TUM

Opportunities for Talents

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

Simulation of Authentication and Data Storage with Quantum Tokens

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

We aim at accurate modelling of physical processes at the physical layer of quantum information processing systems, to investigate the applicability of information-theoretic concepts of the post-Shannon era. In particular, a current main interest lies in secure storage models. To aid in the development of corresponding communication modules, we will work closely with information-theoretic and experimental groups. We are thus looking for a professional user, ideally a developer, of QuTip that can help us in the development of fast, accurate and scalable simulations.
As a part of our efforts, we would like to develop a module allowing a user with a background in quantum communication theory to investigate accuracy and performance of protocols and concepts.

We offer

Payment according to TV-L E14, full employment, with contract duration limited to 3 years. Earliest possible starting date is the first of February 2022.

Tasks

Development of modules in QuTiP that can be aggregated to a complete quantum information processing system. Simulation and simulative benchmarking of novel quantum information processing systems using hardware acceleration. Maintenance of github repositories. Planning and implementation of scientifically accurate software in a team. Organization of workshops and lectures for knowledge dissemination. Interaction with experimental groups with the goal of increasing prediction accuracy of simulations. Scientific publication and participation in international workshops and conferences.

Applications

Applicants please contact Dr. J. Nötzel (janis.noetzel@tum.de) for questions, and send their application (including CV, cover letter and name plus email address for two potential referees along with a list of publications and their three most important publications in the relevant areas of research) with subject "Application to 6G quantum communications" to jobs.lti@ei.tum.de until December 15, 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.