

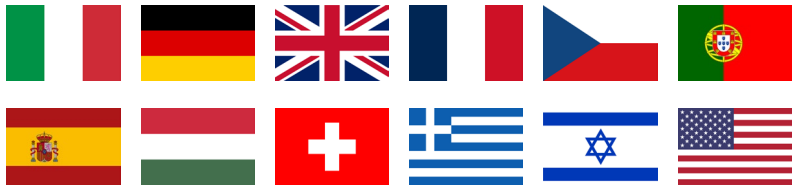
EUROPEAN  
PLASMA RESEARCH  
ACCELERATOR WITH  
EXCELLENCE IN  
APPLICATIONS



# EuPRAXIA Doctoral Network

Carsten P Welsch

EuPRAXIA Preparatory Phase kick-off Meeting



This project has received funding from the European Union's Horizon  
Europe research and innovation programme under grant agreement  
No. 101079773



└ BACKGROUND

> RESEARCH

└ EuPRAXIA-DN



## QUASAR Group:

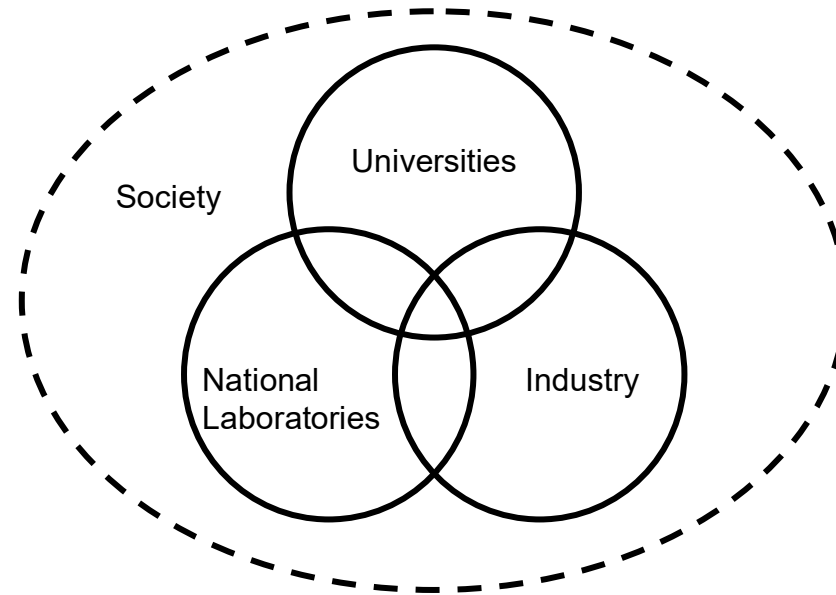
- +35 members (Postdocs, PhD students, admin staff)

## Mainly based at CI, but also:

- CERN
- GSI
- CNRS



(Universities) + (STFC: ASTeC and elements at DL)  
+  
Integration of all the above





(Beam Diagnostics, **Physics**) 4.2 M€, 32 partners



(Laser Applications, **Engineering**) 4.6 M€, 38 partners



(Accelerator Optimization, **Physics**) 6 M€, 35 partners



(Medical Accelerators R&D, **Life Sciences**) 4 M€, 24 partners



(Antimatter R&D, **Physics**) 4 M€, 26 partners



Largest portfolio of Marie Curie networks in any scientific area.  
Also: Chair of STFC ETCC and member of UKRI TSAG.







# ACCELERATING RESEARCH AND TRAINING

Carsten P Welsch

*INFN-LNF*

*University of Liverpool*

*The Cockcroft Institute*



UK Research  
and Innovation

# What is EuPRAXIA-DN?



- MSCA Doctoral Network with a budget of 3.2M €;
- 12 high-level Fellowships (*10 Fellows will be funded by the EU, another two by the UKRI guarantee funds*);
- Interdisciplinary and cross-sector plasma accelerator research and training program carried out between universities, research centres and industry;
- Allows for organizing (large) number of events;
- Recognized importance of plasma accelerator R&D at European level!

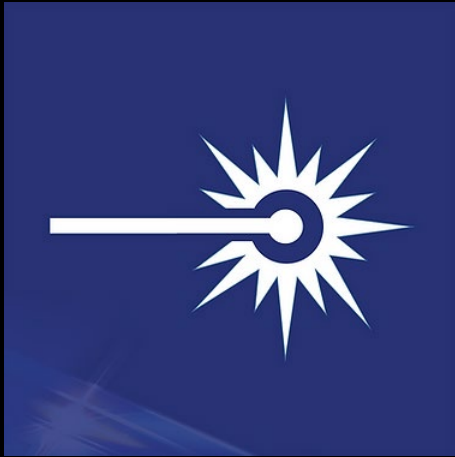
# Beneficiaries



# Partner Organizations



# Research



Laser & Plasma



Facility Design &  
Optimization



Applications

The network's main scientific and technological objectives are split into three closely interlinked work packages.

# Training & Events

- International **school** on plasma accelerators;
- EuPRAXIA **camps** on focused research topics – always across the different project work packages;
- Researcher **skills training** designed to prepare all Fellows for their future careers and make them attractive for employers in academia and industry;
- Final **conference** and **outreach symposium** to present project results.

**Events are open to all fellows and wider community !**

# EuPRAXIA-DN Events - Details

## Main Training Events & Conferences

Complementary Skills and Media School

*EuPRAXIA School*

*EuPRAXIA Camp I - Technologies*

*EuPRAXIA Camp II - Science*

*EuPRAXIA Camp III – Innovation*

Hands-on training Diagnostics

Advanced Researcher Skills School

Technology Transfer & Careers School and Symposium

Final conference

- Outreach **symposium** will be held in 2026 together with the LIV.INNO CDT to maximize impact;
- Final **conference** location will be decided in due time.

# Project Website



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EuPRAXIA logo to show identity, with added description



The EuPRAXIA 'X' as used in logo, on *EuPRAXIA Files* etc

## ACCELERATING RESEARCH AND TRAINING



Plasma accelerators



Associated technologies



Applications

EuPRAXIA gold and indigo tone used throughout website for headings, buttons, icons etc

# Project Website



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## ACCELERATING RESEARCH AND TRAINING

- ✓ Plasma accelerators
- ✓ Associated technologies
- ✓ Applications

TRAINING THE NEXT GENERATION

## HIGH LEVEL FELLOWSHIPS

[LEARN MORE](#)

The EuPRAXIA Doctoral Network (EuPRAXIA-DN) is a new Horizon Europe Marie Skłodowska Curie Actions Doctoral Network (MSCA-DN), offering 12 high level fellowships between universities, research centers and industry that will carry out an interdisciplinary and cross-sector plasma accelerator research and training program for the new EuPRAXIA research infrastructure.




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## NETWORK STRUCTURE


### Work Packages

Find out more about the different work packages within EuPRAXIA-DN.




### Partners

EuPRAXIA-DN will bring together teams with a long-standing track record in their particular research areas.




### Steering Committee

The Steering Committee is responsible for the overall network strategy.




### Fellows

By connecting Fellows across three different WPs, bigger programs of research can be tackled than any of the institutions involved could address alone.




### Project Team

The Project T.E.A.M. is very experienced in the coordination and management of large international projects.



### Contact Us

Get in touch to find out more about our projects, vacancies, research and more.





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## RESEARCH

THE NETWORK'S MAIN SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES ARE SPLIT INTO THREE CLOSELY INTERLINKED WORK PACKAGES



### Laser & Plasma

This WP will tackle an overall optimization of the accelerated electron beam by carrying out comprehensive studies into the optimization of the laser and plasma parameters.

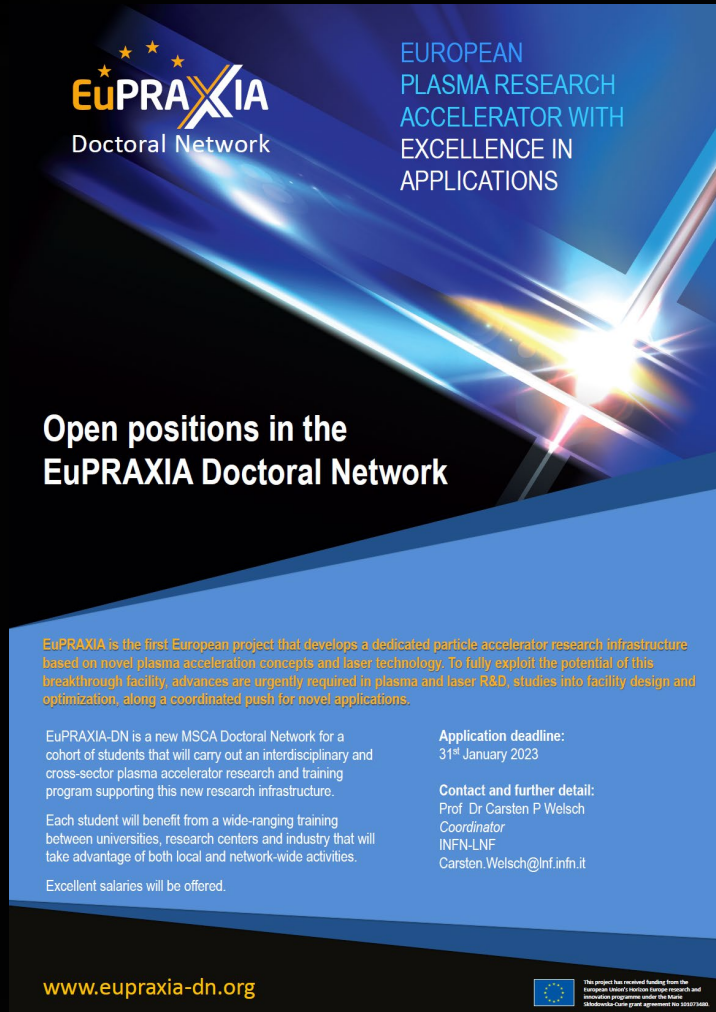
- ✓ [Manipulation and Characterization of Ultrashort Laser Pulses for High-quality Electron Bunch Acceleration](#)  
(Consiglio Nazionale delle Ricerche - Istituto Nazionale di Ottica)
- ✓ [Theoretical and Experimental Studies of Plasma Formation in Capillary Discharge Waveguides for Plasma-based Accelerators](#)  
(Istituto Nazionale di Fisica Nucleare)
- ✓ [Study laser-plasma interaction in a preformed plasma channel in a high repetition rate regime](#)  
(ELI Beamlines)
- ✓ [Short-pulse Laser-driven Injector](#)  
(Lund University)



# Dissemination

- Research articles will be supported by **international press release**;
- Two **project brochures** will be produced at the beginning and end of the project to highlight the Fellows' research results;
- Fellows will produce a **video** about EuPRAXIA-DN to raise awareness of research within the network;
- School visits and **outreach** events;
- The network will release a regular **newsletter** showcasing scientific results; highlight articles will feature in *Accelerating News*;
- All activities will be supported by ULIV's established **social media** channels.

# Position Vacancies



**EUROPEAN  
PLASMA RESEARCH  
ACCELERATOR WITH  
EXCELLENCE IN  
APPLICATIONS**

**Open positions in the  
EuPRAXIA Doctoral Network**

EuPRAXIA is the first European project that develops a dedicated particle accelerator research infrastructure based on novel plasma acceleration concepts and laser technology. To fully exploit the potential of this breakthrough facility, advances are urgently required in plasma and laser R&D, studies into facility design and optimization, along a coordinated push for novel applications.

EuPRAXIA-DN is a new MSCA Doctoral Network for a cohort of students that will carry out an interdisciplinary and cross-sector plasma accelerator research and training program supporting this new research infrastructure.

Each student will benefit from a wide-ranging training between universities, research centers and industry that will take advantage of both local and network-wide activities.

Excellent salaries will be offered.

**Application deadline:**  
31<sup>st</sup> January 2023

**Contact and further detail:**  
Prof. Dr Carsten P Welsch  
Coordinator  
INFN-LNF  
Carsten.Welsch@lnf.infn.it

[www.eupraxia-dn.org](http://www.eupraxia-dn.org)

The project has received funding from the European Union's Horizon Europe research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101017546.

- 12 Fellowships on offer for start spring/summer 2023;
- R&D projects across the 3 EuPRAXIA-DN work packages;
- International training program
- Excellent salaries will be offered.

[www.eupraxia-dn.org](http://www.eupraxia-dn.org)

# Summary

- A major European initiative in plasma accelerator research will start in January 2023;
- Three work packages address a number of important research challenges;
- There are many opportunities for getting involved.

**Spread the word – participate – benefit!**

# Contact and Further Details



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*Project Coordinator*

INFN-LNF

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[www.eupraxia-dn.org](http://www.eupraxia-dn.org)

