Technische Universität Braunschweig

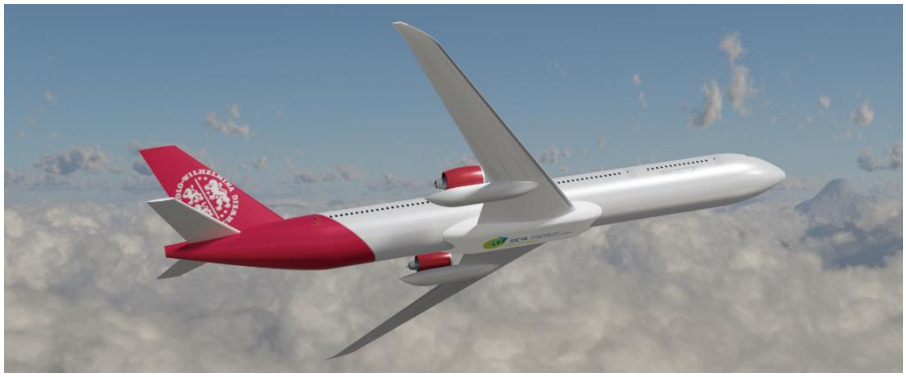
Institut für Flugzeugbau und Leichtbau IFL

SE²A

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

High-fidelity Aerostructural analysis, design, and optimization of energy-efficient aircraft

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).

Future sustainable and energy-efficient aircraft require unconventional approaches to their configurations to maximize the synergetic effects of future airframe and propulsion technologies. Due to high uncertainties at the early stages of design, high-fidelity analysis capabilities are necessary to answer specific design questions and make proper design decisions. The current project is related to the development of the framework for aerostructural analysis, design and optimization, and assessments of key configurational uncertainty areas of long-range commercial aircraft that feature advanced technologies considered in the Cluster.

Employment:

The position is located at the *Institute of Aircraft Design and Lightweight Structures (https://www.tu-braunschweig.de/en/ifl)* in *Braunschweig*. The entry date is as soon as possible, and the duration is initially limited until *the end of 2025*. 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 program is mandatory, the time

effort for this training measure entails 10% of the working time. The payment is made according to task assignment and fulfillment 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. Applications from international scientist are welcome. The Cluster SE²A aims to increase the share of women in academic positions. Applications from female candidates are very welcome. Where candidates have equal qualifications, preference will be given to female applicants. Candidates with handicaps will be preferred if equally qualified. Please enclose a proof.

Task:

- Develop toolchains for aerodynamic and structural analysis using high-fidelity tools
- Develop capabilities for aerostructural analysis and optimization of aircraft wings
- Perform aerostrauctural analysis and design of aircraft wings with unconventional engine allocation
- Publish research findings in journals and at international conferences
- Support teaching at the university (assistance with lectures and supervision of student theses)
- Support the acquisition of new research projects and the administration of the institute

Who we are looking for:

- Received an above-average university degree in Aerospace or Mechanical engineering
- Solid understanding of overall aircraft design aspects at conceptual and preliminary phases
- Experience in analytical and high-fidelity structural and aerodynamic analyses of aircraft
- Strong knowledge of FEA is required (ANSYS, Abaqus, or similar)
- Experience with CFD analysis is considered a plus
- Knowledge of multi-disciplinary design optimization techniques is considered a plus
- Capable of working as a team player as well as independently, structured and solution-oriented
- Very good knowledge of the English language in order to work in an international environment

Application Process:

Applications should be sent by e-mail to s.karpuk@tu-braunschweig.de and must contain the following documents until **15.03.2022**:

- 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.

Please note that application costs cannot be refunded. For the purpose of carrying out the application process, personal data will be stored.

For more information, please call M. Sc. Stanislav Karpuk on **+49 (0) 531 391-9922**.