy absorption of CEP-dependent current-driving process in GaN.

17:30 - 17:45 ORAL (Tu4.18)

Ultrafast valleytronics in bulk crystals

Martin Kozák (Charles University), Adam Gindl (Charles University), Martin Čmel (Charles University), František Trojánek (Charles University), Petr Malý (Charles University)

We introduce an ultrafast optical technique allowing to generate and detect valley polarized electron distributions in bulk semiconductor crystals. The principle is based on anisotropic intervalley scattering induced by a strong nonresonant optical fields. We demonstrate its feasibility by generating valley polarization of electrons in silicon and diamond.

17:45 - 18:00 ORAL (Tu4.19)

Quantum-enhanced THz time-domain sensing

Dionysis Adamou (University of Glasgow), Lennart Hirsch (University of Glasgow), Taylor Shields (University of Glasgow), Seungjin Yoon (University of Glasgow), Adetunmise C. Dada (University of Glasgow), Jonathan M.R. Weaver (University of Glasgow), Daniele Faccio (University of Glasgow), Marco Peccianti (Loughborough University), Lucia Caspani (University of Strathclyde), Matteo Clerici (University of Glasgow)

We explore time-domain THz spectroscopy using entangled photon probe pulses. Our experiment shows that quantum correlations in the probe allow a marked improvement in the detection sensitivity. We report on the enhancement of detected electric field signal-to-noise ratio and the impact it has on spectroscopy.

Tuesday, October 7th
18:00 - 18:30
Drinks and Aperitif

Tuesday, October 7th
18:30 - 20:30
Industry Session
Chair: Paulo T. Guerreiro

18:30 - 18:40 INDUSTRY (IS1)

CEP controlled, few-cycle UV pulses

*Bruno Schmidt (**few-cycle**)*

18:40 - 18:50 INDUSTRY (IS2)

Compact hybrid Ho:YLF picosecond amplifier system exceeding 100 mJ pulse energy

*Robert Riedel (**Class 5**)*

18:50 - 19:00 INDUSTRY (IS3)

Ultrafast tunable solutions from EKSPLA

*Justas Varpučianskis (**EKSPLA**)*

19:00 - 19:10 INDUSTRY (IS4)

High-energy, high-average-power amplifiers at kHz repetition rate and their nonlinear pulse compression

*Thomas Metzger (**TRUMPF**)*

19:10 - 19:20 INDUSTRY (IS5)

Characterizing Pulse Duration at Video-Rate: A Tool for Laser Source Development and Optimization

*Vitor Amorim (**Sphere Ultrafast Photonics**)*

19:20 - 19:30 INDUSTRY (IS6)

Towards the future of Ultrafast Ti:Sapphire Laser

*Ming Yang (**Viulase**)*

19:30 - 19:40 INDUSTRY (IS7)

Towards higher peak powers: Energy scaling of two different multipass cell compressors at sub-10 fs pulse duration and 4 mJ

*Kilian Fritsch (**n2 Photonics**)*

19:40 - 19:50 INDUSTRY (IS8)

High-dynamic range pulse-contrast measurements for wide use in scientific applications and laser development

*Matthias Baudisch (**APE**)*

19:50 - 20:00 INDUSTRY (IS9)

UFI developments and updates 2025

*Alexander Guggenmos (**UFI**)*

20:00 - 20:10 INDUSTRY (IS10)

High-energy and –Peak-Power Yb Lasers

*Valdas Maslinskas (**Light Conversion**)*

20:10 - 20:20 INDUSTRY (IS11)

High-Performance 2 μm Lasers Venturing into Novel Scientific and Industrial Fields

*Christian Gaida (**Active Fiber System**)*

20:20 - 20:30 INDUSTRY (IS12)

Optical parametric amplifier and integrated broadband pulses characterization

*Antoine Dubrouil (**Femto Easy**)*

Wednesday, October 8th
09:00 - 10:45
W1: Spatio-temporal manipulation and ultrashort pulse characterization
Chair: Íñigo Sola

09:00 - 09:30 INVITED (W1.1)

Spatio-temporal control and characterization for ultrafast nonlinear interactions

Charles G. Durfee (Colorado School of Mines), Nathaniel Westlake (Colorado School of Mines), Patrick Hunt (Colorado School of Mines), Cameron Clarke (Colorado School of Mines), Dan Adams (Colorado School of Mines)

Full spatio-temporal characterization is increasingly important both for minimizing and exploiting nonlinear effects. In this talk, we will describe our strategies for spatio-spectral and spatio-temporal characterization. We will show examples of linear and nonlinear spatio-temporal control in the areas of direct laser ponderomotive acceleration and high-order harmonic generation.

09:30 - 09:45 ORAL (W1.2)

Spatially-dependent group delay dispersion from a grating and its application for single-shot d-scan

Daniel Díaz Rivas (Lund University), Cristian Barbero (Universidad de Salamanca), Chen Guo (Lund University), Marzo Cristina López Cerón (Lund University), Miguel Canhota (Lund University), Ivan Sytcevich (Lund University), Saga Westerberg (Lund University), Gaspard Beaufort (Lund University), Miguel Miranda (Sphere Ultrafast Photonics), Rosa Romero (Sphere Ultrafast Photonics), Helder Crespo (Sphere Ultrafast Photonics), Anne-Lise Viotti (Lund University), Cord Arnold (Lund University)

We demonstrate that angular dispersion from a diffraction grating can lead to a spatially-dependent group delay dispersion. We use this effect to implement a novel single-shot d-scan, more suitable for longer pulse durations compared to approaches based on material dispersion.

09:45 - 10:00 ORAL (W1.3)

Generation and characterisation of TW-scale sub-fs optical pulses

Joleik Nordmann (Heriot-Watt University), Nikoleta Kotsina (Heriot-Watt University), Michael Heynck (Heriot-Watt University), Martin Gebhardt (Heriot-Watt University), Teodora Grigorova (Heriot-Watt University), Christian Brahms (Heriot-Watt University), John C Travers (Heriot-Watt University)

Optical attosecond pulses can be directly generated through soliton self-compression. Here we describe the generation and characterisation of TW-scale sub-femtosecond pulses using our high-energy XSOL (Extreme Soliton) beamline and an in-vacuum dispersion-free TIPTOE apparatus. We obtain multi-mJ pulses with an envelope full-width at half-maximum duration of 0.77 fs.

10:00 - 10:15 ORAL (W1.4)

Advanced Laser Pulse Metrology through 2D Self-Referenced Spectral Interferometry

Stefan Bock (Helmoltz-Zentrum Dresden-Rossendorf (HZDR)), Thomas Oksenhendler (iTEOX), Jörn Dreyer (Helmoltz-Zentrum Dresden-Rossendorf (HZDR)), René Gebhardt (Helmoltz-Zentrum Dresden-Rossendorf (HZDR)), Uwe Helbig (Helmoltz-Zentrum Dresden-Rossendorf (HZDR)), Toma Toncian (Helmoltz-Zentrum Dresden-Rossendorf (HZDR)), Ulrich Schramm (Helmoltz-Zentrum Dresden-Rossendorf (HZDR))

High intensity lasers with high temporal intensity contrast require the ability to measure this property comprehensively. The 2D self-referenced spectral interferometry method represents one solution to this need, with the capability of spatial, spectral and temporal high-dynamic field measurements in single-shot.

10:15 - 10:30 ORAL (W1.5)

Visible and NIR optical vortices measured in space-time with BLASHI

Benjamín Alonso (Universidad de Salamanca), Miguel López-Ripa (Universidad de Salamanca), Íñigo Sola (Universidad de Salamanca)

We generate NIR and visible ultrashort optical vortices from vector beams combined with second harmonic and characterize their spatiotemporal properties using Bulk LAteral SHearing Interferometry (BLASHI).

10:30 - 10:45 ORAL (W1.6)

Analytically describing and analyzing spatio-temporal couplings in focusing laser pulses

Klaus Steiniger (Helmholtz-Zentrum Dresden-Rossendorf), Fabia Dietrich (Helmholtz-Zentrum Dresden-Rossendorf), Daniel Albach (Helmholtz-Zentrum Dresden-Rossendorf), Michael Bussmann (Helmholtz-Zentrum Dresden-Rossendorf), Arie Irman (Helmholtz-Zentrum Dresden-Rossendorf), Markus Loeser (Helmholtz-Zentrum Dresden-Rossendorf), Richard Pausch (Helmholtz-Zentrum Dresden-Rossendorf), Thomas Püschel (Helmholtz-Zentrum Dresden-Rossendorf), Roland Sauerbrey (Helmholtz-Zentrum Dresden-Rossendorf), Susanne Schöbel (Helmholtz-Zentrum Dresden-Rossendorf), Ulrich Schramm (Helmholtz-Zentrum Dresden-Rossendorf), Mathias Siebold (Helmholtz-Zentrum Dresden-Rossendorf), Karl Zeil (Helmholtz-Zentrum Dresden-Rossendorf), Alexander Debus (Helmholtz-Zentrum Dresden-Rossendorf)

Analytic expressions for duration, tilt, and other pulse properties are presented, being valid along the entire distance between the focusing mirror and focus. In contrast to previous work, these account for the impact of spatial dispersion during propagation and explain observed pulse-front tilts of several ten degrees near the focus.

Coffee Break + Picture

Wednesday, October 8th
11:15 - 12:45
W2: Machine learning and artificial intelligence for ultrafast optics
Chair: Geory Genty

11:15 - 11:45 INVITED (W2.7)

Advancing the next generation of photonic measurement systems using machine learning

Darko Zibar (Technical University of Denmark)

In this talk I will highlight the rolle of advanced signal processing methods in phase noise characterization of optical frequency combs, end-to-end learning for fiber-optic communication, and realization of programmable ultra-wideband Raman amplifiers. Lastly, I will introduce an exciting new application of machine learning: controlling nonlinear interactions in nonlinear waveguides.

11:45 - 12:15 INVITED (W2.8)

Machine learning for the control of ultrafast nonlinear spectral broadening processes

Yassin Boussafa (Université de Limoges), Lynn Sader (Université de Limoges), Bruno P. Chaves (Université de Limoges), Van Thuy Hoang (Université de Limoges), Manal Arbati (Université de Limoges), Alexis Bougaud (Université de Limoges), Jérémy Saucourt (Université de Limoges), Marc Fabert (Université de Limoges), Alessandro Tonello (Université de Limoges), Vincent Couderc (Université de Limoges), John M. Dudley (Université Marie et Louis Pasteur), Michael Kues (Leibniz University Hannover), Benjamin Wetzel (Université de Limoges)

We review recent experiments using machine learning to control ultrafast nonlinear dynamics. After covering multidimensional control and optimization of nonlinear broadening, we focus on modulation instability, highlighting how advanced characterization and machine learning strategies enable gaining insight and tailoring optical wavepackets, even in noise-driven regimes.

12:15 - 12:30 ORAL (W2.9)

AI-Driven Design of Ultra-Broadband Dispersive Mirrors

Utsa Chattopadhyay (Technical University of Hamburg), Florian Carstens (Laser Zentrum Hannover e.V.), Andreas Wienke (Laser Zentrum Hannover e.V.), Ingmar Hartl (Deutsches Elektronen-Synchrotron), Nihat Ay (Technical University of Hamburg), Christoph M. Heyl (Deutsches Elektronen-Synchrotron), Henrik Tuennermann (Deutsches Elektronen-Synchrotron)

We present a machine-learning framework for optical thin-film coating design that accelerates the design process while achieving excellent performance characteristics without expert intervention. To demonstrate its capabilities, we design a broadband high-reflectivity mirror with state-of-the-art performance, including a -200 fs^2 GDD covering a spectral range from 940 to 1120 nm.

12:30 - 12:45 ORAL (W2.10)

High Harmonic Generation driven Extreme Ultraviolet 0-th order Scatterometry for Nanostructure Characterization

Francesco Corazza (Advanced Research Center for Nanolithography), Emmanouil Kechaoglou (Advanced Research Center for Nanolithography), Leo Guery (Advanced Research Center for Nanolithography), Maximillian Lipp (Advanced Research Center for Nanolithography), Zhonghui Nie (Advanced Research Center for Nanolithography), Lyuba Amitonova (Advanced Research Center for Nanolithography), Peter Kraus (Advanced Research Center for Nanolithography)

We introduce a tabletop high harmonic generation (HHG) scatterometry technique to extract structural and material characteristics of periodic nanostructures. Grazing incidence reflection scatterometry enables fast and robust measurements of linewidth and groove height with 20 nm and 2 nm precision respectively, paving the way for ultrafast spectroscopy on layered heterostructures.

Wednesday, October 8th
12:45 - 14:00
Lunch + **Poster Session 2** (Page 92-107)

Wednesday, October 8th
14:00 - 15:45
W3: Methods for shaping and measuring ultrashort pulses
Chair: Tamas Nagy

14:00 - 14:30 INVITED (W3.11)

i2PIE for broadband pulse measurement and compression

Pieter H Neethling (Stellenbosch University), Eugene E Fouché (Stellenbosch University), Gurthwin W Bosman (Stellenbosch University)

i2PIE is an implementation of time-domain ptychography which allows for the accurate measurement of the spectral phase of a broadband laser pulse, including higher order phase terms. This paper shows the implementation of this pulse compression scheme and highlights some applications and extensions.

14:30 - 14:45 ORAL (W3.12)

PI-FROSt to reveal driving mechanisms in harmonic generation from solid-state media

Pierre Béjot (Université Bourgogne Europe), Bálint Kiss (ELI-ALPS), Rajaram Shrestha (ELI-ALPS), Levente Àbrók (ELI-ALPS), Zoltán Kis (ELI-ALPS), Katalin Pirisi (ELI-ALPS), Balazs Bágo (ELI-ALPS), Olivier Faucher (Université Bourgogne Europe), Franck Billard (Université Bourgogne Europe), Eric Cormier (ELI-ALPS), Edouard Hertz (Université Bourgogne Europe)

The novel PI-FROSt method has been applied to synchronously characterize all harmonics generated in a semiconductor crystal by midIR ultrashort pulses enabling to retrieve processes at play during the interaction.

14:45 - 15:00 ORAL (W3.13)

Detection of pulse-duration fluctuations and drifts with attosecond precision

Arno Klenke (Friedrich-Schiller-Universität Jena), Maximilian Benner (Friedrich-Schiller-Universität Jena), Jonas Margraf (Friedrich-Schiller-Universität Jena), Mats Segbers (Friedrich-Schiller-Universität Jena), Tino Eidam (Active Fiber Systems GmbH), Jens Limpert (Friedrich-Schiller-Universität Jena)

We present the detection of dispersion-related pulse-duration fluctuations in an ultrafast laser with attosecond precision. By pre-chirping the pulses in combination with spectral-broadening, a per-pulse measurement signal can be generated that allows to detect these changes with precision down to 20 as and use it as a feedback for stabilization.

15:00 - 15:15 ORAL (W3.14)

Shaping Exciton Polarization Dynamics in 2D Semiconductors by Tailored Ultrafast Pulses

Omri Meron (Tel Aviv University), Uri Arieli (Tel Aviv University), Eyal Bahar (Tel Aviv University), Swarup Deb (Tel Aviv University), Moshe Ben-Shalom (Tel Aviv University), Haim Suchowski (Tel Aviv University)

We demonstrate precise temporal control of coherent exciton polarization dynamics in monolayer WSe2 using a single sub-10 fs shaped pulse. By tuning multiphoton pathway interference, we selectively tune and enhance four-wave mixing (FWM) generated by distinct excitonic states, identifying exciton-exciton interactions as the predominant FWM mechanism.

15:15 - 15:30 ORAL (W3.15)

Single-Shot Carrier-Envelope Phase Measurement at 586 kHz Using Optical Fourier-Transform Interferometry

Chen Guo (Lund University), Miguel Miranda (Sphere Ultrafast Photonics), Ann-Kathrin Raab (Lund University), Anne-Lise Viotti (Lund University), Paulo T. Guerreiro (Sphere Ultrafast Photonics), Vitor Amorim (Sphere Ultrafast Photonics), Piotr Matyba (Umeå University), Rosa Romero (Sphere Ultrafast Photonics), Helder Crespo (Sphere Ultrafast Photonics), Anne L'Huillier (Lund University), Cord L. Arnold (Lund University)

In this work, we demonstrate single-shot and every-shot measurements of the carrier-envelope phase(CEP) of ultrashort pulses at a repetition rate of 586 kHz. Synchronous measurements using a commercialCEP detector, operating at a lower sampling rate (117 kHz), show excellent agreement, validating the accuracy and reliability of our approach.

15:30 - 15:45 ORAL (W3.16)

d-scan ultrashort pulse characterization implemented with a 4-f pulse stretcher/compressor

Miguel Miranda (Sphere Ultrafast Photonics), Chen Guo (Lund University), Paulo T. Guerreiro (Sphere Ultrafast Photonics), Cord L. Arnold (Lund University), Vitor Amorim (Sphere Ultrafast Photonics), Rosa Romero (Sphere Ultrafast Photonics)

We present an implementation of the d-scan technique using a variable grating-based 4f stretcher/compressor arrangement. This allows us to continuously scan from negative to positive dispersion over a large range. We demonstrate this implementation by measuring sub 8 fs to 100 fs pulses with the same setup.

Coffee Break

Wednesday, October 8th
16:15 - 18:15
W4: Ultrahigh peak-power laser systems and related technologies
Chair: Charles Durfee

16:15 - 16:45 INVITED (W4.17)

Progress on the commissioning of 10 Hz Petawatt beamline at the Extreme Photonics Applications Centre

Cristina Hernandez-Gomez (STFC Rutherford Appleton Laboratory), Veselin Aleksandrov (STFC Rutherford Appleton Laboratory), Chris Armstrong (STFC Rutherford Appleton Laboratory), Samuel Buck (STFC Rutherford Appleton Laboratory), Thomas Butcher (STFC Rutherford Appleton Laboratory), Danielle Clarke (STFC Rutherford Appleton Laboratory), Rob Clarke (STFC Rutherford Appleton Laboratory), Stephen Dann (STFC Rutherford Appleton Laboratory), Tiago Faria Pinto (STFC Rutherford Appleton Laboratory), Chris Gregory (STFC Rutherford Appleton Laboratory), James Green (STFC Rutherford Appleton Laboratory), Robert Heathcote (STFC Rutherford Appleton Laboratory), Paul Mason (STFC Rutherford Appleton Laboratory), Luke McHugh (STFC Rutherford Appleton Laboratory), Rajeev Pattathil (STFC Rutherford Appleton Laboratory), Gary Quinn (STFC Rutherford Appleton Laboratory), Chris Spindloe (STFC Rutherford Appleton Laboratory), Jorge Suarez-Merchan (STFC Rutherford Appleton Laboratory), Nicholas Stuart (STFC Rutherford Appleton Laboratory), Dan Symes (STFC Rutherford Appleton Laboratory), Agnieska Wojtusiak (STFC Rutherford Appleton Laboratory), John Collier (STFC Rutherford Appleton Laboratory)

In this paper we present the current status of the Extreme Photonics Applications Centre (EPAC). This new facility will deliver 1 PW laser operating 10 Hz into two versatile experimental areas. EPAC has been designed to further the development and application of laser-driven accelerators in academic, industrial, and medical spheres.

16:45 - 17:00 ORAL (W4.18)

Picosecond contrast improvement for PW class lasers based on modified stretcher design

Olivier Chalus (Thales LAS France), Dimitrios Papadopoulos (Sorbonne Université), Francois Mathieu (Sorbonne Université), Patrick Audebert (Sorbonne Université), Nathalie Lebas (Sorbonne Université), Mathilde Charbonneau (Thales LAS France), Stanislas Pasternak (Thales LAS France), Christophe Derycke (Thales LAS France), Samy Ferhat (Thales LAS France), Alain Pellegrina (Thales LAS France), Sandrine Ricaud (Thales LAS France), Bruno LeGarrec (Sorbonne Université), Erhard Gaul (MARVEL Fusion), Gabriel Cojocaru (ELI-NP), Antonia Toma (ELI-NP), Saidbek Norbaev (ELI-NP), Ioan Dancus (ELI-NP)

To improve picosecond contrast within multi-petawatt laser system a stretcher without convex mirror is proposed, designed and implemented to demonstrate the gain of contrast of several order of magnitude on hundred picosecond time-scale pedestal.

17:00 - 17:15 ORAL (W4.19)

Advancing Short-Pulse Laser Drivers for Fusion Applications

Erhard W. Gaul (Marvel Fusion GmbH), Peter Fischer (Marvel Fusion GmbH), Giordano Bodini (Marvel Fusion GmbH), Jana Jung (Marvel Fusion GmbH), Frederik Buckstegge (Pulsed Light Technology GmbH), Christopher Aleshire (Pulsed Light Technology GmbH), Prasanth Jhetre (Pulsed Light Technology GmbH), Oscar Naranjo (Pulsed Light Technology GmbH), Antonia Schmalz (Pulsed Light Technology GmbH), Mathias Krüger (Marvel Fusion GmbH), Jan Heye Buss (Marvel Fusion GmbH), Marius Schollmeier (Marvel Fusion GmbH), Hartmut Ruhl (Marvel Fusion GmbH), Georg Korn (Marvel Fusion GmbH)

We develop a diode-pumped solid-state Petawatt laser (>100 J, <100 fs, 10 Hz, 527nm) with up to 10% wall-plug efficiency. Optimized for high temporal pre-pulse contrast (>10^{-10}:1), it efficiently couples laser energy to ions via ponderomotive electron expulsion and Coulomb acceleration, reaching MeV energies in a compact design.

17:15 - 17:45 INVITED (W4.20)

Multilayer dielectric coatings for ultrahigh intensity lasers and their challenges to achieve long term operation without damage

Carmen S. Menoni (Colorado State University)

Amorphous oxide coatings, a ubiquitous laser technology, are being challenged by premature damage at ultra-high intensities and ultra-high energy. This talk will describe efforts in improving the materials' morphology, and how it can be exploited to engineer novel multilayer dielectric coatings with high resilience to laser damage.

17:45 - 18:00 ORAL (W4.21)

Toward 100Hz Joule class ultra-short pulses TiSa laser

Alain Pellegrina (Thales LAS France), Adeline Kabacinski (Thales LAS France), Antoine Jeandet (Thales LAS France), Vincent Leroux (Thales LAS France), Loic Lavenu (Thales LAS France), Olivier Chalus (Thales LAS France), Olivier Casagrande (Thales LAS France), Sandrine Ricaud (Thales LAS France), Christophe Simon-Boisson (Thales LAS France)

Joule class lasers at 100Hz with ultra-short pulse involve a lot of challenges to manage thermal issues in the amplifiers as well as in the compressors. Recent results achieved in this direction are presented.

18:00 - 18:15 ORAL (W4.22)

Towards a sub-10 fs hybrid frontend with $>10^{14}$ temporal contrast for high intensity lasers

Roland S. Nagymihály (ELI ALPS Research Institute), Mikhail Kalashnikov (ELI ALPS Research Institute), Levente Lehotai (ELI ALPS Research Institute), Viktor Pajer (ELI ALPS Research Institute), János Bohus (ELI ALPS Research Institute), Nóra Csernus-Lukács (ELI ALPS Research Institute), Szabolcs Tóth (ELI ALPS Research Institute), János Csontos (ELI ALPS Research Institute), Balázs Tari (ELI ALPS Research Institute), Ignas Balciunas (Light Conversion Ltd.), Ernestas Kucinskas (Light Conversion Ltd.), Tomas Stanislauskas (Light Conversion Ltd.), Ádám Börzsönyi (ELI ALPS Research Institute)

Performance of an OPCPA seeded Ti:Sa-based 7 mJ 100 Hz frontend is presented with an ultrahigh temporal contrast of $>10^{12}$ in combination with sub-15 fs pulse duration. Investigation of further temporal cleaning in a multipass cell is in progress to obtain sub-10 fs with a contrast reaching the 10^{14} level.

Thursday, October 9th
08:45 - 09:45
Plenary Talk II (Page 12)

The world of atoms at the attosecond time scale

Anne L´Huillier (Lund University)

Thursday, October 9th
09:45 - 10:45
Th1: Attosecond science and pulse generation I
Chair: Emma Springate

09:45 - 10:15 INVITED (Th1.1)

Innovative Microfluidic Sources for XUV and Soft-X Ray Generation

Caterina Vozzi (CNR Istituto di Fotonica e Nanotecnologie)

We present recent experimental advances in using an efficient microfluidic HHG-based XUV source, developed for studying ultrafast electron dynamics in materials and complex molecules.

10:15 - 10:30 ORAL (Th1.2)

Intrinsic Limits to Achieving Application-Relevant Soft X-ray Flux in High Harmonic Generation

Robert Klas (Friedrich-Schiller-Universität Jena), Martin Gebhardt (Friedrich-Schiller-Universität Jena), Jan Rothhardt (Friedrich-Schiller-Universität Jena), Jens Limpert (Friedrich-Schiller-Universität Jena)

This contribution reveals the fundamental limitations of achieving application-relevant flux in high har-monic generation (HHG) at high photon energies due to CEP walk-off effects. The dephasing caused by differing phase and group velocities results in a limited effective coherence length, preventing efficient high harmonic generation beyond 0.5 keV.

10:30 - 10:45 ORAL (Th1.3)

Continuous Relativistic High-Harmonic Generation from a Liquid-Leaf Plasma Mirror at kHz Repetition Rate

Antoine Cavagna (Institut Polytechnique de Paris), Milo Eder (The Ohio State University), Jaismeen Kaur (Institut Polytechnique de Paris), Andre Kalouguine (Institut Polytechnique de Paris), Stefan Haessler (Institut Polytechnique de Paris), Enam Chowdhury (The Ohio State University), Rodrigo Lopez-Martens (Institut Polytechnique de Paris)

We demonstrate, for the first time, continuous relativistic high-harmonic generation (RHHG) at 1 kHz using an ethylene glycol liquid-leaf plasma mirror driven by waveform-controlled 1.5-cycle laser pulses.

Coffee Break

Thursday, October 9th
11:15 - 13:00
Th2: Attosecond science and pulse generation II
Chair: Rodrigo Lopez-Martens

11:15 - 11:45 INVITED (Th2.4)

Bright Isolated Attosecond Pulses from Post-Compressed Yb Laser Filaments

Ming-Chang Chen (National Tsing Hua University)

We demonstrate robust isolated attosecond pulse generation using post-compressed Yb laser filaments in a semi-infinite gas cell. Filamentation induces self-compression and phase-matching, enabling bright 200-as pulses in Ar and sub-70-as pulses in Ne and He, establishing a universal route toward high-contrast attosecond sources.

11:45 - 12:00 ORAL (Th2.5)

Low-Divergence Harmonic Generation with Hollow Gaussian Beams for Compact, High-Intensity Attosecond Sources

Melvin Redon (Lund University), Rodrigo Martín-Hernández (Universidad de Salamanca), Ann-Kathrin Raab (Lund University), Saga Westerberg (Lund University), Victor Koltalo (Lund University), Chen Guo (Lund University), Luis Plaja (Universidad de Salamanca), Julio San Román (Universidad de Salamanca), Anne-Lise Viotti (Lund University), Anne L'Huillier (Lund University), Carlos Hernández-García (Universidad de Salamanca), Cord Louis Arnold (Lund University)

We use Hollow Gaussian Beams (HGBs) produced with a spatial light modulator to generate high-order harmonics in an argon gas jet. As opposed to conventional Gaussian beams, HGB-driven harmonics exhibit decreasing divergence with increasing harmonic order. This could be a recipe for more compact attosecond beamlines with higher refocused intensity.

12:00 - 12:15 ORAL (Th2.6)

Synthesis of isolated attosecond extreme-ultraviolet spatiotemporal optical vortices via high-order harmonic generation

Rodrigo Martin-Hernandez (Universidad de Salamanca), Guan Gui (University of Colorado and NIST), Henry Kapteyn (University of Colorado and NIST), Margaret Murnane (University of Colorado and NIST), Chen Ting-Liao (University of Colorado and NIST), Luis Plaja (Universidad de Salamanca), Miguel A. Porras (Universidad Politécnica de Madrid), Carlos Hernandez-Garcia (Universidad de Salamanca)

Spatiotemporal optical vortices (STOVs) are structured light fields strongly coupled in space and time. We demonstrate, for the first time, that extreme-ultraviolet harmonic STOVs can be synthesized into an isolated attosecond STOV. This is achieved through advantageous nonlinear up-conversion of infrared spatiospectral optical vortices via high-order harmonic generation.

12:15 - 12:30 ORAL (Th2.7)

On-demand isolated attosecond pulses: the optimal in-situ and in silico tailored waveforms

Rafael De Queiroz Garcia (University of Hamburg), Fabian Scheiba (University of Hamburg), Maximilian Kubullek (University of Hamburg), Roland Erwin Mainz (Deutsches Elektronen-Synchroton (DESY)), Miguel Angel Silva Toledo (University of Hamburg), Giulio Maria Rossi (Deutsches Elektronen-Synchroton (DESY)), Franz Kärtner (University of Hamburg)

We experimentally demonstrate an 8-fold efficiency enhancement and extreme tunability of attosecond pulse generation in the water window by employing a two-channel infrared waveform synthesizer. The waveforms that optimize emission from 200 to 450 eV are obtained via a field characterization technique and the gating mechanisms are understood via simulations.

12:30 - 12:45 ORAL (Th2.8)

All-attosecond transient reflection spectroscopy

Lauren Drescher (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Alba de Las Heras (Max Planck Institute for the Structure and Dynamics of Matter), Rohit Sharma (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Niklas Mutz (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Marc Vrakking (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Shunsuke Sato (Max Planck Institute for the Structure and Dynamics of Matter), Angel Rubio (Max Planck Institute for the Structure and Dynamics of Matter), Bernd Schütte (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie)

The large configuration space and interaction strength of solids presents challenges for time-resolved spectroscopy and require attosecond temporal resolution. We introduce all-attosecond transient reflection spectroscopy, enabling core excitation in both pump and probe steps. We present results on XUV-excited ionic crystal insulators, shining light on the quasi-particle dynamics of core-excitons.

12:45 - 13:00 ORAL (Th2.9)

Sub-20-fs UV Pump – XUV Probe Beamline for Ultrafast Molecular Spectroscopy

Marta Arias Velasco (IFN-CNR), Aurora Crego (IFN-CNR), Stefano Severino (Politecnico di Milano), Fabio Medeghini (Politecnico di Milano), Lorenzo Mai (Politecnico di Milano), Fabio Frassetto (IFN-CNR), Luca Poletto (IFN-CNR), Matteo Lucchini (IFN-CNR), Maurizio Reduzzi (Politecnico di Milano), Mauro Nisoli (IFN-CNR), Rocio Borrego Varillas (IFN-CNR)

We present a UV pump - XUV probe setup with sub-20 fs resolution, enabling the first direct measurement of the ultrafast $S_2 \rightarrow S_1$ transition in acetylacetone. Using in-situ photoelectron cross-correlation, we track excited-state dynamics with unprecedented precision, demonstrating the potential of UV-XUV spectroscopy for ultrafast photochemical process investigations.

Thursday, October 9th
13:00 - 14:00
Lunch + **Poster Display 2** (Page 92-107)

Thursday, October 9th
14:00 - 18:30
Whale and Dolphin Watching Tour – Vila Franca do Campo, Azores

The tour departs from Terra Nostra Garden Hotel at 14:00 and heads towards the Vila Franca do Campo Marina for an offshore marine wildlife observation tour. Participants are guided by marine biologists who provide a pre-departure briefing on local cetacean species and conservation-friendly observation practices.

The Azores offer year-round sightings of resident sperm whales and various dolphin species, with spring being the optimal season for observing large migratory whales such as blue, fin, and Sei whales. The tour also provides opportunities to encounter seabirds, marine turtles, and other wildlife in the region's rich deep-blue waters.

The three-hour trip includes navigation around nearby islets, recognized by BirdLife International for their ecological importance. During the tour, guides share species-specific insights and answer questions, ensuring an educational and engaging experience. Photographs taken by the biologists during the tour are later edited and posted on social media.

Thursday, October 9th
19:30 - 22:30
Conference Banquet

Friday, October 10th
09:00 - 10:45
F1: High average power ultrafast lasers, Coherent beam combining
Chair: Thomas Metzger

09:00 - 09:30 INVITED (F1.1)

Compact yet mighty: tapered double-clad amplifiers for picosecond pulses

Regina Gumenyuk (Tampere University)

In this presentation, I will focus on our effort in realizing high power/energy laser systems based on active double-clad tapered fiber amplifiers. Owning to the special longitudinal profile, these fiber amplifiers are capable of directly amplifying picosecond pulses, delivering excellent beam profile and high polarization stability in a compact footprint.

09:30 - 09:45 ORAL (F1.2)

44 W, 100 kHz, 2.5-cycle pulses from a flat-top pumped OPCPA

Hadil Kassab (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Lars Oppermann (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Vincent Fortin (CNRS-Université de Bordeaux-CEA), Maylis Lavastre (CNRS-Université de Bordeaux-CEA), Stéphane Petit (CNRS-Université de Bordeaux-CEA), Tobias Witting (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Marc Vrakking (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie), Federico Furch (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie)

We present a two-stage OPCPA delivering sub-7 fs pulses around 800 nm with 44 W average power at 100 kHz. The pump beam of the second stage is shaped utilizing a holographic high reflectance mirror to provide a flat-top shape at the OPCPA crystal plane.

09:45 - 10:00 ORAL (F1.3)

Pulse compression of 300W, 12mJ with 83% transmission in hollow-core fiber

Maksym Ivanov (few-cycle Inc), Etienne Doiron (few-cycle Inc), Marco Scalia (few-cycle Inc), Gabriel Tempea (few-cycle Inc), Pedram Abdolghader (few-cycle Inc), Kevin Watson (University of Connecticut), Tobias Saule (University of Connecticut), Carlos Trallero (University of Connecticut), Bruno Schmidt (few-cycle Inc)

We demonstrate power scaling of pulse post-compression using an air-cooled hollow-core fiber, achieving pulse compression from 1.3 ps to 100 fs at 300 W of average power. Supporting 25–100 kHz (12–3 mJ) at constant 300 W power, the system operates with noble or molecular gases, highlighting its scalability and versatility.

10:00 - 10:15 ORAL (F1.4)

Tailored Ultrashort Pulse Bursts in a Gain-Managed Nonlinear Fiber Amplifier for Coherent 50fs Pulse Stacking at mJ Energies

Lauren Cooper (University of Michigan), Siyun Chen (University of Michigan), Pavel Sidorenko (Cornell University), Frank Wise (Cornell University), Almantas Galvanauskas (University of Michigan)

We propose a method of scaling gain-managed nonlinear amplifiers (GMNA) to mJ energies using tailored pulse bursts that can be time-combined into a single 50fs output pulse using coherent pulse stacking.

10:15 - 10:30 ORAL (F1.5)

Energy Scaling of Kerr-Lens Modelocked Ho:YAG Thin-Disk Oscillators to the Microjoule Level

Sergei Tomilov (Ruhr-Universität Bochum), Mykyta Redkin (Ruhr-Universität Bochum), Yicheng Wang (Ruhr-Universität Bochum), Anna Suzuki (Ruhr-Universität Bochum), Martin Hoffmann (Ruhr-Universität Bochum), Clara Saraceno (Ruhr-Universität Bochum)

We demonstrate high-energy Kerr-lens modelocked (KLM) Ho:YAG thin-disk laser (TDL) emitting at 2.1-µm wavelength. We compare different laser configurations to reach a maximum pulse energy of 1.7 µJ at an output power of 29 W with a pulse duration of 434 fs, corresponding to a peak power of 3.7 MW.

10:30 - 10:45 ORAL (F1.6)

High Power Kilohertz Thin Disk Amplifier with 600mJ Pulse Energy Developed for OPCPA

Huang Zhou (Songshan Lake Materials Laboratory), Renchong Lv (Songshan Lake Materials Laboratory), Lei Feng (Songshan Lake Materials Laboratory), Sen Tian (Songshan Lake Materials Laboratory), Jiangfan Pan (Songshan Lake Materials Laboratory), Yong Zhen (Songshan Lake Materials Laboratory), Peng He (Songshan Lake Materials Laboratory), Wenglong Tian (Xidian University), Jiangfeng Zhu (Xidian University), Xinkui He (Songshan Lake Materials Laboratory), Zhiyi Wei (Songshan Lake Materials Laboratory)

We are developing kHz thin-disk Yb:YAG amplifier system. The broadband seed laser integrating an oscillator and a spectrum-shaped Yb:CALGO pre-amplifier feeds sequential amplification stages: a regenerative amplifier and three multi-pass amplifiers, achieving pulse energy of >600 mJ. Grating compression yields <600-fs pulse length with PW-scale applicability.

Coffee Break

Friday, October 10th
11:15 - 12:30
F2: Ultrafast applications: novel methods and technology II
Chair: Jan Rothhardt

11:15 - 11:45 INVITED (F2.7)

High average power Terahertz time-domain systems

Robin Löscher (Ruhr University Bochum), Tim Vogel (Ruhr University Bochum), Samira Mansourzadeh (Ruhr University Bochum), Mohsen Khalili (Ruhr University Bochum), Clara Saraceno (Ruhr University Bochum)

We will present the latest advances in the demonstration of high average power Terahertz time-domain spectrometers based on Yb ultrafast lasers, that are approaching the watt level average power.

11:45 - 12:00 ORAL (F2.8)

Extended Length Femtosecond Laser Filamentation via High Repetition Rate Effects

Malte Schroeder (Ruhr-Universität Bochum), Robin Löscher (Ruhr-Universität Bochum), Alan Omar (Ruhr-Universität Bochum), Clara Saraceno (Ruhr-Universität Bochum)

Femtosecond laser filamentation has numerous applications that benefit from an extended filament range, such as cloud clearing or lightning guiding. We demonstrate a novel approach to extend filamentation based on cumulative gas hydrodynamics at high laser repetition rates which induce a “leapfrog” effect without requiring additional optics or beam shaping.

12:00 - 12:15 ORAL (F2.9)

Two-Photon Dual-Comb LiDAR Imaging

Alexander J. M. Nelmes (Heriot-Watt University), Hollie Wright (Heriot-Watt University), Simon Fletcher (University of Huddersfield), Andrew P. Longstaff (University of Huddersfield), Derryck T. Reid (Heriot-Watt University)

Two-photon dual-comb LiDAR replaces data intensive acquisition with time-tagged cross correlations to achieve precision metrology without the need for phase-stabilized ultrafast lasers. With amplified detection, extend the technique to non-cooperative targets, allowing LiDAR point-cloud imaging at precisions orders of magnitude higher than conventional LiDAR.

12:15 - 12:30 ORAL (F2.10)

Offset tunable 650–1050 nm astrocomb

Yuk Shan Cheng (Heriot-Watt University), Kamalesh Dadi (Heriot-Watt University), William Newman (Heriot-Watt University), Jake Charsley (Heriot-Watt University), Richard McCracken (Heriot-Watt University), Derryck Reid (Heriot-Watt University)

By using a feed-forward technique, we integrate a cw laser into a 650–1050 nm supercontinuum from a 1-GHz laser frequency comb. Transmitting the supercontinuum through a Fabry-Pérot filter cavity locked to the cw laser produces a 16-GHz astrocomb, whose offset frequency is fully tunable in 1-GHz intervals.

Thursday, October 9th
12:30 - 14:00
Lunch + **Steering Committee Meeting**

Friday, October 10th
14:00 - 15:15
F3: Ultrafast applications: novel methods and technology III
Chair: Caterina Vozzi

14:00 - 14:15 ORAL (F3.11)

A Simple, Multi-Channel Architecture for 10-fs Spectroscopy Covering Visible to Mid-IR

Connor Davis (Cornell University), Dylan Heberle (Cornell University), Noah Flemens (Cornell University), Jeffrey Moses (Cornell University)

We present the architecture and experimental progress of the 10-fs Hyperspectral Stroboscope, a device to generate synchronized sub-10 fs pulses spanning the visible to mid-infrared. Using nonlinear-optical stages employing adiabatic frequency conversion with intrinsic dispersion management, we can greatly simplify the architecture for multi-channel, ultrafast spectroscopy covering several octaves.

14:15 - 14:30 ORAL (F3.12)

Chiral optical tweezers – efficient enantioseparation of molecules

Robert M Jones (King's College), Nicola Mayer (King's College), Serguei Patchkovskii (Max-Born-Institute), Emilio Pisanty (King's College), Margarita Khokhlova (King's College)

We present an experimentally realisable scheme for all-electric dipole trapping of chiral molecules in an enantioselective fashion. Our theory shows that light with chirality structured in time induces a chiral Stark shift resulting in trapping of the chosen enantiomer in the laser beam, while the other enantiomer is shaken away.

14:30 - 14:45 ORAL (F3.13)

HHG-Based Lensless Imaging: Unique Insights into Material and Life Sciences

Leona Licht (Friedrich-Schiller-University Jena), Wilhelm Eschen (Friedrich-Schiller-University Jena), Chang Liu (Friedrich-Schiller-University Jena), Daniel Penagos (Friedrich-Schiller-University Jena), Johannes Reents (Friedrich-Schiller-University Jena), Robert Klas (Friedrich-Schiller-University Jena), Jens Limpert (Friedrich-Schiller-University Jena), Jan Rothhardt (Friedrich-Schiller-University Jena)

We present a table-top, extreme ultraviolet ptychography microscope at 13.5 nm. Structured illumination improves resolution and image quality, enabling the investigation of nanoscale structure and composition of microorganisms and battery electrodes. Additionally, we demonstrate a novel method for quantitative single-shot EUV imaging, paving the way for imaging of ultrafast dynamics.

14:45 - 15:00 ORAL (F3.14)

Ultrafast Imaging Below the Diffraction Limit with High Harmonic Deactivation Microscopy

Kevin Murzyn (Advanced Research Center for Nanolithography), Tanya van Horen (Advanced Research Center for Nanolithography), Pieter van Essen (Advanced Research Center for Nanolithography), Zhonghui Nie (Advanced Research Center for Nanolithography), Leo Guery (Advanced Research Center for Nanolithography), Maarten van der Geest (Advanced Research Center for Nanolithography), Stefan Witte (Advanced Research Center for Nanolithography), Peter Kraus (Advanced Research Center for Nanolithography)

We harness attosecond waveform and coherence control in multicolor laser fields to spatially deactivate solid-state high-harmonic generation below the diffraction limit. This harmonic deactivation microscopy (HADES) enables label-free super-resolution microscopy. We demonstrate imaging of nanostructures via HADES and describe its prospects for (sub-)-femtosecond nanoscopy.

15:00 - 15:15 ORAL (F3.15)

Tunable Femtosecond Source Based on Spatiotemporal Nonlinear Enhancement

Bahareh Hosseini Fakhar (Institut national de la recherche scientifique), Zeinab Norouzinik (Institut national de la recherche scientifique), Kourosh Zarekarizi (Institut national de la recherche scientifique), François Légaré (Institut national de la recherche scientifique), Reza Safaei (Institut national de la recherche scientifique), Arash Aghigh (Institut national de la recherche scientifique)

This study presents a wavelength-tunable, multi-megawatt pulse source using N_2O-filled hollow-core Kagome photonic crystal fibers (PCFs) for nonlinear microscopy. Starting with a Ytterbium laser, we achieved 50% efficiency at 1300 nm, essential for three-photon fluorescence microscopy, enabled by spatiotemporal nonlinear enhancement in the Raman-active medium.

Coffee Break

Friday, October 10th
15:45 - 17:15
F4: Ultrafast optics with x-rays and electrons
Chair: John Travers

15:45 - 16:15 INVITED (F4.16)

Distributed Charge Compton Sources & Applications

C. P. J. Barty (University of California)

This presentation reviews the motivation, design, performance, and applications of laser-Compton x-ray & gamma-ray sources based on the collision of high-frequency trains of high-brightness electron bunches and trains of ultrashort duration laser pulses created via multi-GHz pulse synthesis.

16:15 - 16:30 ORAL (F4.17)

High flux femtosecond fiber laser driven hard X-ray source

Maximilian Benner (Friedrich-Schiller University Jena), Mohammed Almassarani (Friedrich-Schiller University Jena), Robert Klas (Fraunhofer Institute for Applied Optics and Precision Engineering), Arno Klenke (Friedrich-Schiller University Jena), Jan Rothhardt (Friedrich-Schiller University Jena), Jens Limpert (Friedrich-Schiller University Jena), Maximilian Karst (Fraunhofer Institute for Applied Optics and Precision Engineering), Lucas Eisenbach (Friedrich-Schiller University Jena), Philipp Gierschke (Friedrich-Schiller University Jena), Warunya Röder (Friedrich-Schiller University Jena)

We present a high-flux, continuously operated femtosecond hard X-ray source by tightly focusing short laser pulses on a regenerative liquid metal jet. The photon flux is the highest ever reported at photon energies above 10keV, moreover it scales linearly with laser power, enabling scalable X-ray generation with great application potential.

16:30 - 16:45 ORAL (F4.18)

Optical control of electrons in a Floquet topological insulator

Daniel Lesko (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU)), Tobias Weitz (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU)), Simon Wittigschlager (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU)), Weizhe Li (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU)), Chrisitan Heide (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU)), Ofer Neufeld (Technion-Israel, Institute of Technology), Peter Hommelhoff (Friedrich-Alexander-Universität, Erlangen-Nürnberg (FAU))

We demonstrate optical control of electrons in light-dressed graphene using bi-chromatic electric fields. Circularly polarized femtosecond laser pulses at 1550 nm generate a Floquet topological insulator (FTI). A phase-locked second harmonic controls electrons within the FTI. We observe photocurrent circular dichroism, the all-optical anomalous Hall effect, and attosecond FTI micromotion.

16:45 - 17:00 ORAL (F4.19)

A soft X-ray timing tool based on spintronic THz emission

Robert Carley (European X-Ray Free Electron Laser Facility GmbH), Laurent Mercadier (European X-Ray Free Electron Laser Facility GmbH), Luigi Adriano (European X-Ray Free Electron Laser Facility GmbH), Benjamin van Kuiken (European X-Ray Free Electron Laser Facility GmbH), Loïc Le Guyader (European X-Ray Free Electron Laser Facility GmbH), Yi-Ping Chang (European X-Ray Free Electron Laser Facility GmbH), Carsten Broers (European X-Ray Free Electron Laser Facility GmbH), Le Phuong Hoang (European X-Ray Free Electron Laser Facility GmbH), Jan Torben Delitz (European X-Ray Free Electron Laser Facility GmbH), Natalia Gerasimova (European X-Ray Free Electron Laser Facility GmbH), Zhong Yin (Tohoku University), Giuseppe Mercurio (European X-Ray Free Electron Laser Facility GmbH), Giacomo Merzoni (Politecnico di Milano), Teguh Citra Asmara (European X-Ray Free Electron Laser Facility GmbH), Sergii Parchenko (European X-Ray Free Electron Laser Facility GmbH), Alexander Reich (European X-Ray Free Electron Laser Facility GmbH), Justine Schlappa (European X-Ray Free Electron Laser Facility GmbH), Martin Teichmann (European X-Ray Free Electron Laser Facility GmbH), Andreas Scherz (European X-Ray Free Electron Laser Facility GmbH)

THz single cycle pulses emitted from a spintronic thin film illuminated by X-ray free electron laser pulses are detected by spectrally-encoded single-shot electro-optic sampling to parasitically measure and correct the arrival time variation in pump-probe experiments in condensed matter.

17:00 - 17:15 ORAL (F4.20)

Linking Adaptable and Optimized Ultrafast Photoemission to Brighter X-rays

Jack Hirschman (Stanford University), Randy Lemons (SLAC National Accelerator Laboratory), Hao Zhang (SLAC National Accelerator Laboratory), Mat Briton (SLAC National Accelerator Laboratory), Razib Obaid (SLAC National Accelerator Laboratory), Agostino Marinelli (SLAC National Accelerator Laboratory), Ryan Coffee (SLAC National Accelerator Laboratory), Sergio Carbajo (SLAC National Accelerator Laboratory)

We present a versatile framework enabling spectral and temporal shaping of the photoinjector laser pulses through programmable infrared modulation and innovative nonlinear upconversion techniques. Demonstrating temporally-tailored UV pulses, this approach provides an avenue for enhanced control over electron-emission, targeting order-of-magnitude increase in XFEL brightness and applications of attosecond pulse production.

Friday, October 10th
17:15 - 17:45
Conference Closure

Monday, October 6th
12:45 - 14:15
Poster Session 1

P1.1

High-order frequency mixing: harvesting bright XUV from propagation

Margarita Khokhlova (King's College)

P1.2

Femtosecond pulse replication via phase-only shaping and RandoMICS algorithm

Konstantin Yushkov (National University of Science and Technology MISIS), Mikhail Martyanov (Russian Academy of Sciences), Vladimir Molchanov (National University of Science and Technology MISIS)

P1.3

Uncertainty relations in femtosecond laser pulse shaping

Konstantin Yushkov (National University of Science and Technology MISIS), Vladimir Molchanov (National University of Science and Technology MISIS), Efim Khazanov (Russian Academy of Sciences)

P1.4

Towards energetic single-cycle pulses with post-compression of the SYLOS lasers

Szabolcs Tóth (ELI ALPS Research Institute), Roland S. Nagymihály (ELI ALPS Research Institute), János Csontos (ELI ALPS Research Institute), Levente Lehotai (ELI ALPS Research Institute), Imre Seres (ELI ALPS Research Institute), Viktor Pajer (ELI ALPS Research Institute), Károly Osvay (University of Szeged), Ádám Börzsönyi (ELI ALPS Research Institute)

P1.5

Spatio-spectral characterization of few-cycle lasers from visible to mid-infrared

Roland S. Nagymihály (ELI ALPS Research Institute), Levente Lehotai (ELI ALPS Research Institute), Miguel Miranda (Sphere Ultrafast Photonics), Bálint Kiss (ELI ALPS Research Institute), Rajaram Shrestha (ELI ALPS Research Institute), Viktor Pajer (ELI ALPS Research Institute), János Csontos (ELI ALPS Research Institute), Szabolcs Tóth (ELI ALPS Research Institute), Imre Seres (ELI ALPS Research Institute), Péter Jójárt (ELI ALPS Research Institute), Paulo T. Guerreiro (Sphere Ultrafast Photonics), Matias Charrut (Sphere Ultrafast Photonics), Eric Cormier (ELI ALPS Research Institute), Rosa Romero (Sphere Ultrafast Photonics), Ádám Börzsönyi (ELI ALPS Research Institute)

P1.6

Dielectric grating technology for high power ultrashort laser source

Samy Ferhat (Thales LAS France), Doriane Jussey (Thales Research & Technology), Guillaume Croizier (Thales LAS France), Justin Rouxel (Thales Research & Technology), Raphael Guillemet (Thales Research & Technology), Sandrine Ricaud (Thales LAS France), Olivier Chalus (Thales LAS France), Man-Si Laure Lee (Thales Research & Technology), Brigitte Loiseaux (Thales Research & Technology)

P1.7

Compact 60 mJ Ho:YLF amplifier system seeded with a robust Yb:fiber-driven OPA

Simon Reuter (Class 5 Photonics GmbH), Philipp Merkl (Class 5 Photonics GmbH), Jakob Schauss (Class 5 Photonics GmbH), Sebastian Starosielec (Class 5 Photonics GmbH), Mark J. Prandolini (Class 5 Photonics GmbH), Michael Schulz (Class 5 Photonics GmbH), Martin Bock (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektrosophie), Uwe Griebner (Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektrosophie), Robert Riedel (Class 5 Photonics GmbH)

P1.8

High-Contrast Broadband Seed Generation for Vulcan 20-20

Gonçalo Vaz (Instituto Superior Técnico da Universidade de Lisboa), Pedro Oliveira (Central Laser Facility), Helder Crespo (Central Laser Facility), Hugo Pires (Instituto Superior Técnico da Universidade de Lisboa)

P1.9

Few-cycle, mJ-level 3 µm source driven by 1030 nm pulses

Gonçalo Vaz (Instituto Superior Técnico), Hugo Pires (Instituto Superior Técnico), Gonçalo Figueira (Instituto Superior Técnico)

P1.10

Effect of Plasma Mirror Substrate and Coating Material on the Resultant Temporal Contrast of the Astra-Gemini Laser

E. Asquith (Central Laser Facility), G.G. Scott (Central Laser Facility), M. Savage (Central Laser Facility), C. Baird (Central Laser Facility), N. Bourgeois (Central Laser Facility), Y. Tang (Central Laser Facility), O. Chekhlov (Central Laser Facility), R. Timmis (University of Oxford), H. Huddleston (Queens University Belfast), B. Dromey (Queens University Belfast), M. Yeung (Queens University Belfast), R. Pattathil (Central Laser Facility), S. Hawkes (Central Laser Facility)

P1.11

Spatiotemporal characterization of ultrafast pulses using a dispersive interferometer

Yeong Gyu Kim (Korea Institute of Machinery & Materials), Byungjoo Kim (Korea Institute of Machinery & Materials), Dohyun Kim (Korea Institute of Machinery & Materials), Jiyeon Choi (Korea Institute of Machinery & Materials), Sanghoon Ahn (Korea Institute of Machinery & Materials)

P1.12

Impact of imperfect surface and imperfect groove pattern of compressor diffraction gratings on laser pulse focal intensity

Efim Khazanov (Gaponov-Grekhov Institute of Applied Physics of the Russian Academy of Sciences)

P1.13

Impact of Vacuum Conditions on Wavefront Stability in the SYLOS2 Laser System

János Csontos (ELI ALPS), Szabolcs Tóth (ELI ALPS), László Tóth (ELI ALPS), István Dóra (ELI ALPS), Dániel Abt (ELI ALPS), Prabhash Prasannan Geetha (ELI ALPS), Balázs Kovalovszki (ELI ALPS), Balázs Nagyillés (ELI ALPS), Balázs Farkas (ELI ALPS), Zsolt Divéki (ELI ALPS), Andor Körmöczi (ELI ALPS), Ádám Börzsönyi (ELI ALPS), Tamás Somoskői (ELI ALPS)

P1.14

Tunable sub-2 fs ultraviolet pulse generation

Marina Fernández Galán (Universidad de Salamanca), Enrique Conejero Jarque (Universidad de Salamanca), Julio San Roman (Universidad de Salamanca), Christian Brahms (Heriot-Watt University), John C. Travers (Heriot-Watt University)

P1.15

High-Power 930-nm Femtosecond Fiber Laser based on Frequency Doubling

Siying Wang (Peking University), Yizhou Liu (Shandong University), Aimin Wang (Peking University)

P1.16

Single-shot a-swing pulse characterization

Cristian Barbero (Universidad de Salamanca), Íñigo Sola (Universidad de Salamanca), Benjamín Alonso (Universidad de Salamanca)

P1.17

Compact Tunable Sub-20 fs Visible Pulses via Fiber Laser-Driven Resonant Dispersive-Wave Emission

Mohammed Sabbah (Heriot-Watt University), Robbie Mears (University of Bath), Leah R. Murphy (Heriot-Watt University), Kerrianne Harrington (University of Bath), James M. Stone (University of Bath), Tim A. Birks (University of Bath), John C. Travers (Heriot-Watt University)

P1.18

A high-repetition rate, table-top coherent soft x-ray source

Azize Koç (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH), Daniel Walke (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH), Minjie Zhan (Ultrafast Innovations GmbH), Iain Wilkinson (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)

P1.19

Generation of multi-GW, sub-10 fs tuneable visible pulses

Martin Gebhardt (Heriot-Watt University), Joleik Nordmann (Heriot-Watt University), Michael Heynck (Heriot-Watt University), Nikoleta Kotsina (Heriot-Watt University), Teodora Grigorova (Heriot-Watt University), Christian Brahms (Heriot-Watt University), John C. Travers (Heriot-Watt University)

P1.20

Optical Parametric Multi-Pass Cell Amplifier: A High-Efficiency Ultrashort Pulse Amplification scheme

Supriya Rajhans (Deutsches Elektronen-Synchrotron DESY), Nikolas Rupp (Deutsches Elektronen-Synchrotron DESY), Esmerando Escoto (Deutsches Elektronen-Synchrotron DESY), Arthur Schoenberg (Deutsches Elektronen-Synchrotron DESY), Ingmar Hartl (Deutsches Elektronen-Synchrotron DESY), Christoph M. Heyl (Deutsches Elektronen-Synchrotron DESY), Tino Lang (Deutsches Elektronen-Synchrotron DESY)

P1.21

Fast a-swing ptychographic pulse retrieval

Cristian Barbero (Universidad de Salamanca), Íñigo Sola (Universidad de Salamanca), Benjamín Alonso (Universidad de Salamanca)

P1.22

Ultrabroadband few-cycle and chirped pulses measured with amplitude swing

Íñigo Sola (Universidad de Salamanca), Miguel López-Ripa (Universidad de Salamanca), Óscar Pérez-Benito (University Complutense), Benjamín Alonso (Universidad de Salamanca), Rosa Weigand (University Complutense)

P1.23

Recent developments in L3 HAPLS

Jakub Novák (ELI ERIC), Petr Szotkowski (ELI ERIC), Emily Link (Lawrence Livermore National Laboratory), James McLaughlin (Lawrence Livermore National Laboratory), Leily Kiani (Lawrence Livermore National Laboratory), Thomas Galvin (Lawrence Livermore National Laboratory), Katherine Velas (Lawrence Livermore National Laboratory), Jan Černý (ELI ERIC), Jitka Sedmidubská (ELI ERIC), Alexandros Sarafis (ELI ERIC), Martin Cuhra (ELI ERIC), Lucia Jarboe (ELI ERIC), Bohdana Lopushanska (ELI ERIC), Jan Moučka (ELI ERIC), Thomas Spinka (Lawrence Livermore National Laboratory), Bedřich Rus (ELI ERIC)

P1.24

Spatiotemporal measurement of astigmatically focused beams using BLASHI

Benjamín Alonso (Universidad de Salamanca), Miguel López-Ripa (Universidad de Salamanca), Íñigo Sola (Universidad de Salamanca)

P1.25

Generation of multi-octave millijoule-level radial vector beams

Michael Heynck (Heriot-Watt University), Nikoleta Kotsina (Heriot-Watt University), Joleik Nordmann (Heriot-Watt University), Martin Gebhardt (Heriot-Watt University), Teodora Grigorova (Heriot-Watt University), Christian Brahms (Heriot-Watt University), John C. Travers (Heriot-Watt University)

P1.26

Polarization-resolved ultrashort pulse characterization using an air-based knife-edge

Marie Ouillé (Institut National de la Recherche Scientifique (INRS-EMT)), Gaëtan Jargot (Institut National de la Recherche Scientifique (INRS-EMT)), Mayank Kumar (Institut National de la Recherche Scientifique (INRS-EMT)), Stephen Londo (Institut National de la Recherche Scientifique (INRS-EMT)), Édouard Hertz (Université Bourgogne Europe), Pierre Béjot (Université Bourgogne Europe), Heide Ibrahim (Institut National de la Recherche Scientifique (INRS-EMT)), François Légaré (Institut National de la Recherche Scientifique (INRS-EMT)), Adrien Leblanc (Université Paris Saclay)

P1.27

Broad-band second harmonic generation in a multi-pass cell

Arthur Schönberg (Deutsches Elektronen-Synchrotron DESY), Nikolas Rupp (Deutsches Elektronen-Synchrotron DESY), Ana Oliveira E Silva (Deutsches Elektronen-Synchrotron DESY), Lorenzo Pratolli (Deutsches Elektronen-Synchrotron DESY), Vincent Wanie (Deutsches Elektronen-Synchrotron DESY), Francesca Calegari (Deutsches Elektronen-Synchrotron DESY), Christoph M. Heyl (Deutsches Elektronen-Synchrotron DESY)

P1.28

Ultraviolet pulse shaping through four-wave-mixing-based upconversion

Linshan Sun (University of California Los Angeles), Hao Zhang (University of California Los Angeles), Cameron Leary (University of California Los Angeles), Connor Lim (University of California Los Angeles), Chad Pennington (University of California Los Angeles), Gia Azcoitia (University of California Los Angeles), Sergio Carbajo (University of California Los Angeles)

P1.29

Generation of extreme-ultraviolet spatiotemporal optical vortices

Rodrigo Martin-Hernandez (Universidad de Salamanca), Guan Gui (University of Colorado and NIST), Henry Kapteyn (University of Colorado and NIST), Margaret Murnane (University of Colorado and NIST), Luis Plaja (Universidad de Salamanca), Chen-Ting Liao (University of Colorado and NIST), Miguel Angel Porras (Universidad Politécnica de Madrid), Carlos Hernandez-Garcia (Universidad de Salamanca)

P1.30

Burst-mode multi-GHz pulse repetition rate ps laser with kW average power for high throughput laser processing

Hanyu Ye (CNRS-IOGS-Université Bordeaux), Lilia Pontagnier (CNRS-IOGS-Université Bordeaux), Abdelkrim Bendahmane (CNRS-IOGS-Université Bordeaux), Annalisa Guandalini (Spectra-Physics, MKS Instruments, Inc.), Matthias Kemnitzer (Spectra-Physics, MKS Instruments, Inc.), Martin Gorjan (Spectra-Physics, MKS Instruments, Inc.), Jurg Aus der Au (Spectra-Physics, MKS Instruments, Inc.), André Loescher (Universität Stuttgart), Florian Bienert (Universität Stuttgart), Marwan Abdou Ahmed (Universität Stuttgart), Giorgio Santarelli (CNRS-IOGS-Université Bordeaux), Eric Cormier (CNRS-IOGS-Université Bordeaux)

P1.31

Spectral phase interferometry for direct electric-field reconstruction of synchrotron light from tapered undulators

Takao Fuji (Toyota Technological Institute), Takashi Tanaka (RIKEN SPring-8 Center), Tatsuo Kaneyasu (Institute for Molecular Science), Yuichiro Kida (Japan Synchrotron Radiation Research Institute), Kei Imamura (Japan Synchrotron Radiation Research Institute), Satoshi Hashimoto (University of Hyogo), Aoi Gocho (University of Hyogo), Keisuke Kaneshima (University of Hyogo), Yoshihito Tanaka (University of Hyogo), Masahiro Katoh (Institute for Molecular Science)

P1.32

Sub-80-fs 2 µm thulium-holmium-doped fluoride fiber oscillator

Hiroki Kawase (Toyota Technological Institute), Nur Atika Azali (Toyota Technological Institute), Takao Fuji (Toyota Technological Institute)

P1.33

Multichannel Yb:YAG laser architecture for peak and average power scaling

Ivan Kuznetsov (Russian Academy of Sciences), Sergey Chizhov (Russian Academy of Sciences), Nikolay Karpov (Russian Academy of Sciences), Oleg Palashov (Russian Academy of Sciences)

P1.34

MW-Peak-Power Ho:YAG Thin-Disk Laser

Martin Smrz (Hilase centre), Yuya Koshiba (Hilase centre), Jiri Muzik (Hilase centre), Pavel Peterka (Institute of Photonics and Electronics AS CR), Pavel Honzatko (Institute of Photonics and Electronics AS CR), Miroslav Slechta (Institute of Photonics and Electronics AS CR), Antonin Fajstavr (Crytur s.r.o.), Sabina Kudelkova (Crytur s.r.o.), Tomas Mocek (Hilase centre)

P1.35

Spatiotemporal Characterization of High-Power Light Springs Using Off-Axis Holography and IMPALA

Pablo San Miguel Claveria (Instituto Superior Técnico), Slava Smartsev (Institut Polytechnique de Paris), Gabrielle Vaz (Instituto Superior Técnico), Robert Neumann (Instituto Superior Técnico), Rafael Almeida (Instituto Superior Técnico), Joaquim Pereira (Instituto Superior Técnico), Carolina Miranda (Instituto Superior Técnico), Jerome Faure (Instituto Superior Técnico), Marta Fajardo (Institut Polytechnique de Paris), Marco Piccardo (Instituto Superior Técnico)

P1.36

Approaching kW-class Lambda Cubed Regime at ELI ALPS

Adam Borzsonyi (ELI ALPS), János Csontos (ELI ALPS), Peter Jojart (ELI ALPS), Balint Kiss (ELI ALPS), Roland Nagymihály (ELI ALPS), Imre Bence Seres (ELI ALPS), Szabolcs Tóth (ELI ALPS), Barnabás Gilicze (ELI ALPS), Prabhash Prasannan Geetha (ELI ALPS), Viktor Pajer (ELI ALPS), János Bohus (ELI ALPS), Levente Lehotai (ELI ALPS), Eric Cormier (ELI ALPS), Rodrigo Lopez-Martens (ELI ALPS), Mikhail Kalashnikov (ELI ALPS), Katalin Varju (ELI ALPS), Gabor Szabo (ELI ALPS)

P1.37

HYPerspectral Ultrafast Source - HYPUS

Etienne Doiron (few-cycle Inc.), Maksym Ivanov (few-cycle Inc.), Marco Scaglia (few-cycle Inc.), Pedram Ghaderi (few-cycle Inc.), Max Stratmann (few-cycle Inc.), Ximeng Zheng (few-cycle Inc.), Gabriel Tempea (few-cycle Inc.), Vampa Giulio (University of Ottawa and National Research Council of Canada), Bruno Schmidt (few-cycle Inc.)

P1.38

Single-Shot Measurements of Carrier-Envelope Phase at 293 kHz Pulse Repetition Frequency

Paulo T. Guerreiro (Sphere Ultrafast Photonics), Jose C. Alves (Faculdade de Engenharia da Universidade do Porto), Celso P. Figueiredo (Faculdade de Engenharia da Universidade do Porto), Vítor A. Amorim (Sphere Ultrafast Photonics), Miguel Miranda (Sphere Ultrafast Photonics), Chen Guo (Lund University), Anne-Lise Viotti (Lund University), Cord L. Arnold (Lund University), Anne L'Huillier (Lund University), Helder Crespo (Sphere Ultrafast Photonics), Rosa Romero (Sphere Ultrafast Photonics)

P1.39

Advanced High Harmonic Generation Beamline for Tailored XUV at ELI Beamlines

Matyáš Staněk (ELI Beamlines Facility), Lucie Jurkovičová (ELI Beamlines Facility), Jan Vábek (ELI Beamlines Facility), Fauzul Rizal (ELI Beamlines Facility), Martin Albrecht (ELI Beamlines Facility), Jaroslav Nejdl (ELI Beamlines Facility), Ondrej Hort (ELI Beamlines Facility)

P1.40

Microjoule Level 10fs Visible Pulse Generation Via Frequency Doubling of Hollow Core Fibre Driven by an Yb Amplifier

Pedram Abdolghader (few-cycle Inc), Madhu Beniwal (Institut national de la recherche scientifique), Marco Scaglia (few-cycle Inc), Étienne Doiron (few-cycle Inc), Maksym Ivanov (few-cycle Inc), Gabriel Tempea (few-cycle Inc), Ximeng Zheng (few-cycle Inc), Pooya Abdolghader (few-cycle Inc), Giulio Vampa (NRC-uOttawa Joint Centre for Extreme Photonics), Bruno E Schmidt (few-cycle Inc)

P1.41

Single-stage multipass spectral broadening and compression of 90 fs, 400-µJ laser down to 10 fs

Tomin Joy (n2-Photonics GmbH), Oleg Pronin (n2-Photonics GmbH), Kilian Fritsch (Light Conversion), Valdas Maslinskas (Light Conversion), Tomas Stanislauskas (n2-Photonics GmbH)

P1.42

Ultrafast deep-UV pulse shaping for optimal electron beam production for the AWAKE experiment at CERN

Anahita Omoumi (CERN), Eduardo Granados (CERN)

Wednesday, October 8th
12:45 - 14:00
Poster Session 2

P2.1

Broadband Astrocomb Spectral Shaper with Single-Comb-Mode Control

William Newman (Heriot-Watt University), Jake M. Charsley (Heriot-Watt University), Yuk Shan Cheng (Heriot-Watt University), Richard A. McCracken (Heriot-Watt University), Derryck T. Reid (Heriot-Watt University)

P2.2

Towards a single-diode-pumped Ti:sapphire-based astrocomb

Ewan Allan (Heriot-Watt University), Abdullah Alabbadi (Max Planck Institute for the Science of Light), Hanna Ostapenko (Heriot-Watt University), Pablo Castro-Marin (Heriot-Watt University), Yuk Shan Cheng (Heriot-Watt University), Richard A. McCracken (Heriot-Watt University), Pascal Del'Haye (Max Planck Institute for the Science of Light), Derryck T. Reid (Heriot-Watt University)

P2.3

Timing stabilization of femtosecond optical laser system for pump-probe experiments in SACLA

Tadashi Togashi (Japan Synchrotron Radiation Research Institute (JASRI)), Shigeki Owada (Japan Synchrotron Radiation Research Institute (JASRI)), Toshinori Yabuuchi (Japan Synchrotron Radiation Research Institute (JASRI)), Makina Yabashi (Japan Synchrotron Radiation Research Institute (JASRI))

P2.4

Exploring Spontaneous Multimode Solitary Wave Generation

Maghsoud Arshadipirlar (Institut National de la Recherche Scientifique (INRS-EMT)), Francois Légaré (Institut National de la Recherche Scientifique (INRS-EMT)), Reza Safaei (MPB Communications Inc.)

P2.5

Ultrafast time-resolved demagnetization imaging in a ferromagnet

Alessandro Baserga (Politecnico di Milano), Federico Visentin (Politecnico di Milano), Davide Benettin (Politecnico di Milano), Giovanni Gandini (Politecnico di Milano), Christian Rinaldi (Politecnico di Milano), Ettore Carpene (IFN-CNR), Giulio Cerullo (Politecnico di Milano), Stefano Dal Conte (Politecnico di Milano), Franco V.A. Camargo (IFN-CNR)

P2.6

Optimization of thin plate post-compression based on 2+1D numerical simulations

Viktor Pajer (ELI-HU Nonprofit Ltd), Levente Lehotai (ELI-HU Nonprofit Ltd), János Bohus (ELI-HU Nonprofit Ltd), Nóra Csernus-Lukács (ELI-HU Nonprofit Ltd), Balázs Tari (ELI-HU Nonprofit Ltd), Mikhail Kalashnikov (ELI-HU Nonprofit Ltd), Ádám Börzsönyi (ELI-HU Nonprofit Ltd), Roland Nagymihály (ELI-HU Nonprofit Ltd)

P2.7

High power HHG source driven by a Black Dwarf laser system

Bastian Manschwetus (Class 5 Photonics GmbH), Thomas Braatz (Class 5 Photonics GmbH), Sebastian Starosielec (Class 5 Photonics GmbH), Hossein Goudarzi (Class 5 Photonics GmbH), Marek Wieland (Universität Hamburg), Mark J. Prandolini (Class 5 Photonics GmbH), Michael Schulz (Class 5 Photonics GmbH), Taisia Gorkhover (Universität Hamburg), Markus Drescher (Universität Hamburg), Christoph M. Heyl (Deutsches Elektronen Synchrotron (DESY)), Robert Riedel (Class 5 Photonics GmbH)

P2.8

Ultrafast SHG microscopy enhanced by deep learning for rapid, low-power tissue imaging

Arash Aghigh (Institut National de la Recherche Scientifique), Bhawna Dhawan (Institut National de la Recherche Scientifique), Reza Safaei (Institut National de la Recherche Scientifique), François Légaré (Institut National de la Recherche Scientifique)

P2.9

Compression of ultrafast laser pulses at the SXP instrument of the European XFEL

Patrik Grychtol (European XFEL), Pranav Bhardwaj (European XFEL), Yi-Ping Chang (European XFEL), Robert Carley (European XFEL), Laurent Mercadier (European XFEL), Dimitrios Rompotis (European XFEL), Moritz Emons (European XFEL), Joachim Meier (European XFEL), Maximilian Lederer (European XFEL), Andreas Scherz (European XFEL), Manuel Izquierdo (European XFEL)

P2.10

Relevant effects for the pulse post-compression with VEGA-2

Irene Hernández-Palmero (Centro de Láseres Pulsados (CLPU)), Julio San Román (Universidad de Salamanca), Enrique Conejero Jarque (Universidad de Salamanca)

P2.11

Ultrafast intracavity measurement of resonant microcavity modes dynamics

Ouri Karni (NTT-Research Inc.), Etienne Lorchat (NTT-Research Inc.), Chirag Vaswani (NTT-Research Inc.), Thibault Chervy (NTT-Research Inc.)

P2.12

Photon Transport Neural Networks: A Digital Twin Approach

Justin Baker (University of California), Jack Hirshman (Stanford University), Abhimanyu Borthakur (Stanford University), Harris Hardiman-Mostow (University of California), Sergio Carbajo (University of California), Andrea Bertozzi (University of California)

P2.13

Advancing X-ray Sources with Digital Twin Surrogates for Ultrafast Optics

Jack Hirschman (Stanford University), Hao Zhang (SLAC National Accelerator Laboratory), Abhimanyu Borthakur (University of California), Linshan Sun (University of California), Justin Baker (University of California), Andrea L. Bertozzi (University of California), Randy Lemons (SLAC National Accelerator Laboratory), Frederick Cropp (SLAC National Accelerator Laboratory), Razib Obaid (SLAC National Accelerator Laboratory), Ryan Coffee (SLAC National Accelerator Laboratory), Auralee Edelen (SLAC National Accelerator Laboratory), Sergio Carbajo (SLAC National Accelerator Laboratory)

P2.14

CEP-stable High-power Ultra-short Ti:Sa laser system seeded by OPCPA

Jingfeng Chen (Amplitude), Raman Maksimenka (Fastlite by Amplitude), Solenne Favier (Amplitude), Philippe Demengeot (Amplitude), Yoann Pertot (Fastlite by Amplitude), Xiaowei Chen (Amplitude)

P2.15

250W, 2.5mJ, 7.3fs at 1030nm extracted from a dual-stage MPC-based post-compression

Christian Grebing (Active Fiber Systems GmbH), Stefano Wunderlich (Active Fiber Systems GmbH), Maxim Tschernajew (Active Fiber Systems GmbH), Evgeny Shestaev (Active Fiber Systems GmbH), Florian Just (Active Fiber Systems GmbH), Vinzenz Hilbert (Active Fiber Systems GmbH), Christian Kern (Active Fiber Systems GmbH), Marco Kienel (Active Fiber Systems GmbH), Hafiz Masood (Active Fiber Systems GmbH), Tobias Heuermann (Active Fiber Systems GmbH), Christian Gaida (Active Fiber Systems GmbH), Oliver Herrfurth (Active Fiber Systems GmbH), Sven Breitkopf (Active Fiber Systems GmbH), Tino Eidam (Active Fiber Systems GmbH), Jens Limpert (Active Fiber Systems GmbH)

P2.16

CEO Frequency Detection of Watt-Level Ho:CALGO Femtosecond Oscillator at 2.1 µm Wavelength

Sergei Tomilov (Ruhr Universität Bochum), Yicheng Wang (Ruhr Universität Bochum), Mykyta Redkin (Ruhr Universität Bochum), Michael Müller (Ruhr Universität Bochum), David Carlson (Octave Photonics), Martin Hoffmann (Photonics and Ultrafast Laser Science), Clara Saraceno (Photonics and Ultrafast Laser Science)

P2.17

Passively Stable Free-space Coherent Combining in Nonlinear Pulse Compression

Nayla Jimenez (Deutsches Elektronen-Synchrotron DESY), Victor Hariton (Deutsches Elektronen-Synchrotron DESY), Henrik Tünnermann (Deutsches Elektronen-Synchrotron DESY), Hüseyin Çankaya (Deutsches Elektronen-Synchrotron DESY), Ingmar Hartl (Deutsches Elektronen-Synchrotron DESY), Marcus Seidel (Deutsches Elektronen-Synchrotron DESY)

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Broadband Dispersive mirrors for multipass cell with 100 GW peak power

Dr Volodymyr Pervak (Ludwig Maximilians University), Alexei Kobiak (Ultrafast Innovations GmbH), Alexander Guggenmos (Ultrafast Innovations GmbH)

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Multi-gigawatt peak power post-compression with higher-order vortex beams in a bulk multi-pass cell

Victor Koltalo (Laboratoire d'Optique Appliquée (LOA)), Saga Westerberg (Lund University), Melvin Redon (Lund University), Gaspard Beaufort (Lund University), Ann-Kathrin Raab (Lund University), Chen Guo (Lund University), Cord Arnold (Lund University), Anne-Lise Viotti (Lund University)

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High-Quality Soliton Compression in Hollow-Core Fiber

Callum Smith (NKT Photonics A/S), Erik Christensen (NKT Photonics A/S), Rasmus Engelsholm (NKT Photonics A/S), Patrick Montague (NKT Photonics A/S)

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Towards (V)UV Dual Comb Spectroscopy with Femtosecond Temporal Resolution

Robert di Vora (Graz University of Technology), Emily Hruska (Graz University of Technology), Birgitta Bernhardt (Graz University of Technology)

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Nonlinear characterization of materials via low order surface harmonics driven by 100 fs pulses operating at 100 kHz

Hugo Pires (Universidade de Lisboa), Hugo Gomes (Universidade de Lisboa), Gonçalo Vaz (Universidade de Lisboa), Gonçalo Figueira (Universidade de Lisboa), Ana Silva (Universidade Nova de Lisboa)

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Combining high temporal pulse quality and high compression factors via post-compression with chirped ellipse rotation

Esmerando Escoto (Deutsches Elektronen-Synchrotron DESY), Andrea Zablah (Deutsches Elektronen-Synchrotron DESY), Supriya Rajhans (Deutsches Elektronen-Synchrotron DESY), Arthur Schönberg (Deutsches Elektronen-Synchrotron DESY), Christoph M. Heyl (Deutsches Elektronen-Synchrotron DESY)

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Bright, soft X-ray high harmonic source at 100 kHz repetition rate

Philipp Gierschke (Fraunhofer Institute for Applied Optics and Precision Engineering), Themistoklis Sidiropoulos (Friedrich-Schiller-Universität Jena), Lucas Eisenbach (Friedrich-Schiller-Universität Jena), Warunya Röder (Fraunhofer Institute for Applied Optics and Precision Engineering), Maximilian Karst (Helmholtz-Institute Jena), Mathias Lenski (Friedrich-Schiller-Universität Jena), Ziyao Wang (Friedrich-Schiller-Universität Jena), Maximilian Benner (Friedrich-Schiller-Universität Jena), Arno Klenke (Fraunhofer Institute for Applied Optics and Precision Engineering), Robert Klas (Fraunhofer Institute for Applied Optics and Precision Engineering), Jan Rothhardt (Fraunhofer Institute for Applied Optics and Precision Engineering), Jens Limpert (Fraunhofer Institute for Applied Optics and Precision Engineering)

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State of ELI ALPS high repetition rate lasers

Imre Bence Seres (ELI ALPS), Barnabás Gilicze (ELI ALPS), Tamás Bartyik (ELI ALPS), Zsolt Bengery (ELI ALPS), Zsolt Kovács (ELI ALPS), Bernát Vinkó (ELI ALPS), Zoltán Várallyay (ELI ALPS), Péter Jójárt (ELI ALPS), Ádám Börzsönyi (ELI ALPS), Evgeny Shestaev (Active Fiber Systems GmbH), Maxim Tschernajew (Active Fiber Systems GmbH), Nico Walther (Active Fiber Systems GmbH), Christian Gaida (Active Fiber Systems GmbH), Sven Breitkopf (Active Fiber Systems GmbH), Tino Eidam (Active Fiber Systems GmbH), Jens Limpert (Active Fiber Systems GmbH)

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High energy few-cycle flat-top beam single-plate post-compression

Gaudenis Jansonas (Vilnius University), Dominykas Karvelis (Vilnius University), Pija Gadonaitė (Vilnius University), Arūnas Varanavičius (Vilnius University)

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Composition-controlled recovery dynamics of GaSb-based SESAMs in the SWIR

Maximilian C. Schuchter (ETH Zurich), Marco Gaulke (ETH Zurich), Nicolas Huwyler (ETH Zurich), Matthias Golling (ETH Zurich), Mircea Guina (Optoelectronics Research Centre, Physics Unit (TAU)), Ursula Keller (ETH Zurich)

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Optical chip for carrier-envelope phase scanning of laser oscillator beams

Václav Hanus (HUN-REN Wigner Research Centre for Physics), Beatrix Fehér (HUN-REN Wigner Research Centre for Physics), Péter Dombi (HUN-REN Wigner Research Centre for Physics)

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Mid-infrared supercontinuum generation up to 12 µm via intra-pulse difference frequency generation in Zinc Germanium Phosphide

Ankita Khanolkar (Thorlabs Inc.), Chenchen Wan (Thorlabs Inc.), Dongfeng Liu (Thorlabs Inc.), Sterling Backus (Thorlabs Inc.), Peter Fendel (Thorlabs Inc.), Reza Salem (Thorlabs Inc.)

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Anomalous spin dynamics after dual optical excitation

Sergii Parchenko (European XFEL), Peter M. Oppeneer (Uppsala University), Andreas Scherz (European XFEL)

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From Green to EUV: Efficient Coherent Light Generation at 13.5 nm Driven by a 515 nm Source

Maximilian Karst (Friedrich Schiller University Jena), Lucas Eisenbach (Friedrich Schiller University Jena), Philipp Gierschke (Friedrich Schiller University Jena), Robert Klas (Friedrich Schiller University Jena), Jan Rothhardt (Friedrich Schiller University Jena), Jens Limpert (Friedrich Schiller University Jena)

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Fast dispersion scan trace retrieval: neural networks vs. iterative algorithms

Miguel Canhota (Lund University), Daniel Díaz Rivas (Lund University), Caroline Juliano (Lund University), Marzo López Cerón (Lund University), Ivan Sytcevich (Lund University), Chen Guo (Lund University), Anne-Lise Viotti (Lund University), Cord Arnold (Lund University)

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Highly Efficient and Compact High-Harmonic Source at 45 to 65 eV for Magnetic Imaging

Mahmoud Abdelaal (Institute of Applied Physics Friedrich-Schiller-University Jena), Daniel Penagos (Institute of Applied Physics Friedrich-Schiller-University Jena), Maximilian Karst (Institute of Applied Physics Friedrich-Schiller-University Jena), Robert Klas (Institute of Applied Physics Friedrich-Schiller-University Jena), Jens Limpert (Institute of Applied Physics Friedrich-Schiller-University Jena), Jan Rothhardt (Institute of Applied Physics Friedrich-Schiller-University Jena)

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High-speed fly-scan ptychography with single-pulse diffraction

Augustas Karpavicius (Advanced Research Center for Nanolithography (ARCNL)), Matthias Gouder (Advanced Research Center for Nanolithography (ARCNL)), Stefan Witte (Advanced Research Center for Nanolithography (ARCNL))

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Bulk Multipass Cell Compression of Bursts of 11.424 GHz Repetition Rate, 50 uJ, Multi-Picosecond Photoinjector Laser Pulses

Michael Seggebruch (University of California Irvine), Ferenc Raksi (Lumitron Technologies, Inc.), Alex Amador (Lumitron Technologies, Inc.), Shawn Betts (Lumitron Technologies, Inc.), Adan Garcia (Lumitron Technologies, Inc.), Gennady Imeshev (Lumitron Technologies, Inc.), Patrick Lancuba (Lumitron Technologies, Inc.), Ricardo De Luna Lopez (Lumitron Technologies, Inc.), Mauricio Quinonez (Lumitron Technologies, Inc.), Trevor Reutershan (University of California Irvine), Kelly Zapata (Lumitron Technologies, Inc.), Luis Zapata (Lumitron Technologies, Inc.), Allen Zhang (Lumitron Technologies, Inc.), Christopher Barty (University of California Irvine)

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Toward ultrafast parametric X-ray radiation using a compact electron beamline

Chad Pennington (UCLA), Gia Azcoitia (UCLA), Mariia Stepanova (University of California), Connor Lim (UCLA), Linshan Sun (UCLA), Mashnoon Sakib (University of California), Cameron Leary (UCLA), Jackson Rozells (UCLA), Brittany Lu (UCLA), Liang Jie Wong (Nanyang Technological University), Tenio Popmintchev (University of California San Diego), Maxim Shcherbakov (University of California), Sergio Carbajo (UCLA)

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Ultrafast Energy Redistribution in Bimetallic Antenna–Reactor Nanoparticles

Ritika Dagar (SLAC National Accelerator Laboratory), Taekun Yoon (SLAC National Accelerator Laboratory), Samuel Sahel-Schackis (SLAC National Accelerator Laboratory), Thomas M. Linker (SLAC National Accelerator Laboratory), Martin Grassl (SLAC National Accelerator Laboratory), Shivani Kesarwani (University of Potsdam), Holger Lange (Eth Zurich), Daniela Rupp (Eth Zurich), Alessandro Colombo (Eth Zurich), Linos Hecht (Eth Zurich), Changji Pan (Eth Zurich), Elena Ott (Deutsches Elektronen-Synchrotron), Lea Schuepke (Paul Scherrer Institut), Antoine Sarracini (Paul Scherrer Institut), Kirsten Schnorr (Paul Scherrer Institut), Christoph Bostedt (Paul Scherrer Institut), Andre Al Haddad (European XFEL), Aurelian Sanchez (European XFEL), Chris Aikens (European XFEL), Yevheniy Ovcharenko (Kansas State University), Simon Dold (Eth Zurich), Michael Meyer (SLAC National Accelerator Laboratory), Adam Summers (University of Potsdam), Matthias Kling (SLAC National Accelerator Laboratory)

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Real-Time Observation of Interfacial Charge Transfer in Hybrid Systems via fs-MIR spectroscopy

Issatay Nadinov (King Abdullah University of Science and Technology), Simil Thomas (King Abdullah University of Science and Technology), George Healing (King Abdullah University of Science and Technology), Husam N. Alshareef (King Abdullah University of Science and Technology), Omar F. Mohammed (King Abdullah University of Science and Technology)

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Towards Realizing Schawlow-Townes Limited Dual-comb Spectroscopy with an Analog Feed-Forward Approach

Gregory Sercel (University of California), Mirali Seyed Shariatdoust (University of California), Tao Qu (University of California), Jack Diab (University of California), Jack Hirschman (Stanford University), Randy Lemons (Stanford University), Sophia Beninati (University of California), Prineha Narang (University of California), Suzanne Paulson (University of California), Sergio Carbajo (University of California)

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100 kHz Repetition Rate Extreme Ultraviolet Beamlines at the Artemis Facility

Bruce Weaver (Rutherford Appleton Laboratory), Yu Zhang (Rutherford Appleton Laboratory), Charlotte Sanders (Rutherford Appleton Laboratory), James Thompson (Rutherford Appleton Laboratory), Tiffany Walmsley (Rutherford Appleton Laboratory), Oliver Smith (Rutherford Appleton Laboratory), Adam Wyatt (Rutherford Appleton Laboratory), Richard Chapman (Rutherford Appleton Laboratory), Greg Greetham (Rutherford Appleton Laboratory), Emma Springate (Rutherford Appleton Laboratory)

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Introduction to Advanced Attosecond Laser Infrastructure

Kun Zhao (Institute of Physics of the Chinese Academy of Sciences)

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Nonlinear photophysics of rare-earth ions under femtosecond excitation

Helena Cristina Vasconcelos (University of the Azores), Maria Gabriela Meirelles (University of the Azores)

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