

We are looking for a full-time research assistant on the topic of

## Quantum Communication in 6G Networks

### About us

The research focus of the Theoretical Quantum Systems Design group is on questions that are motivated from practical communication system design and deployment. We develop concepts for near-term quantum communication networks and study quantum communication techniques from the perspective of novel use cases. Our scientific methods are based on quantum information theory, theoretical quantum communication system design and simulations. We develop hardware control methods to accelerate the knowledge exchange between theory and experiment and apply analytical and numerical methods. We encourage interdisciplinary work, especially the collaboration and contact with research groups focusing on classical system design and experimental research on quantum systems and strengthen the contact to the TUM Entrepreneurship center wherever possible.

### Requirements

The position offers the possibility to work on the boundary between theoretical foundations of quantum system design and 6G requirements. The ideal candidate brings with them a deep interest in applied mathematics, in particular quantum information theory of infinite-dimensional systems, and a degree in engineering, physics or mathematics. We welcome enthusiastic, creative, and curious applicants that enjoy the challenges and unpredictability of interdisciplinary research on the borderline between strict theory and concrete industrial implementation. Openness to changes in directions as well as initiative in formulating research questions and goals and the capability to develop independent strategies to proving mathematical results are expected.

### We offer

Payment according to TV-L E13, full employment, with contract duration limited to 4 years. Earliest starting date is the first of December 2021. The successful candidate can be enrolled in the graduate program of Technical University of Munich.

### Tasks

Known techniques from the domain of quantum communications will have to be evaluated, adapted and improved in the context of mobile networks and modern use cases. The question whether quantum communication techniques can even act as an enabler to novel network services will receive special attention. The Theoretical Quantum Systems Design Group offers a course on quantum networks involving our network simulator QuNetSim. Participation in the teaching of the course is expected. Scientific results will need to be written down in publication-ready form and presented at international conferences.

### Applications

Applicants please contact Dr. J. Nötzel ([janis.noetzel@tum.de](mailto:janis.noetzel@tum.de)) for questions, and send their application (including CV, cover letter and name plus email address for two potential referees) with subject "Application to 6G quantum communications" to [jobs.lti@ei.tum.de](mailto:jobs.lti@ei.tum.de) until November 30, 2021.

### General Information

*TUM is aiming to increase the number of women employees, and applications from women are expressly welcomed. People with disabilities, with essentially the same suitability and qualification, will be preferred. As you apply for a position at the Technical University of Munich (TUM), you provide personal data. Please note our data protection information according to Art. 13 Data Protection Basic Regulation (DSGVO) on the collection and processing of personal data in connection with your application <http://go.tum.de/554159>. By submitting your application, you confirm that you have taken note of the data protection information of the TUM.*