![Universität Paderborn logo]

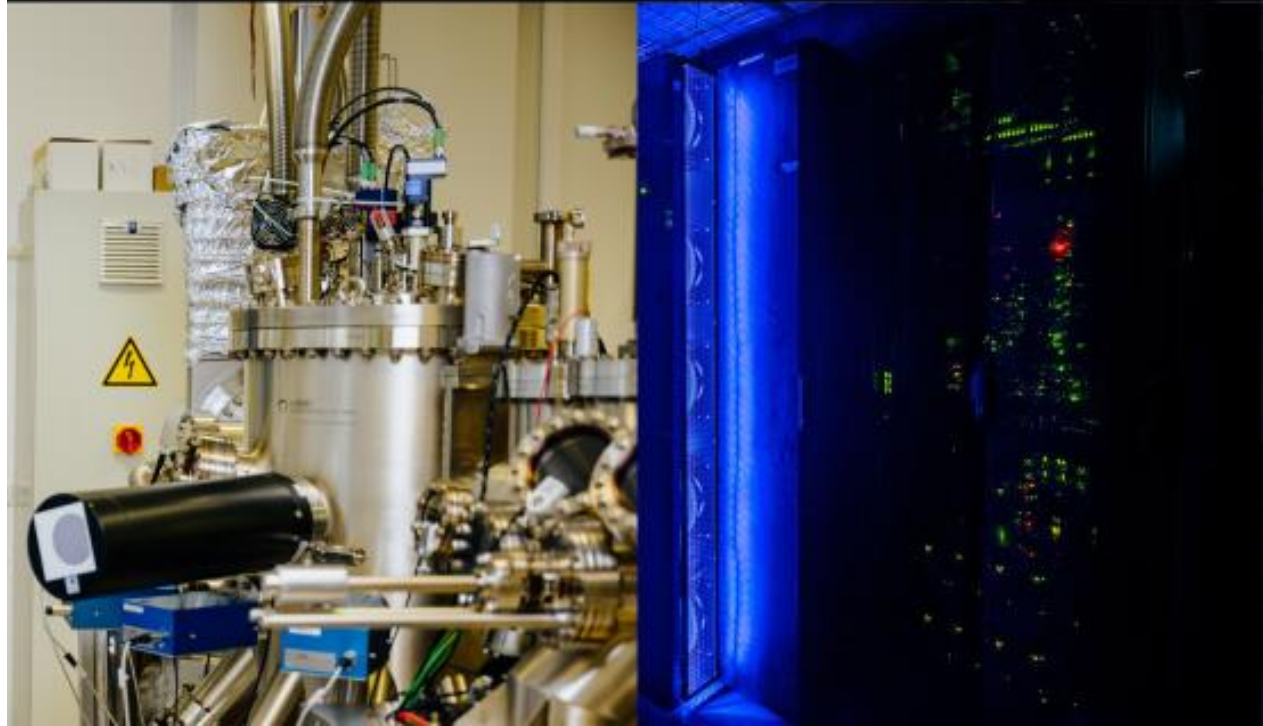# MSc Optoelectronics & Photonics

Dr. Sascha Hohmann

03 April 2024

Usually the first contact

Dr. Sascha Hohmann

Academic Councillor

Contact

Department of Physics
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By appointment by email

Examination Matters

Prof. Dr. Stefan Schumacher

→ Theory of Functional Photonic Structures

Contact   Affiliations

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Study plan for summer term entry

Semester			
1	**Core subjects (6+6 LP)** • Fields and Waves (EE) • Quantum Electronics (Ph)	**Specialization (6+6 LP)** • Quantum Optics (Ph) • Photonic Nanostructures (Ph) • …	**GS (3+3 LP)** • Management of Technical Projects • Language course • …
2	**Fundamentals (6+6 LP)** • Circuit and System Design (EE) • Modeling and Simulations (EE)	**Core subjects (6+6 LP)** • Computational Optoelectronics and Photonics I (Ph) • OE Semicond. devices I (Ph)	**(4 LP)** • Topics in OE & Photonics **Lab courses (6 LP)** • Optoelectronics • Optics & lasers • Material science • Computational optoelectronics • …
3	**Specialization (6+6 LP)** • Optical Communication A (EE) • Nonlinear Optics (Ph) • …	**Lab Project (14 LP)**	
4	**Master Thesis (30 LP)**		

Lab Project: Extended lab work with focus on a specific subject

Study plan for summer term entry

Semester			
1	**Core subjects (6+6 LP)** • Fields and Waves (EE) • Quantum Electronics (Ph)	**Specialization (6+6 LP)** • Quantum Optics (Ph) • Photonic Nanostructures (Ph) • …	**GS (3+3 LP)** • Management of Technical Projects • Language course • …
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3	**Specialization (6+6 LP)** • Optical Communication A (EE) • Nonlinear Optics (Ph) • …	Lab Project (14 LP)	**Lab courses (6 LP)** • Optoelectronics • Optics & lasers • Material science • Computational optoelectronics • …
4	Master Thesis (30 LP)		

Master Thesis: Independent research project, e.g. quantum optics, nanooptics & spectroscopy, computational photonics, optical communications, ultrafast optoelectronics, …

Our Website: http://photonics.upb.de

e.g., **examination regulations**, course recommendations, …

Modeling and Simulation

Module group:	Workload (h):	CP:	Semester of study:	Cycle:	Duration (in sem.):
Fundamentals of optoe-lectronics	180	6	1	Winter semester	1

1 Module structure:

	Course	Type	Contact time (h)	Self-study (h)	Status (C/E)	Group size (students)
a)	Modeling and Simulation	Lect	30	60	Compuls.	up to 240
b)	Modeling and Simulation	Exerc	30	60	Compuls.	up to 30

2 Options within the module

None

3 Admission requirements

- Prior knowledge of programming in Matlab will be required
- Knowledge of mathematics and physics at the level of the university entrance qualification

Information: Unless otherwise specified, these are recommendations.

4 Contents

Short Description

In this lecture, techniques of constructing models and simulations of technical systems are introduced and implemented.

Contents

- Introduction to the modeling process
- Number representation in digital computers
- Numerical schemes for ordinary and partial differential equations
- Discrete simulations

7	Certified participation
	None
8	Prerequisites for participation in examinations
	None
9	Prerequisites for assigning credits
	The credit points are awarded after the module examination (MAP) was passed.
10	Weighing for overall grade
	The module is weighted according to the number of credits (factor 1).
11	Reuse in degree courses
12	Module coordinator
	Prof. Dr. rer. nat. Jens Förstner
13	Other notes

Module Homepage

Implementation

The theoretical concepts are taught in lecture form. The exercises consist of simple questions to be discussed as well as classical mathematical problems which are to be solved by the students in self- contained manner. Further, the students will use self-written as well as commercial software for selected topics.
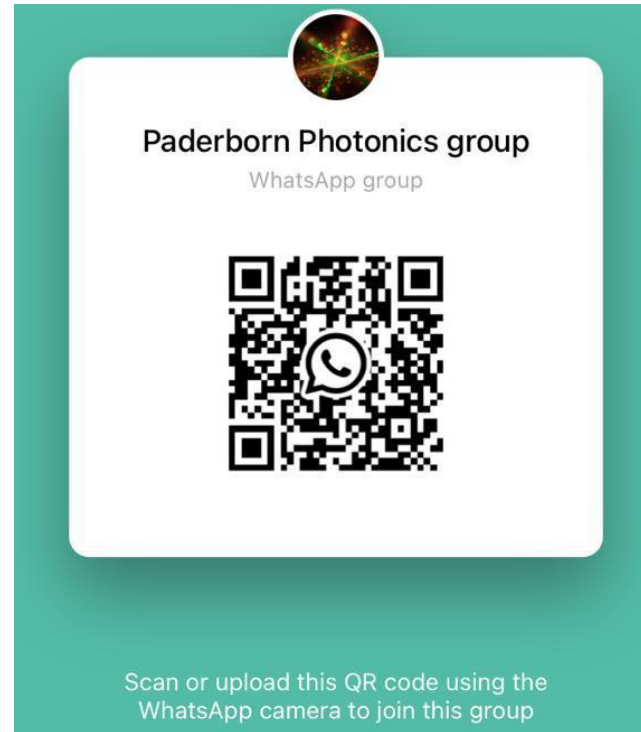
➡️ Have a look there to check the specializations!

WhatsApp Group

➡️ **A piece of advice:** get in touch with second year students after/in class or WhatsApp

https://chat.whatsapp.com/CzVThUIrOk22RwoYtZvVwA

Electronic Campus Management System: „Paul"

paul.uni-paderborn.de

-> sign up for courses (*your* choice of courses)
-> later: sign up for exams, check your grades, ...

Always check the deadlines for registering and deregistering for exams!

Online Learning Platform: „Panda"

panda.uni-paderborn.de

-> all classes will be in-person taught in summer term 2024
-> additional course information and study material may be provided through Panda

Some further questions

➡ **What are my login credentials for Paul and Panda?**

- IMT login (IMT helpdesk: imt@upb.de)

➡ **Do I need to enroll for each course separately?**

- yes, you need to do that in Paul

➡ **Where can I find more information about a particular course?**

- courses available for each term are listed in Paul
- some general info is also given in Paul
- more information is given at the end of the examination regulations pdf-file
- further course information may also be available in Panda once signed up for specific courses

…

➡ **Do not hesitate to contact us!**

➡ **Or ask here and now …**