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.

The Faculty of Electrical and Computer Engineering, Institute of Communication Technology, the Telekom Chair for Communication Networks offers a project position as Research Associate (m/f/x) (subject to personal qualification employees are remunerated according to salary group E13 TV-L) starting as soon as possible. The position is initially limited until August 31, 2024. The period of employment is governed by § 2 (2) Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG).

**Tasks:** The selected candidate will be conducting research in the field of digital design, applied to the development of hardware accelerators for wireless communication kernels. Specifically, the candidate will be performing the following tasks during the development of this research project:

1. Modeling in MatLab of channel estimation kernels applied for advanced wireless communication systems, such as ultra-massive MIMO.
2. Implementation of hardware-accelerated channel estimation kernels on the RISC-V architecture. Therefore, the accelerator will perform two computing intensive tasks: matrix multiplication and inversion.
3. Development of an Instruction Set Architecture extensions for the RISC-V architecture to accelerate the computation of channel estimation kernels. An additional comparison of those findings with commercial and complex Digital-Signal-Processors is expected.

The Deutsche Telekom Chair for Communication Networks has stood out for providing investigators with state-of-the-art research tools such as multi-antenna channel emulators, which will provide a precise and detailed characterization of end-to-end channel state in real-world condition. Therefore, the successful candidate will interact with ultimate and most advanced technology, applied in the development of high-performance communication kernels for 5G and 6G.

**Requirements:** We aim at attracting the best talent in the field of hardware accelerator applied to the implementation of high-performance wireless communication kernels for 6G.

**Basic Requirements:**
- an outstanding university master's/ diploma degree and if applicable with PhD degree (or equivalent) in computer science, mathematics, electrical engineering or a relevant area;
- an independent, target- and solution-driven work attitude and strong work ethic;
- an integrative and cooperative personality with excellent communication and social skills;
- fluency in English - written and oral.
Preferred Qualification:
• knowledge of open-source hardware architectures such as RISC-V, and Hardware Development Languages (HDL).
• strong programming skills in high level languages (Python, C/C++), and HDL languages (Verilog and SystemVerilog).
• good understanding of channel estimation algorithms for massive MIMO.
• experience implementing communication kernels with Software Defined Radios (SDR).
• experience in developing RISC-V Instruction Set Architectures (ISA) would be really beneficial.
• initial record of creative research is beneficial.

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 August 17, 2023 (stamped arrival date of the university central mail service applies) to: TU Dresden, Fakultät Elektrotechnik und Informationstechnik, Institut für Nachrichtentechnik, Deutsche Telekom Professur für Kommunikationsnetze, z. Hdn. Herrn Javier Acevedo, Helmholtzstr. 10, 01069 Dresden, Germany or via the TU Dresden SecureMail Portal https://securemail.tu-dresden.de by sending it as a single pdf document to javier_riccardo.acevedo_bueno@tu-dresden.de. 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.