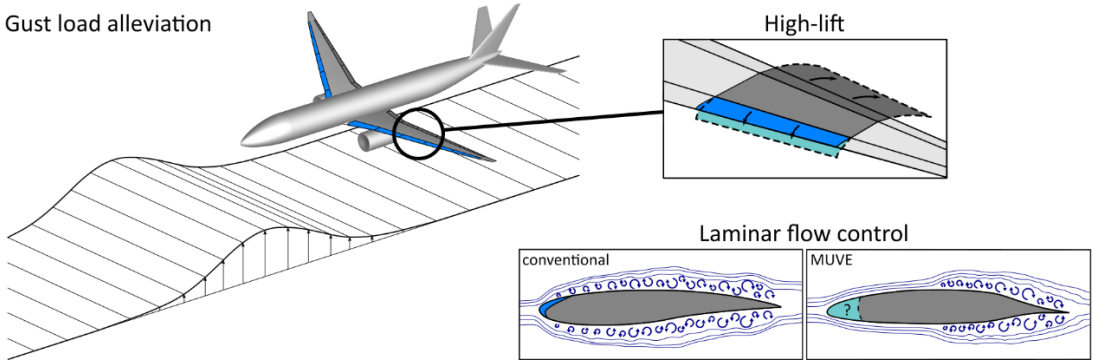
Technische Universität Braunschweig

Zertifikat seit 2007
audit familiengerechte hochschule

Starting from 1st August 2024, the Institute of Aircraft Design and Lightweight Structures of the TU Braunschweig within the collaborative LuFo project MUVE is looking for a

# Research Associate (m/f/d) in the field of *Structural Design of a Multi-Functional Leading Edge for Energy-Efficient Aircraft*

**(Full time – 3.00 years fixed-term – Doctorate)**




## Background and Research Objectives

In this project, we strive to contribute to the goal of sustainable and climate-friendly aviation by targeting a reduction in primary energy consumption through reduced wing weight and drag. To achieve this, multiple functions will have to be combined on future wings: i) laminar flow control to reduce viscous drag on both the upper and lower wing surface, ii) active suppression of gust- and maneuver-induced loads to reduce the structural requirements and fatigue loads, allowing the structural weight to be reduced, iii) high aspect ratio wings to reduce induced drag, and iv) high lift capabilities for take-off and landing.

The combined application of these different functions poses demanding requirements on the leading edge of the wing, as shown in the figure above. Current leading edge concepts do not allow for the integration of all of these different functions and thus prevent their joint application. A multifunctional leading edge system as an enabler for these different technologies is therefore essential for achieving current climate targets. The research project MUVE, funded by the Federal Aeronautical Research Programme (LuFo) of the Federal Ministry for Economic Affairs and Climate Action (BMWK) in Germany, pursues the design of this multifunctional, innovative leading edge system and the evaluation of its climate-relevant effects.

The PhD researcher advertised at the IFL of TU Braunschweig will investigate the structural-mechanical aspects together with a second PhD researcher, who is responsible for the aerodynamic aspects, of this novel leading edge design, in close collaboration with the TU Hamburg (system-technical design) and University of Stuttgart (aerodynamic performance evaluation). A significant proportion of the work is carried out on the basis of flow/structure-coupled high-fidelity simulations, while the feasibility of the leading edge system is to be demonstrated through the construction and testing of functional demonstrators.

## Make a Difference

- You will carry out research in the collaborative research on the topic *Structural Design of a Multi-Functional Leading Edge*
- You will collaborate with other national research institutions and industrial partners
- You will publish research findings and participate in national and international conferences
- You will be involved in teaching at the University by supervision of students' work

## Your Qualifications

- Master's degree or equivalent in mechanical engineering / aerospace engineering with experiences in numerical simulation, e.g. finite element method, and / or structural design
- You do not have a doctoral degree yet, but aim for one
- You have very good knowledge of the English language, and ideally also of the German language
- You are enthusiastic about actively working on the challenge of climate-neutral flying and are open to work in an interdisciplinary, cross-location team

## Our Benefits

- Work on exciting future-oriented research topics in an inspiring work environment as part of a friendly and motivated team as well as the university community.
- A vibrant campus life in an international atmosphere with intercultural offers and international co-operations
- Pay in accordance with the collective agreement TV-L, pay grade 13, depending on the assignment of tasks and fulfilment of personal requirements.
- A special payment at the end of the year as well as a supplementary benefit in the form of a company pension, comparable to a company pension in the private sector.
- Interesting and diverse tasks in a pleasant working atmosphere with a friendly and motivated team that works closely together across the locations.
- A workplace that is basically suitable for part-time work, although the position is to be filled full-time, as well as flexible working and part-time options and a family-friendly university culture, awarded the "Family-friendly university" audit since 2007.
- A wide range of continuing education and company health care programmes as well as a vibrant campus life in an international atmosphere.

## TU Braunschweig

With around 16,000 students and 3,800 employees, Technische Universität Braunschweig is the largest Institute of Technology in northern Germany. We are known for our strategic and performance-oriented thinking and acting, top-level research, highly committed lecturers and a successful transfer of knowledge and technologies into industry and society. We are dedicated to creating a family-friendly environment and advocate for equal opportunities.

Our core research areas are Mobility, Engineering for Health, Metrology, and the City of the Future. A strong focus is placed on engineering and the natural sciences, with a close link of our core disciplines to the economics, social and educational sciences as well as the humanities.

Our campus is located in the middle of one of Europe's research hotspots, where we have established a successful working relationship—both with the more than 20 research facilities in our neighbourhood and our international partner universities.

## 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. Matthias Haupt on (0531) 391-9917.

## Apply by 31 July 2024

Are you interested? Please send your application preferably via email to m.haupt@tu-braunschweig.de or via mail to

Technische Universität Braunschweig
Institute of Aircraft Design and Lightweight Structures
Hermann-Blenk-Str. 35
38106 Braunschweig