

TRAINING COURSE on

ULTRAFAST AND INTENSE LASER METROLOGY

Objectives

- Master laser field representation
- Understand the many laser field parameters (energetic, spatial, temporal, spectral, spatio-temporal, ...)
- Review up-to-date laser metrology techniques
- Train on common metrology techniques during hands on sessions
- Interact directly with the many industrial partners in charge with the trainings
- Build a network of users within the European community and exchange knowledge and how-to among the participants. Initiate collaborations.

Term

- Lectures: 2.5 days
- Hands on training: 2.5 days (18 limited places)

Prerequisites

- Degree in lasers and optics

Audience

- Users or designers of high intensity/high energy/high average power lasers
- Technicians, Engineers, Researchers
- Undergraduate and PhD students

Dates

- 19-23 June 2017

Venue

- PYLA/University of Bordeaux

Teachers

- Eric Cormier, CELIA, Bordeaux University
- JC Delagnes, CELIA, Bordeaux University
- Antoine Jeandet, CEA
- Yann Mairesse, CELIA, CNRS
- Patrick Mounaix, IMS, CNRS
- Fabien Quere, CEA
- Stéphane Petit, CELIA, CNRS
- Baptiste Fabre, CELIA, Bordeaux University

With the collaboration of:

- Fastlight
- Femtoeasy
- Gentec/Laser Components
- Imagine Optic
- Phasics
- Sphere/ Porto University

Program

Basic concepts:

- Ultrashort and intense laser sources
- Laser field representation
- Laser parameters
- Linear and non-linear optics

Measurement methods:

- Energy (Photodiode, pyroelectric, thermopile)
- Spectral (wavemeter, Fabry-Perot, monochromator, imaging spectrometer, FTIR, ...)
- Temporal (Autocorrelation, FROG-type, SPIDER-type, D-Scan, Wizzler, CEP, ...)
- Spatial (Knife-edge, CCD, ..., M^2 , Shack-Hartman, multilateral interferometry, ...)
- Spatio-temporal couplings (Termite, ...)

Special cases:

- THz characterization
- XUV/attosecond pulse characterization

Lab work:

- Time-frequency duality (simulations)
- SNLO (simulations)
- Spatial propagation (simulations)
- Energy, power, intensity
- Spectral measurements (calibration, resolution)
- Temporal (Autoco, SPIDER, Wizzler, FROG, D-Scan, ...)
- Spatial (Shack-Hatmann, multi-lateral shearing interferometry, Knife-edge, M^2)
- Spatio-temporal (simulations)
- THz (characterization)

Training session chair

- **Prof. Eric CORMIER**, CELIA, Bordeaux University, PYLA
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Coordination

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