

Technische Universität Dresden (TUD), 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 Circuits and Systems**, the **Chair of Measurement and Sensor System Technique** ([Prof. Jürgen Czarske](#)) offers a position as

**Research Associate / Postdoc (m/f/x)**  
**Quantum Multimode Fiber Communication**

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **as soon as possible**. The position comprises 75% of the fulltime weekly hours and is limited until July 31, 2024. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz-WissZeitVG).

Single-mode fiber optic networks are the backbone of the global Internet infrastructure. However, multimode fibers provide additional channels for data transmission but suffer from modal crosstalk scattering. We investigate structured light to correct scattering towards space division multiplexing and new approaches in information security.

**Tasks:** The focus is on research into innovative concepts for light control using multimode fibers, which enable (de)multiplexing of quantum states via the spatial degrees of freedom (audits). For this purpose, spatial modulation techniques with single and entangled photons are used. Your activities include the realization of multimode fiber system, the characterization of the light transmission properties, the implementation of quantum key distribution and the transfer to applications.

**Requirements:** above-average university and, if applicable, PhD degree in the subject physics or related areas; ability and willingness to work independently and conceptually in a dynamic team; curiosity in research at interfaces of sciences; interest in practice-oriented, interdisciplinary cooperation with partners from research and industry; knowledge of software development and digital signal processing. Previous knowledge of optics, quantum optics, MATLAB or Python is advantageous.

Technical questions will be answered with pleasure: Mr. Stefan Rothe, [stefan.rothe@tu-dresden.de](mailto:stefan.rothe@tu-dresden.de).

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 comprehensive application including the usual documents by **March 29, 2023** (stamped arrival date of the university central mail service applies) to: **TU Dresden, Fakultät Elektrotechnik und Informationstechnik, Institut für Grundlagen der Elektrotechnik und**

**Elektronik, Professur für Mess- und Sensorsystemtechnik, Herrn Prof. Dr.-Ing. habil. J. Czarske, 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 [grp-mst-sekretariat@msx.tu-dresden.de](mailto:grp-mst-sekretariat@msx.tu-dresden.de). Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

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**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>.