

TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the **Faculty of Electrical and Computer Engineering, Institute of Communication Technology**, the **Vodafone Chair of Mobile Communications Systems** offers a position as

Research Associate (m/f/x)

(subject to personal qualification employees are remunerated according to salary group E13 TV-L)

starting at the **earliest possible date**. The position is limited to 18 months with the option of extension. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position offers the chance to obtain further academic qualification.

The **Vodafone Chair for Mobile Communications Systems** offers the opportunity to help shape the development of future mobile communication systems in a prosperous and dynamic environment, to gain valuable project experience and to establish and deepen contacts with innovative companies. Further information on the Vodafone Chair can be found at <https://mns.ifn.et.tu-dresden.de/>. The research at the Vodafone Chair runs within the scope of **DFG, EU and BMBF projects** as well as within the framework of an **ERC Synergy Grant**.

Tasks: You will conduct research in the field of wireless communications technology on one of the following topics:

- development and evaluation of resilient wireless systems for
 - o spectrum sensing, channel modeling, radio resource management, anti-jamming
 - o machine learning and digital twinning
 - o applications in industry and medicine
- Transmission and signal processing techniques for joint communication and sensing, including waveform and frame design, parameter estimation algorithms, and applications of sensing such as localization.
- beamforming architectures and techniques for massive ultrawideband MIMO
- Gearbox PHY concept: design of multi-gear radio interface, and optimization of the operation using AI/ML techniques for gear switching and dynamic reconfiguration
- Physical layer design for ultra-energy-efficient wireless spike-based sensor node communication, including optimized spike modulation, stochastic modeling of a spike-based signal processing chain, and task-based communication.
- Algorithm design for innovative quasi-optical terabit/sec wireless communications systems with energy-efficient oversampled 1-bit quantization: digital baseband design including the study of optimal modulation, channel estimation, and receiver synchronization algorithms

- Field testing with our own 5G SA Campus Networks including ORAN
- Mobile network measurements with best-in-class equipment and process automation
- Airborne RF measurements using 5G connected drones
- Communications and control co-design for wireless-networked control systems
- Reduction of latency requirements for cyber-physical systems using model-based prediction and estimation
- Learning for dynamical systems and control using data-driven/ML techniques.

All tasks are carried out in cooperation with partners from industry and science. The field of activity also includes the supervision of student work related to the research topics. The results of the work are to be published at international conferences and in distinguished journals.

Requirements: an above-average university degree in the field of computer science, electrical engineering, communications engineering or information systems engineering; profound knowledge of wireless communications, communications engineering and digital signal processing; independent, goal- and solution-oriented approach; integrative and cooperative behavior with very good communication and social skills; confident command of written and spoken English.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application with the usual documents by **June 10, 2024** (stamped arrival date of the university central mail service of TUD applies) stating the **Job-ID: w24-172** to: jobs@ifn.et.tu-dresden.de (Please note: We are currently not able to receive electronically signed and encrypted data.) or to: **TU Dresden, Fakultät Elektrotechnik und Informationstechnik, Institut für Nachrichtentechnik, Vodafone Stiftungsprofessur für Mobile Nachrichtensysteme, Herrn Prof. Gerhard Fettweis, Helmholtzstr. 10, 01069 Dresden, Germany**. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: <https://tu-dresden.de/karriere/datenschutzhinweis>.