



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 7,250 employees in one of Europe's biggest research centres and help us to shape change!

One of the outstanding scientific challenges is the construction of an architecture and development of a methodology that can enable useful quantum computing. The mission of the newly founded Institute for Functional Quantum Systems, located in Aachen & Jülich (PGI-13, www.funqs.de), is to create the technological and scientific basis to make this a reality. We use superconducting qubits that operate at temperatures close to absolute zero and are controlled by high-speed signals. We focus on developing the quantum devices, improving their coherence and materials, and implementing quantum gates and algorithms. A key requirement is to preserve high quality quantum operations as we scale. Overcoming these exciting challenges lies at the interface between scientific research and engineering insight.

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

Your Profile:

- Master in physics or electrical engineering
- Knowledge of solid state physics and/or quantum information
- Experience with programming, preferable with Python

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

- Fluent speaking and writing skills 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

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 offer ideal conditions for you to complete your doctoral degree:

- A highly motivated team as well as an international and interdisciplinary working environment at one of Europe's largest research establishments.
- State-of-the-art scientific and technical infrastructure
- Opportunity to participate in international conferences and workshops
- Continuous scientific mentoring by your advisor
- The opportunity to take part in making useful quantum computing a reality
- Ideal conditions for balancing work and private life, as well as a family-friendly corporate policy
- Flexible work (location) arrangements, e.g. remote work
- 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- Further development of your personal strengths, e.g. through an extensive range of training courses; a structured program of continuing education and networking opportunities specifically for doctoral researchers via JuDocS, the Jülich Center for Doctoral Researchers and Supervisors: <https://www.fz-juelich.de/en/judocs>
- Targeted services for international employees, e.g. through our International Advisory Service

To apply, please submit a complete CV, letter of motivation, university degree records (both Bachelor's and Master's degree), as well as two reference letters.

The position is for a fixed term of 3,5 years with the possibility of extending it to 4 years. Pay in line with 75% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60 % of a monthly salary as special payment („Christmas bonus“). Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: https://www.fz-juelich.de/gp/Careers_Docs

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.