

Welcome in the Master programme

Prof. Axel Görlitz, HHU Düsseldorf

04.04.2024

Master Programme in Physics

MSc in Physics - Study Programme			
1. Semester	2. Semester	3. Semester	4. Semester
Focus Area 1 (12 LP)		Specialization (15 LP)	Final Seminar (3 LP)
Focus Area 2 (12 LP)			Master Thesis (30 LP)
Elective Physics (36 LP)			
Elective General (12 LP)			

Physics Focus (Schwerpunkt)

- Plasma Physics, Quantum Optics and Quantum Information, Solid State Physics, Soft Matter Physics, Biophysics
- Two focus areas (12 ECTS each) have to be chosen
- In each focus area one experimental (type A) and one theoretical (type B) module (6 ECTS each) have to be chosen
- It is guaranteed that in all focus areas lectures of type A and type B are held regularly (i. e. once per academic year)
- Course enrollment at LSF (lsf.hhu.de)

Physics Focus (Schwerpunkt)

Schedule of lectures in the focus areas	
SS 2024	WS 2024/25
Experimental Quantum Optics (A)	Experimental Plasma Physics (A)
Theoretical Quantum Optics and Quantum Information (B)	Theoretical Plasma Physics (B)
Theoretical Soft Matter (B)	Experimental Soft Matter (A)
Theoretical Solid State Physics (B)	Semiconductor Devices (A)*
Optical Properties of Solids (A)	Experimental Biophysics (A)
Theoretical Biophysics (B)	

*additional lectures in experimental solid state physics may be offered in the winter term 2024/25

Elective Physics Modules (Wahlpflichtbereich Physik)

- Focus modules, Laser Physics, Astrophysics, Computational Physics, Numerical Simulations, Advanced Quantum Mechanics, ...
- Modules with a total of 36 credit points have to be chosen
- Course enrollment at LSF (lsf.hhu.de)
- [Handbook of Modules](#) lists courses that are generally offered

Elective Physics Modules (Wahlpflichtbereich Physik)

Modules that can be chosen as elective physics module in SS 2024

all focus modules (if not used in focus area)

Advanced Quantum Mechanics

Quantum Cryptography

Fusion Plasma Physics

Laser Plasma Physics

Nonlinear Optics

Active Soft Matter

Self-Assembly of Biomolecules

Stochastic Processes

Soft Matter Systems: Advanced Experimental and Theoretical Methods

Nanomagnetism

Greens Functions

Symmetries, Symmetry Breaking and Phase Transitions

Imaging Techniques II

Surface Physics II

Höhere Methoden der Analysis in der Physik (D)

Laboratory Course on Laser Physics

+ further seminars (see LSF)

Elective modules (Wahlbereich)

- Any university course including physics modules.
- Advanced Mathematics, Chemistry, more Physics courses (typically in German).
- Transferable skills, language courses (<http://www.studierendenakademie.hhu.de>),...
- Graded courses/modules count for final grade.

Modules offering online material

Unless indicated otherwise, online material is available on the teaching platform ILIAS (ilias.hhu.de). You will have access to the material for the specific course approximately one day after you have registered for the course in the online schedule (lsf.hhu.de)

Lecture	Available Material
Theoretical Quantum Optics	lecture notes at https://www.tp3.hhu.de/lehre (password available upon request at Dagmar.Bruss@uni-duesseldorf.de)
Theoretical Soft Matter Physics	lecture notes
Theoretical Solid State Physics	lecture notes (successively available parallel to the lecture)
Optical Properties of Solids	links to books relevant for the lecture
Theoretical Biophysics	- online material - online stream (link on ILIAS)
Quantum Cryptography	- lecture notes at https://www.tp3.hhu.de/lehre (password available upon request at hermann.kampermann@hhu.de) - online-stream (request login data at hermann.kampermann@hhu.de)

Modules offering online material

Lecture	Available Material
Imaging Techniques II	online material
Nanomagnetism	links to books relevant for the lecture
Active Soft Matter	lecture notes and further online material
Stochastic processes	online videos (link on ILIAS)

2nd year of Master Programme

Specialization

- Training for Master thesis
- 15 Credit Points

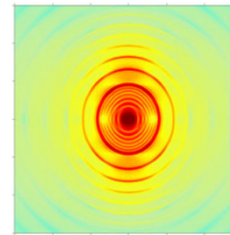
Final Seminar

- Presentation of Master thesis
- 3 Credit Points

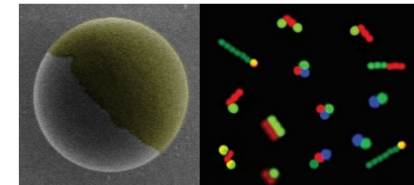
Master thesis

Research work in one of our primary research areas:

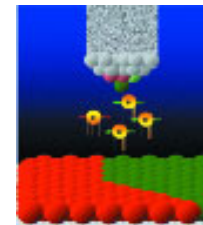
- Plasma Physics
- Soft Matter
- Solid State Physics/Nano Physics
- Quantum Optics/Quantum Information
- Medical Physics/Biophysics



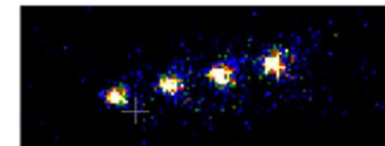
(AG Müller)



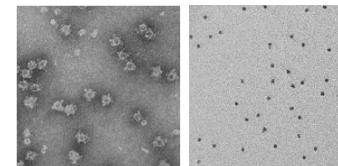
(AG Buttinoni)



(AG Getzlaff)



(AG Schiller)



(AG Monzel)

- Cover entire moduls
- Oral exams (date of exam are individually arranged with the examiner) or written tests (fixed date)
- Registration: 1 week before exam; online-registration (in the Studierendenportal)
- **Exception** - seminars: registration with professor
- **Exception** - directed study: registration with professor

Contact

Student Advisor: Prof. Axel Görlitz
(Contact hours: when the office door is open)

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General Information for international students at HHU:

www.hhu.de/en/international