

## **Stellenausschreibung der Universität Regensburg | Nummer 23.097**

PhD (Theory) and Postdoc position (Experiment):  
Quantum Sensing in Ultrafast Transmission Electron Microscopy

Quantum coherent dynamics in solid-state nanostructures will play a decisive role in future quantum industries but experimental techniques to characterize such dynamics on their intrinsic time and length scales are still in their infancy. In the newly established lighthouse project "Free-electron states as ultrafast probes for qubit dynamics in solid-state platforms" funded by the Munich Quantum Valley initiative, the groups of Prof. Ferdinand Evers and Prof. Sascha Schäfer at the University of Regensburg will address this challenge and will jointly develop the theoretical and experimental foundations for probing the quantum state of matter by femtosecond electron pulses. Within this project and associated with the Regensburg Center for Ultrafast Nanoscopy (RUN), we seek to appoint a **Research Associate** (75% E13) in theoretical solid-state physics at the earliest possible date:

### **Research Associate** (m/f/d) in theoretical physics

#### **Your tasks include:**

- Develop a theoretical model that can describe the time evolution of an electronic excitation ("exciton") within an environment that allows to manipulate the electromagnetic environment ("cavity").
- Numerical simulations of the electron dynamics in the presence of a light field using this model.
- Understanding ultrafast transmission experiments based on such simulation results.
- Assistant teaching in courses related to solid-state physics or quantum optics.

#### **Your qualifications:**

- Excellent master thesis in theoretical physics, preferably with a condensed matter background.
- Experience in computational methods of quantum physics.
- Experience in data analysis and physical modeling.
- Strong communication and writing skills.

#### **We offer:**

- A creative and innovative research environment with a particular focus on instrumental and method development
- A diverse research team with experimental and theoretical physicists
- Remuneration and benefits according to 75% E13 (PhD position) and 100% E13 (Postdoc position).

The University of Regensburg is an innovative and interdisciplinary campus university with over 20.000 students. Its research is highly recognized, and a wide range of degrees are offered for students from Germany and abroad.

The University aims to raise the number of its female researchers and explicitly encourages applications by qualified females. Furthermore, support to families is offered to meet the demands of the workplace (see [www.uni-regensburg.de/chancengleichheit](http://www.uni-regensburg.de/chancengleichheit) for more information).

Applicants with a disability are given preferential consideration in case of equal qualification. Please indicate any disability already at the application stage.

Also please note that any costs arising from a possible interview cannot be reimbursed.

Applications (including cover letter and CV) should be sent as one PDF file by 31 May 2023 to [ferdiand.evers@ur.de](mailto:ferdiand.evers@ur.de) and [sascha.schaefer@ur.de](mailto:sascha.schaefer@ur.de).

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