

Faculty Electrical and Computer Engineering

At the Professorship for Measurement and Sensor Systems/Czarske Lab, there is a position (www.tu-dresden.de/et/mst/)

Research Associate, Predoc/Postdoc
Optical Diffractive Neural Networks for Multimode Fibers
(subject to personal qualification employees are remunerated according to salary group E 13 TV-L, up to 100%)

for one year with the option of extension (length of employment according to WissZeitVG). There is the opportunity for your own further academic qualification (usually PhD or habilitation).

Single-mode fiber optic networks are the backbone of the global internet infrastructure including internet of things. 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 using optical diffractive neural networks (ODNN) for mode decomposition and multiplane light conversion.

Tasks: The focus is on research into innovative concepts for light control using multimode fibers, which enable (de)multiplexing of optical states via the spatial degrees of freedom (qudits). Your activities include the realization of multimode fiber system, the characterization of the light transmission properties, and the implementation of ODNN. The optical computers operate with high speed, low latency, and low energy consumption.

Prerequisites: Above-average scientific degree in the subject electrical engineering, 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 AI/ML/DNN, technical optics, quantum optics, MATLAB or Python is advantageous.

We offer: Living and success in Florence at the Elbe; Laboratories with modern equipment; excellent contacts in research and industry; visiting international conferences and an interdisciplinary, flexible team.

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 8 Feb 2024 (stamped arrival date of the university central mail service applies) to: **TU Dresden, Faculty of Electrical and Computer Engineering, Professorship for Measurement and Sensor Systems, Prof. Dr.-Ing. habil. J. Czarske, Helmholtzstr. 18, 01069 Dresden** or with a single email to 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. Technical questions will be answered with pleasure: <juergen.czarske@tu-dresden.de>
