Peter Grünberg Institute for Quantum Control (PGI-8) at the Forschungszentrum Jülich specialises in novel optimisation strategies for emerging quantum technologies. These emerging technologies aim to provide transformative changes to our society, including how we think about information, and unlocking vast calculations for the natural sciences, logistical problem solving, and high-performance computation. Our group has pioneered the application of quantum optimal control methods to quantum computation and many-body quantum systems. This includes the development of physical models and model reduction techniques as well as algorithmic advances of in-situ optimisation and machine learning to tackle the complex processes inherent to scalable quantum devices.

We are looking to recruit a

Postdoc - Programable Atomic Large-Scale Quantum Simulation

Your Job:
We are offering a postdoctoral research position in the context of the European Quantum Flagship collaborative project on Programable Atomic Large-Scale Quantum Simulation (PASQuanS2.1). This project will centre around developing new applications of quantum simulators, including contexts in which one can realise quantum advantage – as well as verification techniques for experiments operating in these regimes. This work will involve analytical techniques as well as state-of-the art numerical techniques and the position will be embedded in the Quantum Control team in Jülich and in collaboration with a range of international partners. Your tasks in detail:

- Identify new applications and protocols to demonstrate quantum advantage on existing and near-term quantum simulation devices
- Develop and tailor quantum algorithms and protocols for scientific and industrial applications to experimental platforms
- Design control strategies for programmable quantum simulators based on atomic systems such as neutral atoms and Rydberg atoms
- Develop verification techniques for these systems

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
• Cooperate internationally with theory partners, and support experimental partners to control quantum simulators with high precision
• Prepare scientific publications and project reports
• Mentor junior group members and help to lead our research efforts

Your Profile:
• PhD degree in quantum physics or a related field
• A background and strong interest in developing analytical models and numerical optimisation methods, and interest in working closely with experimentalists
• Detailed knowledge of quantum physics and experience with quantum technology
• Fluent command of written and spoken English
• Leadership and communication skills
• Ability to work autonomously in close interaction within a team
• And most importantly: enthusiasm to explore uncharted territory, develop and follow your own ideas

Our Offer:
We work on the very latest issues that impact our society and are offering you the opportunity to actively help in shaping change. Here is what Forschungszentrum Jülich can offer you:
• Opportunity to conduct research at the interface of theory and experiment in a world-leading group in quantum control
• Work in a highly motivated research group as part of an international and interdisciplinary working environment with access to outstanding computing facilities and connections to the best research institutions around the world
• Continuous scientific mentoring by your scientific advisor as well as feedback and wide-ranging expertise from the whole group in multiple facets of quantum technology and optimisation
• Opportunity of participating in (international) conferences and project meetings
• Transferable skills training offer and language course at FZJ
• Skills that you will acquire during your tenure are in high demand both in academia and in high-tech companies: at present, there is significant investment from private and governmental funding agencies in the field of quantum technologies
• Flexible work (location) arrangements, e.g. remote work
• Flexible working hours in a full-time position (39 hours/week) with the option of slightly reduced working hours
• 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
• In addition, we have a lot more to offer: https://go.fzj.de/benefits

Your initial employment contract will be for a fixed term of 2 years, with the prospect of longer-term employment. Salary and social security benefits will conform to the provisions of the Collective Agreement for the Public Service (TVöD-Bund), pay group 13, depending on your current qualifications and the precise nature of the tasks assigned to you. Information on employment as a postdoctoral fellow at Forschungszentrum Jülich can be found here: https://www.fz-juelich.de/en/careers/professionals/postdocs

We particularly welcome applications from people from a diverse range of backgrounds (e.g. regardless of age, gender, disabilities, sexual orientation/identity, as well as social, ethnic, and religious background). We strive to offer a diverse and inclusive working environment, in which people enjoy equal opportunities and are able to fulfill their potential.
New applications are processed continuously.