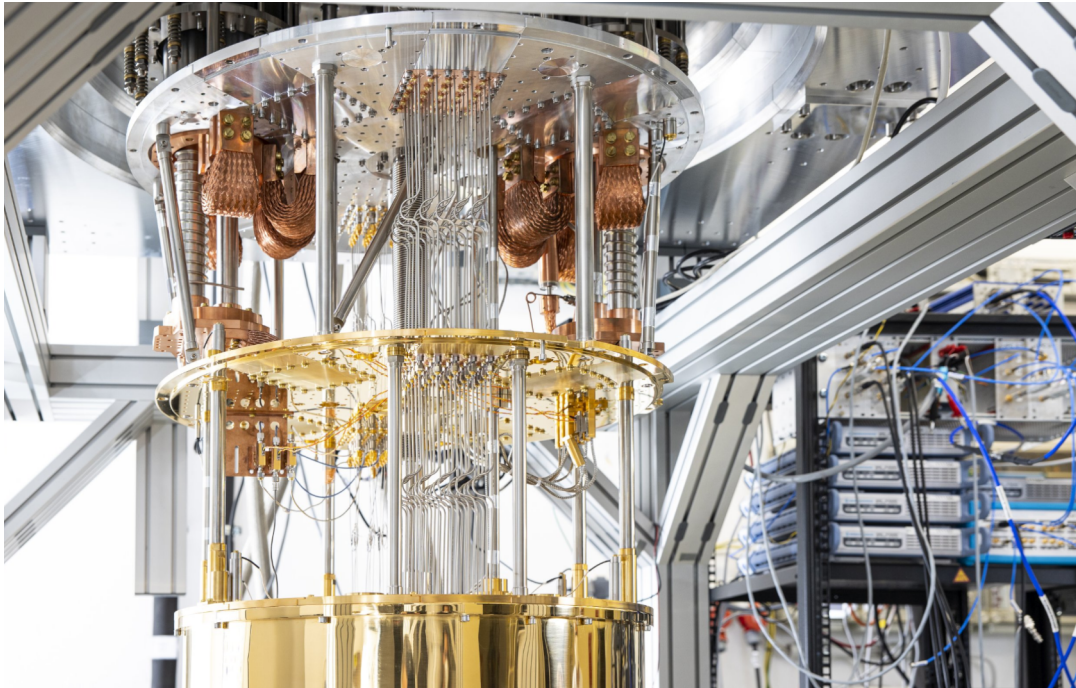




Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The Mathematical Methods group at PGI-12 develops analytical tools and methods to study a wide variety of topics in modern theoretical physics. We are looking for a PhD candidate to perform research in a project at the overlap of general relativity, quantum field theory and quantum information in the context of quantum technologies in space. We aim at understanding how photons, one of the most ubiquitous particles of Nature, are affected as quantum systems when propagating in curved space-times. Given the current push for the development of advanced quantum technologies, such as a distributed quantum Internet or quantum computing, it is not only of fundamental interest to improve our understanding of photons as fundamental physical systems, but it is also crucial to understand how they are affected when employed as core constituents of novel quantum technologies within planned operational environments. This theoretical project builds on existing work to fully characterize the kinematics and dynamics of photons that propagate in weakly curved spacetimes, with an eye for applications.

We are offering a

PhD Position - Quantum photonics in curved spacetime

Your Job:

- Research: employ on quantum field theory in curved spacetime to model photon kinematics
- Output: publish in peer reviewed journals, seek patent applications when possible
- Dissemination: present the work at conferences, seminars and within
- Visit regularly project partner in Linz, Austria
- Discuss and establish contact with experimental colleagues, including those working on Cubesat missions

Your Profile:

- Master's degree in physics, mathematics or a similar discipline
- Knowledge of quantum physics

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

- Experience in quantum field theory
- Numerical simulation skills
- Ability to show initiative and work independently
- Excellent cooperation and communication skills and ability to work as part of a team

Desirable additional qualifications:

- Knowledge of general relativity
- Experience in quantum optics

Please feel free to apply for the position even if you do not have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

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:

- **TEAM & ENVIRONMENT:** You will work in a motivated team with an international and interdisciplinary focus – at one of the largest research institutions in Europe
- **KNOWLEDGE & DEVELOPMENT:** Your professional development is important to us – we support you specifically and individually e.g., through training and networking opportunities specifically for doctoral candidates (JuDocS): <https://go.fzj.de/JuDocs>
- **CAMPUS EXPERIENCE:** Our research campus in the countryside creates ideal conditions for collegial exchange and sporting activities right on site. Our cafeteria offers a wide range of options—you can enjoy a relaxing lunch break with a lake view
- **SUCCESSFUL START:** It is important to us that you quickly settle into the team and are given structured training for your tasks. We also support you from the very beginning and make your start easier with our Welcome Days and Welcome Guide: <https://go.fzj.de/welcome>
- **FAIR REMUNERATION:** Depending on your qualifications and assigned responsibilities, you will be classified according to pay group 13 (75%) of the TVöD-Bund. Additionally, you will receive a special payment (“Christmas bonus”) amounting to 60% of one month’s salary. All information about the TVöD-Bund collective agreement can be found on the BMI website (pay scale table on page 66 of the PDF download): <https://go.fzj.de/bmi.tvöed>
- **PERSPECTIVE:** The position is initially for a fixed term of 3 years but with the prospect of longer-term employment
- **SUPPORT FOR INTERNATIONAL EMPLOYEES:** Our International Advisory Service makes it easier for international employees to get started

In addition to exciting tasks and a collegial working environment, we offer you much more: <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.

Further information on diversity and equal opportunities: <https://go.fzj.de/equality>