PhD-Researcher Position (m/f/d) within the SE²A Research Cluster

**Multidisciplinary analysis and design of components for the thermal management of future aircraft configurations**

Temporary Position (up to 3 years), up to Salary Level EG 13 TV-L, 100%

Background:

The Cluster of Excellence SE²A - 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 aerospace, electrical, energy and chemical engineering as well as economics and social science 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/en/se2a](http://www.tu-braunschweig.de/en/se2a))

The Project:

The project breaks new technological ground by exploring the previously unknown design sensitivities resulting from the coupling of the waste heat transport from the fuel cells to the aerodynamic surface via a cooling fluid and the heat conduction through the surface structure up to the heat transfer to the aerodynamic flow around the aircraft surface. In addition to the precise numerical modelling of the individual disciplines involved and their couplings, a multidisciplinary thermal-mechanical design of the corresponding skin panels will be developed here. In a team with other scientists, a collaborative multidisciplinary analysis and optimisation environment is to be created that will make it possible to explore and characterise such as yet unexplored multidisciplinary design spaces and to optimise design solutions by means of algorithms.
Employment:
The position is located at the Institute of Aircraft Design and Lightweight Structures (IFL) (https://www.tu-braunschweig.de/en/ifl) in Braunschweig. The entry date is as soon as possible, and the duration is initially limited to 3 years with the possibility of extension up to a maximum of 6 years. The position is part-time suitable, but should be occupied 100%. For all doctoral researchers of the cluster, an active participation in SE²A's own qualification programme is mandatory, the time effort for this training measure entails 10% of the working time. The payment is made according to task assignment and fulfilment of personal requirements up to salary group EG 13 TV-L. International applicants may have to successfully complete a visa process before hiring can take place.

Task:
- Exploration of the thermal-mechanical design space for aircraft panels for cooling fuel cells of future aircraft configurations
- Thermal-mechanical modelling, analysis and optimization of such aircraft panels using FE methods including thermal flow-structure interactions
- Co-development of a collaborative analysis and design environment
- Publishing research results in scientific journals and at international conferences
- Support the institute’s teaching activities (supervision of lectures and student theses)
- Support research project acquisition and administrative tasks of the institute

Who we are looking for:
- You have very good basic knowledge in the areas of thermal and mechanical modelling
- You have very good basic knowledge of numerical, discretizing methods such as FEM or FVM
- You have experience in using numerical simulation tools and good programming skills
- You have a university degree (Master or equivalent) in engineering with above-average grades
- You are a team player and independent, solution-oriented and structured
- You are proficient in the English language for work in an international research environment
- You are proficient in the German language to support the teaching activities of the institute.

What’s more to know:
We welcome applicants of all nationalities. At the same time, we encourage people with severe disabilities to apply. Applications from severely disabled persons will be given preference if they are equally qualified. Please attach a form of evidence of your handicap to your application. We are also working on the fulfilment of the Central Equality Plan based on the Lower Saxony Equal Rights Act (Niedersächsisches Gleichberechtigungsgesetz—NGG) and strive to reduce under-representation in all areas and positions as defined by the NGG. Therefore, applications from women are particularly welcome in this case.

The personal data will be stored for the purpose of processing the application. By submitting your application, you agree that your data may be stored and processed electronically for application purposes in compliance with the provisions of data protection law. Further information on data protection can be found in our data protection regulations at https://www.tu-braunschweig.de/datenschutzerklaerung-bewerbungen. Application costs cannot be reimbursed.
Questions and Answers:
For more information, please call Dr.-Ing. Matthias Haupt on +49 (0) 531 391-9917.

Application Process:
Applications should be sent by e-mail to m.haupt@tu-braunschweig.de or in printed form to

Technische Universität Braunschweig
Institut für Flugzeugbau und Leichtbau
Dr.-Ing. Matthias Haupt
Hermann-Blenk-Straße 35, D 38108 Braunschweig

until **15.07.2023** 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
- Additional Documents must be provided on request

All documents should be in PDF format, preferably in a single file. Personal data and documents relating to the application process will be stored electronically.