

MON4A • Novel Fiber and High Power Sources

Auditorium

16:15–18:00

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Chair: Giulio Cerullo, Politecnico di Milano, Milan, Italy

MON4A.1 • 16:15

•Invited•

Ultrabroadband Er:fiber Systems and Applications. •Alfred Leitenstorfer¹, Alexander Sell¹, Daniel Träutlein¹, Florian Adler¹, Konstantinos Moutzouris¹, Florian Sotier¹, Matthias Kahl¹, Rudolf Bratschitsch¹, Rupert Huber¹, and Elisa Ferrando-May²; ¹Department of Physics and Center for Applied Photonics, University of Konstanz, D-78457 Konstanz, Germany, ²Department of Biology and Center for Applied Photonics, University of Konstanz, D-78457 Konstanz, Germany.

Compact and low-noise Er:fiber lasers allow efficient frequency conversion from the near ultraviolet into the mid infrared. These widely tunable sources enable multi-color experiments in applications ranging from precision metrology via pump-probe spectroscopy to bioimaging.

MON4A.2 • 16:45**Compact high Power Ytterbium based**

fs-Oscillator-Amplifier System. •Peter Rußbüldt¹, Torsten Mans², Dieter Hoffmann¹, Anne-Laure Calendron³, Max Lederer³, and Reinhard Poprawe^{1,2}; ¹Fraunhofer Institute for Laser Technology, Steinbachstr. 15, 52074 Aachen, Germany, ²Chair for Laser Technology RWTH Aachen, Steinbachstr. 15, 52074 Aachen, Germany, ³High Q Laser Production GmbH, Kaiser-Franz-Josef-Strasse 61, 6845 Hohenems, Austria.

A compact diode-pumped Yb:YAG Innoslab fs-oscillator-amplifier system, scalable to several 100W, was realized. Nearly transform and diffraction limited 786fs pulses at 77W average output power and 63.2MHz repetition rate are achieved so far.

MON4A.3 • 17:00

Fiber Laser Pumped High Average Power Single-Cycle THz Pulse Source. •Matthias C Hoffmann¹, Ka-Lo Yeh¹, Harold Y Hwang¹, Tom Sosnowski², János Hebling^{1,3}, and Keith A Nelson¹; ¹Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA, 02139, USA, ²Clark-MXR, Inc., 7300 West Huron River Drive, Dexter, Michigan 48130, USA, ³Department of Experimental Physics, University of Pécs, 7624 Hungary.

Single-cycle THz radiation was generated by optical

rectification of Yb-fiber laser pulses with 250 fs duration and 10 μ J energy. We obtained an average power of 0.5 mW at 1 MHz repetition rate.

MON4A.4 • 17:15

Millijoule Pulse Energy High Repetition Rate Femtosecond Fiber CPA System: Results, Micromachining Application and Scaling Potential. •Fabian Röser, Jan Rothhardt, Tino Eidam, Oliver Schmidt, Damian N. Schimpf, Antonio Ancona, Stefan Nolte, Jens Limpert, and Andreas Tünnermann; Institute of Applied Physics, Friedrich-Schiller-University Jena, Germany.

We report on an ytterbium-doped fiber CPA system delivering millijoule energy 800 fs pulses at high repetition rates and average powers exceeding 100 W. A micromachining application and average power scaling potential are also presented.

MON4A.5 • 17:30

Femtosecond thin disk lasers with >10 μ J pulse energy for high field physics at multi-megahertz repetition rates.

•Thomas Südmeyer¹, S.V. Marchese¹, C. R. E. Baer¹, S. Hashimoto¹, M. Golling¹, A. G. Engqvist¹, D. J. H. C. Maas¹, U. Keller¹, G. Lépine², G. Gingras², and B. Witzel²; ¹Department of Physics, Institute of Quantum Electronics, ETH Zurich, 8093 Zurich, Switzerland, ²Centre d'optique, photonique et laser, Université Laval, Pav. d'optique-photonique, Québec G1V 0A6, Canada.

We discuss a modelocked femtosecond thin disk laser generating record-high 11 μ J pulse energy. We present photoelectron imaging spectroscopy measurements in argon and xenon at megahertz repetition rate with peak intensities up to $6 \cdot 10^{13}$ W/cm²

MON4A.6 • 17:45

Ultra-High Intensity-High Contrast 300-TW Laser at 0.1 Hz Repetition Rate. •Victor Yanovsky¹, Vladimir Chvykov¹, Galina Kalinchenko¹, Pascal Rousseau¹, Thomas Planchon¹, Takeshi Matsuoka¹, Anatoly Maksimchuk¹, John Nees¹, Gilles Cheriaux², Gerard Mourou², and Karl Krushelnick¹; ¹IFOCUS Center and Center for Ultrafast Optical Science, University of Michigan, ²LOA, UMR 7639 ENSTA,-CNRS-Ecole Polytechnique, F-91761, Palaiseau Cedex, France.

We demonstrate the highest intensity -300 TW laser by developing booster amplifying stage to the HERCULES-50 TW-Ti:sapphire laser. To our knowledge this is the first Petawatt-scale laser at 0.1 Hz repetition rate