



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 7,400 employees in one of Europe's biggest research centres and help us to shape change!

At the Peter Grünberg Institute - Integrated Computing Architectures (PGI-4), we are at the forefront of designing scalable, integrated circuits (ICs) that drive and read semiconductor spin qubits at cryogenic temperatures. As part of the institute, our group focuses specifically on system-level design and modeling of the electronics and setups. We provide the critical interface between the quantum domain and state-of-the-art IC design and work with cryogenic measurement setups.

Join our team to the next possible date as

Master Thesis - Heat transfer in cables when operating qubits at cryogenic temperatures

Your Job:

In this interdisciplinary Master project, you are going to investigate the heat and signal transfer through cables that connect qubit control and readout electronics at different temperatures. The temperature range is between room temperature and all the way to below one Kelvin. The thesis includes creating a model that:

- Takes the cross-section of a cable with specific materials as variables
- Makes it possible to vary length and temperatures of both end of the cable
- Calculates the corresponding heat transfer of the cable

Since thermal conductivity typically changes greatly with temperature, the heat conductance calculation would have to be solved differentially or the length of the cable would have to be divided into subsections that are small enough for a constant temperature to be assumed on the sections.

Your Profile:

- Bachelor's degree or equivalent in electrical engineering, physics, mechanical engineering, or a related field
- A basic knowledge of integrated circuit design, system-level modeling, or computer architectures or even quantum computers can be helpful but is not necessary

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

- Enthusiasm for unconventional, interesting interdisciplinary work - especially at the intersection of electronics and quantum technology

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:

- An interesting and socially relevant topic for your thesis with future-oriented themes
- Ideal conditions for gaining practical experience alongside your studies
- An interdisciplinary collaboration on projects in an international, committed and collegial team
- Excellent technical equipment and the newest technology
- Qualified support through your scientific colleagues
- The chance to independently prepare and work on your tasks
- Flexible working hours as well as a reasonable remuneration
- A large research campus with green spaces, offering the best possible means for networking with colleagues and pursuing sports alongside work
- Flexible work (location) arrangements, e.g. remote work

In addition to exciting tasks and a collaborative working atmosphere in 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.