



Technische  
Universität  
Braunschweig

Institut für **IDS**  
Dynamik und Schwingungen



**PhD-Researcher Position (m/f/d) within the SE<sup>2</sup>A Research Cluster**

***Uncertainty Quantification for Coupled Multiphysics Problems:  
Applications in Sustainable Aviation***

**Temporary Position (up to 3 years), up to 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 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))

**Employment:**

The position is affiliated with the Institut für Dynamik und Schwingungen (<https://www.tu-braunschweig.de/ids>) 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%. Active participation in SE<sup>2</sup>A's own doctoral program complementary to the programs of the institutions is an integral part of this position. 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 SE<sup>2</sup>A 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:**

Research within SE<sup>2</sup>A focuses on new concepts for future aircraft, which require multidisciplinary approaches to leverage the full design potential. The project will be particularly concerned with developing new methods for multiphysics analysis and design, which allow for a fast design space exploration and analysis of uncertainties in coupled problems. These include Bayesian methods for parameter estimation, surrogate modeling with physical constraints and problem tailored algorithms for efficient propagation of errors and uncertainties. The specific target application is the design of a novel full cell heat rejection

system for blended wing body long-range aircraft, but the methods shall be developed in a broader context. Handling the increasing complexity of multidisciplinary design is of particular importance and a close collaboration with researchers working on the semantics of coupled problems and engineering design is foreseen. The tasks are highly interdisciplinary in nature and require communication and strong collaboration within the project. The publication of results in high-quality academic journals will be supported and is highly desired. There will be the possibility to prepare a PhD thesis.

**Who we are looking for:**

The prospective candidate should hold a degree in Engineering, Mathematics or a related field and have a strong computational background. In particular, skills in numerical modeling with finite elements or related topics are important. A knowledge of probability theory and statistics is strongly required, as well as programming skills in Matlab or Python. Furthermore, a high level of speaking and writing in English is desired.

**Application Process:**

Applications should be sent by e-mail to [u.roemer@tu-braunschweig.de](mailto:u.roemer@tu-braunschweig.de) or by mail to

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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.

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 write an E-Mail to Ulrich Römer ([u.roemer@tu-braunschweig.de](mailto:u.roemer@tu-braunschweig.de)) or call +49 (0) 531 391- 62120.