JÜLICH
Forschungszentrum


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 mission of the Institute for Functional Quantum Systems (PGI-13) is to create the technological scientific basis to make quantum computing usable. We focus on developing quantum devices, improving their coherence an materials, and implementing quantum gates, algorithms and architectures. We use superconducting qubis that operate at temperatures close to absolute zero and are controlled by high-speed signals. A key requirement is to preserve high quality quantum operations as we scale. Overcoming these exciting challenges lies at the interface between scientific research an engineering.

Check out our lab opening here:
https://blogs.helmholtz.de/research-field-information/en/2023/10/27/julich-research-center-opens-quantum-computer-laboratory/

and us hosting a summer school here:
https://www.youtube.com/watch?v=Itm2hrlSXIU

**We are offering a**

# PhD-Position - Development of scalable superconducting quantum systems

**Your Job:**
This position focuses on building, operating, and testing superconducting quantum devices. Your tasks in detail are:

- Design and fabrication of superconducting quantum circuits
- Setting up experimental systems for cryogenic measurements
- Development of a microwave quantum control & readout stack
- Development of Python code to operate quantum systems
- Detailed experimental characterization of superconducting qubits to quantify performance and identify limiting physical mechanisms
- Perform quantum device calibrations, benchmarking, and run quantum algorithms
- Presenting and publishing the research on an international stage

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application 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

To apply, please submit a complete CV, letter of motivation, university degree records (both Bachelor`s and Master`s degree)

**Your Profile:**
As part of our experimental team, you will regularly work in state-of-the-art laboratories and clean rooms. The role involves working in a cryogenic laboratory environment and following specific clean room protocols

- Master`s degree in physics or electrical engineering
- Willingness to work in laboratory and cleanroom environments
- Ideally, initial experience in a technical or scientific environment (e.g. cleanroom, laboratory)
- Knowledge of solid state physics and/or quantum information
- Experience with programming, preferably with Python
- Fluent speaking and writing skils in English
- Team-oriented and highly motivated to work in an experimental laboratory
- A background in quantum computing as well as experience with cryogenics, signal delivery, microfabrication, materials optimization, and microwave control are highly preferred qualifications

Please feel free to apply for the position even if you do not have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

**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:

- HEALTH & WELL-BEING: Your health is important to us. You can look forward to a comprehensive company health management programme with a wide range of options, including a beach volleyball court, running groups, yoga classes and much more. In addition, our company medical service and an experienced social counselling team are available to assist you on site
- WORK-LIFE BALANCE: Flexible working arrangements (including remote working) are generally possible upon agreement and in line with upcoming tasks and (on-site) appointments
- CAMPUS EXPERIENCE: Our research campus in the countryside provides ideal conditions for collegial exchange and sporting activities right on site
- SUPPORT FOR INTERNATIONAL EMPLOYEES: Our International Advisory Service makes it easier for international employees to get started
- FAIR REMUNERATION: Depending on your qualifications and assigned responsibilities, you will be classified according to pay group 13 (up to 75%) of the TVöD-Bund. Additionally, you will receive a special payment (“Christmas bonus”) amounting to 60% of one month’s salary. Additional compensation beyond the base salary may be possible. All information about the TVöD-Bund collective agreement can be found on the BMI website: https://go.fzj.de/bmi.tvoed (pay scale table on page 66 of the PDF download).
- LEAVE: You will receive 30 days of leave plus additional days off (e.g. between Christmas and New Year`s Day)
- KNOWLEDGE & DEVELOPMENT: Your professional growth is important to us – we support you specifically and individually, for example through training opportunities and the structured JuDocS program for doctoral candidates: https://www.fz-juelich.de/en/judocs

In addition to exciting tasks and a collaborative working atmosphere at Jülich, we have a

lot more to offer: https://go.fzj.de/benefits

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