

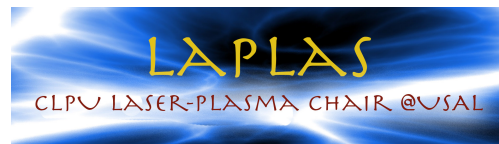
12 November 2021 - Online



ELI ERIC

Iberian Information Day

Iberian knowledge in service of the European laser community



The Spanish experience: plans, courses and summer schools

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Centro de Laseres Pulsado (CLPU) & Laser Plasma Chair @ (USAL)

Motivations

- Extreme Light Infrastructure provides Unique High-Power and Ultra-short lasers at High repetition rates.
- Such conditions were never reached before.
 - ◆ ELI-ALPS Hungary (High power pulses up to 100 KHz)
 - ◆ ELI-beams Czech-republic (High power high energy for particle acceleration)
 - ◆ ELI-np Romania (High power coupled with Gamma ray beam)



ELI-ALPS, Szeged, Hungary



ELI Beamlines, Dolní Břežany, Czech Republic



ELI-NP, Magurele, Romania

Motivations

Such Unique Combination of:

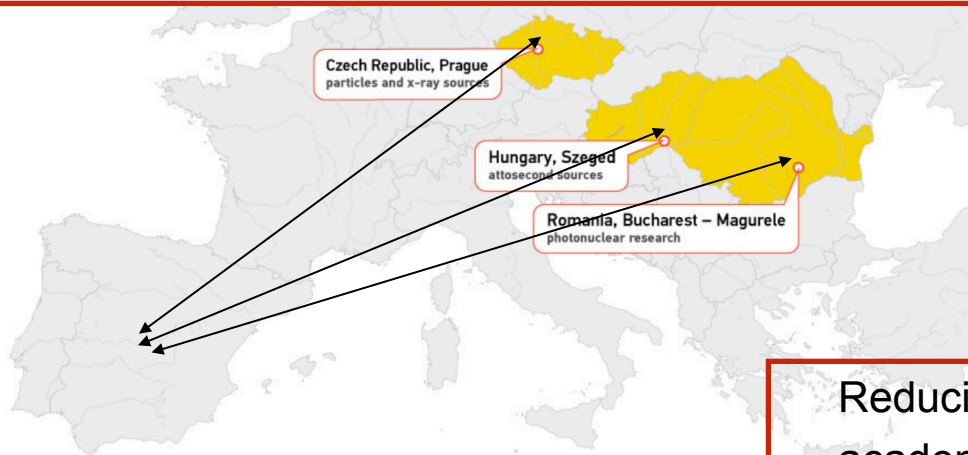
- High level of Science investigation (new frontiers exp)
- High level of technology innovation (cutting edge technology)
- High level of training and formation (new territory multidisciplinary)
- **Can not be organised by a single nation**
- **Cannot be developed *without a wide EU collaborative programme***



Spain has a unique opportunity to be part of this scientific and technological development

Possible actions

- Possibility of Innovative and unique experimental campaigns (requires)
- Collaboration at national and international level (I.e IMPULSE)
- Experiment preparation in intermediates infrastructures (not only lasers)
- Integrated national and International:
 - ◆ Join research activity programmes
 - ◆ Networking programmes
 - ◆ Training programmes
 - ◆ Outreach programmes



- ✓ Multidisciplinary
- ✓ Problem solving
- ✓ Soft skills

New challenges!

Such skills prepare students not only for academic careers

Reducing the distances between academic and non-academic formation

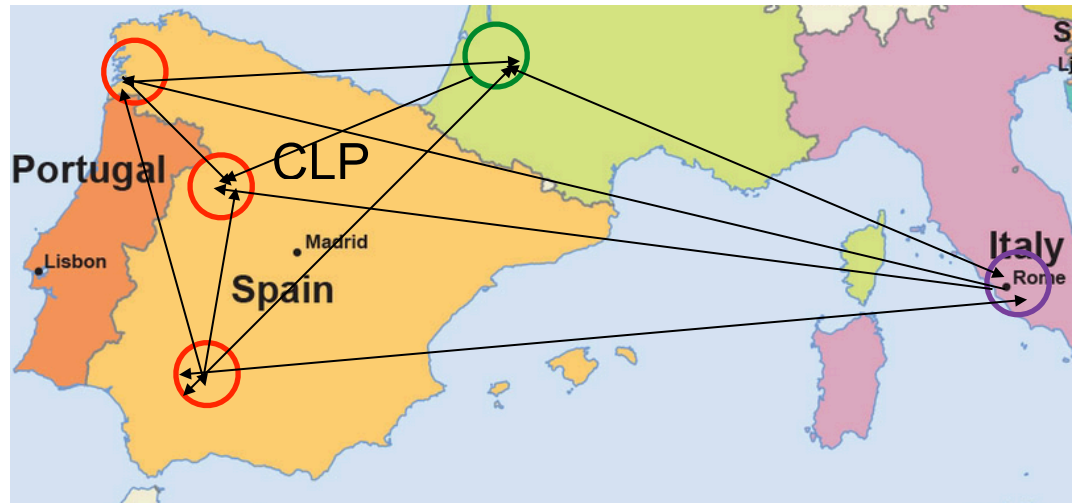
Joint research activities and Networking

- ELI ERIC environment can favourite and reinforce the collaborative programme between the different Spanish infrastructures and research centres
- Collaboration between different science sector are necessities to approach ELI laboratories
- Possibility to apply to EU programmes like “ERC synergy grants” and/or “Cost programmes” implying ERIC collaboration
- Research collaborations are **IMPULSE** and **LASERLAB**

Accepted experiment at the CLPU

Laser-driven neutrons for nuclear physics experiments and applications

- Sevilla
- Santiago de Compostela
- Salamanca
- Bordeaux
- Rome

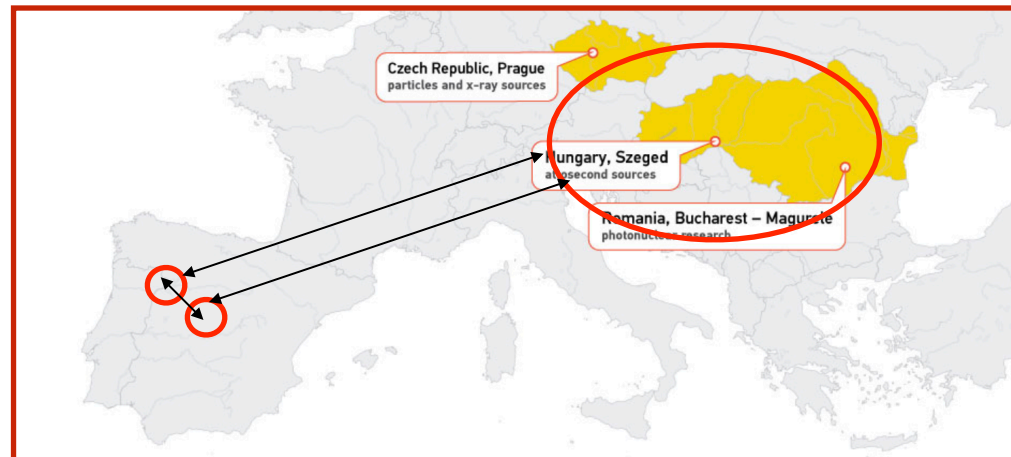


TRAINING (Master)

- ELI ERIC pave the way for new collaborative training programmes with possible applications in the Horizon Europe/ ERASMUS programme
- New opportunities for young scientist to apply for dedicated career programmes
- Possibility of collaborative master programmes with double levels
 - local mobility (for example a Master programme between Salamanca and Madrid)
 - International mobility (possibility to include periods abroad for preparing the thesis)
- Possible double degree ?

Ex: Master programme on : X-ray spectroscopy of plasma

- Master programme shared between CLPU-USAL and UPM Madrid
- Period in ELI for experimental campaign
- Experimental preparation at CLPU
- Final Master thesis in collaboration with ELI



TRAINING (Master)

- Possible to apply for ERASMUS programmes
- Specialised for defining and start new teaching programmes that are not still well represented in the course of single universities

Erasmus+ PowerLaPs
High Power Laser Plasma Physics
2 Year LaPs in Europe

5 Days Intensive Training
+ 2 Annual Intensive Programmes
 #2 weeks teaching, hands-on training & simulations

2018 Plasma Physics
 High Power Laser Matter Interactions /
 High Energy Density Physics

2019 Computational Modeling & Simulations
 in Laser Matter Interactions
 Laser Plasma Diagnostics

Teaching, Training & Applying
 High Power Laser Plasma Physics

**THEORY
 EXPERIMENTS
 SIMULATIONS**

Participating Organisations

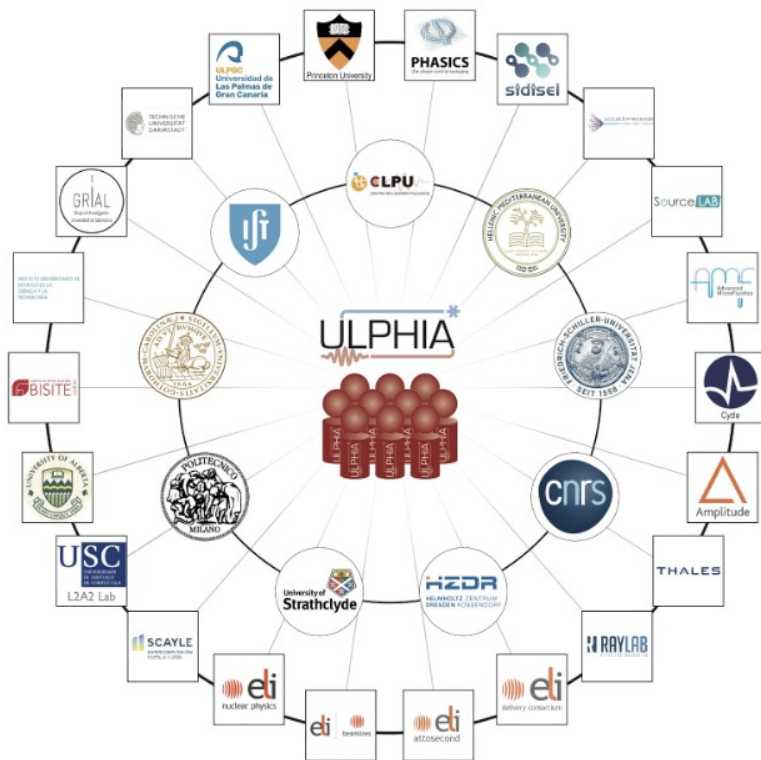
	TEI OF CRETE - Coordinator	2 Weeks IP	2018 & 2019 July	M. Tatarakis	m.tatarakis@chania.teicrete.gr
	UNIVERSITY OF IOANNINA	Multiplier Event	2019	M. Benis	mbenis@uoi.gr
	UNIVERSITY OF YORK	Kick-off Meeting	2017 November	J. Pasley	john.pasley@york.ac.uk
	QUEEN'S UNIVERSITY BELFAST	Intensive Training	2018 March	B. Dromey	b.dromey@qub.ac.uk
	UNIVERSITE DE BORDEAUX	Intensive Training	2018 January	D. Batani	dimitri.batani@u-bordeaux.fr
	ECOLE POLYTECHNIQUE	Kick-off Meeting	2018 November	M. Koenig	michel.koenig@polytechnique.edu
	CZECH TECHNICAL UNIVERSITY	Intensive Training	2019 January	J. Limpouch	jiri.limpouch@fjfi.cvut.cz
	UNIVERSIDAD DE SALAMANCA	Intensive Training	2019 March	L. Volpe	lvolpe@clpu.es

IKY European Union Erasmus+

- 6 EU countries
- 9 EU Institutions
- 2 years programme
- 4 trainings
- 2 summer schools
- > 200 students involved
- 2 JCR publications

TRAINING (Doctorate)

- Joined proposals for ‘doctoral training’ at the Horizon Europe.
- At the moment CLPU is proposing ULPHIA Network in collaboration with Spanish and EU infrastructures.
- Strong Implication of ELI ERIC and all the PILLARS



Ultrafast Laser-Plasma processes at High Intensities & Applications



TRAINING (Summer schools)

- Summer schools can be considered “in between” Training and Outreach activities
- Are fundamental to inform students about the potentiality of the scientific community
- Are complicated to organise due to:
 - the strong multi-disciplinarity
 - The strong differences in student formation level and background

LAPLASS

- ✓ ES & EU teachers
- ✓ ES & EU students
- ✓ 4 editions 2018-2021

Next ?

- ✓ Collaborative summer/winter school
- ✓ Topics related to the physics @ ELI
- ✓ Itinerant events
- ✓ Mixing spanish excellence
- ✓ supported and sponsored by ELI



Thanks for your attention

Děkuji za pozornost

Köszönöm a figyelmet

Multumesc pentru atenție

Grata pela atenção

Gracias por la atención

Grazie tante per l'attenzione!

Backup

01. Astronomy & Astrophysics

- Canarian Observatories (www.iac.es)
- Gran Telescopio CANARIAS (www.gtc.iac.es)
- Calar Alto Astronomical Observatory - CAHA - (www.caha.es)
- IRAM 30M Radio Telescope (www.iram-institute.org)
- Yebes Observatory
- Javalambre Astrophysical Observatory - OAJ - (www.cefca.es)
- Canfranc Underground Laboratory - LSC- (www.lsc-canfranc.es)

01. Astronomy & Astrophysics



02. OCEAN, LIFE & EARTH SCIENCES

- Oceanic Platform of the Canary Islands - PLOCAN - (www.plocan.eu)
- Coastal Observation System of the Balearic Islands - SOCIB - (www.socib.es)
- Spanish Oceanographic Fleet - FLOTA -
- Spanish Antarctic Facilities - BAES-
- Doñana Biological Reserve -RBD- (icts-rbd.cisc.es)
- Aerial Research Platforms -PAI- (www.inta.es/grandesinstalaciones)

02. Ocean, Life & Earth Sciences



03. HEALTH SCIENCES AND BIOTECHNOLOGY

- Integrated Infrastructures for production and characterization of nanomaterials, biomaterials and System in Biomedicine - NANBIOSIS -
- Distributed Network for Biomedical Imaging - ReDIB -
- Nuclear Magnetic Resonance Laboratory - LRB - (www.rmnb.ub.es/lrb)
- Red de Laboratorios de Alta Seguridad Biológica (RLASB)
- Infraestructura de Tecnologías Ómicas (IOT)

03. Health Sciences & Biotechnology



04. INFORMATION & COMMUNICATION TECHNOLOGIES

04. Information & Communication TECH



- Spanish Expanded Supercomputing Network - EXPANDED RES -
- Spanish Academic and Research Network - RedIRIS - (www.rediris.es)

05. ENERGY

05. Energy



- Plataforma Solar de Almería - PSA - (www.psa.es)
- National Fusion Laboratory - LNF - (fusionsites.ciemat.es)

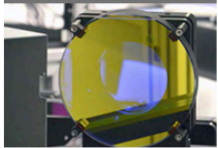
ES ICTS

06. ENGINEERING

- Maritime Aggregated Research Hydraulic Infrastructures - MARHIS -

07. MATERIALS

07. Materials



- ALBA Synchrotron (www.albasynchrotron.es)
- Micro and Nano-Fabrication Clean Rooms Network - MICRONANOFABS -
- Integrated Infrastructures for Electron Microscopy of Materials - ELECM -
- Centre for Ultrashort Ultraintense Pulsed Lasers - CLPU - (www.clpu.es)
- National Accelerator Centre - CNA - (acdc.sav.us.es/cna)

08. SOCIO-ECONOMIC SCIENCES & HUMANITIES

08. Socio-Economic Sciences & Hum.



- National Research Centre on Human Evolution - CENIEH - (www.cenieh.es)