

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 "**Friedrich List**" Faculty of Transport and Traffic Sciences, Institute of Railway Systems and Public Transport, the **Chair of Railway Operations** offers a position as

Research Associate / PhD Student (m/f/x)

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

starting at the **earliest possible date**. The position is limited for 3 years, max. until May 31, 2027 with the option of extension and the chance to obtain further academic qualification (usually PhD). The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). Balancing family and career is an important issue. The position is generally suitable for candidates seeking part-time employment. Please indicate the request in your application.

In our diverse research projects in the field of railway operations science, we investigate fundamental systemic interdependencies, further develop the theoretical methods and translate them into solutions for traffic and operational practice. The focus is on the areas of performance, operational quality and operational planning as well as the development and modelling of sustainable operational processes and technologies for passenger and freight transport. For example, the REINFORCERAIL project is developing an AI-supported component for traffic management systems in rail operations. A model railway simulation is available for this purpose in the Railway Operations Laboratory (EBL) at TU Dresden. The EBL offers both a physical and a computer-aided simulation environment for research, development and demonstration purposes, in which train movements, signalling and traffic operations are realistically modelled. It combines urban and conventional railway systems.

Tasks: Your activities in this context focus on the following:

- Designing and implementing new interfaces between the EBL and the dispatching environment,
- Developing models and algorithms for traffic management; may include traffic rescheduling, Driver Advisory Systems, train and traffic interactions or predictions,
- Developing and evaluating EBL-specific test cases for validating the algorithms,
- Transferring theoretical findings into practice and the railway operations laboratory,
- Participation in the REINFORCERAIL research project,
- Evaluation, documentation and publication of the research results.

Requirements:

- university degree in the field of computer science, transport sciences, operations research, data science, artificial intelligence or comparable (Master or Diploma),

- Good knowledge of quantitative skills including analytics, or OR or ML is beneficial
- Extensive programming knowledge (e. g. Delphi, C++, C# or Java),
- Extensive knowledge of railway systems and operations,
- Systematic and analytical way of working with a clear focus on goals and deadlines,
- High level of written and spoken German and English,
- Good communication and teamwork skills.

We offer:

- Work in a dynamic and international research environment in collaboration with industry and leading universities around the world,
- Work in a unique research environment at the Faculty of Transportation Sciences, which brings together researchers and laboratories from a wide range of disciplines,
- Extensive opportunities for further education and training,
- Job ticket and flexible working hours with the possibility to work from home.

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.

If you have any questions, please contact Prof. Nikola Bešinović by nikola.besinovic@tu-dresden.de.

Please submit your detailed application with the usual documents by **April 3, 2024** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the TUD SecureMail Portal <https://securemail.tu-dresden.de> as a single pdf file to bsrv@tu-dresden.de or to: **TU Dresden, Fakultät Verkehrswissenschaften "Friedrich List", Institut für Bahnsysteme und Öffentlichen Verkehr, Professur für Betrieb von Bahnsystemen, Prof. Nikola Bešinović, 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>.