PRISMAS-
Recruitment day

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

Lund, 16 October 2023

Co-funded by the European Union

Introduction / Key players

Programme Director

Dr. Marjolein Thunnissen

Life Science Director @ MAX IV

Director of Studies

Dr. Lindsay Richard Merte

Associate Professor
Malmö University

Project Coordinators

Judith Maichle

Dr. Doriana Orbanic

User Office @ MAX IV

Co-funded by
the European Union

Todays topics

- Introduction of MAX IV Laboratory
- The PRISMAS Programme
- Conducting a PhD in Sweden
- The PRISMAS Training activities
- How to join the PRISMAS Programme
- Q&A

Questions?

Please add them in the Q&A module of this webinar

Co-funded by the European Union

Introduction of MAX IV

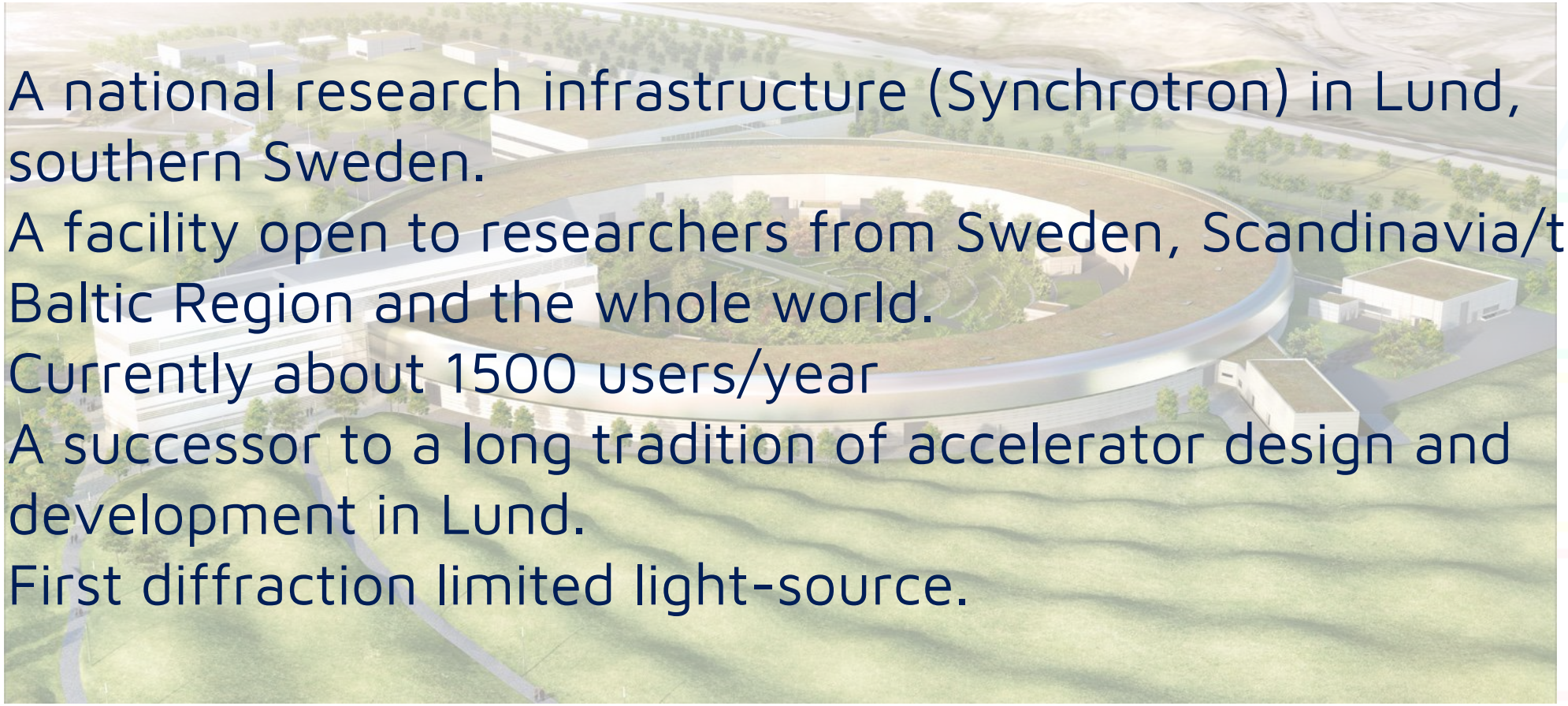
PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

Lund, 16 October 2023

Co-funded by the European Union

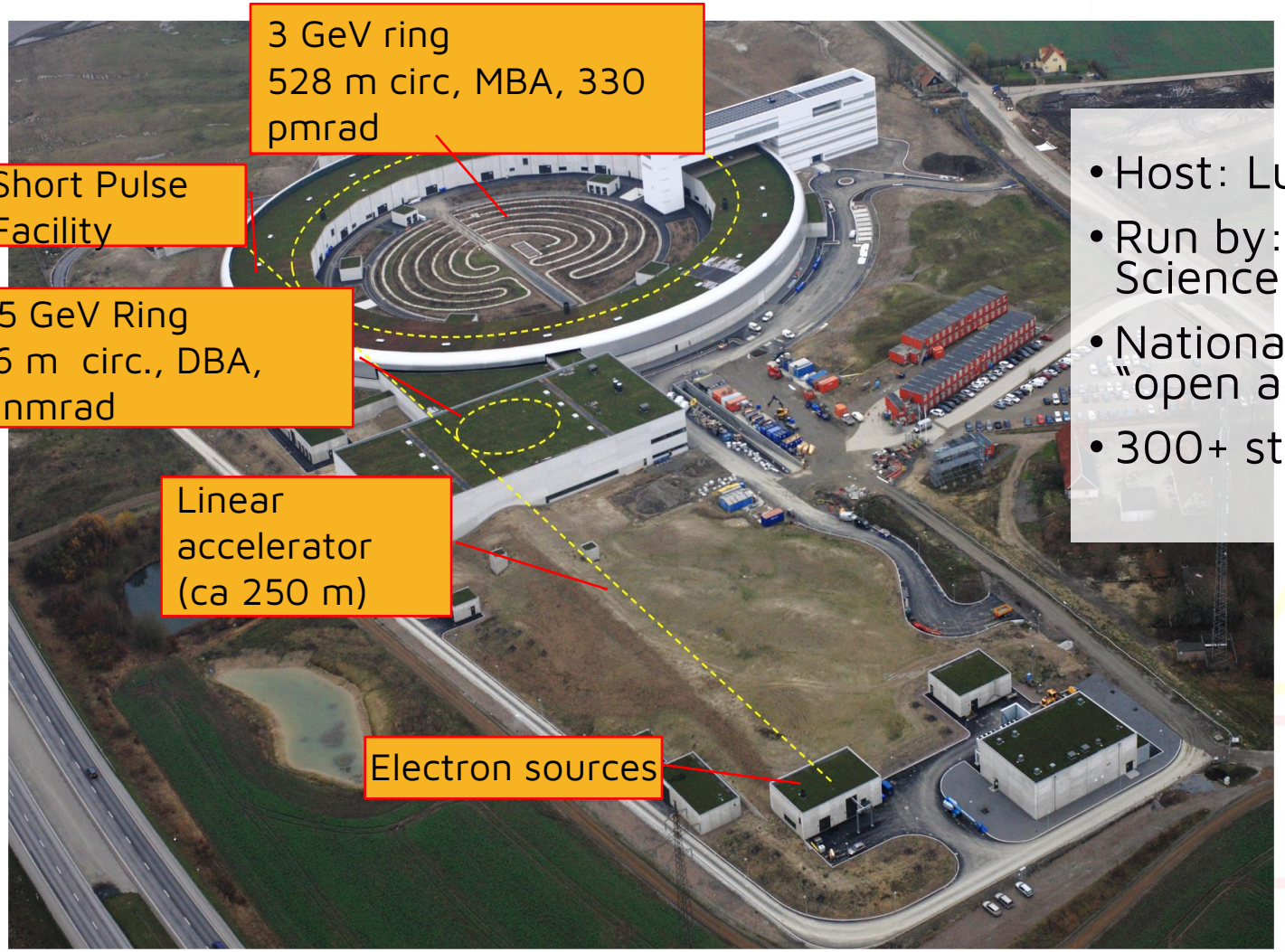
What is MAX IV



- A national research infrastructure (Synchrotron) in Lund, southern Sweden.
- A facility open to researchers from Sweden, Scandinavia/the Baltic Region and the whole world.
- Currently about 1500 users/year
- A successor to a long tradition of accelerator design and development in Lund.
- First diffraction limited light-source.

Co-funded by the European Union

MAX IV Laboratory - overview



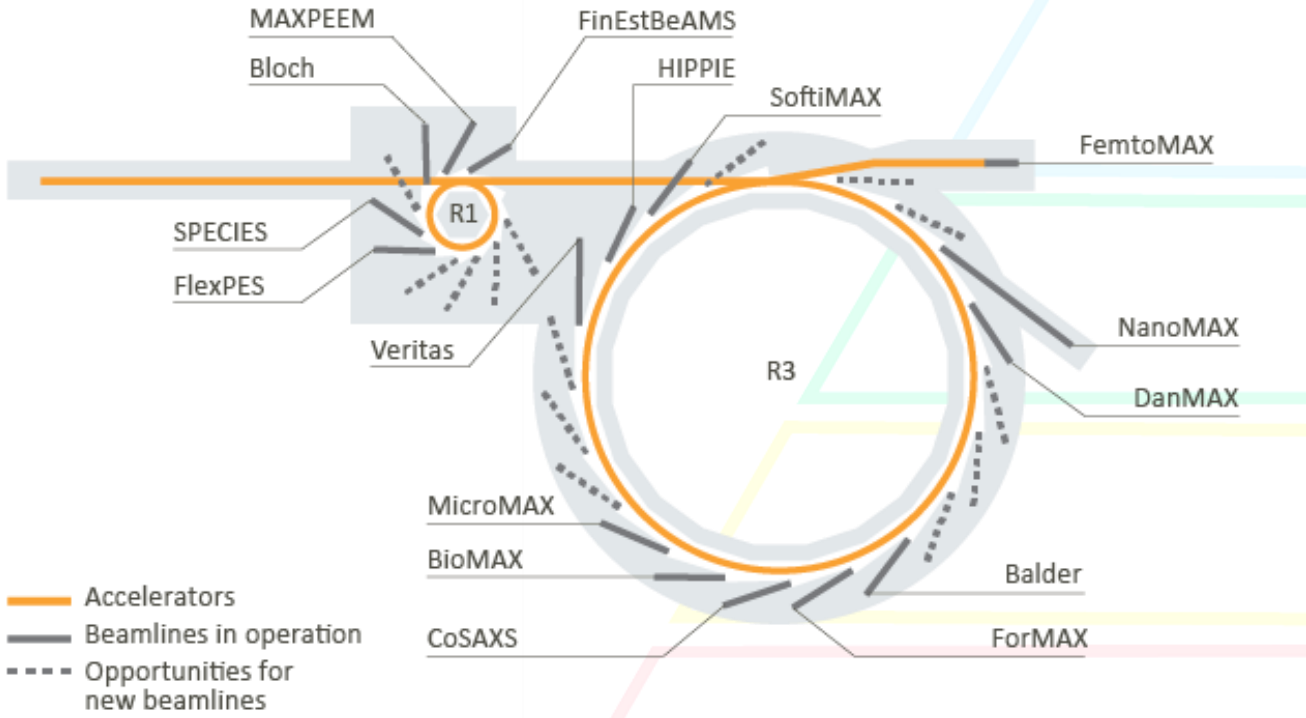
- Host: Lund University
- Run by: LU & National Science Council (VR)
- National laboratory – "open access"
- 300+ staff members

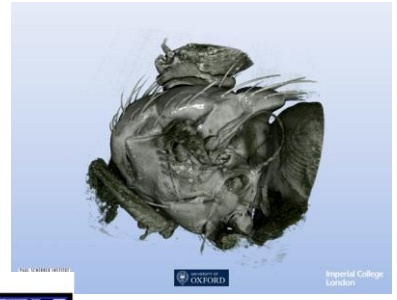
Co-funded by the European Union

MAX IV Laboratory – in numbers

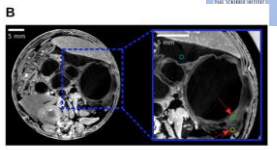
- Inauguration date: June 21, 2016
- 2 Rings: 3GeV, 1,5GeV
- Number of employees: 300+
- Researchers per year: 1000-3000
- 16 Beamlines in operation

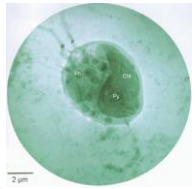
- Families of techniques
- Imaging
- Diffraction and Scattering
- Spectroscopy
- Accelerator Science

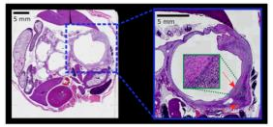


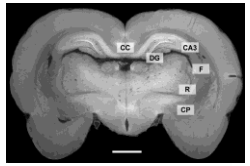


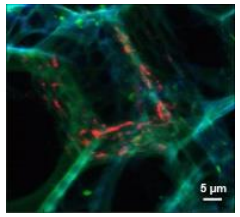
Micro to Nanostructures

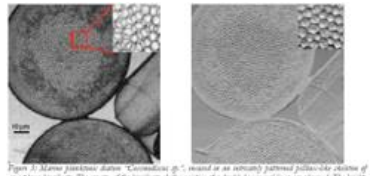


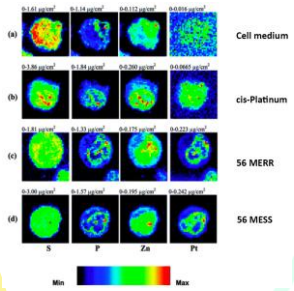


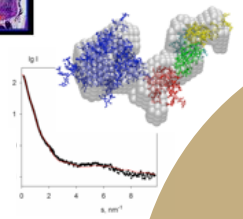


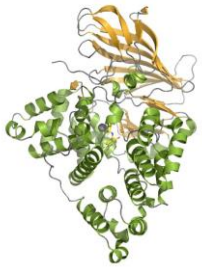








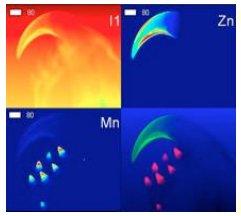




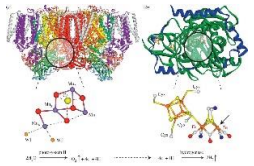
Imaging

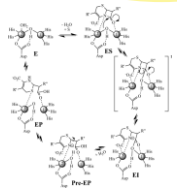
Scattering & Diffraction

Spectroscopy



Atomic structure

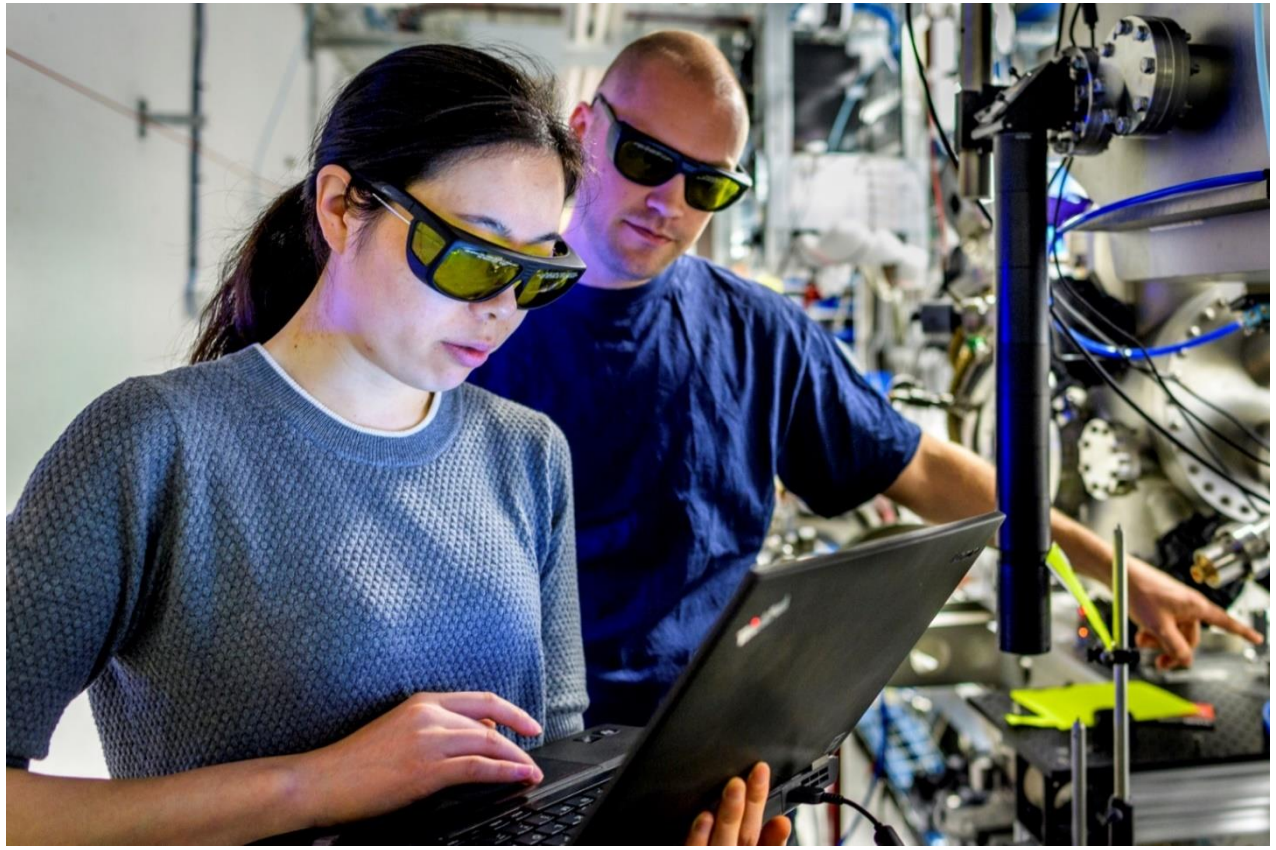




Electronic structure

Co-funded by the European Union

Your secondment @ MAX IV



As temporary staff @ MAX IV you will:

- Gain expertise in key synchrotron-based technologies
- Be involved in experiments at a beamline
- Develop your project with tools on the forefront of science
- Be integrated in the MAX IV community
- Have the opportunity to enable life-long lasting personal networks

Co-funded by the European Union

The PRISMAS Programme

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

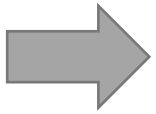
Lund, 16 October 2023

Co-funded by the European Union

Programme overview

- PRISMAS – PhD Research and Innovation in Synchrotron Methods and Applications in Sweden (*Grant agreement ID: 101081419)*

- MSCA COFUND: https://marie-sklodowska-curie-actions.ec.europa.eu/actions/cofund



FOCUS ON TRAINING !

Co-funded by the European Union

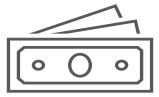
PRISMAS in numbers

40 Doctoral students

1 January 2023 – 31 December 2027

Coordinator: MAX IV Laboratory

Implementing partners:
8 Swedish Universities



Total budget: €15,7M
EU-Contribution: 33%
Consortium: 67%

Consortium

Lund University

Karlstad University (KAU)

University of Gothenburg

Luleå University of Technology (LTU)

Malmö University (MAU)

Stockholm University (SU)

Umeå University (UMU)

Uppsala University (UU)

Co-funded by
the European Union

Project goals

- Train future researchers and scientists to better tackle major future societal challenges using synchrotron research
- Increase the knowledge and promote the use of advanced synchrotron research methods in academic research and industrial R&D
- Maximize the societal benefit of MAX IV
- Strengthen the network surrounding Swedish academia and MAX IV in regard to synchrotron methods
- Build a platform for mentorship and peer-to-peer networking within the community
- Ensure that the Swedish synchrotron community stays world leading

Co-funded by the European Union

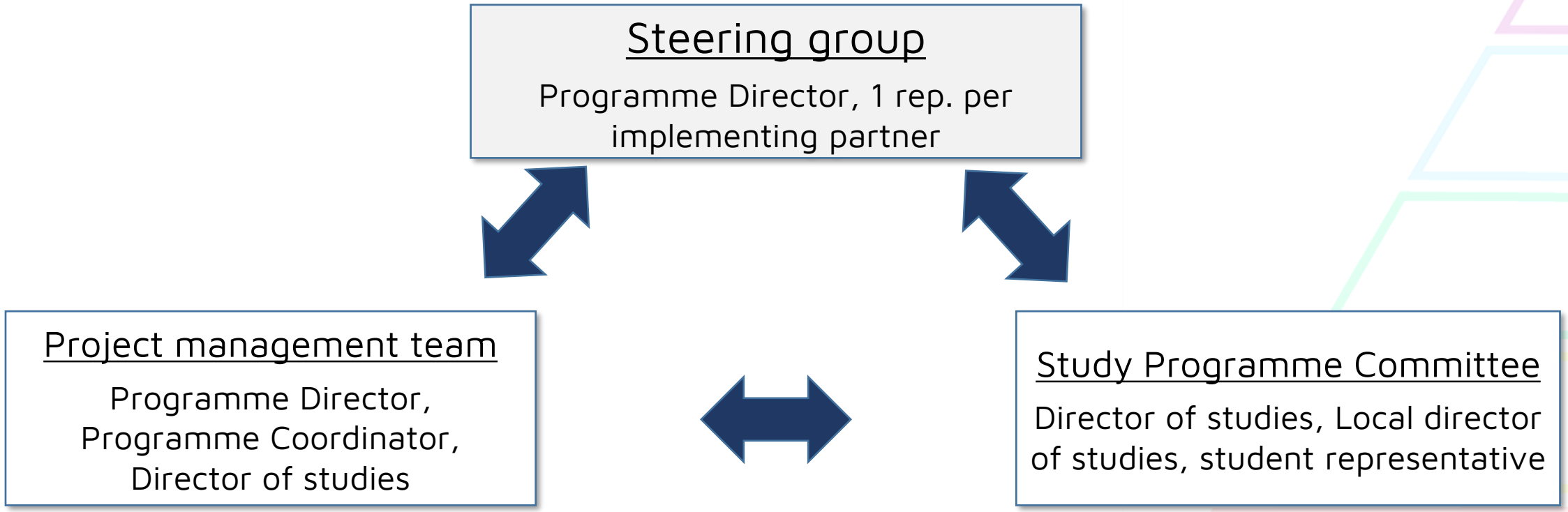
Programme strengths

1. 40 PhD students over a 5-year period
2. Develop MAX IV together with the Swedish synchrotron community
3. Professional training and career development including networking and mobility
4. Intersectoral and interdisciplinary secondments
5. Communication, dissemination and mutual knowledge transfer

A secondment at MAX IV is the basis of the program (minimum of 3 months)

Co-funded by the European Union

Governance structure



Co-funded by the European Union

Research projects

- healthy planet
- healthy people
- clean energy
- sustainable technologies
- accelerator science

Co-funded by
the European Union

Research projects

5

- Liquid-liquid phase separation mediated by phosphorylated intrinsically disordered proteins
- Tracking ATP-Dependent Protein Dynamics
- Structure and dynamics of solid-sate formulations of biologics
- Time resolved studies of Urocanate Reductase – a Novel Microbial Enzyme Producing Imidazole Propionate
- Structure-based fragment screening targeting Cancer

6

- Spectroscopic and geometric characterization of high-valent dinuclear metalloprotein intermediates.
- Uncovering the thermal and mechanical degradation mechanisms of coated ultrahard cutting tools for sustainable machining applications
- Food proteins from plant sources: from structure and interactions to tunable assembly
- How could oxidation state and local structure of chromium affect strategies for phosphorus recovery
- Chlorine Surface Activation Mechanism on Wildfire Smoke Particles and Its Relevance to Stratospheric Ozone Depletion
- Closing the Loop: Chemical Speciation using XAS a Key for Safe Secondary Use of Materials
- Aerosol particle surface characterization in-situ for enhanced atmospheric science

1

- Generation of ultra-short light pulses with Accelerators

APPLICATION THROUGH LOCAL HOST UNIVERSITY SYSTEM !

7

- Soft X-ray spectroscopy study of molecular semiconductors for durable organic photovoltaics
- Event-averaged and time-resolved ambient-pressure XPS as a new tool to study catalysis
- Time-resolved APXPS for the investigation of atomic layer deposition
- Topology of Ultra Thin Metal Films on Semiconductors
- Using magnetoionics and x-ray scattering to investigate energy materials under in-operando conditions
- Opening a new era in tribology: Rheology-Tribology -SWAXS (RheoTrib-SWAXS)
- Nanoscale domain fluctuations in functional materials from X-ray photon correlations

6

- Misfit strain detection in precipitate hardening alloys by Bragg coherent diffraction imaging
- Identifying Active Sites in Electrochemical Ammonia and hydrocarbon Synthesis via In Situ APXPS and XAS
- Multiscale dynamics of nano-cellulose materials using unique Rheo-SWAXS techniques at MAX IV
- Orientation of cellulose nanofibers in spun filaments and effect of moisture studied in-situ WAXS
- Using NanoMAX to understand Additive manufacturing of rare-earth-free permanent magnets
- Quantum properties of direct-Chemical vapor Deposited two-dimensional (2D) heterostructures

Co-funded by the European Union

Recruitment

	Sept	Oct	Nov	Dec	Jan	Feb	Mar
2nd Recruitment call							
Review of applications							
Interview-phase							
Employment							03/28

Conducting a PhD in Sweden

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

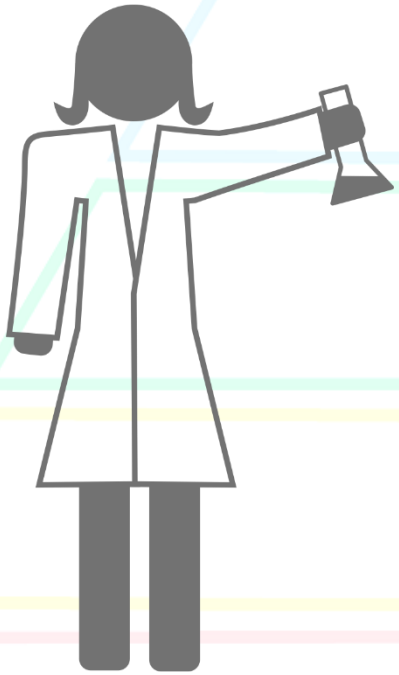
Lund, 16 October 2023

Co-funded by the European Union

PhD studies in Sweden

<u>Dual role: Student and employed research staff</u>

- 4-year position, full-time
- Competitive salary with full benefits and protections
- At least two supervisors:
  - 1 main supervisor – main responsible for planning and follow-up of your research training
  - 1 or more co-supervisors – provide specialized expertise, additional mentorship and advice, etc.
- Robust follow-up procedures to make sure your studies are on track and address any problems
- Culminates in a written dissertation and public defense; success results in award of PhD degree



Co-funded by
the European Union

PhD studies in Sweden

Specific requirements are set by the program you're enrolled in.

- Defined in a "General Study Plan" for the specific degree program
- Usually: 60 ECTS of relevant courses.
  - Some required courses
  - Most are elective, but must be relevant for the student's education. Selection together with supervisor.
- Often: an intermediate thesis can be submitted after two years. After approved thesis and defense, the "Licentiate" degree is awarded.

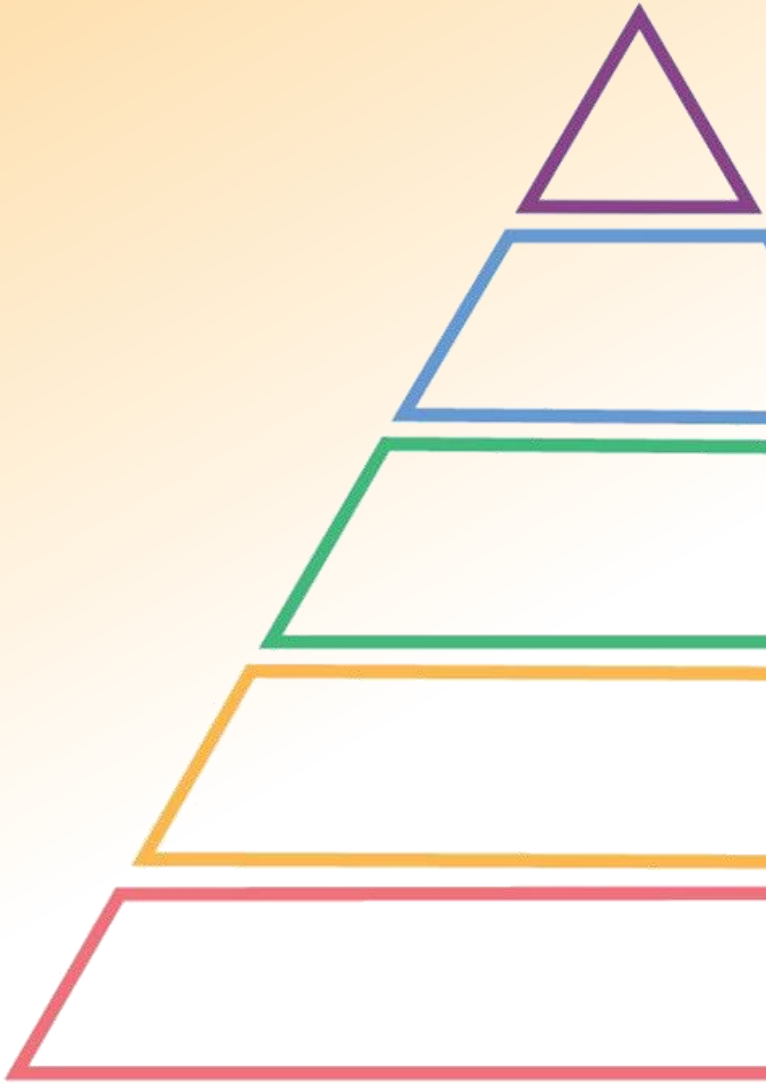
Co-funded by
the European Union

PRISMAS Training activities

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

Lund, 16 October 2023



Co-funded by the European Union

PhD studies in the PRISMAS program

PRISMAS is a hybrid program combining research training in your scentific field with a specialization in synchrotron methods.

You will be enrolled as a doctoral student at one of the partner universities, but will spend a large portion of your time on PRISMAS-specific activties.

Your Home University

- Enrollment in a PhD program in science or engineering
- Employment as a doctoral student
- Your main supervisor and 'home' research group
- Focus on training as an independent reseacher in your main scientific field

PRISMAS

- Research/development in collaboration with MAX IV staff
- Co-supervisor at MAX IV
- Focus on development of specialized expertise in synchrotron instrumentation and methods and related topics
- Dedicated activities for PRISMAS students:
  - Annual meeting in Lund
  - Summer schools

Co-funded by the European Union

PRISMAS learning objectives

We aim to train researchers who are:

- Able to use synchrotron methods effectively to enhance the quality and impact of research in their fields, and able to help others to do so.
- Able to communicate the principles of synchrotron methods, their applications and importance to various audiences, including scientists in their own fields, scientists in general, businesses and policymakers, and the public.
- Well-prepared for careers in industry, academia, or research infrastructure.

PRISMAS will give you:

Strong expertise in X-ray methods relevant to the thesis

Broad knowledge and understanding of X-ray methods and synchrotron facilities in general

Transferrable skills for future careers

Co-funded by the European Union

PRISMAS educational components

Research/development at MAX IV!

- 3-12 month on-site secondment, integrated with MAX IV staff
- Experiments at MAX IV and other facilities via regular proposals

Annual meetings!

- All PRISMAS students and supervisors will meet up once per year to discuss the PhD projects and developments at MAX IV. Linked to the annual MAX IV user meeting; attend both and you'll stay up-to-date on the most important developments in sychrotron science and engineering.

Summer schools!

- Tutorials, scientific lectures, and hands-on exercises to develop knowledge and skills around a broad range of X-ray methods.
- Taught by experts from synchrotron facilities and experienced scientists.
- 3 schools, 1 week each, just for PRISMAS students.

Courses!

- As a PRISMAS student, you should complete at least 20 ECTS in courses in X-ray science and methods or related topics. A variety of couses are offered by the PRISMAS network of universities.

Co-funded by the European Union

How to join PRISMAS

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

Lund, 16 October 2023

Co-funded by the European Union

Eligibility criteria

Have you…

- ❑ Not resided in Sweden for more than 12 months within the period from 2020-10-30 until 2023-10-31?
- ❑ Achieved 240 ECTS (Masters Degree) in a relevant field?
- ❑ Not already been awarded a doctoral degree?
- ❑ The possibility to be available for the project start (March 2024)?

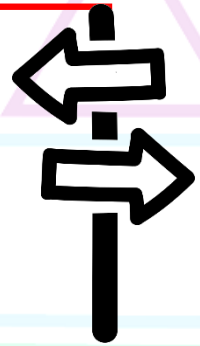
Answered all questions with YES?

Apply here

Co-funded by the European Union

Application package

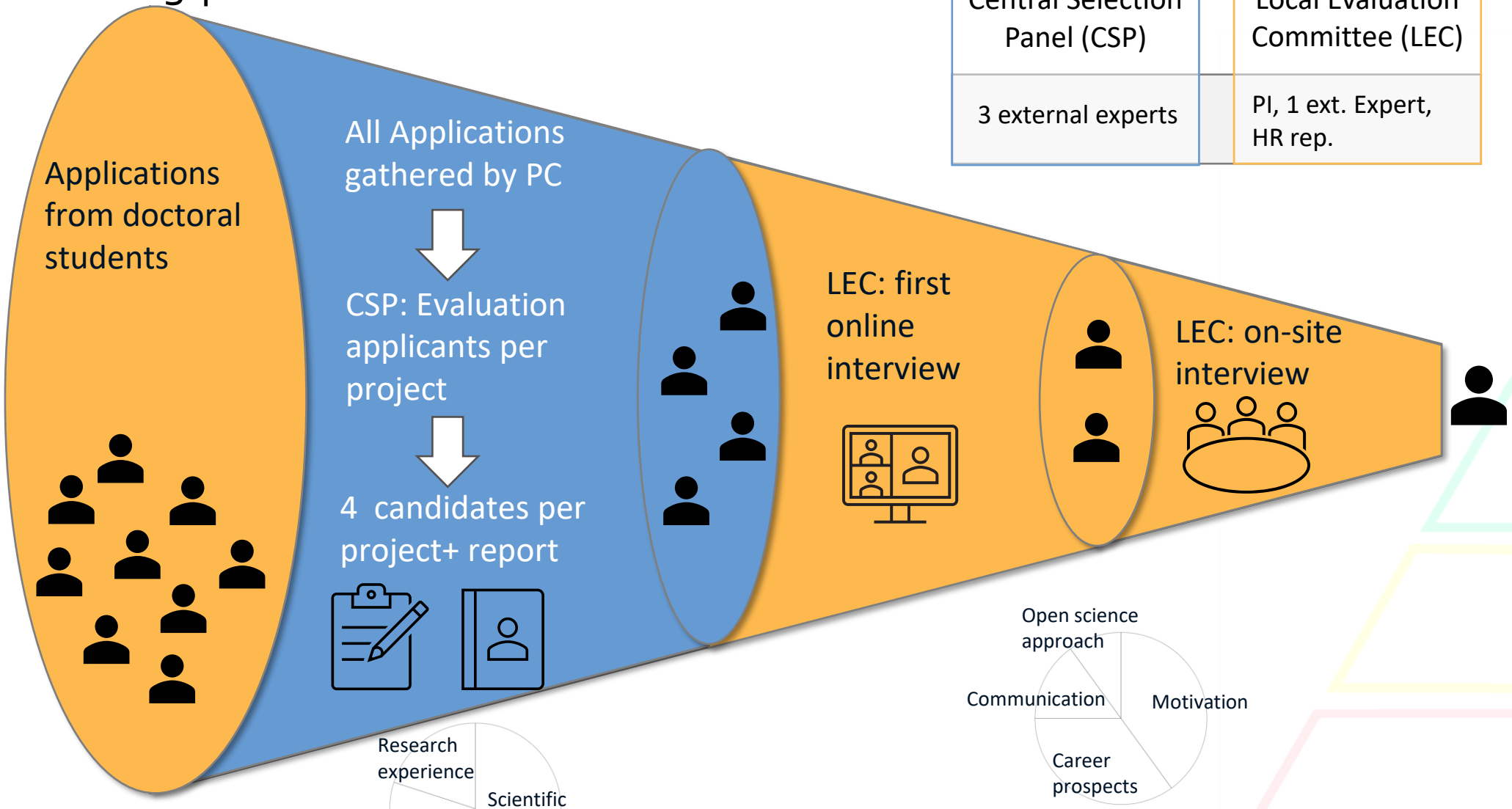
APPLICANTS GUIDE !



- CV in the Europass format, max 4 A4 pages (download template here)
- Two-page cover letter (if you apply for more than one PRISMAS project at one or more universities you should include a priority ranking).
- Minimum one reference letter
- Proof of English language knowledge (minimum CEFR proficiency level B2).
- Academic transcript, including grades for all coursework, with a transcript of a diploma in English.
- Additional documents you consider relevant for the application – specific for each position (check Job Ad)

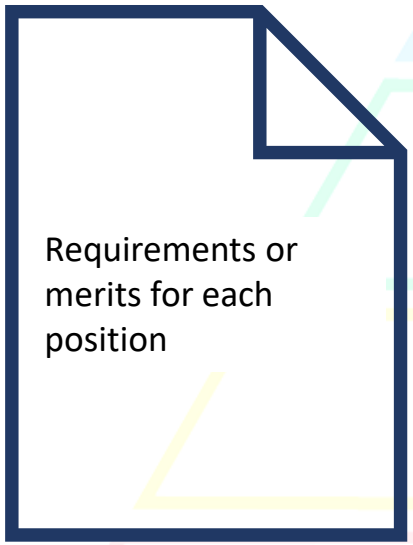
Recruiting process of candidates

Central Selection Panel (CSP)	Local Evaluation Committee (LEC)
3 external experts	PI, 1 ext. Expert, HR rep.



Evaluation criteria

Criteria	Weight	Description
Scientific excellence	60%	Academic education and training, relevant courses and grades; Academic excellence (incl. prizes, publications, participation in international programmes such as Erasmus); Dual degree/diploma
Adequacy of the career plan and the thesis project	20%	Ambition both in relation to the PRISMAS Project/s applied for and in relation to the applicant's research interests more broadly.
Research experience	20%	Research environments within and outside of the Higher Education sector, as well as sectors and organisations which are impacted by research outcomes.



Co-funded by the European Union

Q&A

PhD Research and Innovation in Synchrotron Methods and Applications in Sweden

ONLINE-WEBINAR

Lund, 16 October 2023

Co-funded by the European Union

Now it´s time for your questions

Please use the Q&A Module of the webinar to send us your questions

Thank you!

Follow us on

LinkedIn - PRISMAS

Twitter - PRISMAS

Instagram - @prismasphd

Contact

www.maxiv.se/prismas
prismas@maxiv.lu.se

Co-funded by
the European Union