



Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The development of quantum technologies and machine learning are two of the most dynamic research directions of our time. Within the Helmholtz Young Investigator Group "Machine Learning for Quantum Technology" we aspire to merge the parallel advancements of both fields, where quantum challenges match the natural strengths of machine learning and, reversely, the quantum applications call for the development of new machine learning techniques. Therefore, our research targets the exciting intersection of (non-equilibrium) quantum matter, quantum information, and machine learning with the goal of unveiling previously unexplored many-body physics and devising interactive strategies to manipulate artificial quantum systems.

The Young Investigator Group is part of the Peter Grünberg Institute - Quantum Control (PGI-8) at Forschungszentrum Jülich, which specializes in novel optimal control strategies for emerging quantum technologies. Current research directions include tensor network methods, machine learning, in-situ optimal control, and quantum many-body phenomena.

Join our team to the next possible date as

Postdoc – Computational quantum many-body physics

Your Job:

You will develop impactful machine learning techniques to deal with complex quantum states. Possible research directions and tasks include:

- Method development to advance neural quantum states
- Investigation of non-equilibrium dynamics relating to quantum simulation or pump-probe experiments
- Machine learning for feedback control of monitored quantum systems
- Participation in international conferences in Germany and abroad (incl. presenting your research results)
- Preparation scientific publications and project reports
- Co-supervision and support of Master and PhD students

We look forward to receiving your application until 04.05.2025 via our **Online-Recruitment-System!**

Questions about the vacancy?

Get in touch with us by using **our contact form.**

Please note that for technical reasons we cannot accept applications via email.

www.fz-juelich.de

Your Profile:

- Excellent Master's degree and PhD in Physics or a similar field, ideally with a specialization in quantum many-body physics
- Coursework and experience in (a subset of) quantum mechanics, condensed matter physics, computational physics, statistical physics, non-equilibrium quantum many-body physics
- Ideally, experience with neural quantum states or other applications of machine learning methods in many-body physics
- Methodological competence: Strong programming skills, ideally including experience in deep learning and/or high-performance computing
- Passion for method development
- Very good English communication skills – both verbal and written
- Independent and analytical style of working
- Interactive person with high degree of commitment

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We support you in your work with:

- A highly motivated working group as well as an international and interdisciplinary working environment at one of Europe's largest research establishments
- Outstanding scientific and technical infrastructure
- Opportunity to participate in (international) conferences and workshops
- Further development of your own personal skills in combination with a socially balanced working environment
- Flexible work (location) arrangements, e.g. partly remote work
- Flexible working hours in a full-time position with the option of slightly reduced working hours (<https://go.fzj.de/near-full-time>)
- 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- Targeted services for international employees, e.g. through our International Advisory Service
- A workplace right next to a UNESCO world heritage site: the beautiful and livable town of Regensburg

In addition to exciting tasks and a collaborative working atmosphere at Jülich, we have a lot more to offer: <https://go.fzj.de/benefits>

The position is for a fixed term of 2 years. Salary and social benefits will conform to the provisions of the Collective Agreement for the Public Service (TVöD-Bund), pay group 13, depending on the applicant's qualifications and the precise nature of the tasks assigned to them. All information about the Collective Agreement for the Public Service (TVöD-Bund) can be found on the BMI website: <https://go.fzj.de/bmi.tvloed> The monthly salaries in euros can be found on page 66 of the PDF download.

Place of employment: Regensburg

The place of work will be at the University of Regensburg, where our group is based.

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

Further information on diversity and equal opportunities: <https://go.fzj.de/equality>

To apply, please submit a complete CV, letter of motivation, university degree records, as well as two contacts who can provide reference letters.
Applications will be reviewed on a running basis, starting May 05th 2025.