ELI-ALPS

Lóránt Lehrner
Managing Director, ELI-HU Non-Profit Ltd.
11 September 2017, Brussels

JASPERS Networking Platform,
2nd ELI pillars workshop
ELI - beyond 2018

ELI will be

• the world’s **first international laser user facility**, providing unique research opportunities for the future
  “The CERN of laser research”

• a **distributed research infrastructure**
  based initially on 3 facilities in the Czech Republic, Hungary and Romania

• the first ESFRI project to be **implemented in the new EU Member States**

• **pioneering a novel funding model**
  combining structural funds (ERDF) for the implementation and contributions to an ERIC for the operation
Hungarian Government commits to The realisation of the project

Preparatory project No. 1.

Preparatory project No. 2.

EU 8,4 million +

EUR 231,3 million (Phase 1 – 130,5 M € Phase 2 – 100,8 M €)

Preparatory phase costs

Major projects Phase I and II. costs

Major Project Phase II. Implementation

Major Project Phase I. Implementation

Government Approval, Submission to Brussels

Start of installation of lasers

Start of full capacity operation

Start of construction works

EU Commission approval to the major project
Missions of ELI-ALPS

• To generate X-UV and X-ray femtosecond and attosecond pulses, for temporal investigation at the attosecond scale of electron dynamics in atoms, molecules, plasmas and solids.

• To contribute to the technological development towards high average power, high peak intensity lasers.
Relevant stakeholders of the Hungarian ELI-ALPS major project

**Owners**
- Hungarian State through the NSDO Inc 90%
- Municipality of Szeged Town 5%
- Szeged University 5%

**ELI-HU Research and Development Non-Profit Ltd.**
- Final beneficiary of Funds
- Implements the ELI-ALPS project
- Member of the ELI-DC

*HUF 290.4 = EUR 1*
European Union funds (ERDF): main source

- Overall ELI-ALPS budget: 231,3 million €
- Value of Phase I: 130,5 million € (source: EDOP)
- Value of Phase II: 100,8 million € (source: EIOP)

...according to original Commission approval.

After notification submitted: ratio will be the contrary: 100 million €
For Phase I, while 130 million € for Phase II, no change in overall budget.
Sources of financing of ELI-ALPS II.

**National contribution**

1461/2012 (X.26) Government Resolution: annual contribution to ELI-HU for performing its national and international tasks

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<td>81,052</td>
<td>93,926</td>
<td>163,694</td>
<td>335,667</td>
<td>423,170</td>
<td>263,220</td>
<td>1,360,728</td>
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- Amount used for company’s operational costs and non-eligible expenditures (e.g. due contribution, own resource for calls)
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Sources of financing of ELI-ALPS III.

Direct Brussels calls

- Horizon 2020 calls: ELITRANS, EUCALL
- INTERREG calls: TRINNO
- Danube Programme calls: D-STIR, RI2Integrate
- ERASMUS+ calls: IT-ELLI
Inauguration – 23 May
Moving in – 12 June 2017
Primary sources (laser beams)

High repetition rate (HR) laser:
By 2019-20: 100 kHz, > 5 mJ, < 6 fs, VIS-NIR, CEP
In 2017: 100 kHz, > 1 mJ, < 6.2 fs, VIS-NIR, CEP

Mid-infrared (MIR) laser:
By 2024-25: 10 kHz, > 10 mJ, < 2 cycles, 4 µm-8 µm
In 2017: 100 kHz, > 150 µJ, < 4 cycles, 2.3 µm-3.8 µm

Terahertz pump laser:
By 2020-21: 100 Hz, > 1 J, < 0.5 ps, 1.5 µm-2 µm
By 2018: 50 Hz, > 500 mJ, < 0.5 ps, 1.03 µm

Single cycle (SYLOS) laser:
By 2019-20: 1 kHz, >100 mJ, < 5 fs, VIS-NIR, CEP
In 2017: 1 kHz, >45 mJ, < 10 fs, VIS-NIR, CEP

High field (HF) laser:
By 2024-25: 10 Hz, >2 PW, <10 fs
By 2018: 10 Hz, >2 PW, <17 fs

Secondary sources (attosecond pulses, particles, THz, MIR)

Experiments

Attosecond studies in atomic and molecular physics
Condensed matter physics
Nanophysics, materials science
THz spectroscopy
High resolution imaging
Source development
Plasma physics
Radiobiology
Assembly and Commissioning in 2017-2018

**HR1 laser**
By October 2017

**MIR laser**
By September 2017

**THz spectroscopy laboratory**
By October 2017

**HR1 driven GHHG beamline**
By November 2018

**THz pump laser driven THz nonlinear laboratory**
By November 2018

**SYLOS1**
Fully completed, including 6-month trial period
Assembly and Commissioning in 2019-2020

**HR2 laser**
By March 2019

**PW laser**
By November 2019

**HR2 driven GHHG beamlines**
By May 2019

**SYLOS 2A driven GHHG beamlines**
By June 2020
Operation principles for user ready beamlines

**Number of hours / days / week:**
12 hours a day, 5 days a week

**Number of months:**
11 months operation, 1 month maintenance

**Daily operation:**
2 hours warm-up time
9 hours operation
1 hour cool-down time

**Buildings are accessible:**
Weekdays 6:00-22:00

**Extend the operation beyond 5 days a week, 12 hours a day**
Upon request
Extra personnel
Scientific achievements since August 2013

Number of peer reviewed papers:
119 (22 in 2017)

Conference presentations:
312 (46 in 2017)

The first review paper on the facility:
The ELI-ALPS facility: the next generation of attosecond sources
HR staff update

ELI-HU Nonprofit Ltd. Staff 2013-2023

Scientific, Research and Technology

Back office

Staff (FTE)

0 20 40 60 80 100 120 140 160 180


Full time  Part time  Contract for services
Upcoming events in 2017

ELI Administrative and Finance Committee Meeting
19-20 September, Szeged

International Conference of Multiphoton Processes
24-27 September, Budapest

International Conference on Extreme Light 2017
5-9 November 2017, Szeged

5th User Workshop
9-10 November 2017, Szeged
ELI-ALPS – current photos
THANK YOU FOR YOUR ATTENTION!
For info or further questions on this seminar and the activities of the JASPERS Networking Platform, please contact:

JASPERS Networking and Competence Centre

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