



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 2,600 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 (100% of the regular working time), which will start at the earliest opportunity:

postdoctoral researcher (f/m/d)

(salary is according to 13 TV-L)

The position is embedded in the project "**Photonic Quantum Computing (PhoQC)**" of the Ministerium für Kultur und Wissenschaft of the state of Nordrhein-Westfalen (MKW NRW). Employment ends on 31.10.2024 and adheres to the legal regulations laid out in the WissZeitVG.

Specifically, we are looking for a postdoc in the field of quantum information theory who will **develop and optimize quantum algorithms for photonic quantum systems** at the Institute for Photonic Quantum Systems (PhoQS). Academic duties include, for example,

- development of quantum computation and communication protocols, including advanced Boson-sampling-like protocols, using complex quantum states, such as Fock states, (non) Gaussian states, etc.
- their application in relevant quantum tasks
- optical approaches to quantum computation in the discrete- (i.e., few-photon) and continuous-variable regimes, including multimode quantum light
- exploring optimal and feed-forward control via photonic quantum platforms and quantum-optical networks under realistic conditions
- collaborations with experimental groups, including experiment proposals and data processing
- interdisciplinary interactions with groups from computer science and applied mathematics are expected withing the PhoQC project
- acquisition of as well as assistance in managing existing third-party funding
- training of Doctoral, Master, and Bachelor students
- teaching on the order of 4 teaching hours (SWS) per week

It is expected for the successful candidate to have an established academic profile and prior experience in the following areas:

- quantum information theory
- continuous and discrete variables
- photonic systems
- boson sampling and/or related algorithms

Hiring requirement:

Suitable candidates have completed their PhD and have demonstrated extraordinary academic achievements, as well as teaching experience. Experience in the acquisition and administration of third-party funding is desirable, too.

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 CV and list of publications (preferably as a single pdf file), using the **Ref. No. 5584** via e-mail to jan.sperling@upb.de

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

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