



# Department of Physics

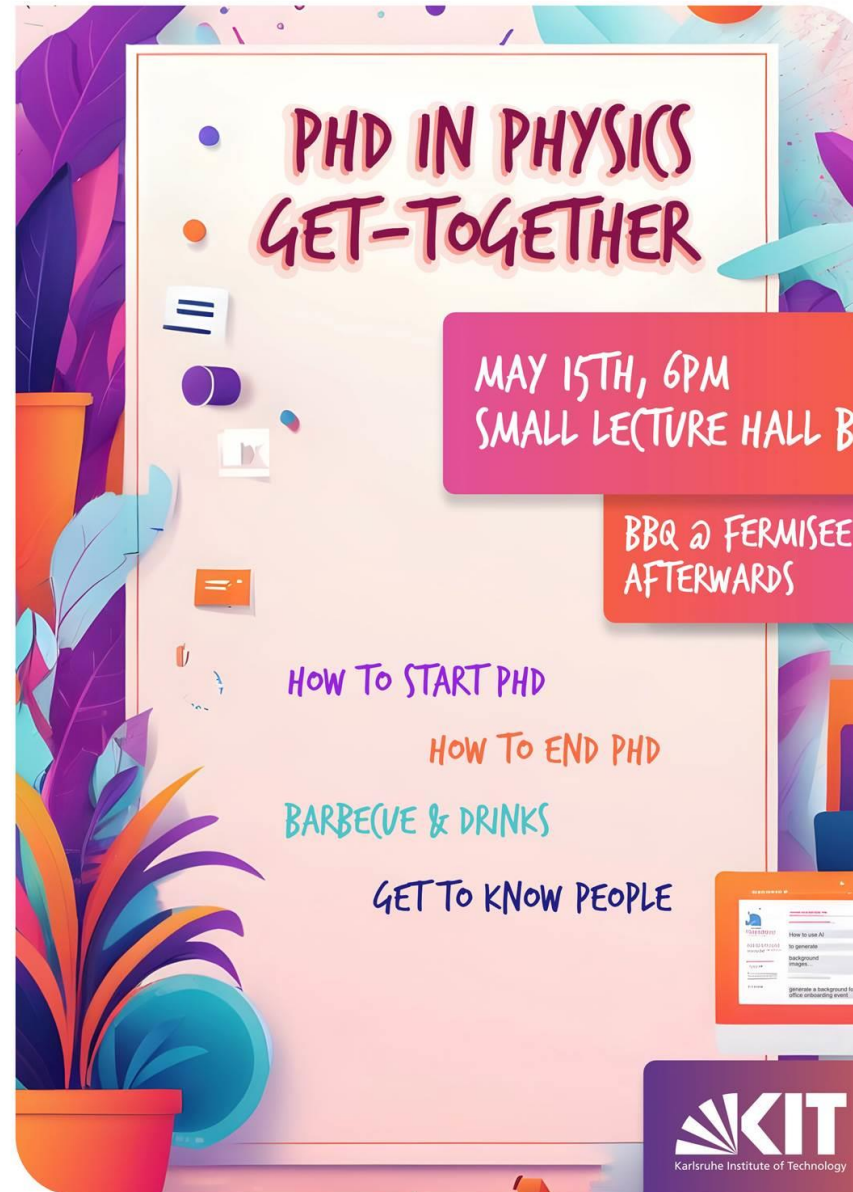
Karlsruhe Institute of Technology

## Onboarding event



# Welcome

- New PhD students at our department:



# Why this presentation?

■ Your work on your PhD is starting off, fine - but **do these steps early on...**

- you familiar with your supervisor, but do you know **KHYS**?

Karlsruhe House of Young Scientists (KHYS)

## Doing a Doctorate at KIT

As a doctoral researcher at KIT you can enjoy excellent research conditions in an international environment. KIT offers you many different forms of doing a doctorate (e. g. within a doctoral program) including natural sciences and engineering, economic, social and human sciences.

Moreover, you are provided with extensive interdisciplinary qualification possibilities as well as personal support and advice, so that you are prepared for your career in the best possible way.



[KIT - Karlsruhe House of Young Scientists \(KHYS\) Home](#)



# Why this presentation?

- Your work on your PhD is starting off, fine - but **do these steps early on...**
- **KHYS** : providing a lot of very useful information

## Karlsruhe House of Young Scientists (KHYS)



**Dr. Simone Naumann**

Project KIM-DOC, registration in Docata

+49 721 608-46224

simone.naumann@kit.edu

Dr. Britta Trautwein,  
KHYS director



KIT - CS  
Straße am Forum 3  
Building 30.96



# DOCATA – a key web portal at KIT

## ■ Register as doctoral researcher ASAP... via **docata**

### Doctoral researchers with a doctoral examination within a KIT Department

You intend to pursue a doctorate or are already pursuing a doctorate at a KIT Department? Docata offers:

- Registration as a doctoral researcher at KIT as well as support in administrative processes along the doctoral research phase (e.g. application for acceptance at your KIT Department, automatic reminders)
- Membership at the Karlsruhe House of Young Scientists (KHYS) and with that, access to all KHYS offers
- Subscribing to as well as unsubscribing from the KHYS infomail

#### Further Information on achieving your doctorate at KIT:

>> [Formal steps for doctoral researchers with a doctoral examination within a KIT Department](#)

#### Information

##### Questions about pursuing a doctorate at a KIT Department

For questions regarding doctoral ordinances and admission requirements, please contact your relevant [KIT Department \(Fakultät\)](#).

##### Questions about postdoc phase

For questions regarding postdoc phase and status at KIT, please contact the [KHYS Postdoc Office](#):  
[postdoc@khys.kit.edu](mailto:postdoc@khys.kit.edu)

##### Questions about using Docata

If you have any questions concerning the use of Docata (e.g. the entry of certain registration data), please contact the Docata team at Karlsruhe House of Young Scientists (KHYS):  
[docata@khys.kit.edu](mailto:docata@khys.kit.edu)

[– Docata \(kit.edu\)](https://www.kit.edu/docata)

- Our department also provides a lot of highly useful information

## Doctorate

The department awards the scientific doctoral degree "Doktor:in der Naturwissenschaften" (Dr. rer. nat.) for independent research in one of the department's **research areas**. At KIT, doctoral researchers find a stimulating scientific environment for their research that goes beyond their own area of expertise. The research work usually takes place at one of the institutes, in cooperation with a scientific supervisor and other researchers of the research groups.

There is no centrally organized application portal for doctoral researchers at the department. Applications should be addressed to prospective supervisors. The relevant topics and researchers can be found under **Research**. It is possible to apply even if there is no explicit advertisement.

Doctoral researchers are often involved in further scientific networks, e.g. via the **KIT Centers** or **coordinated research programs**, and/or in **structured doctoral programs**. At KIT there are **guidelines for doctoral studies** that give an overview of essential aspects to get a doctoral degree.



[KIT - Studies - Doctorate](#)

## ■ Who is who at our faculty: the Dean's Office

### People

<b>Dean</b>	Prof. Dr. Guido Drexlin
<b>Vice Dean</b>	Prof. Dr. Markus Garst
<b>Dean of Studies (Physics)</b>	Prof. Dr. Günter Quast
<b>Dean of Studies (Geophysics)</b>	Prof. Dr. Andreas Rietbrock
<b>Dean of Studies (Meteorology)</b>	Prof. Dr. Corinna Hoose



## ■ Who is who at our faculty: the Dean's Office

Dean's Office Secretariat:

**Corinna Knodel-Rupp**

phone: 0721 608 - 42052

fax: 0721 608 - 46663

mail: [dekanat@physik.kit.edu](mailto:dekanat@physik.kit.edu)

physics highrise (building 30.23), **room 9/14**

**Managing Director**

Dr. Hagen Haberland

**IT-Administration**

Dr. Achim Mildenerger

**Examination Office**

Anja Müller

## ■ Who is who at our faculty: supporting your doctorate

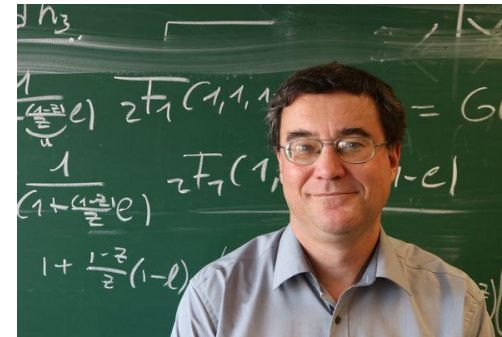
- Recognition of diplomas, MSc. etc. (especially from abroad).

### Prof. Dr. Kirill Melnikov

Physikhochhaus 11/06; Tel. 0721 608-43883

E-Mail: [kirill.melnikov@kit.edu](mailto:kirill.melnikov@kit.edu)

Consultation hours: by appointment



## General examination and study matters:

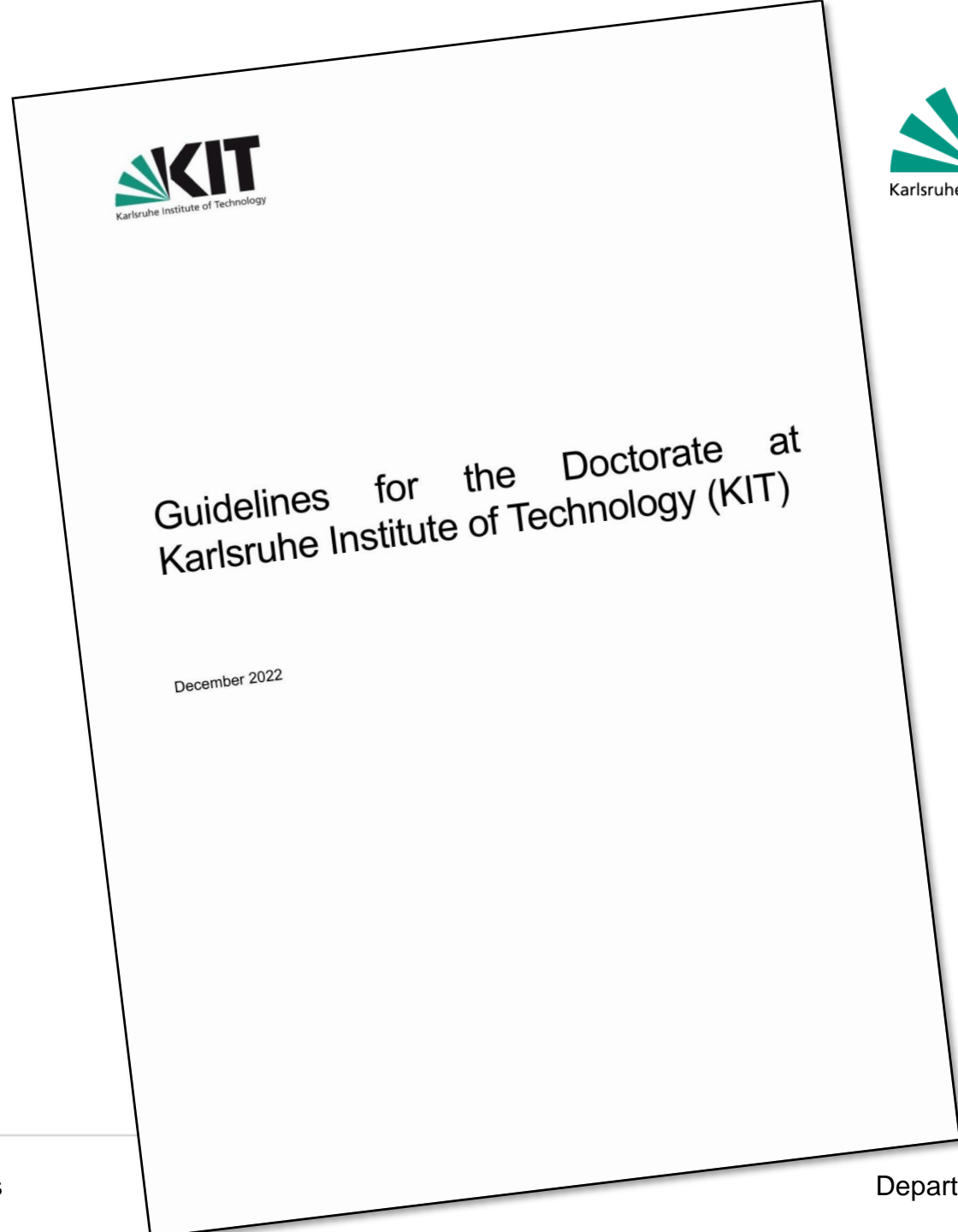
- Enrollment/Exmatriculation
- Application for break semesters
- Questions about tuition fees

**Studierendenservice of the Karlsruhe Institute of Technology (building 10.12)**

# Legal framework

- There are general KIT guidelines...

[Guidelines for the Doctorate at KIT.pdf](#)





# Legal framework

## ■ There are 'local' guidelines...

- regulations at our faculty (2018), German text only
- a translation will be provided soon



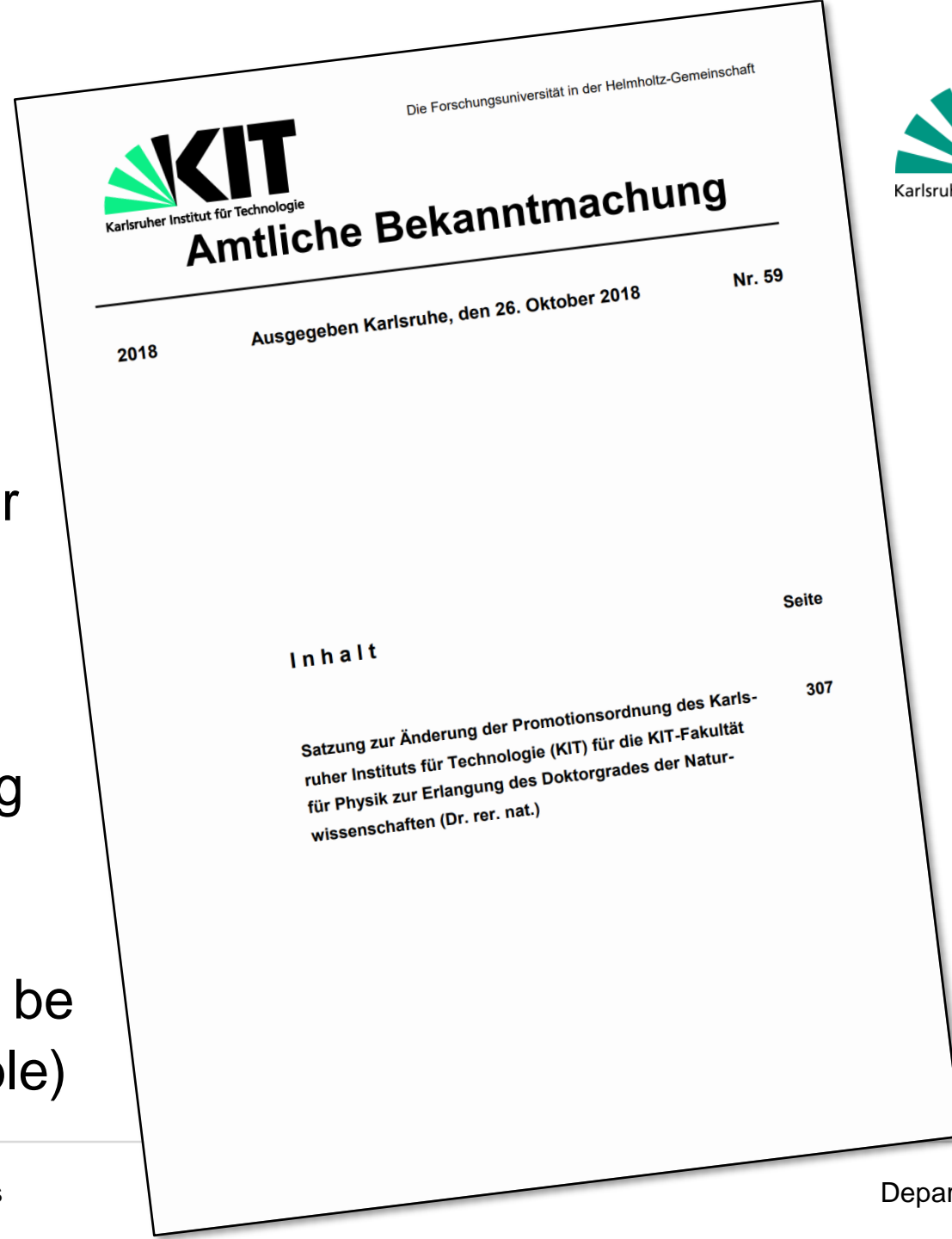
[Promotionsordnung-2017.pdf \(kit.edu\)](#)

# Legal framework

## ■ There are 'local' guidelines...

covering the **following aspects:**

- admission requirements
- acceptance as doctoral researcher
- supervisors
- doctoral procedures
- oral examination
- language requirements concerning dissertation and the oral exam
- publication of the dissertation
- course achievements that have to be made for the doctorate (if applicable)



# KHYS: Formal Steps for Doctoral Researchers

## ■ A Step by step introduction

Step 1: Conclusion of a Doctoral Agreement ▼

Step 2: Registration with KHYS ▼

Step 3: Application for Acceptance at your KIT Department ▼

Step 4: Enrollment as a Doctoral Researcher ▼

Step 5: Application for Admission to the Doctoral Procedure and Opening of the Procedure ▼

Step 6: Oral Exam ▼

Step 7: Publishing your Dissertation ▼

Step 8: Disenrollment/Deregistration ▼

Step 9: Issuance of the Doctoral Degree Certificate ▼



JORGE CHAM © 2014



# Step 1: Your Doctoral Agreement

## ■ A document between you and your advisor: **contents and time of PhD**

Directly after the promise of acceptance, the first advisor and the doctoral candidate conclude a doctoral agreement. The first advisor usually is the first supervisor of the doctoral thesis and the oral examination.

Conclusion of the doctoral agreement shall not replace submission of the request for acceptance as a doctoral candidate to a KIT department.

The doctoral agreement is designed to establish a transparent relationship between the doctoral candidate and the doctoral advisor supervisor with respect to contents and time. It is therefore important that advisors supervisors and doctoral researchers jointly discuss the contents of the doctoral agreement. In this way, common understanding of mutual expectations relating to the doctoral project is ensured. In this regard, the ► **Guidelines for the Doctorate at KIT** can also be helpful. At regular intervals, the contents of the doctoral agreement shall be reviewed and updated.

KIT provides a template of a doctoral agreement and a guidance for the doctoral agreement. Please note that you can access these ► **documents** only within the KIT network. If you cannot access them, please inquire with your supervisor regarding the content of the agreement.

# Step 1: Your Doctoral Agreement

## ■ A template document

- there is also guidance for you and your advisor:

[Microsoft Word - 2016 12 15\\_Handreichungen\\_Promotionsvereinbarung\\_Englisch\\_Neufassung.doc \(kit.edu\)](#)

[Promotionsvereinbarung\\_Englisch.doc \(live.com\)](#)



**KIT**  
Karlsruhe Institute of Technology

### Doctoral Agreement

**§1 Objective and purpose**  
The Doctoral Agreement is designed to generate a transparent relationship between doctoral candidate and doctoral supervisor with respect to content and time. Planning and execution of the doctoral project are to be designed by the parties in such a manner that the project can be concluded in high quality and within an appropriate period of time. The individual life situation of the doctoral candidate is to be considered. A successful conclusion of the doctoral project is not guaranteed by the conclusion of this Doctoral Agreement.

**§2 Participating persons**  
This Doctoral Agreement is concluded between  
Doctoral candidate: \_\_\_\_\_ and \_\_\_\_\_  
First and or main supervisor: \_\_\_\_\_ receives a copy  
The chairperson of the doctoral committee of the KIT Department of \_\_\_\_\_ of this Agreement.

**Intended second supervisor is (Facultative)**

**§3 Doctoral project**  
Preliminary working title / field of work: \_\_\_\_\_  
Planned as cumulative doctoral project: yes / no  
(only possible if permitted by the doctoral ordinance applicable at the time of acceptance as doctoral candidate)  
Commencement (month/year): \_\_\_\_\_  
Scheduled conclusion (month/year): \_\_\_\_\_  
The doctoral project is described in a Suggestion of topic and Time/work schedule in Annexure 1.

DE HAA 03/2015

# Step 2: Registration with KHYS

## ■ You are legally required to register with KHYS via docata

### Requirements for Registration with KHYS:

- You have concluded a doctoral agreement with your supervisor.
- To use ► **Docata**, the web portal for doctoral researchers at KIT, you need a KIT account (type "ab1234@kit.edu" or "ab1234@partner.kit.edu). Note: please do NOT use your student account (type "ab1234@student.kit.edu").

### Formal Steps of Registration:

1. For registration, a KIT account/user account is required. With the registration name (of the type "ab1234") and the password of your KIT account, you can log in. ► **Registration for Docata users**
2. Login with KIT account: ► **Login**
3. Complete the registration form: Enter the data on your doctoral project in the registration form and upload the necessary documents and attachments in Docata. Please make sure that the entries agree with the data given in your documents (e.g. doctoral agreement, proof of studies)! Please note that you have to close all browser windows to log out securely!
4. Confirmation of registration: You will receive a confirmation of registration in writing (PDF) by KHYS usually within 10 working days. With your registration, you automatically become a member of KHYS. ► **Information on KHYS membership**

# Step 2: Registration with KHYS

## ■ mentor: this person should not be in the same institute (discipline)

- a. Curriculum Vitae with your academic career
- b. Bachelor documents (Certificate of completion, Transcript of Records, Diploma)
- c. Master documents (Certificate of completion, Transcript of Records, Diploma, (if you don't have it yet, you can use a title certificate first and submit the official document later))
- d. Doctoral Agreement

e. **Mentor:** According to the official regulation of the faculty of physics, a third supervisor from another institute has to be selected. The task of the mentor is mainly to mediate and help if there are conflicts with the main supervisors.

Please ask a prof or private lecturer from another institute to be your mentor. After you filled out the KHYS form you will get a document ("Appendix - confirmation for mentoring") which your mentor has to sign.

### Professors

Name	Title	Institute	E-Mail
Baumbach, Gerd Tilo	Prof. Dr.	IPS	tilo.baumbach@kit.edu
Beckmann, Detlef	apl. Prof. Dr.	IQMT	detlef.beckmann@kit.edu
Bohlen, Thomas	Prof. Dr.	GPI	thomas.bohlen@kit.edu
Braesicke, Peter	Prof. Dr.	IMK	peter.braesicke@kit.edu
Drexlin, Guido	Prof. Dr.	IAP	guido.drexlin@kit.edu
Eggeler, Yolita	TT-Prof. Dr.	LEM	yolita.eggeler@kit.edu
Engel, Ralph	Prof. Dr.	IAP	ralph.engel@kit.edu
Ferber, Torben	Prof. Dr.	ETP	torben.ferber@kit.edu
Fink, Andreas	Prof. Dr.	IMK	andreas.fink@kit.edu
Fuchs, Matthias	Prof. Dr.	IBPT	matthias.fuchs@kit.edu
Garst, Markus	Prof. Dr.	TFP	markus.garst@kit.edu
Ginete Werner Pinto, Joaquim José	Prof. Dr.	IMK	joaquim.pinto@kit.edu
Goll, Gernot	apl. Prof. Dr.	CFN	gernot.goll@kit.edu
Heinrich, Gudrun	Prof. Dr.	ITP	gudrun.heinrich@kit.edu
Hoose, Corinna	Prof. Dr.	IMK	corinna.hoose@kit.edu
Hunger, David	Prof. Dr.	PHI	david.hunger@kit.edu
Husemann, Ulrich	Prof. Dr.	ETP	ulrich.husemann@kit.edu
Kahlhöfer, Felix	TT-Prof. Dr.	TTP	felix.kahlhoefer@kit.edu
Klute, Markus	Prof. Dr.	ETP	markus.klute@kit.edu

⋮

# Step 3: Application for Acceptance at our faculty



- Latest application date: **6 months** after signing your doctoral agreement

## Why acceptance at the beginning of the doctorate?

Your KIT Department reviews whether you fulfill the admission requirements for doctoral researchers at KIT. By issuing the **acceptance as doctoral researcher**, the **KIT Department commits itself to the scientific supervision of your doctoral research**. This can become relevant if your first supervisor cannot continue supervision of your project, e.g. in case of illness or a change of university. **A letter of acceptance from your KIT Department is proof of your status as a doctoral researcher at KIT.**



# Step 4: Enrollment as Doctoral Researcher

## ■ New legal situation since Feb 16, 2021: mandatory enrolment

### Enrollment

Enrollment is mandatory for all doctoral candidates accepted by a KIT department, unless they are employed full-time by KIT and have declared that they do not want to enroll. If no such declaration is submitted, doctoral candidates are obliged to enroll.

*Note: "Full-time employment means that the working time or the official tasks cover at least half of the regular working time or half of the average volume of official tasks of the corresponding staff that is employed full-time." (Article 9, par. 1, cl. 3, LHG)*

### Fees

Enrollment is associated with the obligation to pay an administrative charge, a charge for the Studierendenwerk, and a charge for the General Students Committee. For more information on fees and the possibility of reimbursement upon request, please refer to ► **Information about Fees** provided by the business unit SLE.

In case of binational doctoral procedures, the provisions agreed upon in the Cotutelle shall apply.

### Benefits of enrollment

Information about the benefits of the enrollment at KIT are listed ► [here](#).

[KIT - Karlsruhe House of Young Scientists \(KHYS\) Doctoral Researchers - Formal Steps - Enrollment as Doctoral Researcher](#)

# Step 4: Enrollment as Doctoral Researcher

## ■ Benefits

### With enrollment at KIT you get:

- a ► [KIT card](#);
- access to the KIT software shop
- the right to free travel in the public transportation network of the ► [Karlsruhe Transport Authority \(KVV\)](#) [↗](#) on weekdays between 6 p.m.- 5 a.m. as well as full time on weekends and public holidays;
- the option to buy the extended KVV ► [Studikarte](#) [↗](#) offer for use of public transport during weekdays as well (ca. EUR 174 for 6 months);
- the use of the offers of ► [Studierendenwerk Karlsruhe](#) [↗](#), e.g. the student discount in the dining halls and cafeterias as well as access to the university sports facilities;
- free participation in a language course per semester at ► [Sprachenzentrum](#) oder ► [Studienkolleg](#);
- if applicable further student benefits (e.g. free of charge use of Badische Landesbibliothek)

### With enrollment you have:

- liability and accident insurance (for stays at KIT and routes to and from KIT).
- For more information on accident and liability insurance, please visit ► [Studierendenwerk Karlsruhe](#) [↗](#).

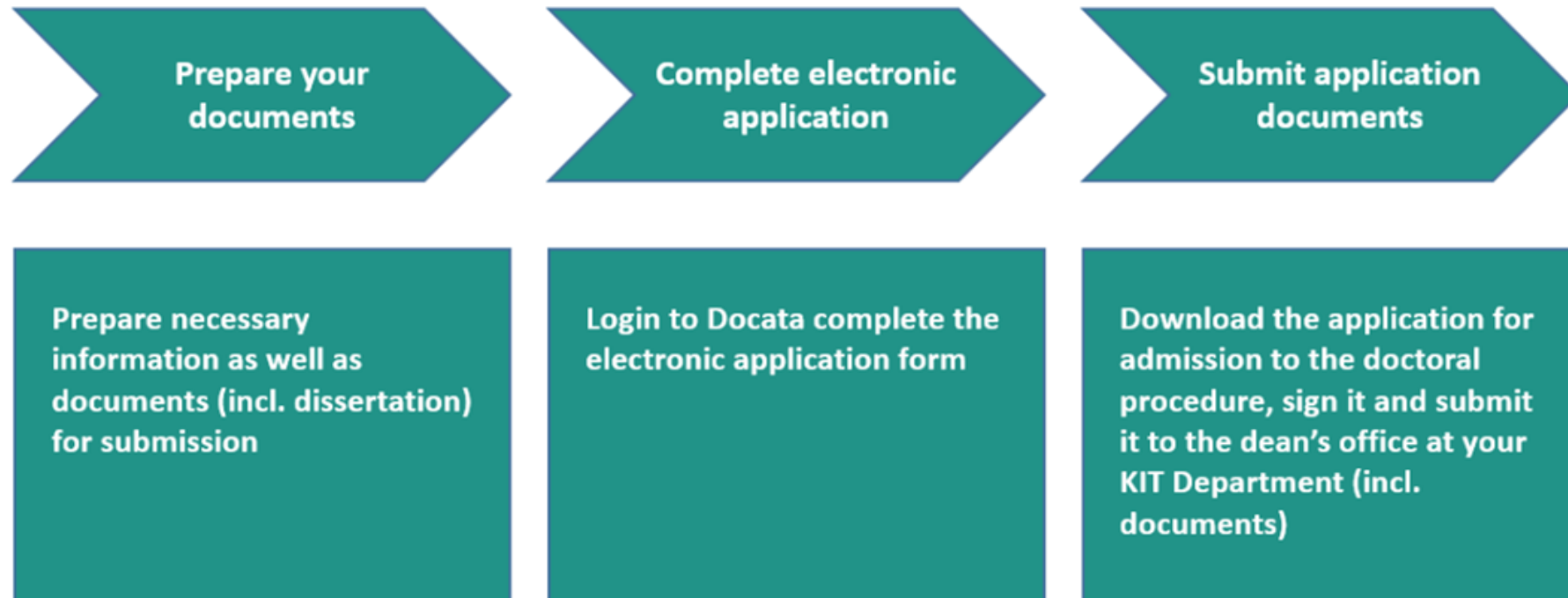
Please note that enrolled doctoral candidates usually don't get a reduction for the health insurance.

# Step 5: Application for Admission to Examination

## ■ Now your written thesis is ready

Once you have completed your dissertation, you need to submit a written application for admission to the doctoral procedure to your KIT Department.

In case you were accepted as a doctoral researcher subject to supplementary requirements, please make sure that you have fulfilled these supplementary requirements before applying for admission to the doctoral procedure.



JORGE CHAM ©

# Step 6: Oral Exam

## ■ Colloquium: consisting of a scientific presentation (20 min.) followed by a disputation where you defend your thesis

- presentation is open to faculty & your group
- get familiar with seminar room 10/1
- 5 participants for disputation:
  - supervisor, co-supervisor, Dean
  - 2 further examiners from faculty (excluding the mentor)
- you can arrange a pre-meeting with the 2 further examiners to discuss your work (you will be reminded of this by email)



# Step 6: Oral Exam

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- you can arrange a pre-meeting with the 2 further examiners to discuss your work (you will be reminded of this by email)

check the **beamer**

check the **blackboard**  
(it can be illuminated!)

check the **interplay** of  
beamer (how to blank)  
& blackboard



# Step 6: Oral Exam – you have passed

- Colloquium: consisting of a scientific presentation (20 min.) followed by a disputation where you defend your thesis



# Step 7: Publishing your dissertation

## ■ Publish or...

Your dissertation has to be published **within one year after the oral exam**. This goes for all KIT departments. According to the ► **doctoral regulations of the KIT departments**, publishing a doctoral thesis is part of the doctorate.

The KIT departments allow an exclusively electronic publication either in the KITopen repository or at KIT Scientific Publishing. Other publication options vary depending on the respective ► **doctoral regulations of the KIT departments**. You can find more information about the publication options for your dissertation on the ► **websites of the KIT Library**.


Once you have published your dissertation, the KIT Library will forward a confirmation to the KIT department and the "Studierendenservice".

# Step 7: Publishing your dissertation

## ■ Publish your doctoral thesis... your options



[KIT Library | Research & Publishing - Publishing for KIT scientists - Doctoral theses at KIT](#)

 Detailed information can also be found on the website "[Flyers and tutorials](#)" in the section "[Forschen und Publizieren - Dissertationen](#)".

## Content

- Overview
- [Electronic publishing in the KITopen repository](#)
- [Electronic publishing at KIT Scientific Publishing](#)
- [Publishing a doctoral thesis in print](#)
- [Publishing and archiving research data from dissertation projects](#)
- [Contact and further information](#)

# Step 7: Publishing your dissertation

## ■ Publish your doctoral thesis... your options

### Electronic publishing in the KITopen repository

#### [Publishing a doctoral thesis in KITopen](#)

- If you choose to assign a Creative Commons license to your work, please include the license information on the reverse side of the front page of your document before publishing in KITopen.
- Detailed information in the KITopen repository and its services.

### Electronic publishing at KIT Scientific Publishing

#### [Publishing a doctoral thesis at KIT Scientific Publishing \(inquiry form\)](#)

- Includes electronic publishing in the KITopen repository.
- Additional printed copies for authors.
- Worldwide sale via international bookstores (print on demand).
- Detailed information on KSP.



# Step 8: Disenrollment/Deregistration

## ■ Do this to receive your certificate

Provided that you are enrolled as a doctoral researcher, you need to officially disenroll/deregister in order to receive the doctoral degree certificate and report.

The process is the same for all enrolled doctoral researchers, regardless of their nationality.

On the basis of Art. 62 par. 5 of the Act of Baden-Württemberg on Universities and Colleges (LHG), so-called endorsements of various KIT institutions are obtained with the help of the application for deregistration.

Please fill out the ► **application for deregistration** and have the respective endorsements recorded on it by the responsible offices in question. Subsequently, you submit the signed application for deregistration to the ► **Welcome Desk team of the “Studierendenservice”**:

Business Unit Studium und Lehre  
- Studierendenservice -  
Englerstrasse 13  
Building 10.12  
76131 Karlsruhe

[KIT - Karlsruhe House of Young Scientists \(KHYS\)  
Doctoral Researchers - Formal Steps -  
Disenrollment/Deregistration](#)

The Welcome Desk team of the “Studierendenservice” will carry out the deregistration on the basis of the application. This is a necessary prerequisite for the issuance of the graduation documents (doctoral degree certificate and report).

The most important questions and answers regarding enrollment and disenrollment/deregistration can be found ► **here**.

# Step 9: Doctoral degree – the certificate

- You are now on your very final steps to be a **Dr. rer. nat.**

You receive the doctoral degree certificate once you have published your dissertation and after you have disenrolled (if applicable).

Once you published your dissertation, the KIT Library will forward a confirmation regarding the publication of the dissertation to the KIT department and the “Studierendenservice”. The doctoral degree certificate will be issued as soon as the “Studierendenservice” received the confirmation from the KIT Library. Provided that you are enrolled as a doctoral researcher at KIT, you need to officially disenroll in order to receive the doctoral degree certificate and report (see step 8).

Only after receiving your certificate you are allowed to carry your new title.

With that final step you have successfully concluded your doctoral research project. Congratulations!

There are a number of ► **prizes and awards** for which you can apply in order to honor your accomplishments and your dedication. Every year, KIT rewards three outstanding doctoral graduates at KIT with the ► **KIT Doctoral Award**.

[KIT - Karlsruhe House of Young Scientists \(KHYS\) Doctoral Researchers - Formal Steps - Issuance of the Doctoral Degree Certificate](#)




# KIT Ombudspersons for Doctoral Researchers




## ■ In case your PhD would be facing major (unexpected) hurdles...

The Ombudspersons act as contact persons in cases of conflicts or disputes between doctoral researchers and supervisors during the doctoral research phase.

Doctoral researchers and supervisors are free to initiate contact with any Ombudsperson at any point. They can decide for themselves whom they wish to address irrespective of their research background. As independent persons of trust, the Ombudspersons offer advice and recommendations and will seek to mediate between disputing parties. The Ombudspersons are bound to confidentiality.

Please consult the German-language  **Statute on appointing Ombudspersons for Doctoral Researchers and Supervisors at KIT** from March 4, 2015 (German only) for more information on the Ombudspersons and the process of their appointment.

An overview of further advisory offices and contact points for doctoral researchers and postdocs can be found  **here**.

# Structured doctoral programs

## ■ A huge part of our PhD students participates in one of these programs

The independent research of doctoral researchers is supported by structured doctoral programs such as **doctoral schools** or **research training groups**. They offer consistent concepts and the highest standards for the supervision of doctoral theses and for the professional and interdisciplinary qualification of doctoral students as well as support for their career development. Researchers of the department play leading roles in several doctoral schools:

- **GRACE** – Graduate School for Climate and Environment
- **KCDS** – KIT Graduate School Computational and Data Science
- **KSETA** – Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and Technology
- **KSOP** – Karlsruhe School of Optics and Photonics
- **KSQM** – KIT Graduate School of Quantum Matter
- **MPSP** [↗](#) – Max Planck School of Photonics

# Graduate schools – KCDS

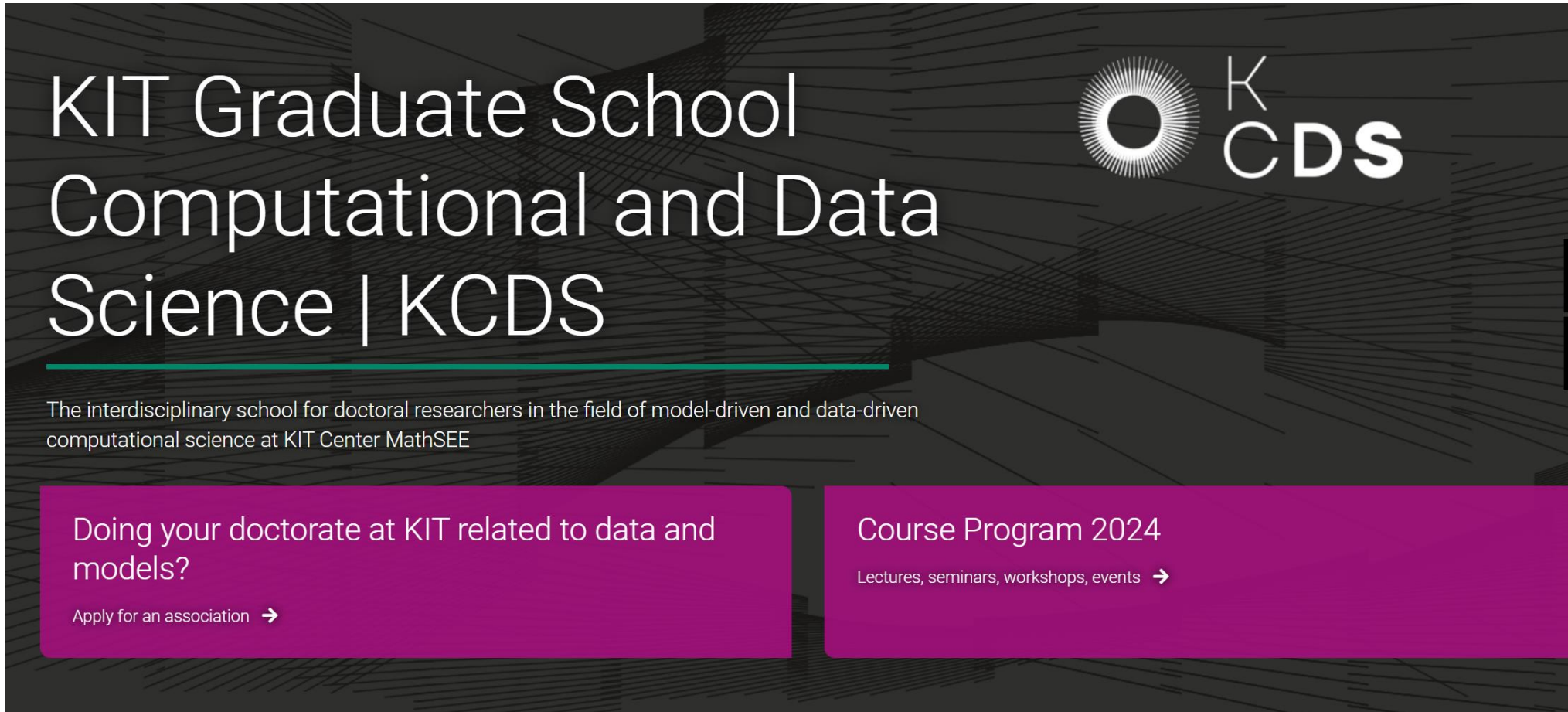
## ■ Climate and environmental scientists: your home is GRACE



[GRACE - Home \(kit.edu\)](https://www.kit.edu/grace)

# Graduate schools – KCDS

## ■ Computational and data scientists: your home is KCDS



KIT Graduate School  
Computational and Data  
Science | KCDS

The interdisciplinary school for doctoral researchers in the field of model-driven and data-driven computational science at KIT Center MathSEE

Doing your doctorate at KIT related to data and models?  
Apply for an association →

Course Program 2024  
Lectures, seminars, workshops, events →



## ■ Computational and data scientists: **next KCDS workshop**

Wednesday, 26 June 2024, 9:00-15:00

Campus South, [building 20.30](#), room 3.060 ("Wellenraum")

### Personal Roadmap for Career Orientation. What Skills Do I Have and Where Do I Want to Go?

As part of a personal roadmap, you have the opportunity to consciously reflect on your current professional and private situation. You will look at your personal goals and wishes and derive concrete steps for your further career and skills development.

What have I already achieved? What skills particularly characterize me? What are my strengths? What is important to me?

How do I visualize a successful future?

The first aim of the event is to take a closer look at the current status quo and generate an understanding of your present situation. Taking stock in this way will help you to take a focused approach to your life and career planning, create a basis for reflection for your longer-term professional and private decisions and work on your individual areas of development in a targeted manner. In this way, you can develop goals for your further career planning from a holistic perspective and derive the first specific steps.

Please note that a career workshop cannot provide individual career counselling.

#### **Registration**

Please visit the [KCDS intranet portal](#) to register for this course.

For non-members of KCDS:

In order to be able to book the course, a KCDS guest/non-member account is necessary.

If you don't have an account yet, you can register here: [Create a KCDS account to book courses](#)

Once your account is activated by a KCDS administrator, you will be able to book the course.



# Graduate schools – KSOP

- Scientists focused on optics & photonics: **your home is KSOP**



The banner features a blue background with a blurred image of a woman holding a clipboard. The text 'Karlsruhe School of Optics & Photonics' is prominently displayed in white. Below it, a green horizontal line is followed by the text 'First Graduate School of the Karlsruhe Institute of Technology (KIT)'. At the bottom, there are four blue buttons with white text and arrows: 'M.Sc. Program' (Apply today! →), 'Ph.D. Program' (Apply today! →), 'Research' (Interdisciplinary & International →), and 'Events' (Forum for Optics & Photonics →).

## Welcome to the KSOP - Karlsruhe School of Optics & Photonics

Multidisciplinary Environment for First-Class Research, Education, and Innovation.



# Graduate schools – KSOP

## ■ Scientists focused on optics & photonics: **your home is KSOP**

The Karlsruhe School of Optics & Photonics (KSOP), Graduate School at the Karlsruhe Institute of Technology, provides both multidisciplinary **Master** and **Doctorate Programs** in Optics & Photonics taught in English. The educational concept is designed to qualify students for accelerated careers at world leading academic institutions and in high-technology industries. KSOP also has a strong focus on research which shows by the many publications, patents, awards and more that have been achieved by KSOP students, alumni, professors, and members.

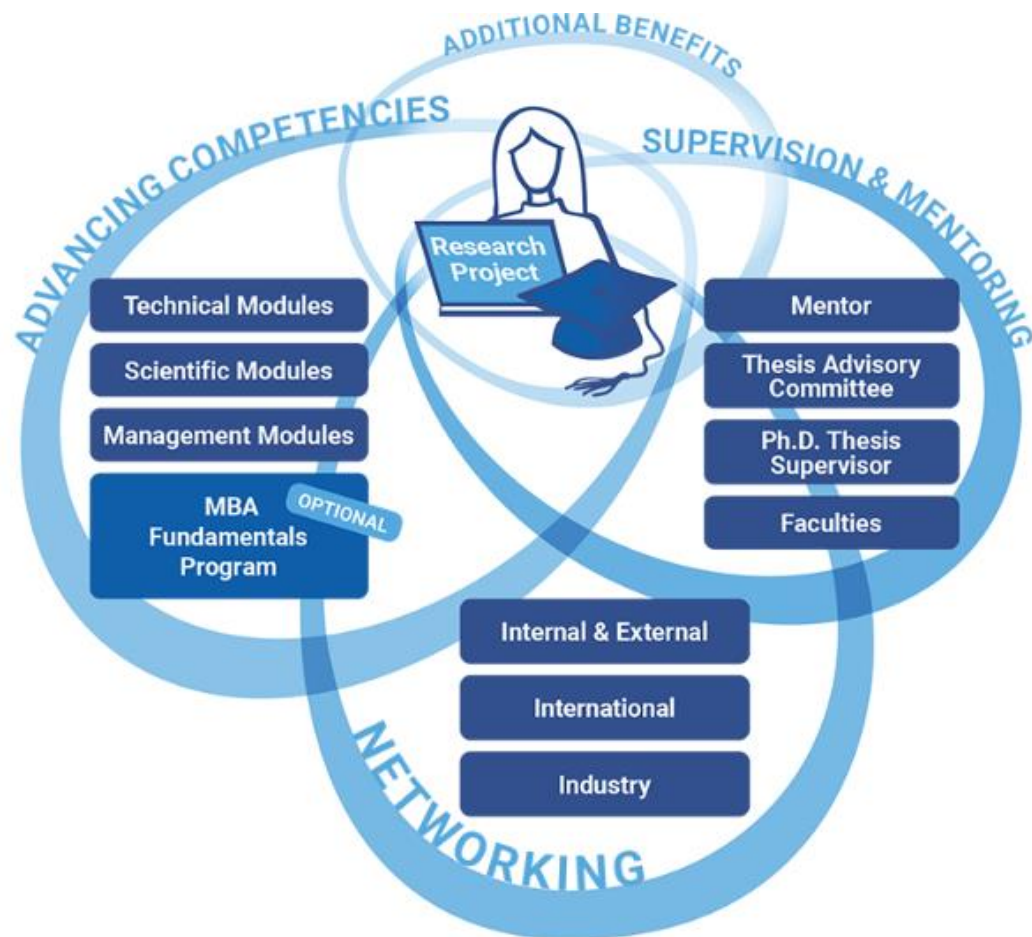
Students benefit from cooperations with the Optics industry. Partnerships with global corporations such as ZEISS, Polytec, and BOSCH, as well as with small and medium-sized enterprises facilitate their first career steps for those who are heading towards the industry. On top, KSOP provides its students with additional career training, networking events, free language courses and state of the art labs.

Excellent Professors  
Low Tuition Fees  
Taught in English      Interdisciplinary  
Excellent Research  
Internship Program  
International Environment



# Graduate schools – KSOP

## ■ KSOP PhD training concept



### Mentoring

In your studies and research you will additionally be supported by two independent advisors and a personal mentor with whom you will be able to discuss your progress on a regular basis.

[Click here](#) for more information.

### Training Concept

KSOP provides a specific modular Ph.D. training program which comprises units from a catalog of technical, scientific as well as management modules. [Click here](#) for more information.

### Networking

KSOP fosters active international networking amongst its students via alumni groups, social media networks and various social events. [Click here](#) for more information.

### Further Information

To obtain more personal information, feel free to contact one of our KSOP ambassadors, who lives near your location and ask to share their experience with you. For additional information, just download our [program flyer](#).

# Graduate schools – KSOP

Karlsruhe School of Optics & Photonics

KSOP

[Startseite](#) > [Events](#) > [KSOP Summer School](#) > [more](#)

## KSOP Summer School

KSOP is known for teaching latest advancements in Optics & Photonics. For keeping our students updated we invite them every second year to follow us in the fascinating world of Optics & Photonics.



Alternating with the [Karlsruhe Days of Optics & Photonics \(KDOP\)](#), we reserve **two days** in the year inviting **leading experts** in Optics & Photonics, students, doctoral researchers and young scientists also from other universities and research institutes for staying in a nice environment for exchanging undisturbed on the recent research state-of-the-art in Optics & Photonics.



# Graduate schools – KSQM

- Quantum physicists: your home is KSQM



KIT Graduate School of Quantum Matter

## KSQM - KIT Graduate School of Quantum Matter

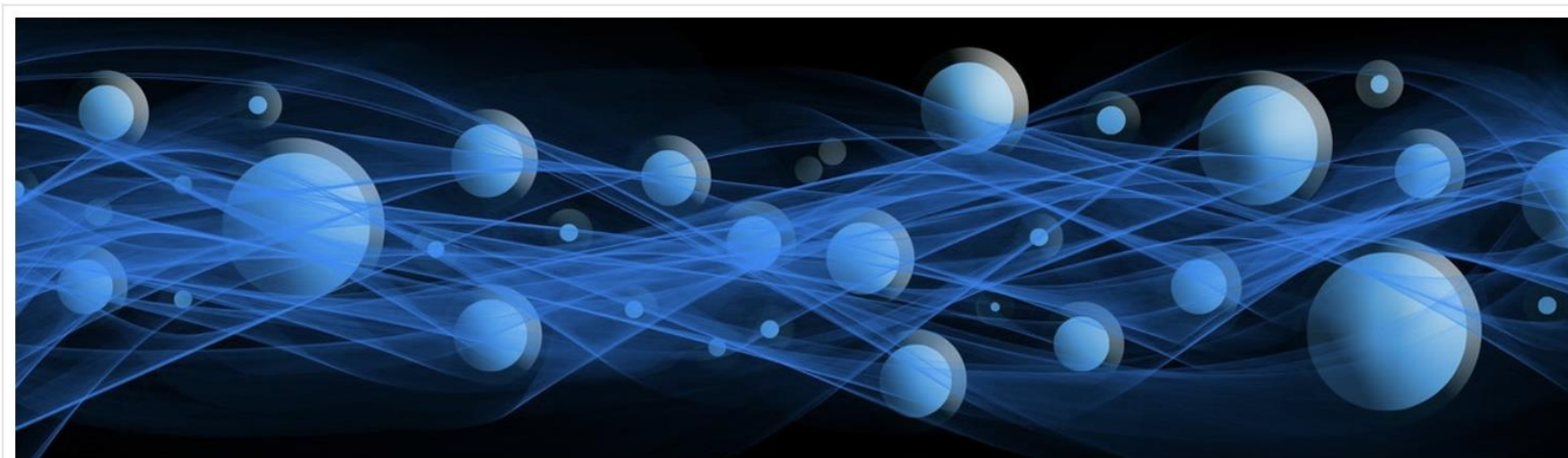
### Scientific profile of KSQM

KSQM provides a multidisciplinary environment for first-class education to foster research and innovation for quantum technologies.

# Graduate schools – KSQM

## ■ KSQM – what does it offer?

**KSQM aims to promote hard and soft scientific skills as well as transferable skills; it provides a platform where doctoral researchers from different disciplines come together and interact as well as further assistance in supervision and mentoring.**



**KSQM** is a qualification and networking platform for doctoral researchers. It strengthens the competencies of the doctoral researchers all around and fosters excellence and interdisciplinary qualification beyond personal field of studies.

# Graduate schools – KSQM

## ■ KSQM – what does it offer?

- **Special tailored lectures** and **courses** in the field of quantum matter, quantum technology and quantum materials
- **Annual interdisciplinary summer schools** where renowned invited speakers provide introductory courses to more specialized topics and give an overview about current research activities on quantum matter
- **Annual retreat meetings** where doctoral researchers and PIs come together and present their own work to fellow researchers thus practicing presentation and discussion skills
- **International exchanges** with research groups from abroad and **funds to cover travel expenses**
- **Modules of KHYS soft skills training** like scientific writing and presentation skills, conflict and stress management, Time and self-management, career management
- **Access to the national and international networks** of the quantum technology and engineering: guest seminars on hands-on experiences with Alumni that work in industry
- **Project funding** for innovative research ideas
- **Additional assistance and support in supervision & mentoring**
- **School certificate as additional qualification proof after successful participation**



# Graduate schools - KSQM

## ■ KSQM – objectives & qualification concept

Q: what does a graduate school like KSQM provide for **me**?

A: It promotes the excellence of its doctoral researchers who receive tailored training for the associated scientific and technological challenges in both academia and industry. Scientifically, the School focuses on three areas: (I) Quantum materials, (II) Quantum engineering and (III) Theory of quantum matter and quantum information reflecting the necessity to discover, design and understand quantum matter for the development of suitable hard- and software. The Graduate School offers on the one hand tailored further education for doctoral researchers within the three focus areas and, on the other hand, establishes stronger relations between existing and new research and teaching efforts bridging the activities between different areas and disciplines.

# Graduate schools - KSQM

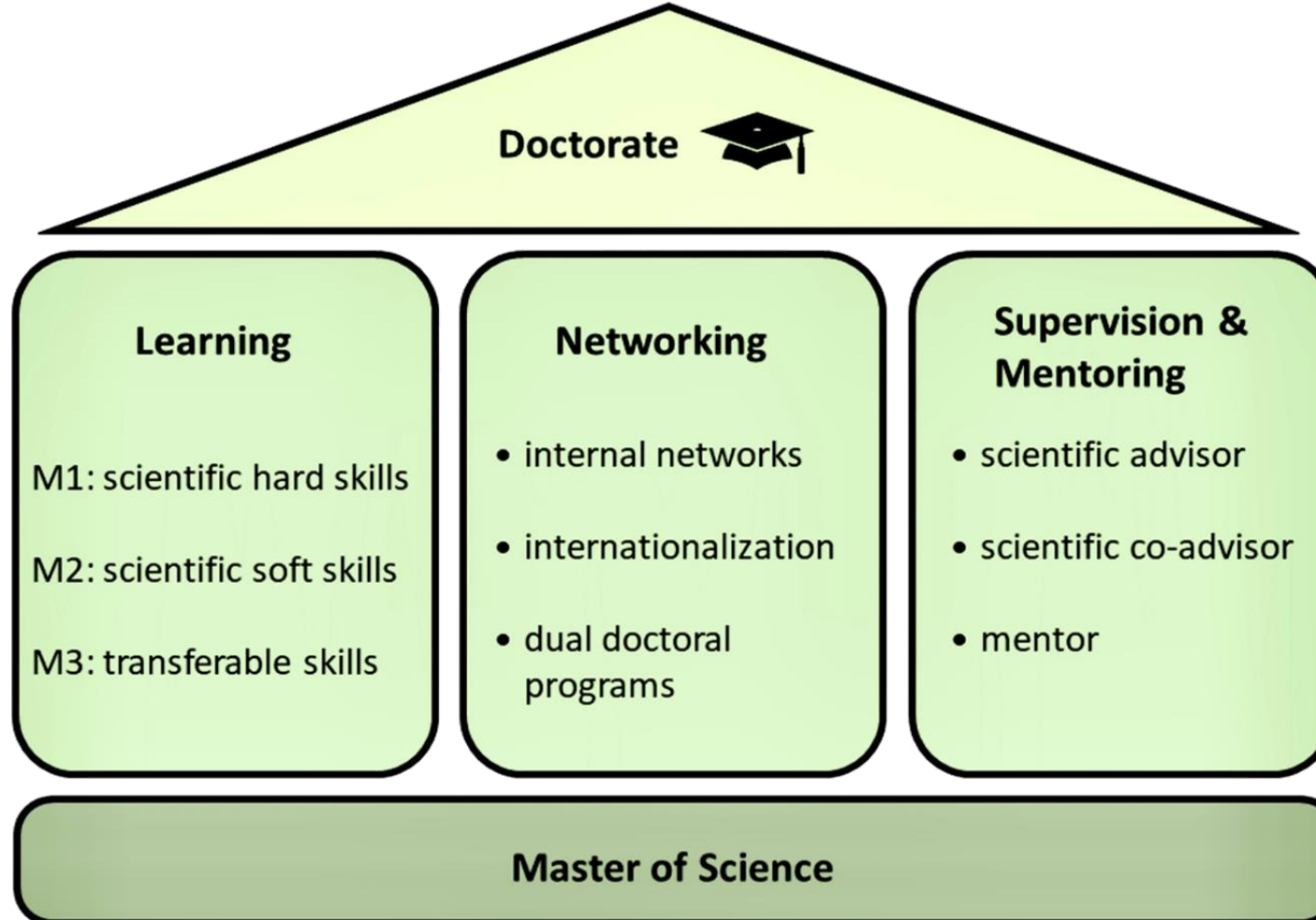
## ■ KSQM – objectives & qualification concept

### Objectives and qualification concept

The qualification concept builds on three pillars: (I) **Learning**, (II) Networking and (III) Supervision & Mentoring. The educational concept is designed to qualify graduates in science as well as in softskills for making a successful careers at world-leading academic institutions and in high-technology industries. The doctoral researchers benefit from all three pillars of the Graduate School as it will offer tailored courses, retreat meetings, and summer schools, encourage the participation in workshop and conferences, it will partially finance international exchanges, and it develops further the existing mentoring and supervision system.

# Graduate schools - KSQM

## ■ Quantum physicists: your home is KSQM



# Graduate schools – KSETA

## ■ Elementary particle & astroparticle physicists: your home is KSETA

Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and Technology (KSETA)

## KSETA

The Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and Technology (KSETA) is the Graduate School associated with the KIT Center Elementary Particle and Astroparticle Physics **KCETA**, which bundles experimental and theoretical research and education at the interface between astronomy, astrophysics, elementary particle physics and cosmology.

[Find out more about KSETA.](#)



# Graduate schools – KSETA

- KSETA – the **general assembly**: a snapshot of researchers in 2020





# Graduate schools – KSETA

## ■ KSETA – the organisational structure



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# Graduate schools – KSETA

- KSETA: founded already way back in 2012



Symposium celebrating 10 years of the Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and Technology (KSETA)

28 October 2022

Karlsruher Institut für Technologie

Europe/Berlin timezone

# Graduate schools – KSETA

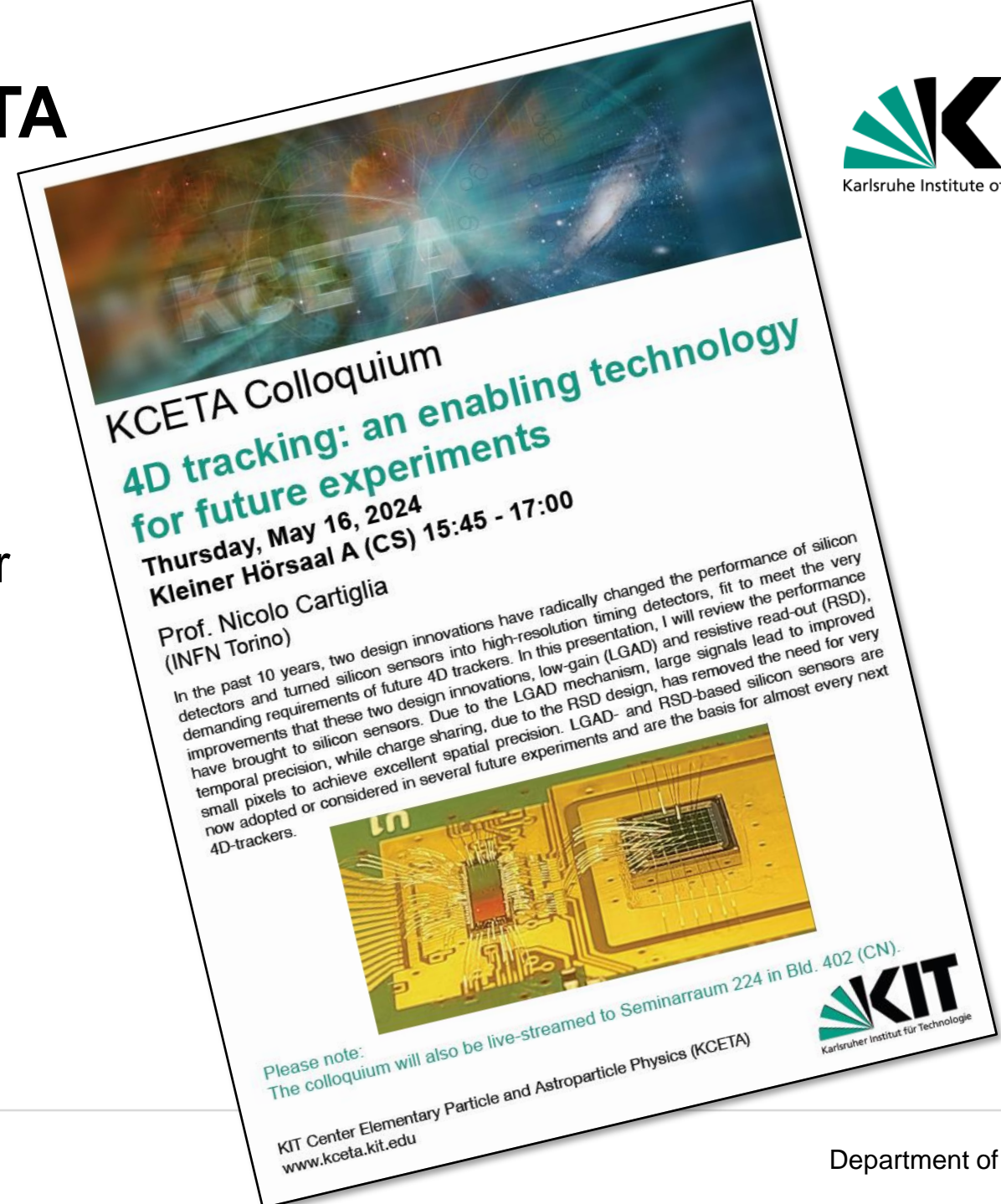
## ■ KSETA – **topical courses** in February/March 2024

1. **The Standard Model Effective Field Theory: theory and phenomenological applications** (broader; all)  
Ilaria Brivio (University of Bologna)
2. **Dynamics of spacetime: gravitational waves and cosmology** (broader; all)  
Bjoern Malte Schaefer (Uni. of Heidelberg)
3. **Scientific Writing** (better; all)  
CJ Fitzsimons (Leadership Sculptor)
4. **Ethics in the lab** (better; all)  
Alexander Bagattini (KIT)
5. **Brane Dynamics** (deeper/broader; Theoretical Particle Physicists)  
Marco Bonetti (KIT)
6. **Introduction and practical exercises: Detection of ionizing radiation** (broader; for students without practical knowledge of ionizing radiation)  
Joachim Wolf (KIT)
7. **Higgs physics** (broader; Particle and Astroparticle Physicists)  
Georg Weiglein (DESY)
8. **Acceleration and transport of galactic cosmic rays** (broader; Astroparticle Physicists)  
Philipp Mertsch (RWTH Aachen)

# Graduate schools – KSETA

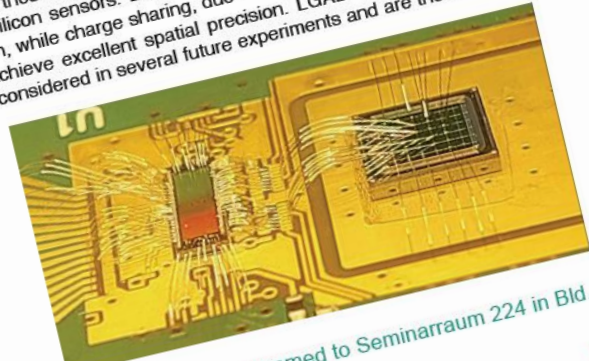
## ■ KSETA – Colloquium this week

- each week a highly interesting topic for the school is being reported on by an external speaker



**KCETA Colloquium**  
**4D tracking: an enabling technology for future experiments**  
Thursday, May 16, 2024  
Kleiner Hörsaal A (CS) 15:45 - 17:00  
Prof. Nicolo Cartiglia  
(INFN Torino)

In the past 10 years, two design innovations have radically changed the performance of silicon detectors and turned silicon sensors into high-resolution timing detectors, fit to meet the very demanding requirements of future 4D trackers. In this presentation, I will review the performance improvements that these two design innovations, low-gain (LGAD) and resistive read-out (RSD), have brought to silicon sensors. Due to the LGAD mechanism, large signals lead to improved temporal precision, while charge sharing, due to the RSD design, has removed the need for very small pixels to achieve excellent spatial precision. LGAD- and RSD-based silicon sensors are now adopted or considered in several future experiments and are the basis for almost every next 4D-trackers.



Please note:  
The colloquium will also be live-streamed to Seminarraum 224 in Bld. 402 (CN).

KIT  
Karlsruher Institut für Technologie

KIT Center Elementary Particle and Astroparticle Physics (KCETA)  
www.kceta.kit.edu



# Graduate school

## ■ HEiKA Graduate School on Functional Materials



3D MATTER  
MADE TO ORDER

The HEiKA Graduate School on “Functional Materials” is a central structural element of the Cluster.

The Graduate School Office coordinates the entire process before, during and after the application. Aside supporting the Young Scientists in their scientific research leading up to their doctorate, the Graduate School offers a **module program** preparing them for a highly interdisciplinary research field.

### Graduate School Program Manager



**Stefanie Peer**  
Cluster Office

[stefanie.peer@3dmm2o.de](mailto:stefanie.peer@3dmm2o.de)



# Helmholtz Doctoral Award 2024

■ Your thesis is important!

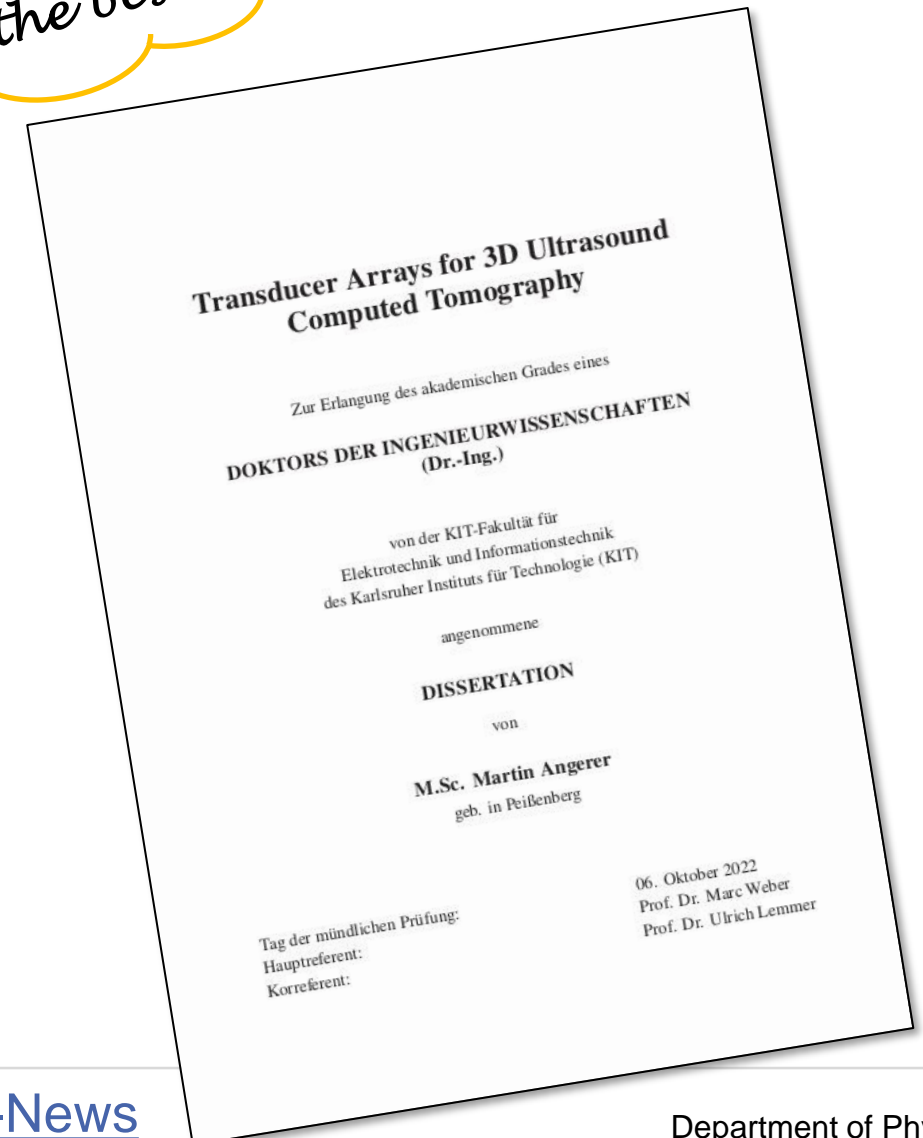
PhDs from KIT  
are the best!



Martin Angerer during his time as a PhD student at the Institute for Data Processing and Electronics (IPE)



© David Marschalsky  
Otmar D. Wiestler presents the doctoral prize to Martin Angerer during the award ceremony at the Helmholtz office, Berlin, 29.04.2024



**Congratulations!**

IPE

# Helmholtz Doctoral Award 2024

## ■ Your thesis is important!



Martin Angerer during his time as a PhD student at the Institute for Data Processing and Electronics (IPE)



Otmar D. Wiestler presents the doctoral prize to Martin Angerer during the award ceremony at the Helmholtz office, Berlin, 29.04.2024

May 2, 2024

3D Ultrasound computer tomography (3D-USCT) is a unique, innovative imaging technique for early, radiation-free breast cancer detection that avoids all the disadvantages of classical mammography while promising high resolution and sensitivity. During his doctoral studies, Martin Angerer as a KSETA fellow worked on the design, fabrication, characterization and optimization of ultrasound transducer arrays for 3D ultrasound computed tomography (3D USCT). The key to his success was the unique infrastructure at KIT provided by the Helmholtz "Matter and Technology" program. The technically most challenging component of 3D-USCT system are the piezo transducers that emit and detect ultrasound waves. Martin Angerer has built a complete set of ultrasonic transducers and demonstrated in simulations that the physical limits were nearly reached with his solution. With his devices he contributed to a successful technology transfer project. He was able to combine fundamental research with his decisive contributions to the project and tight deadlines. In addition, he explored alternative technologies to overcome the limitations of composite materials with piezoelectric fibers. His excellent research has now been awarded with the Helmholtz doctoral price 2024.

The Helmholtz doctoral prize for mission-oriented research is awarded annually in competitive decision to a thesis with outstanding contribution to solving the most pressing problems facing our society. Doctoral students are to be encouraged to conduct mission-oriented research and thus to position themselves at the interface between science and application, to develop and expand entrepreneurial skills, and to help shape the transfer of science to society at an early stage.

Martin Angerer, "Transducer Arrays for 3D Ultrasound Computed Tomography", PhD thesis, Karlsruhe Institute of Technology (KIT), 2022, doi: 10.5445/IR/1000152507

Link: <https://www.helmholtz.de/newsroom/artikel/helmholtz-verleiht-promotionspreis-2024/>



IPE



# KIT Doctoral Award 2022/23

## ■ PhD of Jan van der Linden



Jan van der Linden with his doctoral hat

*December 2023*

In recognition of his outstanding achievements in studying the production of heavy quarks at the Large Hadron Collider (LHC), Jan van der Linden will be awarded the 2022/2023 edition of the KIT Doctoral Award, awarded by the Executive Board of KIT. With this award, KIT honors outstanding young scientists and underlines the high value of young scientists at KIT as a role model for others. The award ceremony will be part of the KIT President's Honorary Evening in summer 2024.

Jan van der Linden's dissertation entitled "Inclusive and differential cross section measurement of ttbb production and studies of tt production with additional jet radiation" is characterized by its high relevance for research at the LHC, its excellent methodological standards and its exceptional quality. In addition, the award recognizes Jan van der Linden's creative use of machine learning methods in particle physics and his commitment to the education of students. Jan van der Linden's dissertation at the Institute of Experimental Particle Physics (ETP) was supervised by Dr. Matthias Schröder and Prof. Ulrich Husemann.

Jan van der Linden has already started the next step of his scientific career. Funded by a Junior Postdoctoral Fellowship from the Belgian Research Foundation Flanders, he investigates the production of top quarks and Higgs bosons at the University of Ghent.



# Organising your research

## ■ Regular meeting with your PhD advisor on your progress

- group meetings are important, but insist on a **Jour fixe** with your advisor: is my research going in the right direction, are the methods adequate, what are the future goals, when is my work ready to publish, and where to publish



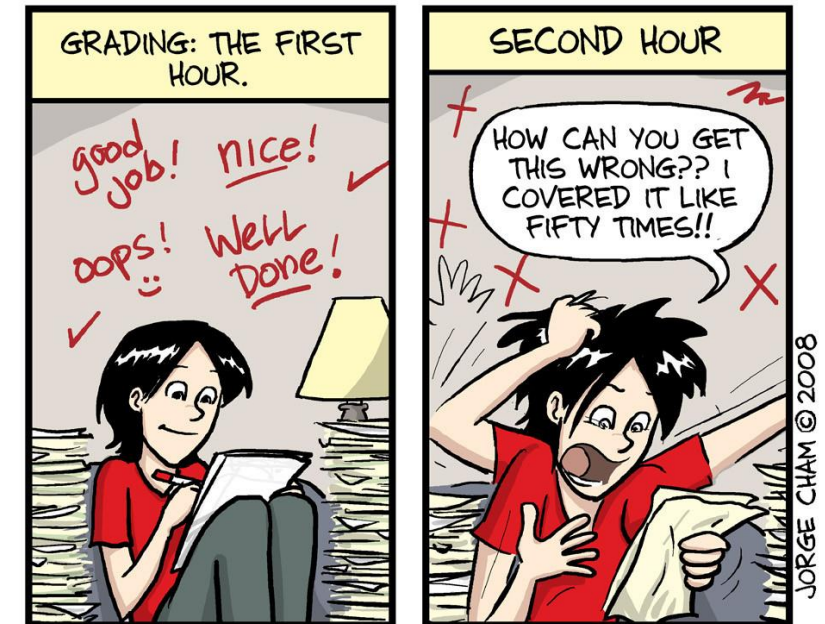
WWW.PHDCOMICS.COM



# Organising your teaching

## ■ Teaching: lab courses, exercises, tutorials, ...

- KIT is the 'Research University in the Helmholtz Association'
- teaching is an important element in your further **development of skills**, and not a 'waste of time to endure'
- skills: better understanding of underlying **principles**, **methods of calculation**, experimental **techniques**
- **communication skills** within a group



# Conclusion

■ Your PhD work: **an important step in your future career**

- see you at your successful  
**defense of your thesis!!**

