

## **Public job advertisement**

45,000 students and 8,000 employees in teaching, research and administration, all working together to shape perspectives for the future – that is the University of Münster (WWU). Embedded in the vibrant atmosphere of Münster with its high standard of living, the University's diverse research profile and attractive study programmes draw students and researchers throughout Germany and from around the world.

The Hybrid Quantum and Nano Systems Group (Prof. Hubert Krenner) in the Physics Institute of the Faculty of Physics at the University of Münster, Germany, is seeking to fill the position of a

### **Doctoral Research Associate** *Wissenschaftliche/r Mitarbeiter/in* **(salary level [TV-L E 13](#), 75%)**

for the externally funded German-French project "INPhO" at the earliest possible date. We are offering this fixed-term part-time position (75% FTE), financed by the German Research Foundation (DFG), for 3 years.

The primary objective of this exciting project is the design, fabrication and validation of densely integrated circuits harnessing nanoscale soundwaves at gigahertz frequencies. These nonlinear phononic circuits are used for parametric information processing and are equipped with an optomechanical interface. The integrated phononic circuits and devices developed in INPhO will pave the way towards new paradigms for information and communication technologies.

The successful applicant will conduct advanced numerical simulations of the mechanical properties of these structures and employ state-of-the-art cleanroom nanofabrication tools for the fabrication of devices. Advanced high-resolution optical spectroscopy forms an integral part of the work studying the use of laser spectroscopy of single quantum dot artificial atoms at cryogenic temperatures, the propagation of sound and their coupling of the sound wave to quantum states. Overall, the successful candidate will receive high-level training in applied microwave device physics and high resolution optical and electrical characterization techniques.

#### **Your tasks:**

- Design of integrated nonlinear phononic circuits and development of cleanroom processes for the fabrication of these devices
- Experimental investigations of the fabricated devices and samples using cutting-edge high-resolution optical, acoustic and radio frequency spectroscopy
- The analysis and modelling of data
- Proactive coordination with project partners in Germany and abroad
- Preparation of project reports
- Dissemination of project results in scientific publications and contributions to workshops and conferences

This position is tied to working towards a doctorate.

#### **Our expectations:**

- A graduate degree (master's or German *Diplom*) in physics, electrical engineering or a related discipline passed with an above average grade is essential.
- Profound knowledge of solid-state physics is required.
- Advanced knowledge of semiconductor quantum nanosystems and nanomechanics is desirable.
- Experience in cutting-edge cleanroom nanofabrication is required.
- Expertise in electron beam lithography or reactive ion etching is desirable.
- A self-motivated, independent and structured work style with a strong technical leaning and the ability to work in a team is required.
- Proficiency in written and spoken English is required, while proficiency in written and spoken German and French is desirable.

The University of Münster strongly supports equal opportunity and diversity. We welcome all applicants regardless of sex, nationality, ethnic or social background, religion or worldview, disability, age, sexual orientation or gender identity. We are committed to creating family-friendly working conditions.

We actively encourage applications by women. Women with equivalent qualifications and academic achievements will be preferentially considered unless these are outweighed by reasons which necessitate the selection of another candidate.

If you have any questions, please contact Prof Hubert Krenner ([krenner@uni-muenster.de](mailto:krenner@uni-muenster.de)).

Are you interested? Then we look forward to receiving your application comprised of the usual documents (including CV, certificates and transcripts of record, short motivation statement, names and contact information of two references) by **15 April 2023** via email, at:

**Westfälische Wilhelms-Universität Münster**  
**Physikalisches Institut**  
**Professor Dr. Hubert Krenner**  
**Reference-Code INPhO**  
**Wilhelm-Klemm-Str. 10**  
**48149 Münster**  
**E-Mail: [krenner@uni-muenster.de](mailto:krenner@uni-muenster.de)**

Please send your application as a single PDF file (file size max. 10 MB, no password protection). Please note that we cannot consider other file formats.