

July 4th, 2025

The Zuse Institute Berlin (ZIB) is a non-university research institute under public law of the state of Berlin. Within the department Network Optimization (NEO) we are offering at the earliest possible date a position for a

Researcher (f/m/d)

on a full-time basis (39,4 hours per week), limited until April 30, 2026. If the applicant meets the relevant wage requirements and personal qualifications, the salary will be based on remuneration group 13 TV-L of the pay scale for the German public sector.

Our research group develops and implements state-of-the-art algorithms for mathematical optimization and artificial intelligence used in real-world applications. To this end, we collaborate with partners from academia and industry within the BMBF-funded research laboratory MODAL SynLab and beyond. Our flagship solver SCIP is one of the leading mixed-integer nonlinear programming solvers internationally.

Job Description

Sustainable public transit requires to balance the attractiveness of the service and the recovery of the costs of operation, which depends on number of users. Current optimization approaches assume that the demand is fixed and hence ignore important degrees of freedom. A key issue is therefore the development of methods that anticipate the demand response. Ideally, one would like to develop a universal “elastic demand” component that can be used to extend various models in public transport optimization ranging from network design via line planning and timetabling to vehicle and duty scheduling up to ticketing control. In this project, we want to develop such a demand component.

Your tasks

- Development of an elastic demand component
- Integration into a superordinate optimization model
- Implementation of a study on quantifying potentials for increasing the demand and the effects of this increase
- Visualization of the results
- Preparation of a project report
- Preparation and analysis of large-scale real world data in industrial formats
- Compilation of a scientific report

Your profile

- Master’s degree (or equivalent) in mathematics, computer science, or related disciplines
- Background in the following mathematical areas is mandatory: combinatorial optimization, integer programming, algorithmic graph theory

- Background in the following application areas is mandatory: Public transport, ideally railways, theory of choice or game theory
- Experience in interdisciplinary project work, in particular, with industrial partners, is highly desirable
- Good programming skills in one major programming language
- Good command of written and spoken English
- Creativity and a high degree of commitment to problem solving

We offer a friendly work environment with flexible work and meeting times, excellent equipment and a challenging professional environment

as well as

- an active onboarding process to provide new employees with the skills and knowledge that are important to their success in our institute and their careers,
- a varied, future-oriented and responsible field of activity,
- professional training opportunities and support in professional development,
- an additional pension scheme (VBL),
- 30 days annual leave, flexible working hours (flexitime),
- a salary based on TV-L (collective agreement for the public service of the federal states) in accordance with qualifications and professional experience with annual bonus payment,
- capital allowance of up to €150 per month, or alternatively a BVG job ticket plus the remaining balance,
- the use of canteens and sports programs of the Freie Universität Berlin (FUB) at reduced rates.

Applicants with disabilities will be given preference if equally qualified. Female applicants are highly encouraged to apply, since women are under-represented in natural sciences and ZIB seeks to increase the proportion of women in this field.

Please send your complete application including curriculum vitae in tabular form and all relevant documents and contact details of two references by **July 10, 2025** (date of receipt), quoting the **Reference Number IWA 11/25** as **one PDF file** to: jobs@zib.de.

For further information about the position, please refer to our website www.zib.de or contact Prof. Ralf Borndörfer (borndorfer@zib.de).

Our private policy statement regarding application data is available at www.zib.de/impressum.

For further job offers please visit our website at www.zib.de/jobadvertisement.