Paderborn University is a high-performance and internationally oriented university with approximately 20,000 students. Within interdisciplinary teams, we undertake forward-looking research, design innovative teaching concepts and actively transfer knowledge into society. As an important research and cooperation partner, the university also shapes regional development strategies. We offer our more than 2,500 employees in research, teaching, technology and administration a lively, family-friendly, equal opportunity environment, a lean management structure and diverse opportunities.

Join us to invent the future!

With the Institute for Photonic Quantum Systems (PhoQS), the Paderborn University aims to establish an international research center in the field of photonic quantum technologies. The goal is to develop new technologies for photon-based quantum applications as well as new theoretical and experimental concepts and research approaches. The ultimate focus is on the understanding and control of photonic quantum simulators and quantum computers.

Within this scope, we invite applications for the following fixed-term position (75% of the regular working time), which will start at the earliest opportunity:

**PhD student (f/m/d)**
(salary is according to TV-L 13)

The position is embedded in the project “Photon Quantum Computer (PhoQuant)” of the Federal Ministry of Education and Research. Employment is initially limited to three years and adheres to the legal regulations laid out in the WissZeitVG.

Specifically, we are looking to employ up to two PhD students in the field of experimental quantum optics who will work on the realization of a testbed for photonic quantum computation based on Gaussian Boson sampling at the Institute for Photonic Quantum Systems (PhoQS). The following are examples of relevant tasks:

- Development of photon counting systems that combine many photons and many modes
- Development of multi-channel homodyne detection systems and multi-channel readout electronics
- Development of coherent displacements of squeezed light
- The characterization and operation of a large, reconfigurable integrated optical interferometer
- The spatio-temporal demultiplexing and subsequent synchronization of pulsed squeezed light
- The investigation of approaches to generating universal resource states for photonic quantum computation
- Assistance training Masters and Bachelors students

It is expected for the successful candidate to have experience in one or more of the following areas:

- Continuous-variable quantum optics, especially squeezing generation and detection
- Discrete-variable quantum optics, especially photon counting
- Ultrafast optics, especially pulse shaping and characterization
- Nonlinear optics, especially frequency conversion and seeding
- Integrated optics, especially guided-wave parametric down-conversion
- Time-frequency manipulations in quantum optics

Knowledge in programming with Python is beneficial.

**Hiring requirement:**
Suitable candidates have completed their M.Sc. in physics or a closely related subject.

Since Paderborn University seeks to increase the number of female scientists, applications of women are especially welcome. In case of equal qualification and scientific achievements, they will receive preferential treatment according to the North Rhine-Westphalian Equal Opportunities Policy (LGG), unless there are cogent reasons to give preference to another applicant. Likewise, applications of disabled people with appropriate qualification are explicitly requested. This also applies to people with equal status according to the German social law SGB IX.

Please send your application including a CV and list of publications (preferably in a single pdf file) using the Ref. No. 5197 by 08.04.2022 via e-mail to benjamin.brecht@upb.de

Information regarding the processing of your person data can be located at: https://www.uni-paderborn.de/en/zv/personaldatenschutz

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