

# School for Master Students: From Quantum Matter to Quantum Computers

## 8 - 12 September 2025

Wondering about quantum technologies and if a career in quantum research might be for you? This school will help you find your answer by giving master students an introduction to the fast-moving field of quantum matter, focusing on many-body systems ranging from exotic states of matter to quantum computers: from recent experimental developments to novel theoretical and numerical applications. Connect to students and to physicists of all career stages — sharing their passion for quantum research with you.

This school invites you and all master students considering a Ph.D. in quantum physics to experience the broader community of theoretical and experimental quantum research.

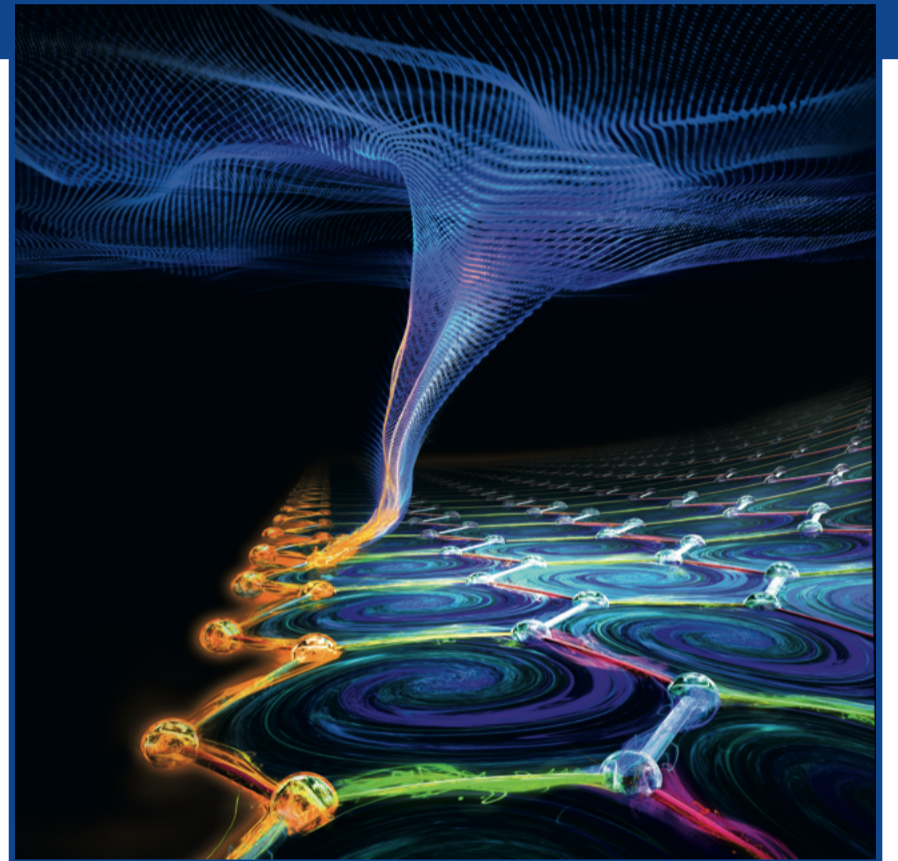
During this program, you will:

- Follow introductory lectures on subjects such as quantum simulation and computing, quantum magnetism, experimental realizations of quantum materials, quantum control, numerical and deep learning techniques for quantum systems, and selected topics of modern research. Presentations will range from overview talks by world-leading researchers to short talks on topics of recent research by current graduate students.
- Get to know how research is done under the supervision of active scientists: get to know how to use state-of-the-art machine learning techniques in the field, bring your own laptop for a hands-on coding session on numerical methods for strongly-correlated many-body physics, or learn about cutting-edge experimental techniques during a lab tour.
- Participate in scientific discussions with other students or with a panel of world-renowned scientists, talk physics during a get-to-know-each-other in social activities over a barbecue — during this workshop you will get the opportunity to exchange ideas with each other and with researchers at the Max Planck Institutes for the Physics of Complex Systems and Chemical Physics of Solids in Dresden, from starting Ph.D. students to the directors of Max Planck Institutes!

No previous research experience is required, just a basic knowledge of quantum mechanics and a strong drive to learn more!

### Topics include:

- Quantum Simulation
- Quantum Matter and Materials
- Quantum Magnetism
- Quantum Control
- Nonequilibrium Physics
- Machine Learning and Numerical Methods for Quantum Systems



### Invited speakers:

- S. Campbell (UC Dublin)
- A. Dawid (Leiden University)
- C. Donnelly (MPI-CPFS)
- C. Hooley (Coventry University)
- A. Karamlou (Google)
- S. Kondov (University of Strasbourg)
- A. Mackenzie (MPI-CPFS)
- M. Maksymenko (Haiqu)
- F. Metz (EPFL)
- R. Moessner (MPI-PKS)
- P. Moll (MPSD)
- H. Noad (MPI-CPFS)
- J.-M. Rost (MPI-PKS)
- L. Šmejkal (MPI-PKS)
- M. Stoudenmire (Flatiron Institute)
- A. Wallraff (ETH Zürich)

### Scientific coordinators:

- M. Bukov (MPI-PKS)
- P. Claeys (MPI-PKS)
- S. Rothenstein (junge DPG)
- R. Moessner (MPI-PKS)

### Organisation:

- Anna Burger (MPI-PKS)

Applications received before 27 June 2025 are considered preferentially.

We plan for an **on-site school**. The registration fee is 80 Euro; costs for accommodation and meals will be covered by the Max Planck Institute.

The event takes place in cooperation with the junge DPG. The junge DPG is a working group of the German Physical Society (DPG).



### For further information please contact:

Anna Burger  
Tel: +49-351-871-1103  
quant25@pks.mpg.de  
www.pks.mpg.de/quant25