# WP6 - Technology development for future high-power laser facilities
# Task 6.3
# **Training and scientific exchange**

**Laserlab-Europe AISBL**

Eurizon Annual Meeting

9-10 February 2023

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

# Task 6.3: Training and scientific exchange

## LLE AISBL, ELI-DC AISBL

Laserlab-Europe will provide a **platform for dedicated knowledge sharing and training** on the topics of intense laser pulse propagation, pulse contrast enhancement, and pulse metrology. This will be realized through a series of three events in which these relevant topics will be discussed among the partners in conjunction with experts from Laserlab-Europe and external, internationally renowned instructors. The regularity of these training events will provide a sustainable laser science forum in which knowledge and state-of-the art results are shared and best practices are developed.

**Deliverables:**

**D6.1** Training event on beam delivery and propagation at extreme intensities – Report, M30 – **submitted**
(postponed by amendment due to Covid-related delay, initially planned M15)

**D6.3** Training event on pulse metrology, techniques and challenges – Report, M34 – **submitted**
(postponed by amendment due to Covid-related delay, initially planned M28)

**D6.6** Training event on pulse metrology, techniques and challenges – Report, due M45

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# Training and scientific exchange – D6.1

Training event on "**Modelling of ultra-intense laser propagation in plasmas and laser-plasma accelerators: fundamentals**"

26-29 April 2022, online event
Organised by GoLP/IPFN/Instituto Superior Técnico, Lisbon, Portugal

Format:

- 4 days, 2 hour lecture per day, followed by remote hands-on sessions
- Challenges and flash presentations of participants

Topics

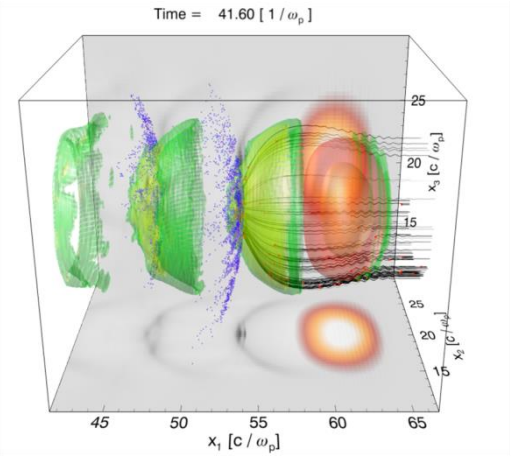
- PIC codes and ZPIC installation
- Laser dynamics and plasma accelerators
- Numerical modelling of laser-plasma interactions
- Laser propagation in plasmas
- Advanced Visualization and Data analysis

Target group

- PhD students, post-docs, researchers in laser-plasma interactions
- with both experimental and theoretical backgrounds

Participants

- 23 active attendees, 25% female
- majority affiliated with Laserlab-Europe and ELI facilities
- some from other European laboratories and Israel


*3D Simulation of a laser wakefield accelerator*

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# Training and scientific exchange – D6.3

Training Weeks on **Experimental Laser-Plasma Physics**

25 July - 5 August 2022 and 1-12 August 2022
Organised by the Central Laser Facility, Rutherford Appleton Laboratories, UK

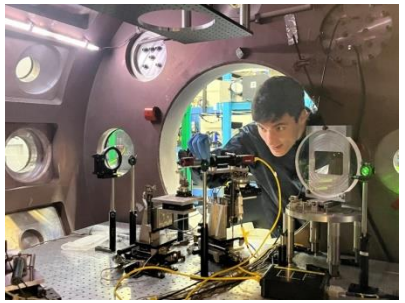
Format:
- 2-weeks courses, 4 students per course

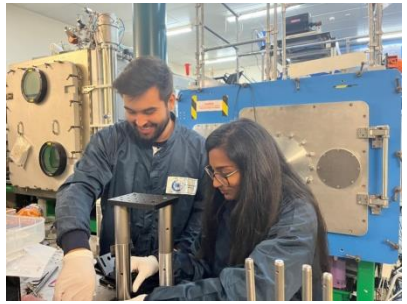
Topics
- basic skills for experimental laser-plasma physics
- optical alignment
- target manufacturing
- setting up an experimental geometry
- taking shots and analysing data

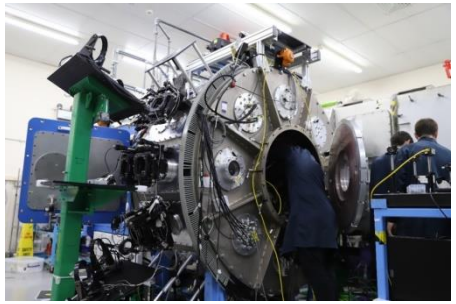
Participants
- 8 participants for the EURIZON weeks
- affiliated with Laserlab-Europe and ELI-NP
- majority 1st year and 2nd year PhD students

Week 1: basic elements of experiments
- Basic optics and optomechanics
- Imaging systems
- Parabola alignment
- Spectrometers
- Particle diagnostics, e.g. Thomson Spectrometer, electron spectrometer, radiochromic film (RCF) pack design
- Optics handling
- Target fabrication

Week 2: bring the skills to the lab
- ➢ build an experiment from scratch







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# Training and scientific exchange – D6.6 and plans for 2023

**D6.6 Training event on pulse metrology, techniques and challenges**

➢Due M45 = October 2023

Plans and options

Experimental Training Weeks at CLF, UK

- proposed focus: high-rep rate laser facilities and development of machine learning techniques
- on site, hands on

Training in simulation and data analysis

- online, remote hands-on possibility

Training event possibly organised by PYLA in Bordeaux (https://pyla-formation.com/en/our-training-fields/)

- on site, hands on
- Focus: High energy lasers, intense lasers, short pulse lasers, e.g.
  - Intense Laser Systems
  - Ultrafast and intense laser metrology

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