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 6,400 employees in one of Europe’s biggest research centres and help us to shape change!

In the midst of the second quantum revolution, Google Inc. and coworkers were able to demonstrate quantum supremacy. Although this was a major technological breakthrough, highly performant qubits are required in order to reach fault tolerance in future superconducting quantum processors. At the Peter Grünberg Institute - Semiconductor Nanoelectronics (PGI-9), we tackle this challenge by investigating topologically protected components in our superconducting circuits. A recent publication related to this project can be found at the following link: [https://www.nature.com/articles/s41565-019-0506-y](https://www.nature.com/articles/s41565-019-0506-y)

The integration of topological matter into superconducting processors promises to reduce quantum error rates by several orders of magnitude.

We are looking to recruit a

**Postdoc - Circuit quantum electrodynamics of Majorana devices and qubits**

**Your Job:**
- You will model and characterize novel superconducting qubits that use topological insulators as weak links
- For device fabrication you are supported by PhD and Master’s students, who are well trained in the Helmholtz Nano Facility and at the Nanocluster
- A variety of superconductive materials (Al, Nb, Ta, V, Ru, Ti etc.) are waiting to be combined with various topological materials of the (Bi,Sb)(Te,Se)y family by means of molecular beam epitaxy
- You will iteratively increase the quality and performance of such hybrid devices by implementing measurement results into your device simulations (e.g. Sonnet, COMSOL) and by guiding students accordingly
- Part of your job is equipping a new dilution refrigerator in our quantum technology lab for cQED in the presence of magnetic fields, which are required for operating topological qubits
Your Profile:
- PhD degree in experimental physics, electrical engineering or related field
- Strong background in superconducting quantum computing and interest in combining superconductors with topological nanostructures
- Experience on design, fabrication, measurement, and analysis of superconducting qubits
- Modeling and simulation of superconducting quantum devices (e.g. Sonnet, COMSOL)
- Experience in setting up, maintaining and optimizing a cryostat for cQED measurements
- Programming in Python (e.g. measurement routines)
- Experience in supervising students
- Good team working skills
- Fluent in English

Our Offer:
- Excellent research and computing infrastructures in one of Europe’s largest research facilities, located between the cities of Cologne, Düsseldorf, and Aachen
- International and interdisciplinary working atmosphere in a dynamical team
- A comprehensive further training programme
- Flexible working hours and various opportunities to reconcile work and private life
- A work contract for the duration of 2 years with no teaching obligations
- Full-time position with the option of slightly reduced working hours
- Salary and social benefits in conformity with the provisions of the Collective Agreement for the Civil Service (TVöD)

Forschungszentrum Jülich promotes equal opportunities and diversity in its employment relations.
We also welcome applications from disabled persons.