

How to gain funded access to RI through Lasers4EU TNA

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Lasers4EU & 360 Carla Quantum Technologies
A central platform for laser research and innovation

1. Quantum Materials & ARPES

- Introduction to quantum materials and their key phenomena
- Fundamentals of ARPES: mapping the electronic band structure of solids
- Lecturer: Prof. Dr. Alexander Kordyuk (German-Ukrainian Centre for Research on Quantum Materials & Kyiv Academic University)

TAKE-A-HOME-MESSAGE 1

Quantum materials are special because many electrons act together and create new effects — like superconductivity. ARPES is the tool that lets us see the electrons inside and understand these effects.

HHG is what makes this possible in a lab: a laser-driven, table-top source of femtosecond XUV pulses. It brings synchrotron-level capabilities to ultrafast science — and opens the door to controlling quantum materials with light, not just observing them.

2. ARPES in the Time Domain

- Ultrafast lasers and HHG sources: taking ARPES into the time domain. Lecturer: Dr. Oleg Kornilov (Max Born Institute)
- From ARPES to trARPES: probing ultrafast electron dynamics. Lecturer: Dr. Michele Puppini (Lausanne Center for Ultrafast Science)

TAKE-A-HOME-MESSAGE 2

tr-ARPES adds the time axis to band-structure mapping — we no longer just see the electronic structure of a quantum material, we watch it respond, relax, and reorganize in real time, directly revealing interactions and the dynamics of ordered states (superconducting gaps, CDWs, topological surface states).

A pump pulse knocks all these subsystems out of step — and by choosing the probe delay, tr-ARPES watches them re-synchronize one by one, measuring each interaction separately: electron–electron scattering (tens of fs), electron–phonon coupling (~100 fs–1 ps), order parameters and coherent phonons (ps), spin–lattice relaxation (ps–ns), and heat diffusion (ns) — something no equilibrium experiment can do.

3. Funded Access to Research Infrastructures

- How to gain funded access to RI through Lasers4EU TNA
- Lecturer: Dr. Alina Khodko & Dr. Nataliia Kachalova (IOP of NAS of Ukraine)
- *most (though not necessarily all) travel & subsistence costs covered

4. Careers in Photonics

- 360CARLA: bridging the photonics talent gap in Europe
- Lecturer: Neide Pedro, Project Manager (Lasers4EU)

27 Access Providing Infrastructures in 15 countries



Transnational Access (TNA)

3 routes to pioneering laser research



Single-instrument

For users interested in transnational access and looking for a suitable laboratory for their access project, from fundamental science to validating a practical application.



Multi-instrument

For users who need access to as many installations as required in different facilities, over several years if necessary. Requires only a single proposal for the whole duration.



Industry

Allows companies to access the most recent techniques and methods in research laboratories and to benefit from the services of the partner facilities of Lasers4EU. The industry route is now open: lasers4.eu/industry-services/

> 3000
access days

300
user projects

80%
of total budget

for researchers
across the globe



portfolio of techniques
& instrumentation



Transnational Access (TNA) 1/2

CONTACT LAB LEADER BEFORE WRITING PROPOSAL

Partner profiles & access search tool

Field:

Category:

All fields

- All fields
- Physics
- Chemistry
- Life Sciences
- Laser Technologies and Optics
- Materials Science
- Imaging & Diagnostic Techniques
- Emergent Technologies
- Medicine and Health
- Energy and Environment
- Cultural Heritage and Historical Preservation
- Criminology

All categories

Reset Filters



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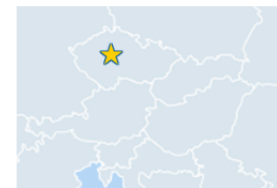
Publications

News & Events

HILASE (Dolní Břežany, Czech Republic)

Institute of Physics of the Czech Academy of Sciences, v.v.i. (FZU)

HILASE operates two diode-pumped Yb:YAG solid state laser facilities: Bivoj, delivering over 1 kW of average power in 105 J, 10 ns pulses at 10 Hz, for laser shock peening and ion generation, and Perla, a high average power laser platform generating < 2 ps pulses in broad spectral region from 206 nm to 3 microns for laser processing.



Website: www.hilase.cz

Contact: Tomáš Mocek

Research highlights

Expertise

Services for industry

Equipment offered to external users

<https://lasers4.eu/find-a-lab/>

Transnational Access (TNA) 2/2

CONTACT LAB LEADER BEFORE WRITING PROPOSAL

How does it work?



 **All proposals must be submitted through a single central online portal.**

1. **Submit a proposal:** Researchers apply via a central online portal, selecting a facility that best suits their technical and/ or scientific needs.
2. **Transnationality requirement:** The host lab has to be in another country than the scientist's home institution.
3. **Scientific review:** Proposals are evaluated by an independent panel based on scientific excellence and feasibility.
4. **Access co-funded by the European Commission:** Selected users receive access free of charge, with scientific, technical, and logistical support. Most (though not necessarily all) travel and subsistence costs are covered. For specific financial details, contact the lab leader when applying for TNA.

Pre-Project Training for Young Scientists

APPLY FOR TNA INCLUDING PRE-PROJECT TRAINING

How does it work?



 **The training request is part of your TNA proposal — no separate application is needed.**

1. **Hands-on preparation:** Visit the host laboratory for up to one week of hands-on training on the equipment, experimental set-ups, and data-analysis methods you will use.
2. **Eligibility:** One person per user group is eligible. Travel and subsistence costs for the training visit are covered.
3. **How to apply:** The training request is submitted during the access proposal stage and must be confirmed by the facility during the feasibility check, prior to scientific evaluation.
4. **Why it matters:** Gain experience with key tools before your access project starts and reduce the learning curve.
Guidelines: <https://lasers4.eu/become-a-user/guidelines>

PRE-PROJECT TRAINING FOR YOUNG SCIENTISTS

Visit the host facility before the access project for hands-on experience with key tools

**Boost Team Productivity
Reduce the learning curve for your team.**

One person per user group is eligible. Travel & subsistence costs covered.

LASERS4EU

OFFERS PRE-PROJECT TRAINING TO YOUNG SCIENTISTS

Arrange a visit to the host laboratory for up to one week of hands-on training on the equipment, experimental set-ups, and data-analysis methods you'll use.

➔ <https://lasers4.eu/become-a-user/guidelines>

The training request is submitted during the access proposal stage and must be confirmed by the facility during the feasibility check, prior to scientific evaluation.



➔ Apply for trans-national access (TNA) including pre-project training

The pre-project training at FORTH was extremely valuable, especially as I had no previous experience working with laser systems. It gave me a solid understanding of the experimental setup, safety procedures, and system operation before my scheduled experiments began, allowing me to make the most of my allocated experimental time and focus on my research from day one. The excellent supervision and readily available support throughout the visit made the entire experience smooth, productive, and highly rewarding.

**Shubhadeep Majumdar,
PhD student at ENPHOCAMAT**

The pre-project training offered by Lasers4EU enabled me to discover the COXINEL free electron laser based on HZDR laser plasma acceleration facility few days before the beginning of a new experimental campaign.

I was glad to meet the team working at HZDR on the COXINEL project and to learn from their expertise on LPA.

I was taught how to remotely control the beamline elements related to electron beam transport and radiation characterization (essentially magnets and diagnostics).

Thanks to this period, I learnt enough about the beamline operation to efficiently join the following experimental campaign dedicated to space charge studies along the free electron laser.

**Aliénor Rouxel,
PhD student at Soleil Synchrotron**

PHOTOS: HILASE

CONTACT LAB LEADER BEFORE WRITING PROPOSAL

How does it work?



 **Services: testing, analysis, technology development, early-stage product development, consultancy, technology transfer.**

1. **Two access models:** Collaborative Research Access with an academic partner (peer-reviewed), or an Industry-Tailored Proposal Management System for confidential commercial projects.
2. **Fast track:** simplified application template, confidential review under NDA, decisions within 2 weeks, project execution of up to 6 months.
3. **Eligibility:** The user-group leader and the majority of group members must be based in a different country than the host facility.
4. **Find a lab & support:** Search tool: lasers4.eu/industrysearchtool · Contact: industry-access@lasers4.eu

Model 1: Collaborative Research Access

Companies that do not have the in-house expertise or staff to independently conduct an experiment may apply with the support of an academic collaborator.

Key Features:

- **Expertise Sharing:** Connection with academic groups providing the specific research skills and hands-on experimental support your project needs.
- **Knowledge Exchange:** Direct collaboration with academic researchers to share ideas and technical know-how.
- **Confidentiality Protection:** NDAs available upon request to safeguard sensitive information.
- **Public Results:** Open access to research data and publications. Exceptions for [SME](#) Users (including qualifying private medical centers) apply.

Applicable Access Routes:

- Standard Access
- Multi-Instrument Access

Model 2: Industry-Tailored Proposal Management System

Designed for commercial projects requiring full confidentiality, rapid turnaround, and exclusive control over intellectual property

Key features:

- **Fast-Track Process:** **SIMPLIFIED APPLICATION TEMPLATE** and a dedicated feedback report to accelerate project launch, with decisions returned within 2 weeks.
- **Confidential Review:** Evaluation is conducted by an ad-hoc Industry Selection Panel operating under a strict NDA.
- **Bespoke Agreements:** Confidential bilateral agreements addressing IP ownership, data management, and the required financial contribution.
- **Public Results:** Open access to research data and publications. Exceptions for [SME](#) Users (including qualifying private medical centers) apply.
- **Implementation:** Project execution of up to 6 months, fully adapted to a commercial timeline.

Applicable Access Route:

- Industry Access

Featured facilities

Each of the techniques you'll hear about in this training is offered at several Lasers4EU partner facilities. Below: where to go for the most prominent capabilities.

MBI

Max-Born-Institute

<https://lasers4.eu/about/partners/mbi/>

Max-Born-Institute (MBI) conducts basic research in nonlinear optics, ultrafast dynamics, the interaction of matter with laser light, and into the resulting applications. It develops and utilizes ultrashort and ultrafast lasers and laser-based short-pulse light sources in a wide spectral range in conjunction with nonlinear spectroscopy methods, as well as combining lasers with x-ray pulses from free electron lasers and synchrotrons.

FIND A LAB

Partner profiles & access search tool

All Lasers4EU Access-providing facilities

The techniques presented in this training are offered at several Lasers4EU partner facilities. Use the Find-a-lab search tool to browse all Access-providing labs, their instruments and contacts, and to identify the best host for your project.

Before writing a proposal:

- Search** — filter partner labs by technique, instrument and country
- Contact** — always contact the lab leader before writing your proposal
- Funding** — access is co-funded by the European Commission; most (though not necessarily all) travel and subsistence costs are covered
- Financial details** — ask the lab leader about the specific financial conditions of your TNA visit

<https://lasers4.eu/find-a-lab/>



<https://survey.lamapoll.de/Training-on-Quantum-Materials-from-ARPES-to-trARPES>



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