

**PhD-Researcher Position within the SE<sup>2</sup>A Research Cluster**  
***Discrete Optimization***

**Temporary Position (1.5 years), Salary Level EG 13 TV-L, 100%**

**Background:**

The Cluster of Excellence SE<sup>2</sup>A - *Sustainable and Energy Efficient Aviation* is a DFG-funded interdisciplinary research center investigating technologies for a sustainable and eco-friendly air transport system. Scientists from engineering, economics, chemistry and biology are working on the reduction of drag, emissions and noise, life-cycle concepts for airframes, improvements in air traffic management and new technologies for energy storage and conversion. Technische Universität Braunschweig, the German Aerospace Center (DLR), Leibniz University Hannover (LUH), the Braunschweig University of Art (HBK) and the National Metrology Institute of Germany (PTB) have joined forces in this extraordinary scientific undertaking. The overall project is structured into the three core research areas “Assessment of the Air Transport System”, “Flight Physics and Vehicle Systems” and “Energy Storage & Conversion”.

([www.tu-braunschweig.de/se2a](http://www.tu-braunschweig.de/se2a))

**Employment:**

The position is located at the Institute of Automotive Management and Industrial Production ([www.tu-braunschweig.de/aip](http://www.tu-braunschweig.de/aip)) in Braunschweig. The entry date is as soon as possible, and the duration is initially limited until the end of 2022. The payment is made according to task assignment and fulfillment of personal requirements to salary group 13 TV-L. International applicants may have to successfully complete a visa process before hiring can take place. The position is basically part-time suitable, but should be 100% occupied.

**Task:**

The successful applicant will work in the Junior Research Group "Overall System Evaluation" with Dr. Imke Joormann. The group consists of scientists from mathematics and economics. Its task is to investigate the impact of different parameters on the air transport system. To this end, a range of tools and models will be developed, e.g., solving a MILP to tightly schedule battery operated aircraft. The successful applicant is expected to contribute to this research, in particular by improving MILP solvers. One research direction explicitly encouraged is to use machine learning techniques in MILP solvers.

### Requirements:

- Completed scientific higher education (master, university diploma) in Mathematics (or a closely related field)
- Solid knowledge in the area of Discrete Optimization
- Programming skills in C/C++ and/or Python
- Good command of written and spoken English
- Interest in working on topics with a real-world application, in cooperation with partners from engineering and economics

Additionally, experience with

- SCIP/Gurobi/Cplex
- MINLPs
- Machine Learning

would be desirable.

The position comes with no teaching requirements.

### Application Process:

Applications should be sent by e-mail to [i.joormann@tu-braunschweig.de](mailto:i.joormann@tu-braunschweig.de) and must contain the following documents:

- Motivation Letter
- Curriculum Vitae including complete address, phone number, email address, educational background, language skills, and work experience
- Copies of bachelor and master diploma and transcript of grades in original language and in English or German translation
- Copy of the master thesis
- Contact information for at least two references

All documents should be in PDF format, preferably in a single file.

The deadline for application is **May 31, 2021**.

At TU Braunschweig, we aim to increase the share of women in academic positions and therefore particularly welcome applications from women. Where candidates have equivalent qualifications, preference will be given to female candidates. Handicapped applicants will be preferred if equally qualified. A proof must be enclosed. Applications from international scientists are welcome. For the purpose of carrying out the application process, personal data will be stored.

For further inquiries, you can contact Imke Joormann, [i.joormann@tu-braunschweig.de](mailto:i.joormann@tu-braunschweig.de).