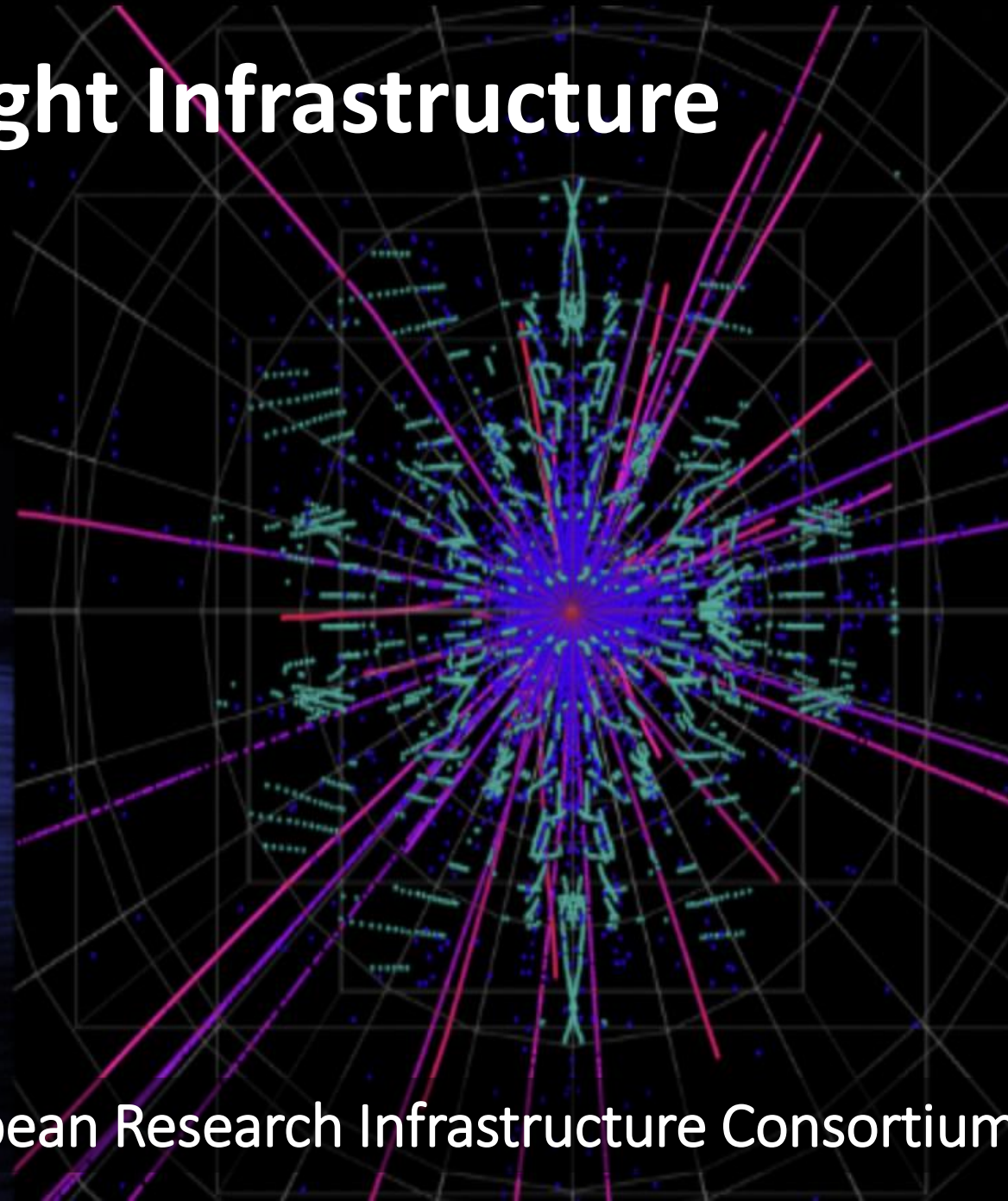




The Extreme Light Infrastructure



Joint ELI User Meeting
2-4 November 2022



A European Research Infrastructure Consortium



Housekeeping Rules



The **meeting** will be **recorded**.



Name and Affiliation should be **featured** on your profile



Only Speakers/Panelists have **speaking permissions**.



Questions can be **posted** in the **Q&A** and will be addressed by the moderators of each session.



In case of **technical or any other questions**, please use the **Chat function** to get in touch with the host.



Joint ELI User Meeting 2022

Plenary Programme, 3 November 2022

Introduction

9:00 - Welcome & Overview

Allen Weeks, ELI ERIC Director General

9:30 - ELI ALPS Overview and Status

Katalin Varjú, ELI ALPS Science Director

10:10 - ELI Beamlines Overview and Status

Daniele Margarone, ELI Beamlines Director of Science and Operations

10:50 - Break

11:00 - ELI Nuclear Physics Overview and Status

Calin A. Ur, ELI Nuclear Physics Director

11:40 - ELI Call for Users

Florian Gliksohn, ELI ERIC Executive Director

12:15 - Lunch Break

ELI ALPS Research Developments Highlights

Chair: Dimitris Charalambidis

13:00 - The NonlinearATTO project

Giuseppe Sansone (Albert Ludwig University of Freiburg, Germany),

13:30 - Ultrafast spectroscopy measurements of liquid solutions under vacuum

Majed Chergui (EPFL, Switzerland),

14:00 - Spin and time-resolved momentum microscopy on solid surfaces

Martin Aeschlimann (TU Kaiserslautern, Germany)

14:30 - Break



Joint ELI User Meeting 2022

Plenary Programme, 3 November 2022

ELI Beamlines Research Developments Highlights

14:35 - Perspectives of X-ray fluorescence imaging (XFI)

Theresa Staufer, Universität Hamburg, Germany,

14:55 - XUV Spectroscopy and Imaging of Helium Nanodroplets

Marcel Mudrich, Aarhus University, Denmark

15:20 - Technologies at General Atomics for Rep-rated Operation of High-Energy-Density-Physics Experiments

Mario Manuel, General Atomics, Developing

15:40 - Research Opportunities in Ion Acceleration and Applications on the ELIMAIA Beamline

Marco Borghesi, Queens' University Belfast, UK,

16:05 - Break

ELI Nuclear Research Developments Highlights

16:10 - Introduction of User Proposals and their scope in future

Kazuo Tanaka (ELI-NP)

16:40 - Dispersion Relation and Pulse Shaping of Femtosecond Laser-Driven Transient Pulsed Electromagnetic Fields

Philip Bradford (CELIA, France),

17:10 - Spectral broadening of large aperture vortex beams

Daniel Ursescu (ELI-NP)

17:40 - Summary / Wrap-up

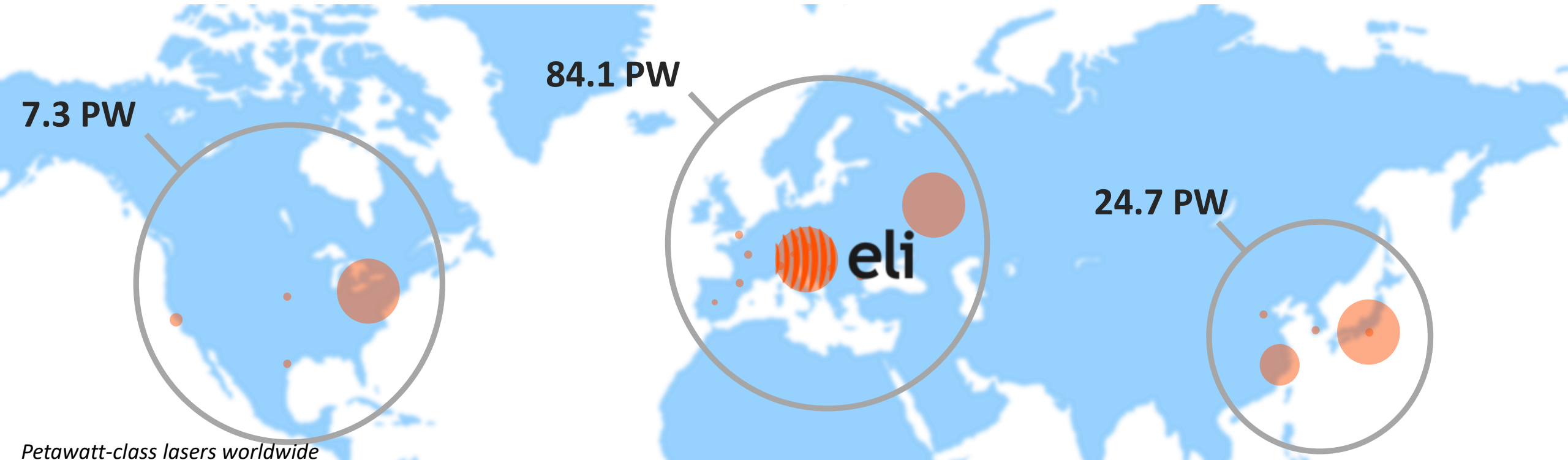


The Extreme Light Infrastructure

A European Research Infrastructure Consortium

Europe leads the world in laser production and installation, especially state-of-the-art systems.

- **Investment** in high-power laser systems in Europe is connected to a **strong and relatively consolidated** community in Laserlab Europe beginning in 2001.
- **The ELI Facilities** are introducing **5 PW+ lasers**, (**3x10PW** and **2xPW@10Hz**) plus a diverse set of leading atto-second high-repetition systems.



Petawatt-class lasers worldwide

SOURCE: Courtesy of J.L. Collier, CLF RAL, UK



ELI Attosecond Laser Pulse Sources

Szeged, Hungary

ELI ALPS is a world-class centre for :

- Ultrafast physical processes
- Chemical, medical and materials science analysis
- Attosecond measurement techniques
- Biological imaging technologies
- Artificial photosynthesis
- Nanoscience
- 270 international staff
- Area 30,000 m²



ELI Beamlines

Dolní Břežany, Czech Republic

ELI Beamlines explores the interaction of light with matter at intensities 10 times higher than previously achievable.

- L1 (Allegra) <20 fs pulses exceeding 100 mJ @ 1 kHz
- L3 (HAPLS) 1 PW <30 fs pulses at least 30 J @ 10 Hz
- L4 (ATON) 10 PW 150fs – 10ns, 1.5kJ @ 1 shot/min
- medical imaging and diagnostics, radiotherapy
- new materials
- X-ray optics
- Laser driven hadron-therapy
- High field
- Fusion
- 300+ international staff



IMPULSE

ELI Nuclear Physics

Măgurele, Romania

ELI ERIC and IFIN-HH includes ELI-NP in the first joint ELI Call. This is made possible through the collaboration under IMPULSE. Experiments using:

- One laser @ 100 TW, 27 fs, 2.7 J @10 Hz (single shot available)
- One laser @ 1 PW, 24 fs - 1 ps, 25 J @ 1 Hz (single shot available)



A European Research Infrastructure Consortium

Construction was possible with
European Structural Investment Funds
(ESIF)

*A European International
Organisation Established in 2021*

*The Czech Republic,
Host of Seat*



*Hungary,
Host*



*Italian
Republic*



Lithuania



*Federal Republic of
Germany
Observer*



*Bulgaria
Observer*



***Member countries support ELI ERIC
jointly with national funding.***



***Horizon 2020 (INFRADEV) helps finance the
integration of the joint user programme, as
well as initial access pilots, flagship
experiments***



eli

ELI ERIC in Figures

ELI ERIC Facility Staff

Total number of employees 574

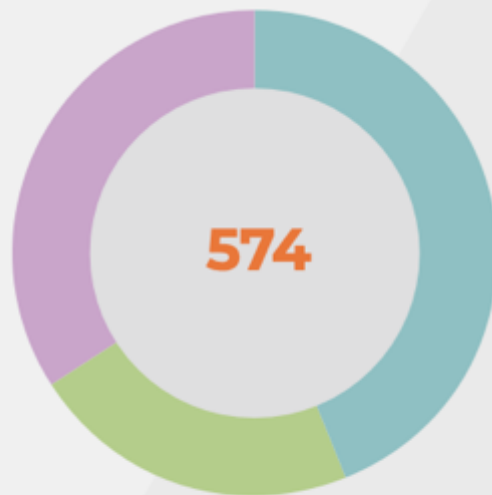
- Researchers 252
- Admin 127
- Technical staff 195

Total number of employees 41

Argentina (2)	Georgia (1)
Australia (1)	Germany (7)
Austria (1)	Greece (4)
Bangladesh (1)	Hungary (191)
Belgium (1)	India (16)
Brazil (1)	Iran (2)
Bulgaria (4)	Italy (13)
China (2)	Korea (1)
Columbia (1)	Lithuania (2)
Costa Rica (1)	Moldavia (1)
Croatia (1)	Nepal (3)
Cyprus (1)	Poland (5)
Czech Republic (230)	Portugal (1)
Egypt (1)	Romania* (2)
France (9)	Russia (17)

Serbia* (1)
Slovakia (11)
South Africa (1)
South Korea (1)
Spain (2)
Sweden (4)
Syria (1)
Turkey (1)
United Kingdom (4)
Ukraine (6)
USA (7)

*incl. dual citizens



International Collaborations and Partnerships

Total Collaborations: 100

Europea

Czech Republic (6)
France (8)
Germany (15)
Greece (1)
Hungary (10)
Italy (9)
Lithuania (2)
Poland (5)
Portugal (1)
Romania (4)
Serbia (1)
Spain (4)
Sweden (2)
Switzerland (2)
United Kingdom (6)

International

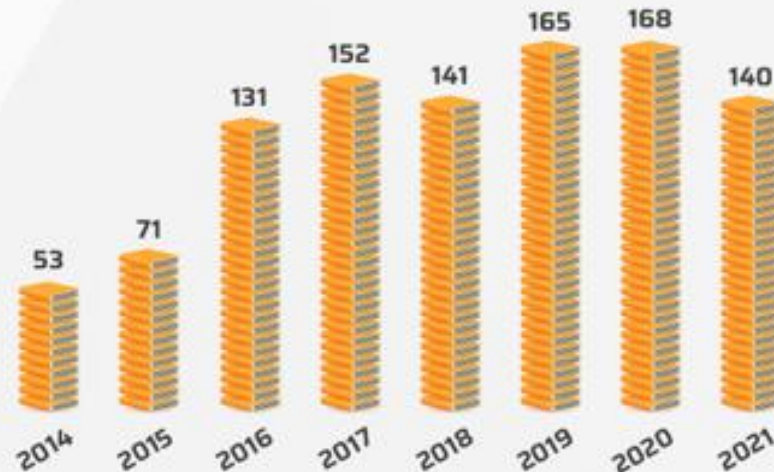
Canada (3)
China (2)
Cyprus (1)
India (1)
Israel (1)
Italy (9)
Japan (7)
Republic of Korea (2)
Russia (3)*

*Russian agreements from 2021 and prior



Publications

Total number of publications from the ELI ERIC facilities 961





ELI ERIC is Open to the World

A user facility with three access modes

- **Excellence-Based Access** – Evaluation of proposals by international peer-review panels. ***Results of experiments published and open.***
- **Mission-Based Access** – Thematic research granted on the basis of scientific missions pursuing challenges. Proposals reviewed by international panels. ***Results published and open.***
- **Proprietary Access** – Paid access for industrial or other users. ***Results are retained by the user,*** consistent with ELI ERIC's Data and IPR Policy.





ELI ERIC Science and User Management





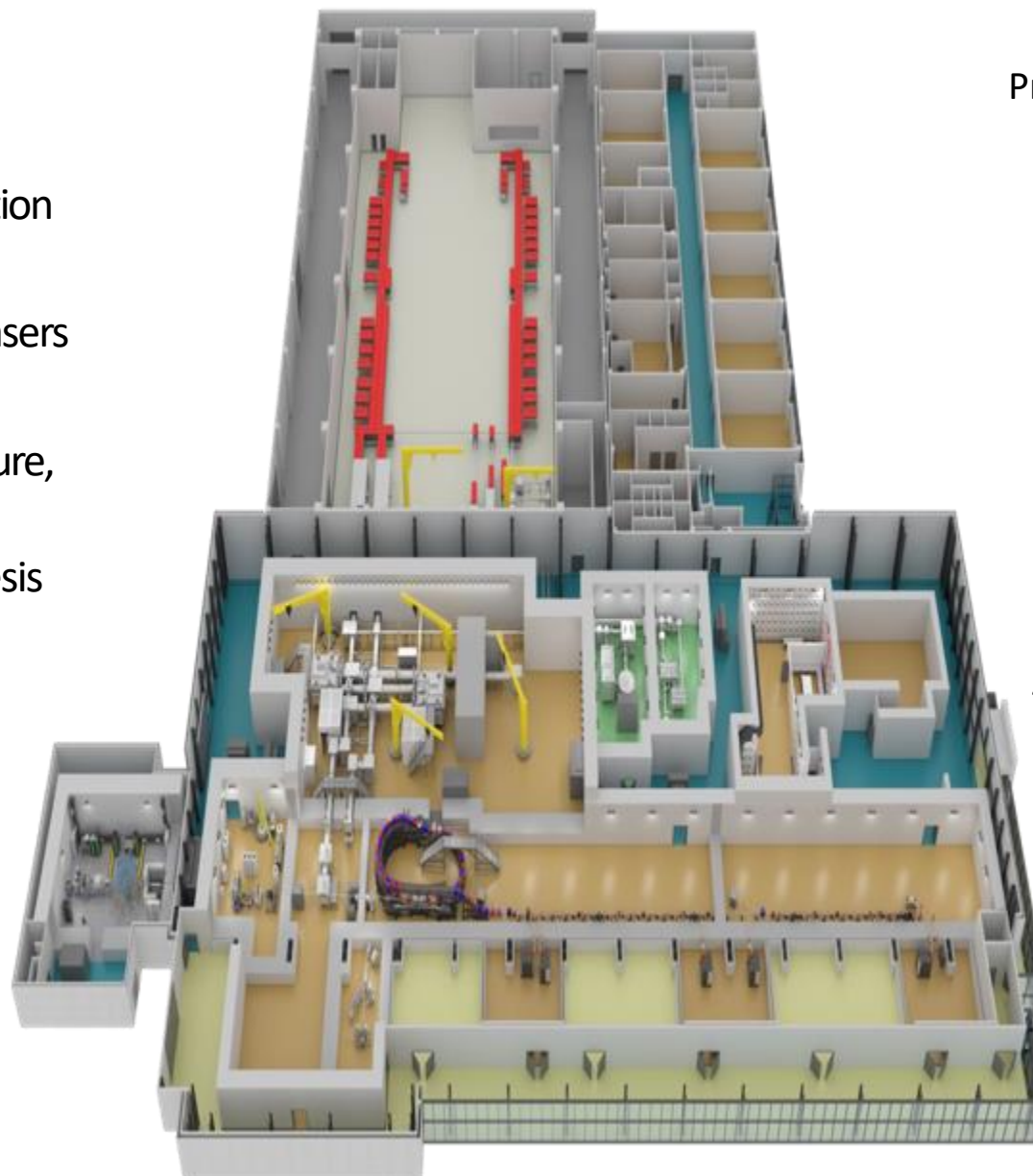
ELI-NP Research Infrastructure

Advanced studies in basic science ...

- characterization of laser-matter interaction with nuclear methods
- particle acceleration with high powerlasers
- nuclear reactions in plasma
- photonuclear reactions, nuclear structure, exotic nuclei
- nuclear astrophysics and nucleosynthesis
- quantum electrodynamics (QED)

... and applications – developing technologies for:

- medical applications (X-ray imaging, radioisotopes)
- industrial applications (non-destructive studies with!)
- material studies with positrons
- materials in high radiation fields



Calin Ur
Project Director
ELI-NP



Sydney Galès
Science Director
ELI-NP





First ELI User Call

<https://up.eli-laser.eu>

- The experiments run October 2022 through April 2023
- There were 44 proposals accepted and evaluated
- There are 10 beamlines/sources
- All instruments have been tested during commissioning
- Proposers are advised to contact the facilities for technical questions
- The 2nd call will be published January 2023



<https://up.eli-laser.eu>

User Portal

 **eli** User Portal

[User calls](#)

[Instruments](#)

[User guide](#)

[Terms and Conditions](#)

[Contact](#)

[My proposals](#)



Access ELI's world-class lasers, instruments and facilities

Extreme Light Infrastructure provides international scientific teams with access to the world's most intense lasers

[Browse instruments](#)

[Apply for beamtime](#)



Potential users have the opportunity to conduct the first state-of-the-art open experiments at the ELI Facilities

ELI-ALPS in Szeged, Hungary

- HR GHHG Gas - REMI-ES
- MIR: Mid-Infrared laser system
- NanoESCA - Endstation
- NLTSF: Nonlinear Terahertz Spectroscopy Facility

ELI Beamlines in Dolní Břežany, Czech Republic

- FSRS & TA: Femtosecond Stimulated Raman Scattering and transient optical absorption
- MAC and HHG: Station for AMO science and Coherent Diffractive Imaging, HHG source development
- trELIps: Time resolved spectroscopic ellipsometry
- TREX: X-ray diffraction, scattering and spectroscopy experiments

ELI Nuclear Physics in Măgurele, Romania

- E4 (100 TW beam)
- E5 (1 PW beam)

<https://up.eli-laser.eu>



Integrating ELI's Facilities Requires Resources and a Plan.

Project Objectives

IMPULSE focuses on **achieving quick and effective transition of ELI ERIC from construction into sustainable operations** by **uniting the ELI facilities** and making them **accessible for users through one single, high-quality access point**.

IMPULSE addresses the **key scientific, technical, organisational, and management requirements** of this integration, building user communities and **expanding the ELI member consortium**.

<https://impulse-project.eu/>

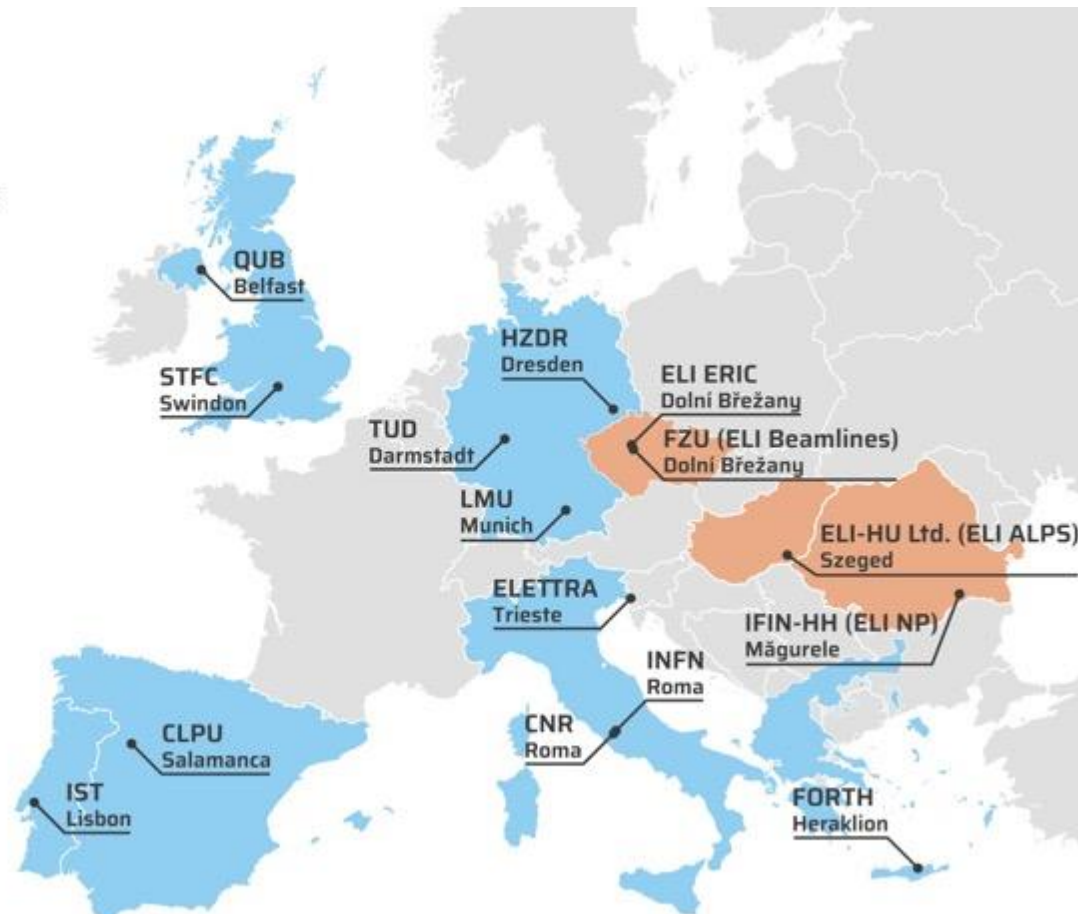


IMPULSE is funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871161

Project Coordinator:
ELI ERIC

ELI Project Partners

Other Partners



Project Facts

- 15 Partners
- 9 Countries
- 42 Months
- €19.9 Million

ELI SUMMER SCHOOL

30 Aug – 2 Sep 2022, Szeged, Hungary

The 7th edition of the ELI Summer School series aims to provide young scientists with a comprehensive overview of the generation and application of intense laser pulses and laser-driven particle and radiation sources. ELISS 2022 is hosted as a hybrid event by ELI-ALPS and jointly organised with ELI Beamlines as an ELI ERIC event.

Main topics include:

- Physics of laser and secondary sources,
- AMO physics,
- Ultra-fast dynamics in gases,
- Liquids and surfaces,
- Laser plasma physics and applications.



More information available:
indico.eli-laser.eu/e/ELISS2022



ELISS2022
Extreme Light Infrastructure Summer School



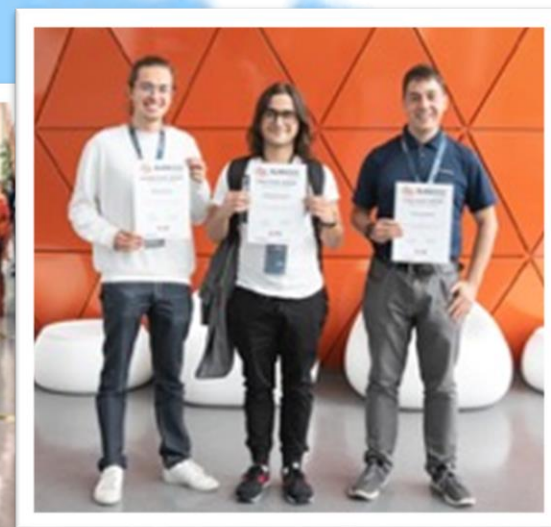
ELISS2022

ELI Summer School | 30 Aug – 2 Sep 2022
Szeged, Hungary

The 7th ELI Summer School

A hybrid event with 183 participants from 28 countries (51 in person, 132 online)

Albania, Argentina, Bangladesh, Bulgaria, China, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, Italy, India, Iran, Korea, Lithuania, Montenegro, Myanmar, Netherlands, Pakistan, Philippines, Poland, Portugal, Romania, Turkey, Ukraine, United Kingdom, United States,





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ELI Attosecond Laser Pulse Sources

A Final word

*Please participate in our post-workshop survey!
Your feedback is valuable and will help us improve.*