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!

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

At the Institute of Energy and Climate Research - Energy Systems Engineering (IEK-10) we focus on the optimal design and operation of integrated, decentralized energy systems with a high share of renewable energy. Computer simulation and numerical optimization are our essential tools to arrive at efficient, reliable and cost-effective solutions.

The High Performance Computing department pursues the goal of further developing the simulation and optimization-based methods used for the planning and operation of energy systems with regard to numerical mathematics and high-performance computing. In this way, the most efficient use of the IT resources used in the respective application is aimed for. This includes commodity workstations, server clusters and networks as well as supercomputers, quantum computers, specialized high-speed networks and hardware accelerators. Central aspects here are, among others, the runtime analysis of existing simulation and optimization software, the subsequent improvement of existing algorithms, the design of new algorithms with a focus on modern IT resources, and their implementation as well as validation.

We are looking to recruit a

Postdoc - Quantum-based Energy Systems

Your Job:
Quantum computing is a promising, disruptive technology for solving optimization and simulation problems which is at the heart of energy grid design and operation. As part of a large scientific project with renowned partners from the quantum and energy community, you have the opportunity to contribute significantly to the further development of existing or completely new quantum algorithms for energy systems. Your work should first focus on the translation of basic power system algorithms to quantum computing (QC). As a result of this phase, use cases should be defined to highlight the value of QC in energy grids simulation, optimization and control aligned with QC technology development.
Your tasks in detail:

- Develop quantum algorithms for energy system simulation, optimization and control
- Evaluate the potential quantum speed-up and comparison to state-of-the-art classical algorithms
- Implement the developed algorithms for first test cases and employment on a real quantum computer
- Contribute to a joint project with other research institutes in the quantum community
- Provide knowledge on quantum computation to the institute, especially to PhD students
- Disseminate the results in renowned journals and at international conferences

The advertised position is one of multiple positions in IEK-10 to be filled related to quantum-based energy grids. You are free to apply for more than one position.

Your Profile:

- Excellent masters and doctoral degree in physics, mathematics or a comparable field
- Excellent knowledge of quantum computation and information theory
- Strong skills in programming (e.g. Python, Matlab, C, C++)
- Excellent ability for cooperative collaboration
- Preferably a good understanding of energy systems or the motivation to become familiar with the topic
- Strong communication skills in English

Our Offer:

We work on the great challenges facing our society and are offering you the chance to actively help in shaping the future. We offer ideal conditions for the next step in your scientific career:

- A highly motivated research group in one of the biggest research centers in Europe
- An excellent scientific and technical infrastructure (incl. access to Quantum hardware, e.g. our D-Wave system)
- Strong support and mentoring for setting up a future career in science and/or the industry
- Further development of your personal strengths, e.g. through an extensive range of training courses
- Extensive company health management
- 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)
- A full-time position with the option of slightly reduced working hours
- 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

We offer you an exciting and varied role in an international and interdisciplinary working environment. This is a 2-year appointment, with the possibility of a 1-year extension based upon satisfactory performance and availability of funding. Salary and social benefits will conform to the provisions of the Collective Agreement for the Public Service
(TVöD-Bund) depending on the applicant’s qualifications and the precise nature of the tasks assigned to them.

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.