



The Institute of Space Systems (IRAS) at TU Braunschweig is offering

**Two research and assistant positions (m/f/d)
(100 % -TV-L up to 13)**

**in the research field of “In-Space Propulsion”
at the earliest possible date for a duration of three years.**

Cryogenic in-space propulsion is a new challenging field of research at the Institute of Space Systems (IRAS) at the Technische Universität Braunschweig.

Although cryogenic propellants combination is largely used in Europe and worldwide for high performance launcher applications, the high specific impulse and availability in space make this propellant combination highly suited for in situ-resources utilization and in-orbit refueling. Hence, additional requirements must be addressed when considering in-space applications such as smaller size engines, harsh thermal environment, and multiple restarts with a reliable in-space ignition. This requires a significant understanding of the overall system and a different architecture compared to conventional, commercial satellites.

For these reasons, we are opening at the Institute of Space Systems (IRAS) two PhD positions in the field of “In-Space Propulsion” which aim to exploit new design of thrusters.

Proposed Dissertation Research Topics

Design, development and experimental characterization of injector types for Methane/Oxygen In-Space Propulsion Systems

Investigation on heat transfer and cooling methodologies for Methane/Oxygen In-Space Propulsion Systems

Tasks

The proposed research topics aim to design, develop and test rocket combustion devices

- Development, design and test of a methane/oxygen mobile rocket test facility
- Preparation of test sequences and sequence safety protocols
- Design and development of new experimental combustion chamber, including calculation of thermal and structural loads to verify suitability of the design and manufacturability of the components
- Planning, evaluation and execution of test activities at TU Braunschweig
- Detailed test evaluation, analysis and problem resolution

- Documentation and presentation of results for technical reviews (CDR, QR)
- Support of teaching activities. Exercise and internship course in “space propulsion” lectures

Qualification

- Education, research, and/or work experience in Aerospace, Mechanical, Physics, and related engineering fields is highly desired
- A Master’s degree in one of the above fields is required
- Experience in propulsion field and 3D printing is desired
- Enthusiasm for exploring new technologies in the field of rocket propulsion, as well as publication of conference and journal papers is required
- The desire to learn, program (C, C++, Matlab/Simulink, Catia), assemble and test

Severely disabled persons are preferred if they are equally suitable. Proof must be enclosed.

At TU Braunschweig we want to increase the proportion of women in scientific positions and therefore particularly welcome applications from women. Candidates with equivalent qualifications are given preference. Applications from international scientists are welcome.

We offer exciting and diversified activities.

Application costs cannot be reimbursed. A return of your application is only possible if you include a self-addressed stamped envelope.

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>.

For further information, please contact Prof. Simona Silvestri (details below). Please send your written application in German or English by 30.06.2023 together with the relevant documents (in one pdf file, max. 50 MB) by email to aerospace@tu-braunschweig.de.

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