MON1 • Photon and Electron Sources of the Future

Auditorium
8:30–10:15
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Chair: Paul Corkum, Steacie Institute for Molecular Science, Ottawa, Canada

MON1.1 • 8:30 **•Invited•**

Ultrafast coherent X-ray diffractive imaging with the FLASH Free-Electron Laser, •*Henry N. Chapman[1], S. Bajt[2], A. Barty[3], W.H. Benner[3], M.J. Bogan[3], S. Boutet[4], A. Cavalleri[5], S. Düsterer[2], M. Frank[3], J. Hajdu[4,6], S.P. Hau-Riege[3], B. Iwan[6], S. Marchesini[7], K. Sokolowski-Tinten[8], M.M. Siebert[6], R. Treusch[2]*, and *B.W. Woods[3]*; *[1]Centre for Free-Electron Laser Science, University of Hamburg and DESY, Hamburg, Germany, [2]HASYLAB, DESY, Hamburg, Germany, [3]Lawrence Livermore National Laboratory, Livermore CA, USA, [4]SLAC, Menlo Park CA, USA, [5]Department of Physics, Clarendon Laboratory, University of Oxford, Oxford, UK, [6]Uppsala University, Uppsala, Sweden, [7]Lawrence Berkeley National Laboratory, Berkeley CA, USA, [8]Institut für Experimentelle Physik, Universität Duisburg-Essen, Germany*.
High-resolution ultrafast coherent diffractive imaging has been carried out at the FLASH FEL. Reconstructed images show no effect of sample destruction. Time resolved imaging was achieved by time-delay holography and with a synchronized optical laser.

MON1.2 • 9:00
X-ray induced transient optical reflectivity for fs X-ray/ optical cross-correlation at Free-Electron Lasers, *Cornelius Gahl[1,3], Armin Azima[5], Martin Beye[2], Martin Deppe[2], Kristian Döbrich[1], Urs Hasslinger[2], Franz Hennies[2,4], Alexej Melnikov[1], Mitsuru Nagasono[2], Annette Pietzsch[2], Martin Wolf[1], Wilfried Wurth[2]*, and •*Alexander Föhlisch[2]*; *[1]Fachbereich Physik, Freie Universität Berlin, Arnimalle 14, 14195 Berlin, Germany, [2]Institut für Experimentalphysik, Universität Hamburg, Luruper Chaussee 149, 22761 Hamburg, Germany, [3]Max-Born-Institut für nichtlineare Optik und Kurzzeitphysik, Max-Born-Strasse 2A, 12489 Berlin, Germany, [4]MAX-Lab, Lund Universität, Ole Römers väg 1, Box 118, 22100 Lund, Sweden, [5]HASYLAB/DESY, Notkestrasse 85, 22607 Hamburg, Germany*.
Using the high peak brilliance of the X-ray Free-Electron Laser at Hamburg, we have studied the X-ray pulse induced transient optical reflectivity on GaAs and established a novel tool for fs X-ray/optical cross-correlation.

MON1.3 • 9:15
An All-Optical Synchrotron Light Source, •*Heinrich Schwoerer[1,2], Hans-Peter Schlenvoigt[2], Kerstin Haupt[2], Alexander Debus[2], Erich Rohwer[1], Jordan Gallacher[3]*, and *Dino Jaroszynski[3]*; *[1]Laser Research Institute, Physics Department, University of Stellenbosch, Private Bag X1, Matieland 7602, South Africa, [2]Institut fuer Optik und Quantenelektronik, Universitaet Jena, Max-Wien-Platz 1, 07743 Jena, Germany, [3]Department of Physics, Scottish Universities Physics Alliance, University of Strathclyde, Glasgow G4 ONG, UK*.
We report on the generation of synchrotron radiation from laser accelerated relativistic electrons propagating through an undulator and present a detailed analysis of stability, reproducibility and future potential in terms of coherence, wavelength and brilliance.

MON1.4 • 9:30
Monoenergetic Electron Acceleration Driven by a Sub-10-fs OPCPA System, •*László Veisz[1], Karl Schmid[1,2], Sofia Benavides[1], Franz Tavella[1], Raphael Tautz[1], Daniel Herrmann[1], Andrius Marcinkevicius[1,3], Michael Geissler[1,4], Ulrich Schramm[5], Jürgen Meyer-ter-Vehn[1], Dietrich Habs[2], Ferenc Krausz[1,2]*, and *Bernhard Hidding[6]*; *[1]Max-Planck-Institut für Quantenoptik, Hans-Kopfermann-Strasse 1, 85748 Garching, Germany, [2]Department für Physik, Ludwig-Maximilians-Universität München, am Coulombwall 1, 85748 Garching, Germany, [3]IMRA America Inc., 1044 Woodridge Avenue, Ann Arbor, Michigan 48105, USA, [4]Centre for Plasma Physics, Department of Physics and Astronomy, Queens University Belfast, Belfast BT7 1NN, UK, [5]Forschungszentrum Dresden-Rossendorf e. V., Bautzner Landstrasse 128, 01328 Dresden, Germany, [6]Institut für Laser- und Plasmaphysik, Heinrich-Heine-Universität Düsseldorf, 40225 Düsseldorf, Germany*.
Electrons were accelerated to 5-30 MeV energy in a He gas jet with a 8.5 fs, 10 TW OPCPA system.

MON1.5 • 9:45
Absolute phase signature in THz emission from a femtosecond filament in argon, •*Christoph Hauri[1], Ivan Medvedev[2], Jonathan Wheeler[2], Chris Roedig[2], Gilles Doumy[2]*, and *Louis DiMauro[2]*; *[1]Paul Scherrer Institute, PSI West, WSLA 004 5232 Villigen, Switzerland, [2]Physics Department, Ohio State Univeristy, Columbus, Ohio, USA*.
We investigate THz emission from femtosecond filaments in argon and propose a scheme for single-shot determination of the absolute phase with a 2-π ambiguity.

MON1.6 • 10:00
Shaping Entangled Photon Pairs with Attosecond Precision, •*Florian Zäh* and *Thomas Feurer*; *University of Bern, Institute of Applied Physics, Sidlerstr. 5, CH-3012 Bern, Switzerland*.
We demonstrate automated amplitude and phase modulation of entangled photon pairs with attosecond precision, different autocorrelation measurements, and the observation of nonlocal effects, such as an increase of the coherence time due to spectral filtering.