

## WED4A • Octave-Spanning Pulse Generation

Auditorium

16:15–18:00

## WED4A • Octave-Spanning Pulse Generation

Chair: Kjeld Eikema, FOM Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands

## WED4A.1 • 16:15

•Invited•

**Generation of octave-spanning Raman comb with absolute-phase control**, •Masayuki Katsuragawa<sup>1</sup>, Feng-Lei Hong<sup>2</sup>, Masaki Arakawa<sup>1</sup>, and Takayuki Suzuki<sup>1</sup>; <sup>1</sup>Department of Applied Physics and Chemistry, University of Electro-Communications, 1-5-1 Chofugaoka, Chofu, Tokyo 182-8585, Japan, <sup>2</sup>National Institute of Advanced Industrial Science and Technology, 1-1-1, Umezono, Tsukuba 305-8563, Ibaraki, Japan.

We show a novel octave-spanning comb generation having precise frequency-spacing of a Raman transition. We also demonstrate that the carrier-envelope-offset of the Raman comb is precisely controlled by stabilizing the comb to an optical frequency-standard.

## WED4A.2 • 16:45

**Tunable, octave-spanning supercontinuum driven by X-Waves formation in condensed Kerr media.**, •Alessandro Averchi<sup>1</sup>, Daniele Faccio<sup>1</sup>, Miroslav Kolesik<sup>2</sup>, Jerome V. Moloney<sup>2</sup>, Arnaud Couairon<sup>3</sup>, and Paolo Di Trapani<sup>1,4</sup>; <sup>1</sup>CNISM and Department of Physics and Mathematics, University of Insubria, Via Valleggio 11, 22100 Como, Italy, <sup>2</sup>ACMS and Optical Science Center, University of Arizona, Tucson, 85721 AZ, <sup>3</sup>Centre de Physique Théorique, CNRS, Ecole Polytechnique, F-91128, Palaiseau, France, <sup>4</sup>Department of Quantum Electronics, Vilnius University, Sauletekio Ave. 9, bldg. 3, LT-10222, Vilnius, Lithuania.

We generate octave-spanning blue-shifted continuum in ultrashort laser pulse filamentation in fused silica. Bandwidth and central wavelength can be tuned modifying the input pulse focusing condition. The process is explained in terms of X-Waves generation.

## WED4A.3 • 17:00

**Toward Ultrafast Optical Waveform Synthesis with a Stabilized Ti:Sapphire Frequency Comb**, •Matthew Kirchner<sup>1</sup>, Tara Fortier<sup>1</sup>, Danielle Braje<sup>1</sup>, Andy Weiner<sup>2</sup>, Leo Hollberg<sup>1</sup>, and Scott Diddams<sup>1</sup>; <sup>1</sup>National Institute of Standards and Technology, Boulder, Colorado 80305, USA, <sup>2</sup>Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana 47907, USA.

We have developed a system for line-by-line control of a stabilized Ti:Sapphire optical frequency comb. We show

individually-addressed 20 GHz comb modes around 970 nm and apply simple masks to demonstrate individual mode control.

## WED4A.4 • 17:15

**Multimillijoule Optically Synchronized and Carrier-Envelope-Phase-Stable Chirped Parametric Amplification at 1.5  $\mu\text{m}$** , •Oliver D. Mücke<sup>1</sup>, Dmitry Sidorov<sup>1</sup>, Peter Dombi<sup>1</sup>, Audrius Pugžlys<sup>1</sup>, Andrius Baltuška<sup>1</sup>, Skirmantas Ališauskas<sup>2</sup>, Jonas Pocius<sup>3</sup>, Linas Giniunas<sup>3</sup>, and Romualdas Danielius<sup>3</sup>; <sup>1</sup>Photonics Institute, Vienna University of Technology, Gusshausstrasse 27-387, A-1040, Vienna, Austria, <sup>2</sup>Laser Research Center, Vilnius University, Saulėtekio av. 10, LT-10223 Vilnius, Lithuania, <sup>3</sup>Light Conversion Ltd., P/O Box 1485, Light Conversion Ltd., P/O Box 1485, Saulėtekio av. 10, LT-10223 Vilnius, Lithuania.

Efficient infrared 35-THz-wide parametric amplification with energies  $>3$  mJ is obtained in a 3-stage OPCPA using a combination of a 1030-nm 200-fs Yb- and a 1064-nm 60-ps Nd amplifier seeded with a common Yb oscillator.

## WED4A.5 • 17:30

**5-fs multi-mJ CEP-locked parametric chirped-pulse amplifier at 1 kHz**, •Shunsuke Adachi<sup>1,3</sup>, Nobuhisa Ishii<sup>1,3</sup>, Hiroki Ishii<sup>1,3</sup>, Teruto Kanai<sup>1,3</sup>, Atsushi Kosuge<sup>1,3</sup>, Yohei Kobayashi<sup>2,3</sup>, Dai Yoshitomi<sup>2,3</sup>, Kenji Torizuka<sup>2,3</sup>, and Shuntaro Watanabe<sup>1,3</sup>; <sup>1</sup>Institute for Solid State Physics, University of Tokyo, Kashiwanoha 5-1-5, Kashiwa Chiba 277-8581, Japan, <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1 Umezono, Tsukuba 305-8568 Japan, <sup>3</sup>CREST, Japan Science and Technology Agency, Sanbancho 5, Chiyoda-ku, Tokyo 102-0075, Japan.

We report an optical parametric chirped-pulse amplifier with 5.5-fs pulse duration at a 1-kHz repetition rate, pumped by a 450-nm pulse from a frequency-doubled Ti:sapphire laser.

## WED4A.6 • 17:45

**Sub-two-cycle pulses at 1.6  $\mu\text{m}$  from an optical parametric amplifier**, Daniele Brida<sup>1</sup>, Giovanni Cirmi<sup>1</sup>, Cristian Manzoni<sup>1</sup>, Marco Marangoni<sup>1</sup>, Stefano Bonora<sup>1,2</sup>, Paolo Villorosi<sup>2</sup>, Sandro De Silvestri<sup>1</sup>, and •Giulio Cerullo<sup>1</sup>; <sup>1</sup>National Laboratory for Ultrafast and Ultraintense Optical Science - INFN-CNR, Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy, <sup>2</sup>LUXOR - Laboratory for UV and X ray Optical Research - CNR-INFN, D.E.I. - Università di Padova, Italy.

We demonstrate two optical parametric amplifier schemes, based on  $\beta$ -barium-borate and periodically-poled lithium tantalate respectively, generating ultrabroadband pulses in the 1-2  $\mu\text{m}$  range. Using a deformable mirror compressor we obtain 8.5-fs pulses at 1.6  $\mu\text{m}$ .