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 Engineering and Information Technology, Institute of Fundamentals of Electrical Engineering and Electronics, the Chair of Measurement and Sensor Systems Technology (www.tu-dresden.de/et/mst/) has a vacancy **as soon as possible** for the position of

<div align="center">

Research Associate (m/f/x)
Diffractive neural networks for multimode optical fibres
(subject to personal qualification employees are remunerated according to salary group up to 100% E13 TV-L)

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until 30 June 2026 with the option of extension (duration of employment according to WissZeitVG). There is the opportunity for further academic qualification. Further qualification (usually doctorate or habilitation). The compatibility of family and career is a high priority. In principle, the position is also suitable for part-time employees. Please note this preference in your application.

Tasks:
- Fibre optic networks form the backbone of the global Internet. Multi-mode fibre optic cables not only allow a significant increase in achievable network capacities through additional spatial degrees of freedom, but also contribute to increasing data security.
- The core task is to research new methods using diffractive optical neural networks for classical and non-classical light using AI and to pursue a transfer to secure multimode fibre communication.
- Your work will focus on researching innovative concepts for light control using multimode optical fibres that enable (de)multiplexing via the spatial degrees of freedom.
- For this purpose, special spatial modulation techniques and physics-informed neural networks will be investigated.
- Their activities include the realisation of measurement systems, the characterisation of light transmission properties, the performance of experiments and simulations, and the publication of the results.
- The main focus of the activities can vary between experimental laboratory setups and simulation experiments.

Requirements:
- Above-average academic degree in physics, electrical engineering, computer science, mechatronics or related degree programmes
- Ability to work independently and goal-orientated

- High level of commitment
- good command of the English language
- Interest in practice-orientated, interdisciplinary collaboration with cooperation partners
- Knowledge of computational imaging is an advantage.

We offer:
- a varied, highly topical and challenging academic position Research activity with own third-party funded project and creative possibilities
- an interdisciplinary working group that has received over 110 awards and offers an SPIE-OPTICA Student Chapter
- state-of-the-art laboratories
- Opportunities to publish in high-quality journals and to attend international conferences for scientific exchange exchange
- excellent contacts to partners from research and industry

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 address any queries to Prof. Dr.-Ing. Juergen Czarske, juergen.czarske@tu-dresden.de.

Please send your complete application documents, stating the **job reference w24-360**, by 22 November 2024 (the postmark of the Central Post Office or the time stamp on the TUD e-mail server applies) to TU Dresden, Faculty of Electrical Engineering and Information Technology, Institute of Fundamentals of Electrical Engineering and Electronics, Chair of Measurement and Sensor Systems Technology, Prof. Dr.-Ing. habil. J. Czarske, Helmholtzstr. 10, 01069 Dresden or by e-mail as a PDF document to grp-mst-sekretariat@msx.tu-dresden.de (Attention: currently no access for electronically signed and encrypted electronic documents). Your application documents will not be returned, please submit only copies. Interview costs will not be covered.