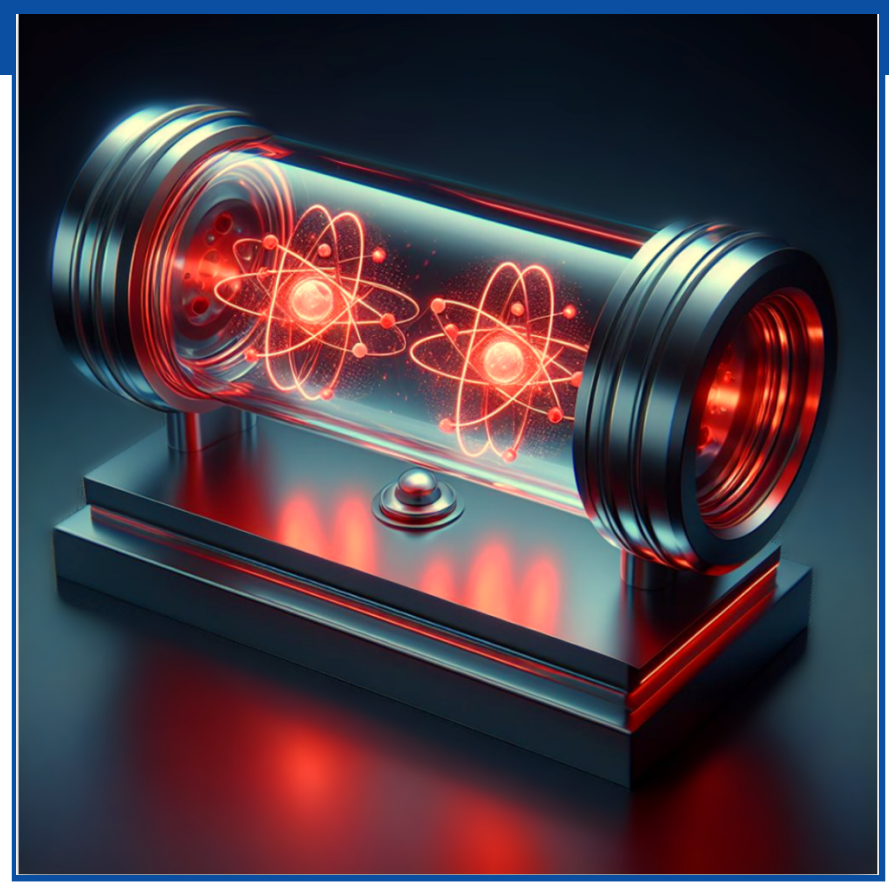
mpipks

Max Planck Institute for the Physics of Complex Systems

School for Master Students:
Collective phenomena in quantum many-body physics: From quantum matter to light

9 - 13 September 2024



Fascinated by quantum physics and wondering if a career in research might be for you? This school will help you find your answer. Learn about the fast-moving field of quantum many-body physics, focusing on the interplay between quantum matter and light: from recent experimental developments in optical lattices, quantum control through light, and exotic quantum phases of matter and materials, to novel theoretical and numerical developments in quantum optics and many-body dynamics. 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:

- **Discover the field of quantum many-body physics** through introductory lectures on quantum optics, quantum electrodynamics within materials, quantum magnetism, exotic states of matter, as well as their experimental observation and numerical techniques to study them. Presentations will range from overview talks by world-leading researchers to short talks on recent research by PhD 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.

- **Build your network** beyond the classroom by participating in scientific discussions with your peers or with a panel of world-renowned scientists. Get career advice about pursuing a Ph.D. in quantum research. Talk physics, share ideas, and connect informally with researchers from starting Ph.D. students to the senior scientists from Max Planck Institutes (PKS and CPfS) on a trip to Saxon Switzerland or over a barbecue.

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

Topics:

- Nonequilibrium Physics
- Quantum Simulation
- Quantum Matter
- Topology in Physics
- Numerical Methods in Quantum Physics

Invited speakers:

A. Browaeys
(Intitut d'Optique)

A. Chandran
(Boston University)

S. V. Kusminskiy
(RWTH Aachen)

J. Leonard
(TU Vienna)

A. Mackenzie
(MPI for Chemical Physics of Solids)

F. Marquardt
(MPI for the Science of Light)

S. Parameswaran
(University of Oxford)

F. Piazza
(University of Augsburg)

M. Schmitt
(University of Regensburg)

N. Tang
(University of Augsburg)

L. Ye
(Caltech)

Scientific coordinators:

M. Bukov
(MPI-PKS)

P. Claeys
(MPI-PKS)

S. Rockenstein
(junge DPG)

R. Moessner
(MPI-PKS)

Organisation:

Anna Burger
(MPI-PKS)

Applications received before 1 July 2024 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
MPI for the Physics of Complex Systems
Nöthnitzer Str. 38, D-01187 Dresden
Tel: +49-351-871-1103
quant24@pks.mpg.de
www.pks.mpg.de/quant24

We also offer individual fellowships (phd, postdoc, sabbatical). Applications are accepted continuously. For details, please check www.pks.mpg.de/visitors