Optical Parametric Chirped-Pulse Amplification – OPCPA

3 DAYS (21H)

Ref. LSL-17

OBJECTIFS

- To provide a basic knowledge in both linear and non-linear optics
- To understand parametric process
- To learn how to simulate et design the various stages involved in parametric amplification (SHG, OPO, OPA, OPCPA)
- To present state-of-the-art OPA and OPCPA devices
- To foster a network at the national and international level
- To facilitate the exchange of knowledge and to share know-how between the attendees

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PUBLIC

- Users or designers of high-intensity, high-energy or high average power lasers
- Technicians, engineers, researchers
- Undergraduates and Ph.D. students

ÉVALUATION

- Assessment
- Certificate of completion

INTERVENANTS

- Internationally renowned speakers experts in their field

PROGRAMME

- Basic concepts
  Ultrashort pulse propagation, dispersion, CEP ;
  Principles of linear and non-linear optics. Second or third order susceptibility. Phase matching. Non-linear processes ;
  Architectures involving parametric amplification processes associated with second order and third order ;
  Non-linear materials ; Simulating parametric processes
- OPA based systems
  High energy and high average power SHG ; MidIR ultrashort pulses at 160 kHz ; 2 cycles at 2 µm at 100 kHz ; High-energy OPCPA at 3.9 µm ;
  4.5 fs 20 GW at 800 nm ; OPCPA front-end for PETAL 10 PW laser ; Fiber OPA ; Fourier Domain OPA ; Visible OPA ; High-intensity / high-energy OPCPA ;
  High–contrast OPCPA front-end
- Lab work
  Simulations ; Frequency doubling, phase matching, angular-spectral-temperature acceptance ;
  Supercontinuum generation and DFG ; CEP control and measurement ; OPA ; Fiber OPA ; 4WM

MÉTHODES & MOYENS PÉDAGOGIQUES

- Lectures
- Hands on training
- Calculation and simulations

+ D'INFOS

- Location : University campus Bordeaux-Talence (33)
- Dates : 1 session/year – contact us
- Prerequisite : Degree in physics
- Fee : 2 500 € HT