

TUoD: Short-Pulse Fiber Lasers and Amplifiers

Chaired by Jens Limpert, Friedrich Schiller University, Jena, Germany

Time: Tuesday 16:45–18:45

Location: Amphi A

Invited

TUoD.1 Tue 16:45

Inducing and controlling non-linearities in high power fs and ps amplifiers based on large mode area rod type fibers — ●ERIC CORMIER¹, YOANN ZAOUTER^{1,2}, and JOHAN BOULLET¹ — ¹Centre Lasers Intenses et Applications, Université de Bordeaux 1, CNRS, CEA, 351 cours de la Libération, F-33405 Talence, France — ²Amplitude Systèmes, 6 allée du Doyen Georges Brus, 33600 Pessac, France

We will present an overview of different high power rod-type-fiber-based amplification systems all operating in the non-linear propagation regime. We show that a proper understanding and manipulation of the non-linearities in particular configurations allows the achievement of unexpected performances.

TUoD.2 Tue 17:15

High repetition rate fiber amplifier driven optical parametric amplifier delivering 41 μ J pulses with 52 fs pulse duration — ●STEFFEN HÄDRICH¹, JAN ROTHHARDT¹, FABIAN RÖSER¹, JENS LIMPERT¹, and ANDREAS TÜNNERMANN^{1,2} — ¹Friedrich Schiller University Jena, Institute of Applied Physics, Albert-Einstein-Str. 15, 07745 Jena, Germany — ²Fraunhofer Institute for Applied Optics and Precision Engineering, Albert-Einstein-Str. 7, 07745 Jena, Germany

We report on an optical parametric amplifier driven by a chirped pulse fiber amplification system at 97 kHz. Pulses as short as 52 fs with an energy of up to 41 μ J are generated, hence, the initial pulse duration is reduced by more than one order of magnitude.

TUoD.3 Tue 17:30

High-repetition rate operation of an acousto-optic programmable filter in a femtosecond fiber amplifier system — ●DIMITRIS PAPADOPOULOS, MARC HANNA, FRÉDÉRIC DRUON, and PATRICK GEORGES — Laboratoire Charles Fabry de Institut Optique, CNRS, Univ. Paris-Sud 91127 Palaiseau France

We demonstrate the use of an acousto-optic dispersive programmable filter combined with a gratings pair to perform the compression of femtosecond pulses amplified in a nonlinear Yb-doped large-mode-area fiber. Generation of sub-80fs >100 nJ pulses is demonstrated at repetition rates up to 164 kHz.

TUoD.4 Tue 17:45

High-power passively mode-locked thulium-doped fibre ring laser with variable dispersion compensation — ●FRITHJOF HAXSEN¹, MARTIN ENGELBRECHT¹, AXEL RUEHL¹, DIETER WANDT¹, UWE MORGNER², and DIETMAR KRACHT¹ — ¹Laser Zentrum Hannover e.V., Hannover, Germany — ²Leibniz Universität Hannover,

Hannover, Germany

A passively mode-locked thulium-doped fibre ring laser with variable internal dispersion compensation is presented. Mode-locking was investigated with positive and negative cavity net dispersion. The obtained pulses had a maximum energy of up to 4.3 nJ and a shortest dechirped pulse duration of 173 fs.

TUoD.5 Tue 18:00

Linearly chirped single-pulse regime from a highly normal Er-doped fiber laser — ●AMÉLIE CABASSE¹, GILLES MARTEL¹, AMMAR HIDEUR¹, BULEND ORTAÇ², and JENS LIMPERT² — ¹CORIA UMR 6614, Université de Rouen, Avenue de l'université BP 12, 76801 Saint Etienne du Rouvray, France — ²Institute of Applied Physics, Friedrich Schiller University, Albert-Einstein-Strasse 15, D-07745 Jena, Germany

We report on a passively mode-locked erbium fiber laser operating in a highly-positive dispersion regime.

Highly-chirped pulses with 5.4 ps duration and 8 nm spectral bandwidth are generated. They are compressed down to 757 fs with an averaged output power of 24 mW.

TUoD.6 Tue 18:15

Wavelength tunable ytterbium fs-fiber-laser without dispersion compensation — ●MICHAEL SCHULTZ¹, HEIKE KAROW¹, DIETER WANDT¹, UWE MORGNER^{1,2}, and DIETMAR KRACHT¹ — ¹Laser Zentrum Hannover e.V., Hannover, Germany — ²Institute of Quantum Optics, Leibniz Universität Hannover, Hannover, Germany

A passively mode-locked Yb-fiber-laser without dispersion management is presented. Different types of intra-cavity filters were used for pulse shaping and stabilizing of highly chirped pulses. Applying the interference filter, the laser could be tuned between 1015 nm and 1050 nm. The minimum pulse duration was 110 fs.

TUoD.7 Tue 18:30

High quality sub-300 fs 100 μ J energy pulses FCPA with mismatched stretchers and compressor — ●ZAOUTER YOANN^{1,2}, BOULLET JOHAN¹, MOTTAY ERIC², and CORMIER ERIC¹ — ¹Centre Lasers Intenses et Applications, Université Bordeaux 1, CNRS, CEA, 351 cours de la Libération, 33405 Talence, France — ²Amplitude Systemes, 6 allée du Doyen Georges Brus, 33600 Pessac, France

We report on a compact double-stage ytterbium-doped fiber chirped pulse amplifier system delivering 30 W of high temporal and spatial quality 270 fs pulses of 100 μ J energy (peak power of 345 MW). Our system exploits the large nonlinear phase shifts in association with mismatched stretcher-compressor units.