OpenSuperQ+ is an ambitious project to build the first powerful quantum computer of more than 1000 qubits: https://www.opensuperqplus.eu. The contribution of PGI-2 led by Dr. Ansari (more information available at https://sites.google.com/site/mansari), is scientific to simulate a precise model for this quantum processor, aiming at constructing new schemes to better qubits and gates. Dr. Ansari’s group specializes in integrating machine learning techniques with circuit QED theory to identify optimal regimes for hardware design and development. With their exceptional skills in device modeling, the team significantly contributes to the success of all experimental partners in the project.

Recent news from Dr. Ansari’s group can be found here:
https://go.fzj.de/QuantumTugOfWar
https://go.fzj.de/LiberatingQuantumProcessors

Join us now and be a part of this groundbreaking research journey in the excellent research group of Dr. Ansari!

We are offering a

**PhD Position - Modelling of Superconducting Qubit Circuits with Machine Learning Techniques**

**Your Job:**

Circuit Quantum Electrodynamics (QED) provides insights into the behavior of superconducting qubit circuits with a few qubits, but scaling up the number of qubits presents significant challenges. As the qubit count increases, modeling accuracy diminishes, often resulting in experimental gate and processor performances that rely on imprecise simulations.

- Our objective is to refine the model for greater precision and, using this improved model, to identify optimized parameter regimes through extensive machine learning.
- We collaborate closely with leading experimental teams across Europe to simulate their devices.

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
This collaboration necessitates prompt scientific communication with experimentalists, developing models based on actual devices, and exploring avenues to enhance performance.

The work will involve extensive use of numerical and analytical techniques pioneered by our group. We are seeking an applicant with a robust background and experience in machine learning and quantum computing to contribute meaningfully to this project.

Key to the success of this project are a strong motivation for original research, self-initiative, and a collaborative approach.

Your Profile:
- Masters degree in theoretical Physics/Electrical Engineering, Mathematics or a related subject
- Solid background and experience in machine learning and quantum computing
- Familiarity with Machine Learning and circuit QED is highly desirable
- Ability to work in a committed and independent manner with flexibility and open-mindedness for new challenges
- Interest in working in an interdisciplinary and international team of scientists
- Fluency in written and spoken English

Our Offer:
We offer ideal conditions for you to complete your doctoral degree:
- A highly motivated working group as well as an international and interdisciplinary working environment at one of Europe’s largest research institutions
- Outstanding scientific and technical infrastructure
- Comprehensive training courses and individual opportunities for personal and professional further development
- Extensive occupational health management and a variety of sports activities (e.g. beach volleyball court, running groups, yoga classes, and much more)
- Ideal conditions for balancing work and private life, as well as a family-friendly corporate policy supported by our Equal Opportunities Bureau

https://go.fzj.de/ReconcilingWorkandFamilyLife
- 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

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 initially for a fixed term of 3 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”).
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.