

TENURE-TRACK
FOR QUANTUM INFORMATICS



INFORMATION FOR APPLICANTS

Index

1. General	3
2. Research.....	3
3. Teaching	4
4. Additional Requirements.....	4
5. Tenure (Qualification) Agreement.....	4

1. General

The Johannes Kepler University Linz (JKU Linz, <http://www.jku.at>) is a young European university with an expert and accomplished focus on the academic areas of social and economic sciences, law, natural sciences and engineering. The studies of Human Medicine were added in 2014. During its fifty year history, the university has achieved a national and international standing with its manifold achievements in research and teaching. The JKU is a campus-style university located north of the city of Linz. The unique campus environment provides close proximity between all disciplines. Interdisciplinary collaboration, innovative base-knowledge research, and close ties to local businesses and the business community have helped to establish its principal direction. By upholding principles of unity in research and teaching as well as fostering advanced methods of knowledge transfer, the JKU Linz generates and provides services for the greater good of society, the business community, fine arts and culture. Core target groups include students, the scientific community as well as organizations representing private and public life.

The JKU was the first university in Austria to introduce studies in Computer Science back in 1969. In the meantime, over 1,000 students currently study Computer Science. The Bachelor's and Master's degree programs in Computer Science are internationally comparable; correlative program ranking reviews in this academic area have yielded strong, admirable results. In the area of research, computer scientists from Linz are highly sought-after and considered high-caliber scientists and academics, many of whom are leaders in their fields (including ERC and Wittgenstein award recipients). Computer Science at the JKU is distinguished by outstanding base-knowledge research and close collaboration with industry.

2. Research

Quantum computation is currently moving from an academic idea to a practical reality. Corresponding devices promise substantial speedups over conventional computers for applications like quantum chemistry, optimization, machine learning, cryptography, quantum simulation, and systems of linear equations, and more. The recent past has seen tremendous progress in the physical implementation of corresponding quantum computers and quantum algorithms. Both, academia but also industrial players (including "big players" such as IBM, Google, Intel, Rigetti, Microsoft, and Alibaba) are heavily involved in this new technology. Computer Scientists need to be ready for this revolutionizing new technology. But research in this field is still rather focused on physics and there is still far too little coordination between the CS community and the quantum community.

This tenure track position is supposed to contribute to address these shortcomings. The candidate is expected to contribute research for quantum algorithms and quantum computation from a Computer Science perspective, but with a strong interdisciplinary relation to related fields such as physics, mathematics, electrical engineering, etc. More precisely, the tenure track position focuses on topics including but not limited to the

- Development and design,
- Implementation and algorithms,
- Theory and models,
- Simulation and design automation, and
- Applications

of/for quantum computers, quantum systems, quantum architectures, quantum information, quantum communications, etc.

The candidate's professional background will be given a higher priority than the subject area he/she is representing.

The candidate's application regarding his/her qualifications in research will be considered under the following criteria:

- Research skills and abilities in the area,
- Scientific reputation demonstrated through high-quality publications and research results,
- Scientific activities at universities, academic, or industrial institutions, as well as
- Doctorate degree.

3. Teaching

The JKU is committed to research-led education. Applicants for the position are expected to offer university-level courses in Computer Science, academic lectures in his/her area of expertise, and take part in teaching the base-knowledge curriculum for Computer Sciences and service courses in the academic area. As the program is international, the successful candidate will be expected to be able to hold courses in English. The position includes teaching obligations equivalent to 4 academic hours per semester.

The candidate's application regarding his/her qualifications for the position will be considered under the following criteria:

- Didactic skills and abilities,
- Experience in holding university-level courses, as well as
- Experience in supervising student academic work such as Master's/Diploma degree theses

4. Additional Requirements

The successful candidate must be willing to collaborate with other research groups at the Johannes Kepler University, research institutions and facilities in Austria and abroad, as well as with industrial companies. In addition to key professional qualifications, the successful candidate should also possess high motivation, team spirit, and a strong social skill set. Besides that, a command of spoken and written English is expected. Applicants who possess little or no German language skills are encouraged to acquire language skills at a level that will enable the candidate to become a potential participant e.g. in university committee activities.

5. Tenure (Qualification) Agreement

The position will be initially limited to a period of six years. Job holders will be offered a tenure agreement if the academic performance suggests that the required high qualification can be reached. If the requirements of the agreement are met, employment will be continued for an indefinite period as a tenured Associate Professor (according to § 99 Sec 5 and 6 of the Austrian University Act). Promotion to Full Professorship is possible in a simplified procedure (following § 99, Sec 4, Austrian University Act).