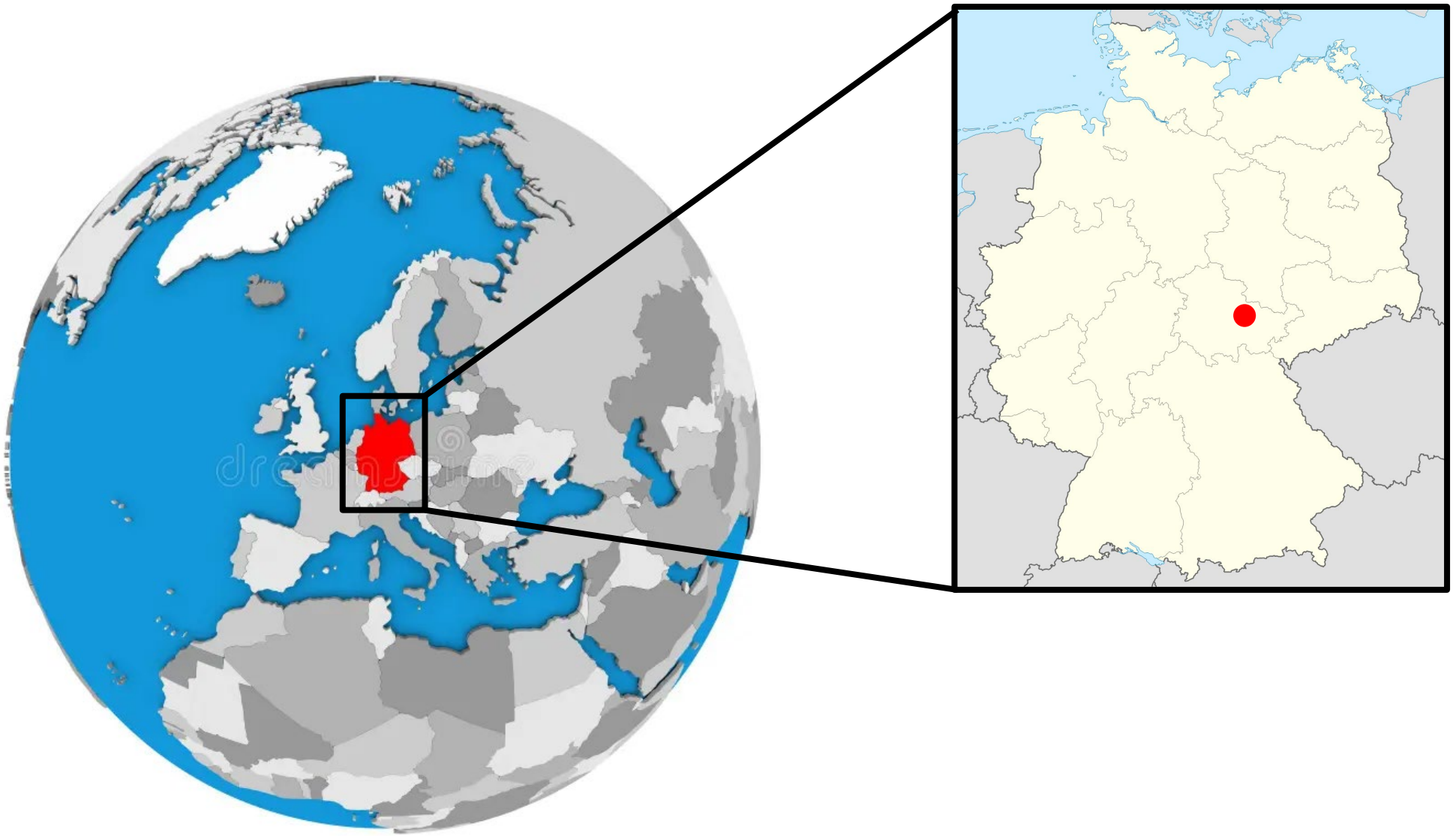
Abbe School of Photonics | JENA
Friedrich-Schiller-Universität

Introduction to the Abbe School of Photonics in Jena

National Central University
24.08.2026

Dr. Frank Setzpfandt f.setzpfandt@uni-jena.de www.asp.uni-jena.de

Location of Jena



FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA

Science Region Jena

No. 1 in Germany City Ranking*

in number of research institutes / per head population

2 Universities & University Hospital

3 Institutes of the Leibniz Association

3 Institutes of the Max Planck Society

2 Institutes of the Fraunhofer Society

3 Institutes of the Helmholtz Association

1 Federal Research Institute

& High-tech companies in Photonics, Biotech, and IT

* “Wirtschaftswoche” City ranking 2023

FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA

Friedrich Schiller University Jena

Founded	1558
Students	16,500 / 14 % int.
Doctoral candidates	4,280 / 26 % int.
Professors	420
Faculties	10

FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA

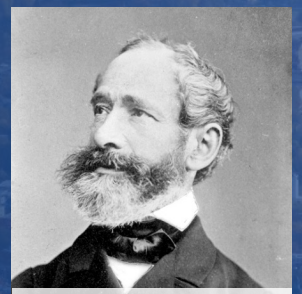
16th century

Foundation

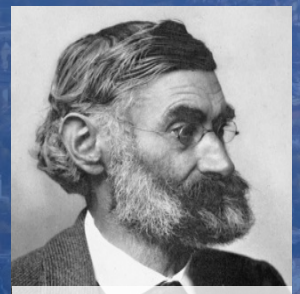
Johann Friedrich I

19th Century

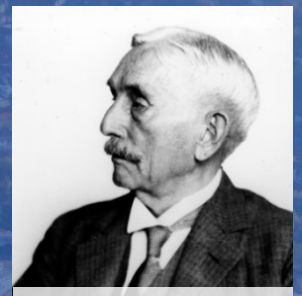
Foundation stone for the successful industrial location of Jena



Zeiss



Abbe



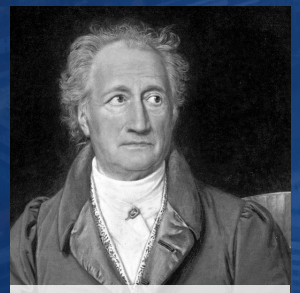
Schott

21st Century

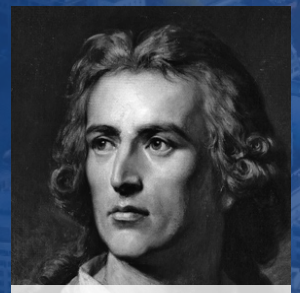
LIGHT. LIFE. LIBERTY. – *Connecting People & Ideas*

18th Century

Cultural centre in Europe: In the Age of Enlightenment and Idealism, the University of Jena flourished.



Goethe



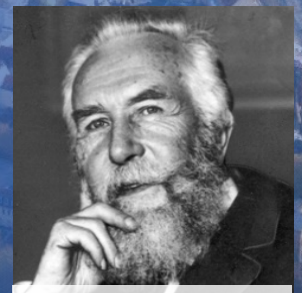
Schiller

Hegel

20th Century

Starting point for botanical, ecological and microbiological research tradition

Schleiden

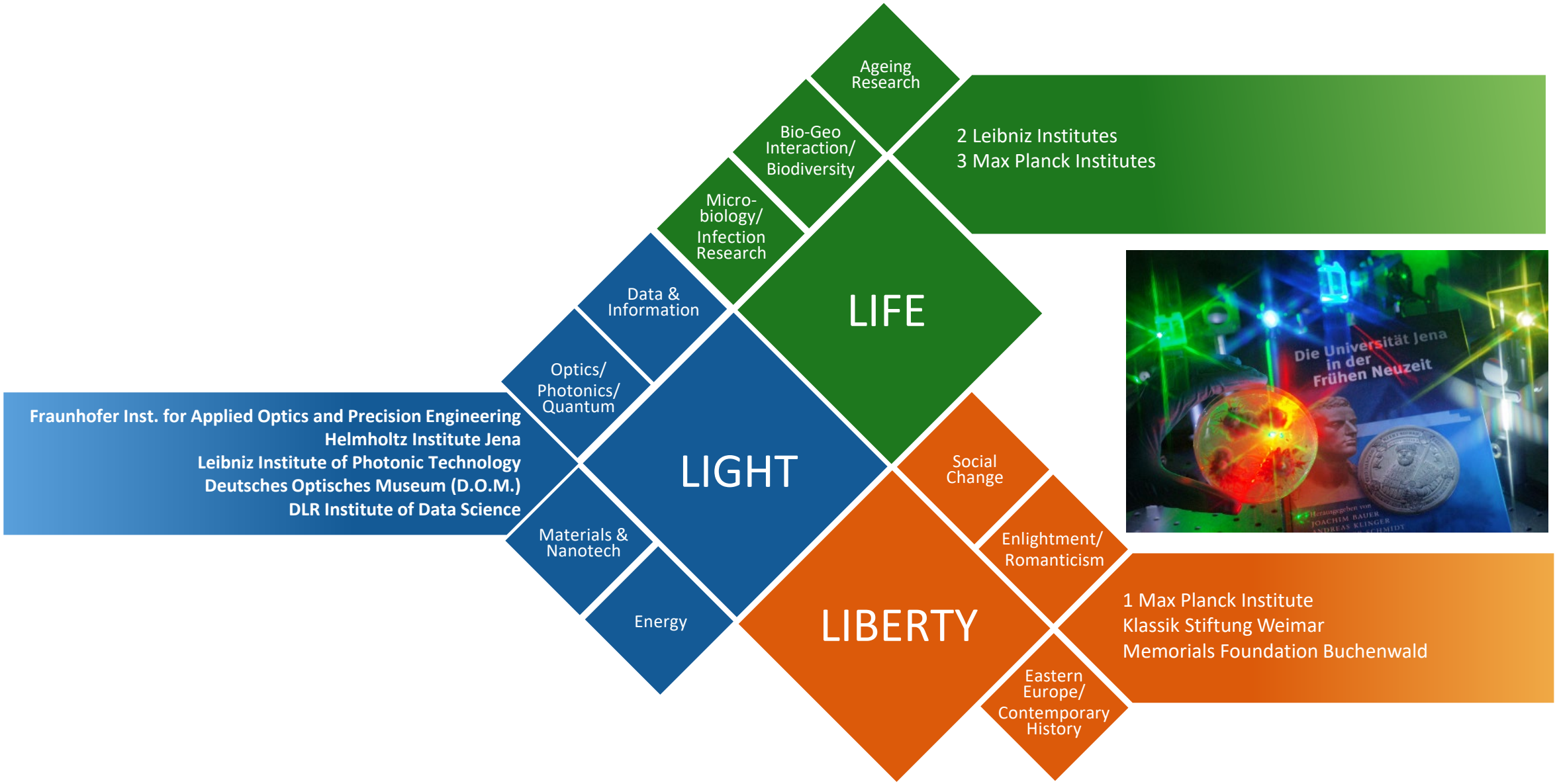


Haeckel

Knöll

Friedrich Schiller University Jena

Research profile and focal research areas



Friedrich Schiller University Jena

ACP‘s role within the focal research area LIGHT

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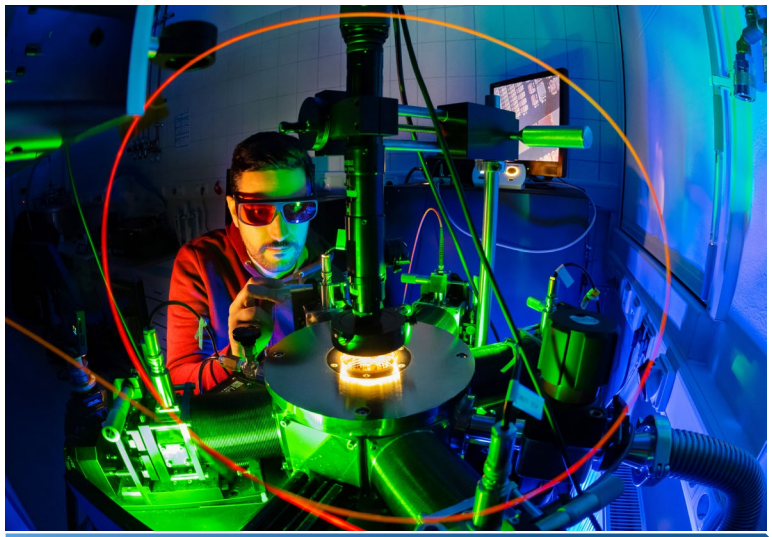

Fraunhofer Inst. for Applied Optics and Precision Engineering
Helmholtz Institute Jena
Leibniz Institute of Photonic Technology
Deutsches Optisches Museum (D.O.M.)
DLR Institute of Data Science

Optics/ Photonics/ Quantum

ACP
(incl. ASP, Lichtwerkstatt)

DFG IRTG 2675 Meta-Active
DFG CRC 1375 NOA
Thuringia InQuoSens
Leibniz Photonics for Infection Deseases
Leibniz Campus Infectooptics
DFG FOR 2783 Quantum Vacuum
EXC 2051 Microverse
CZS QPhoton
Max Planck School of Photonics
DFG GRK 3014 PhInt
DFG TRR 234 CataLight

LIFE

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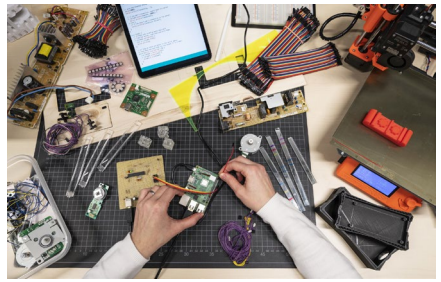

Abbe Center of Photonics

Areas of research and education

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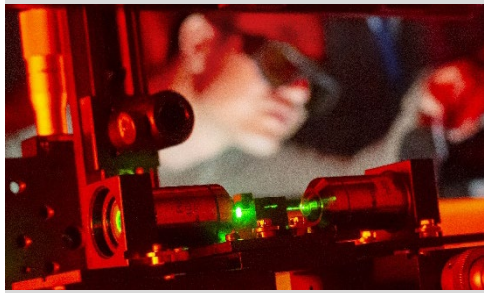
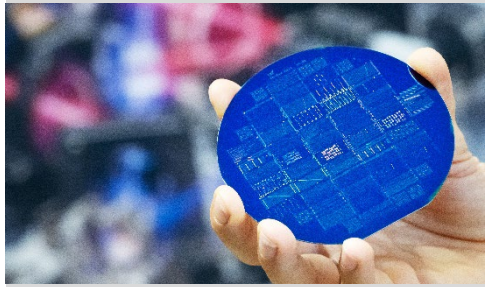
Lasers & Photonic Systems



18 Principal Scientists

- **Coherent Light Sources**
- **Photonic Instrumentation**
- **Optical Systems**

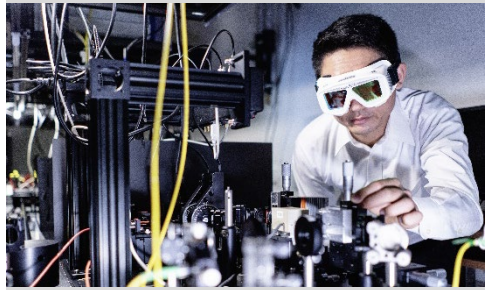
Nanophotonics & Photonic Materials



25 Principal Scientists

- **Nanotechnology**
- **Synthetic Materials**
- **Metasurfaces**
- **Photonic Integrated Circuits**

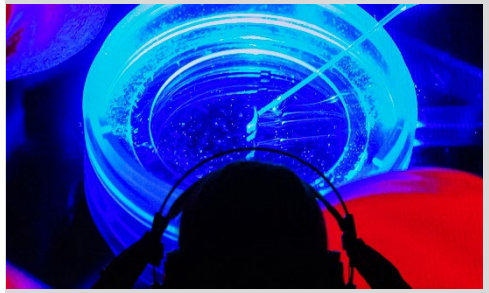
Quantum Technology & Photonic AI



18 Principal Scientists

- **Quantum Computing & Communication**
- **Quantum Imaging & Sensing**
- **Photonic Computing**

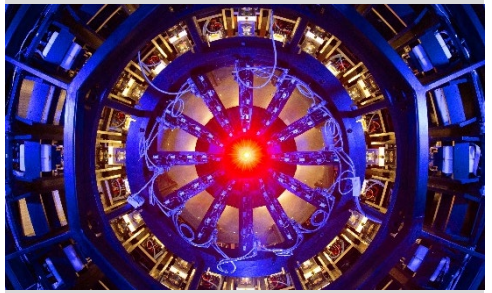
Biophotonics & Optical Health Technology



19 Principal Scientists

- **Advanced Spectroscopic Methods for Biomedicine**
- **Multimodal Bioimaging & AI-Assisted Spectroscopy**
- **Integrated Phot. Diagnostics & Smart Lab-on-a-Chip**

Strong Field Physics



16 Principal Scientists

- **Ultrahigh Peak Power Lasers**
- **Nonlinear & Relativistic Laser Physics**
- **X-ray Optics**

+ Fraunhofer IOF Jena // + Leibniz IPHT Jena // + Helmholtz Institute Jena

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Master's degree program

~ M.Sc. Physics with specialization Photonics (~50 students)
~ M.Sc. Photonics (~200 students)
~ M.Sc. Medical Photonics (~30 students)
~ M.Sc. Quantum Science & Technology (new, ~15 students)
~ M.Sc. Photon Science & Technology (start 10/2026)

Doctoral program

~ Dr. rer. nat./Dr. Ing. in Photonics or Quantum (~300 young researchers)

Abbe Center of Photonics

Principal scientists

Faculty physics +chemistry +biology +medicine +other areas +external institutes +external funding

56 professors,
4 junior professors,
15 (junior) group leaders

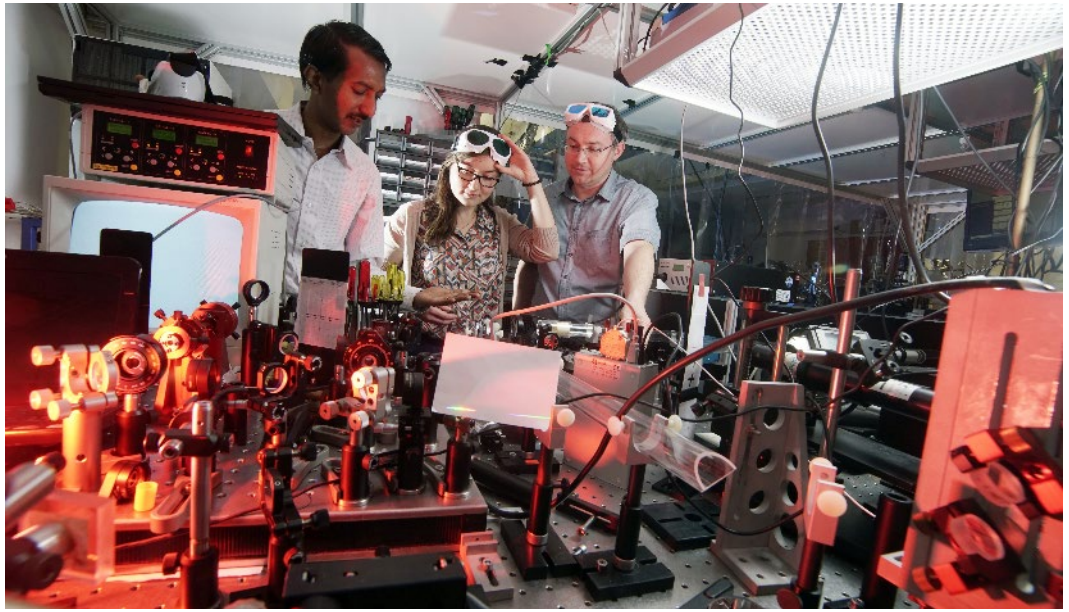
Our structures in the photonics and quantum education

Abbe School of Photonics

- International M.Sc. Photonics and M.Sc. Quantum Science & Technology programs
- Doctoral, guest professor, and junior research programs

Max Planck School of Photonics

- National network of excellence for best-practise photonics education
- Focus on quantum photonics in the doctoral program and training



Mission: Enable independently thinking, young scientists' careers in photonics!

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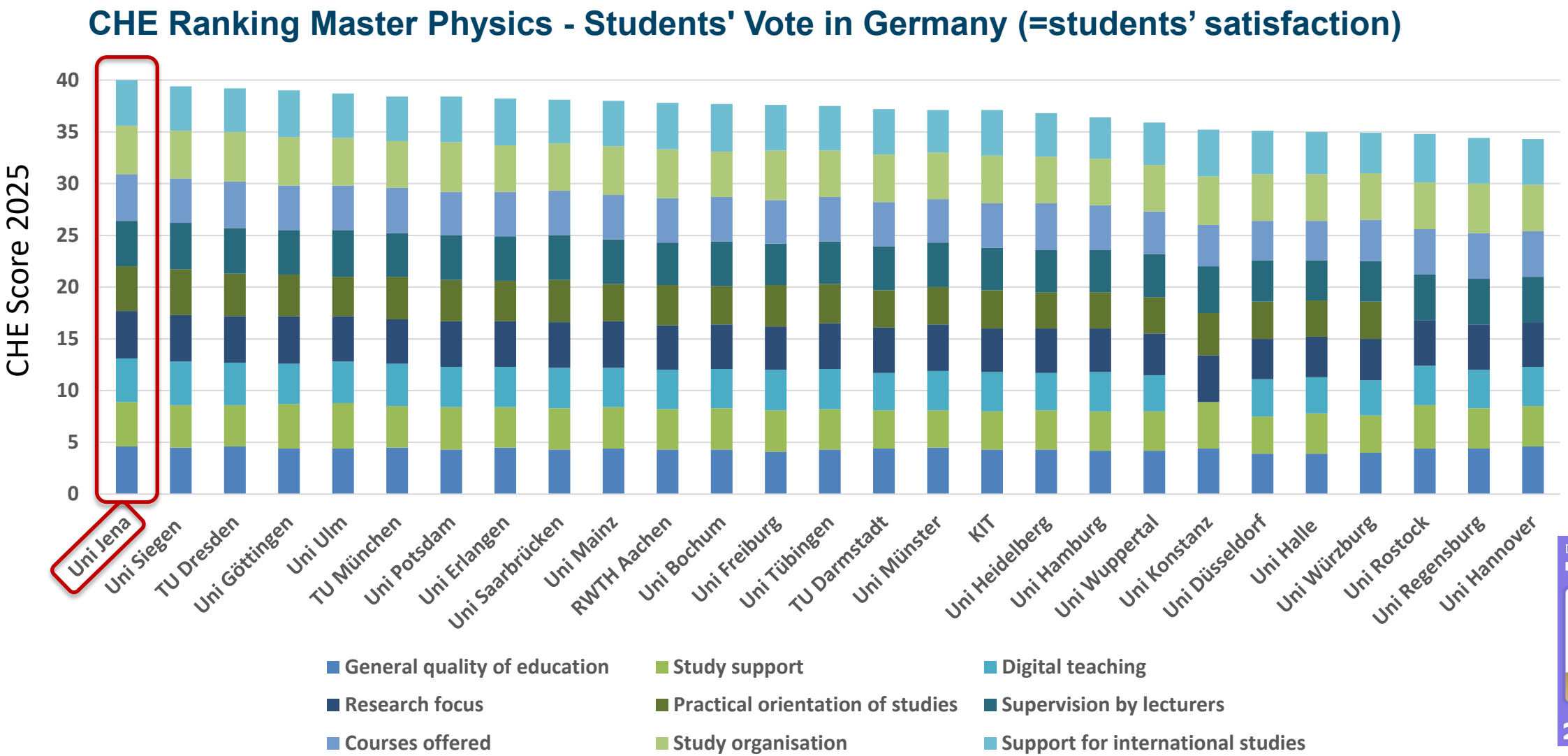
MAX PLANCK SCHOOL of photonics

Visit of Germany‘s President Dr. Frank-Walter Steinmeier to Jena, February 2024

Quality of education program
National university ranking for physics 2025



DEUTSCHLANDS GRÖSSTES HOCHSCHULRANKING
CHE Ranking
Für mehr Transparenz
2024 / 2025

International Master‘s degree and doctoral programs

Abbe School of Photonics | JENA
Friedrich-Schiller-Universität

- Funded 2008 in public private partnership
- Master, doctoral, guest professorship program
- Worldwide network of partnerships and collaborations

Master‘s degree programs

- ***M.Sc. Physics*** (specialization in photonics)
  ~50 students
- ***M.Sc. Photonics***
  ~180 students
  ~1,200 applications p.a., ~6% accepted
- ***M.Sc. Quantum Science & Technology***
  ~20 students (since 2024)

- ***M.Sc. Medical Photonics***
  ~Faculty of Medicine
  ~ 40 students

Doctoral program

~ 300 doctoral students
~ 500 applications p.a., 80 contracted p.a.
~ Researching in >11 institutes
~ Integrated research training groups (DFG, others)
~ Structured graduate program

International Master's degree programs

M.Sc. Quantum Science & Technology

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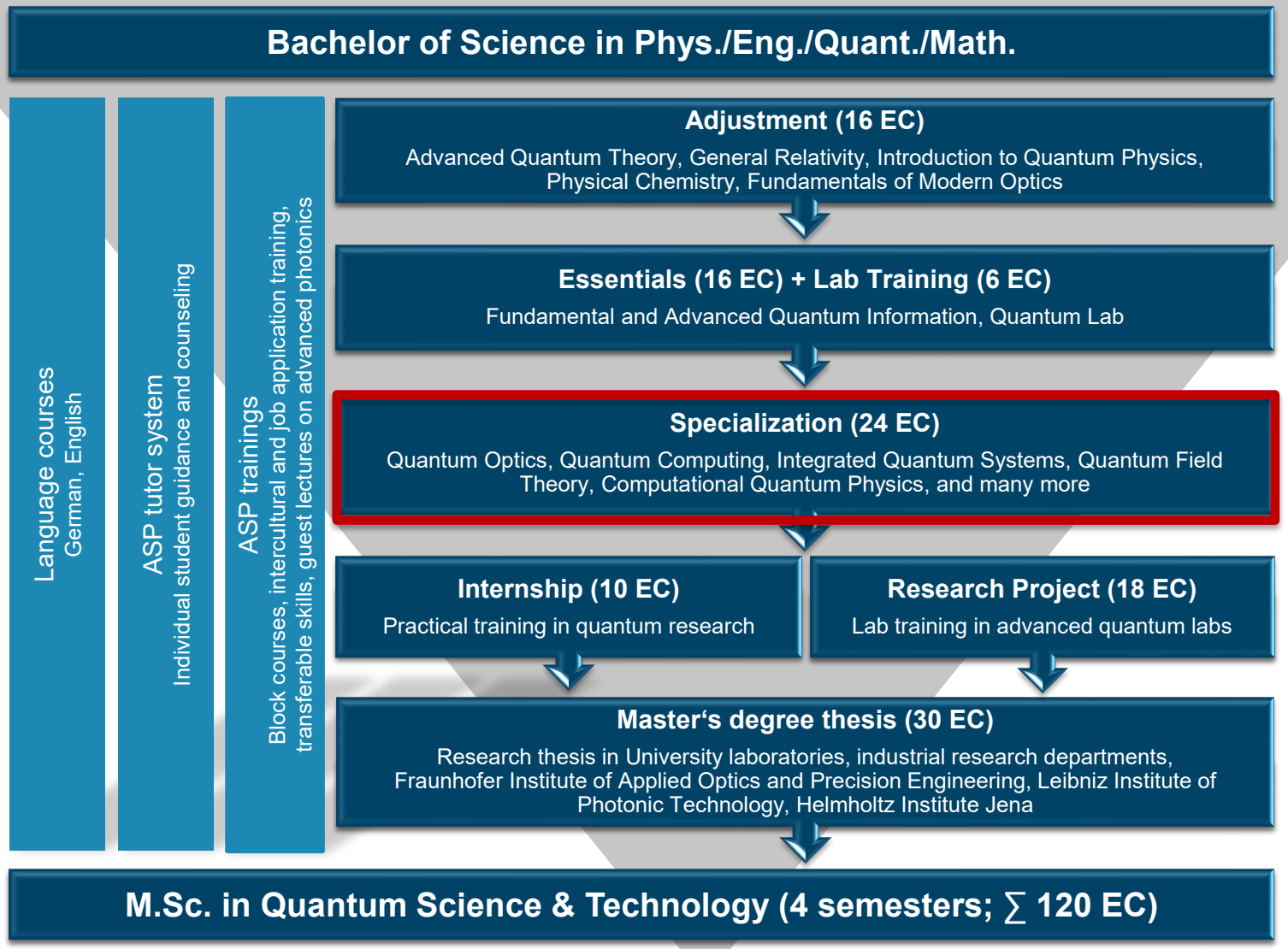
Key areas of education in specialization modules

- Quantum Theory
- Quantum Computation and Information
- Quantum Materials
- Quantum Photonics
- Applied Quantum Technology



International Master's degree programs

M.Sc. Quantum Science & Technology

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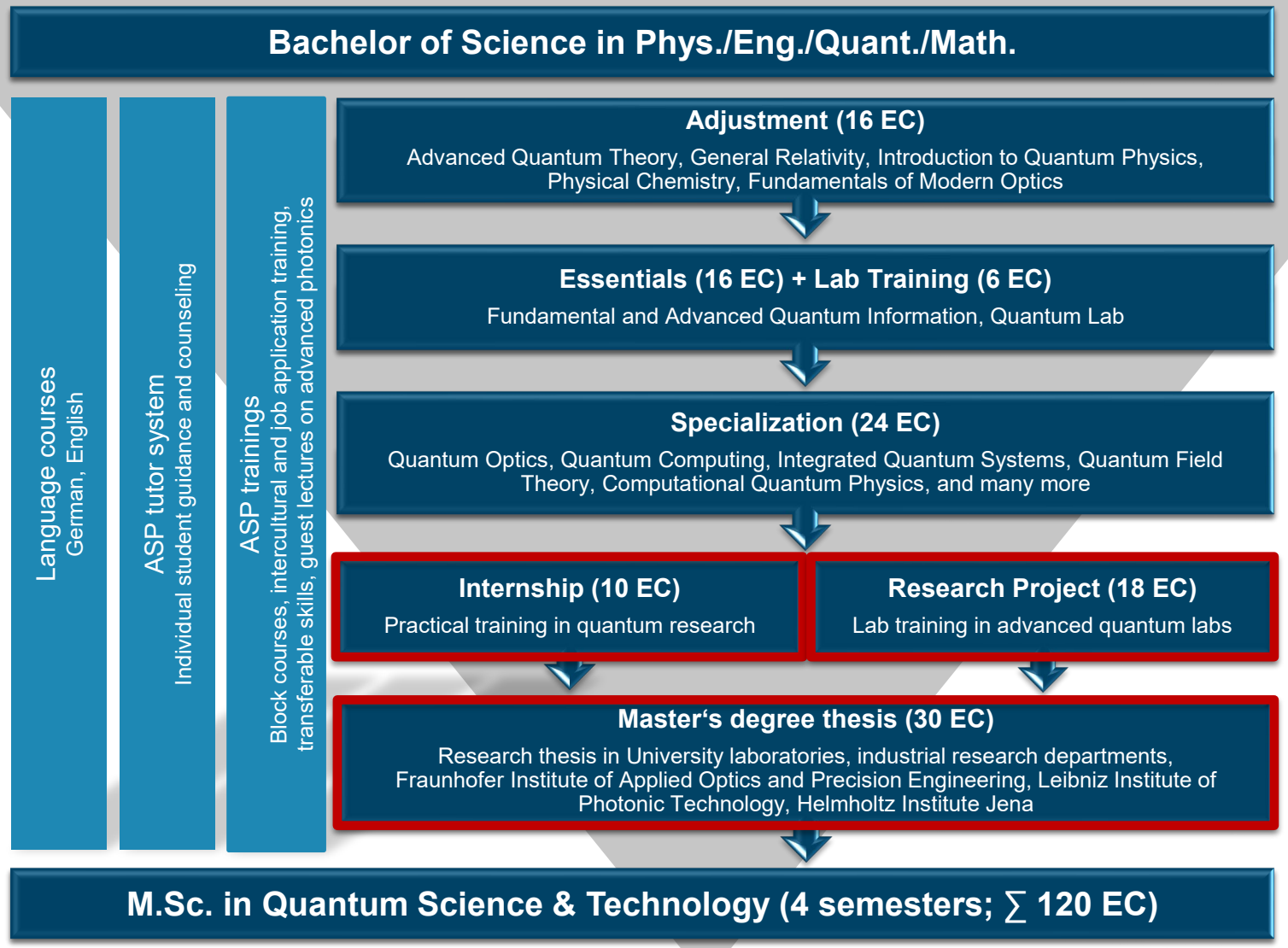
Internship
300 h
~38 working days

Research Project
540 h
~3 months

Master's degree thesis
900 h
~6 months



Building a national network of excellence in education

Max Planck School of Photonics

Applicants with **Bachelor's Degree**

Applicants with **Master's Degree**

PhD program

First phase
Qualifier Master's degree
(2 Years)

Second phase
Research on PhD topic
(3 Years)

MAX PLANCK SCHOOL of photonics

Photonic Innovators
MPSP Alumni

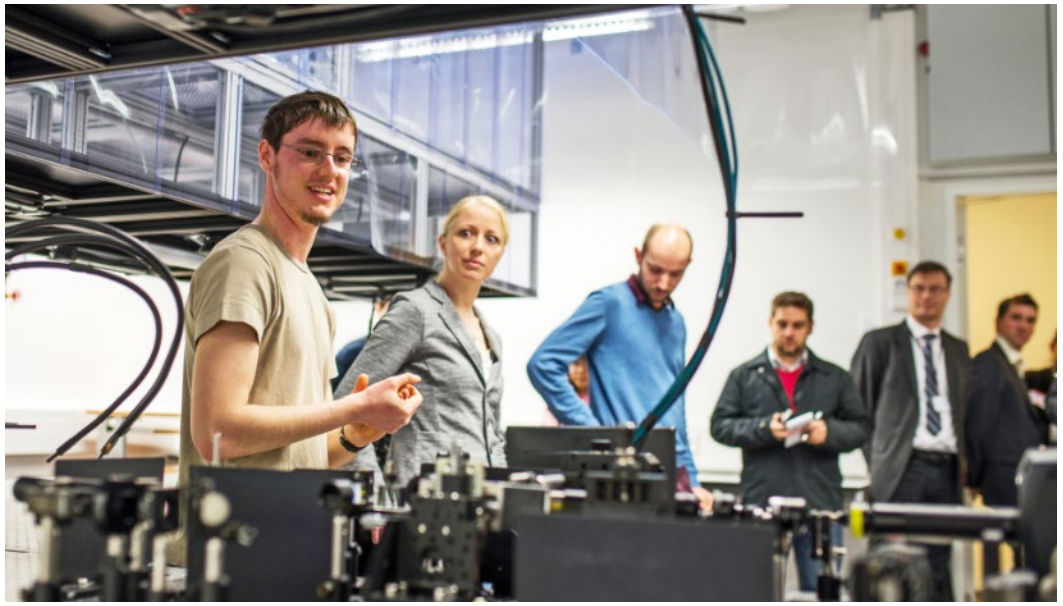
Scholarships

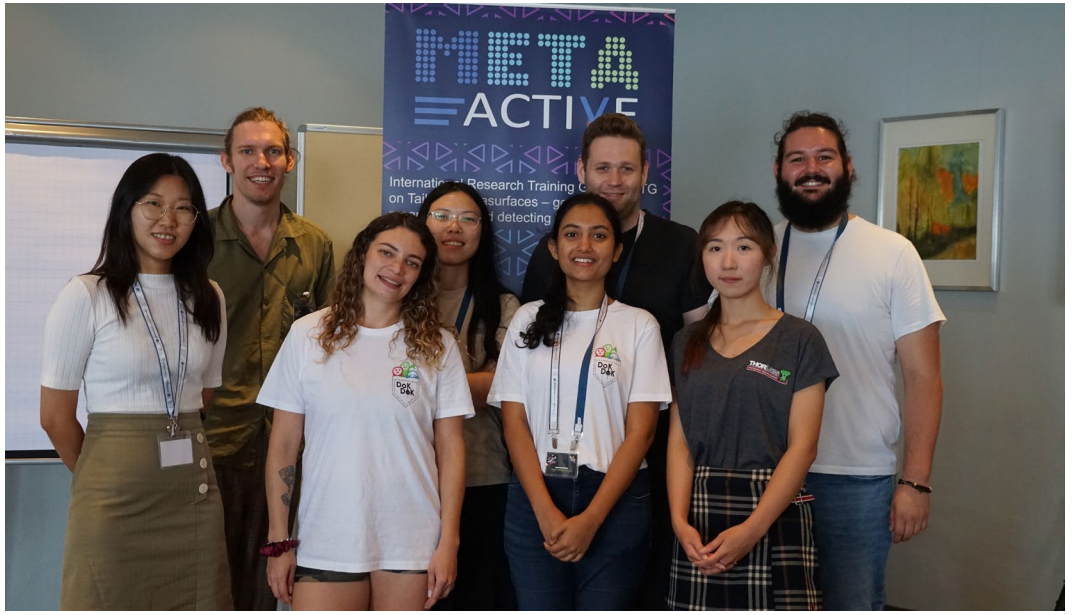
- our courses are free from tuition fees
- scholarships to cover living expenses are available for the most excellent applicants in regular M.Sc. courses
- all students in Max Planck School of Photonics get scholarship

Doctoral program

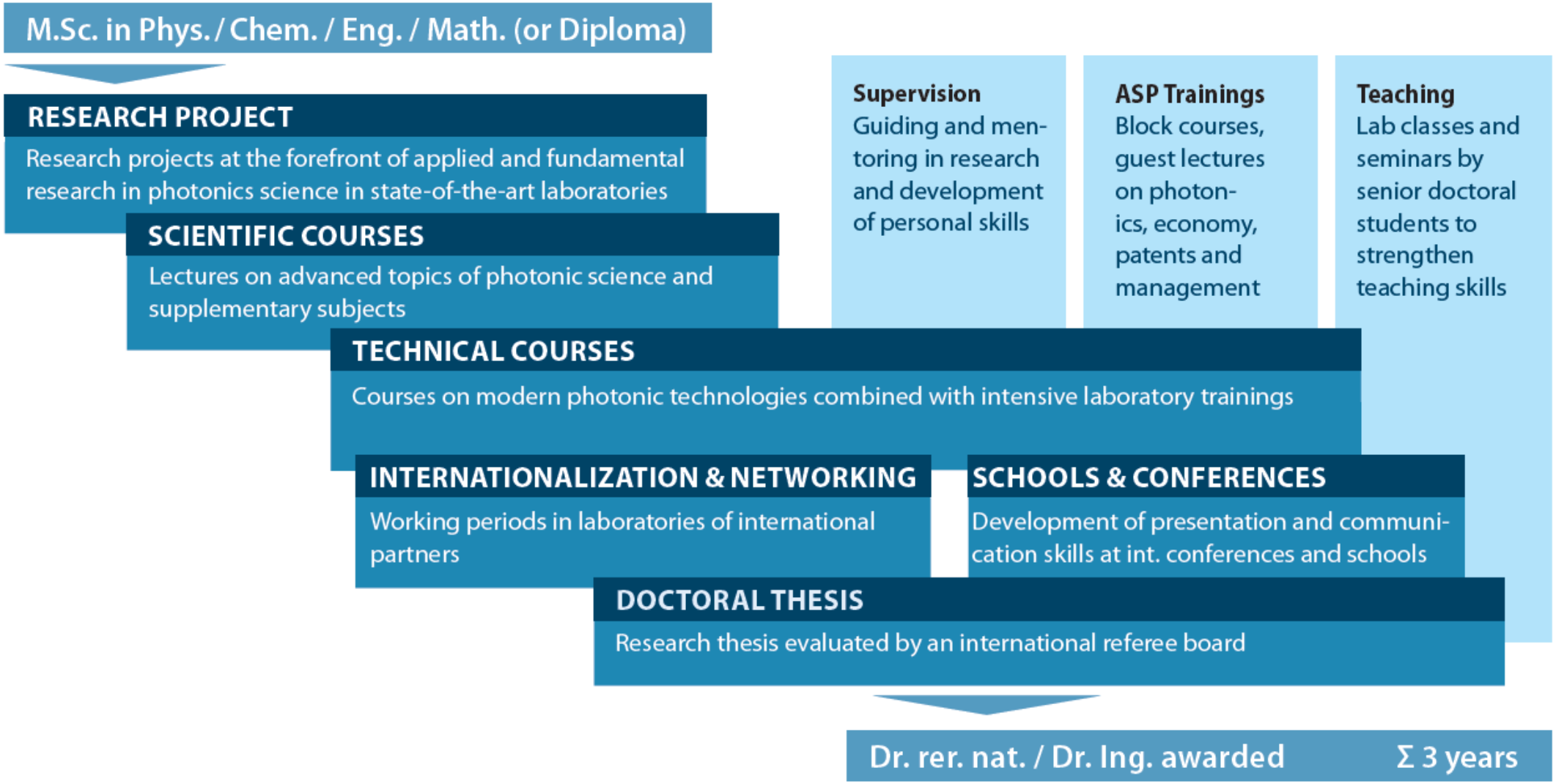
Doctorate in Physics, Photonics, Quantum Technologies

- Doctoral projects connected to third party funding & scholarship programs, e.g.
  - DFG-IRTG 2675 META-ACTIVE with Australia (German Research Foundation)
  - Max Planck School of Photonics (Federal government, Max Planck, Fraunhofer)
  - Optics & Photonics (EU, Thuringia, local state government and industry)
  - Individual, project-bound doctoral positions (e.g. DFG, BMFTR)

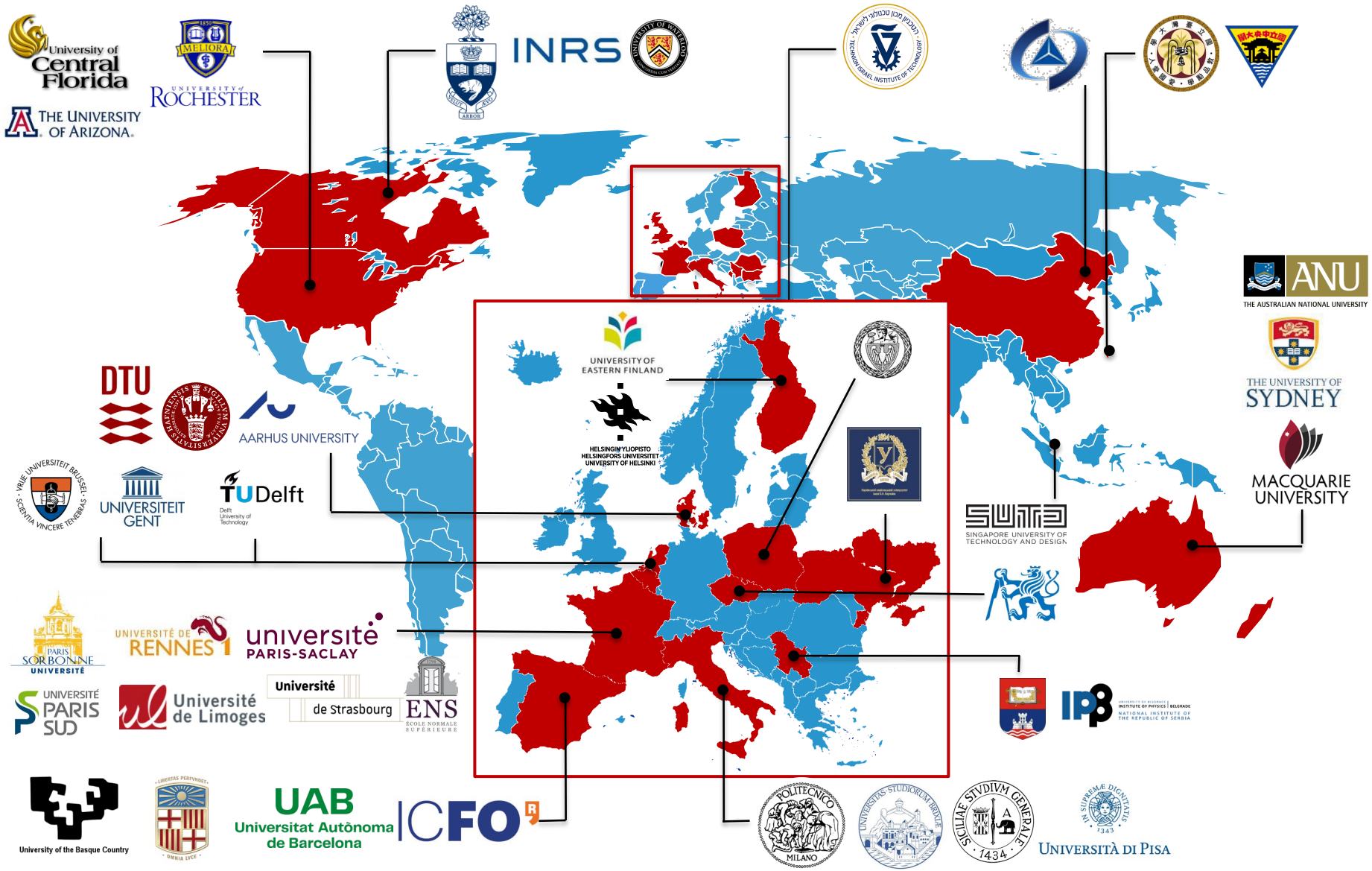




Doctoral program

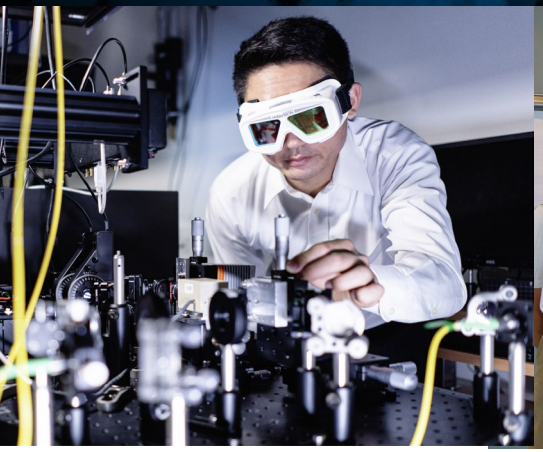


ASP‘s international education partner network

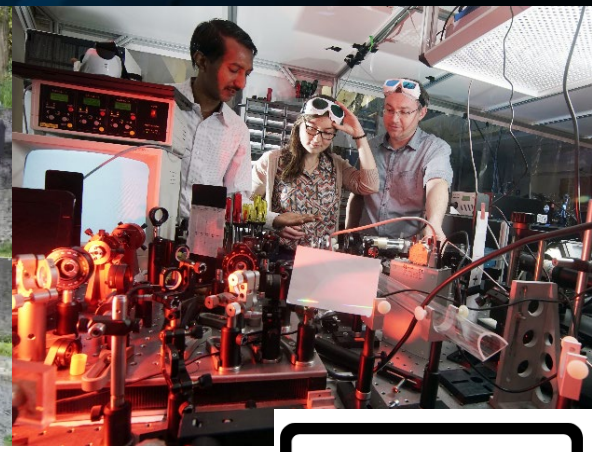


Abbe School of Photonics

Take-Home-Messages







- **Global network for academic training at all qualification levels (MSc, PhD, Postdoc,…)**
- **International M.Sc. Photonics and M.Sc. Quantum Science & Technology**
- **Unique hightech ecosystem (companies, start-up culture, makerspace, quantum awareness)**

SCAN ME