

TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the **Faculty of Mechanical Science and Engineering, Institute of Aerospace Engineering**, the **Chair of Space Systems** offers a full-time position as

Research Associate / PhD Student (m/f/x)

E-Sailors - Electric solar wind Sail doctors

(salary according to MSCA regulation)

starting **May 1, 2026**.

This project has received funding from the European Union's Horizon Europe research and innovation program under the MARIE SKŁODOWSKA-CURIE grant agreement no 101227277.

Research areas: **DC5: High-Voltage PPU for E-sail**

Terms: The position is limited to 36 months. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz – WissZeitVG).

Supervisory team: Supervisor: Prof. Dr. Martin Tajmar
Co-supervisor: Assoc. Prof. Dr. Jaan Praks

Secondment: 2 months at Aalto university in Finland

About E-Sailors: The Electric solar wind Sail doctors (E-Sailors) is a challenge-based Doctoral Network that aims to bring Electric solar wind sail (E-sail) from Low Earth Orbit (LEO) demonstration missions to the operational environment of the solar wind. It is delivered by 8 universities in cooperation with FMI, where E-sail was invented, and 4 companies.

E-sail is a highly innovative and potentially disruptive propellantless propulsion system. An operational E-sail consists of hair-thin and kilometers-long wires, or tethers, which are charged at a high voltage creating an electrostatic sheath (electric sail) which deflects solar wind particles and generates the propulsive effect in interplanetary environment. Successful and rapid development and deployment of the technology will ensure EU's leadership in the exploration and exploitation of deep space, the next commercial space frontier.

The program is designed to achieve the following training objectives for our doctoral candidates: 1) Equip them with core scientific skills and specialized knowledge in designing experiments for demonstrating space technologies and developing space missions; 2) Provide them with a wide range of transferrable skills, such as Open Science and FAIR, communicating science to public, advocacy, networking etc.; 3) Develop their business and entrepreneurship skills, such as IPR management, preliminary business planning, pitching to investors, starting start-ups.

Project description: This position dubbed "E-Sailor 5" will be responsible for developing a high-voltage PPU that shall power the E-Sail electron emitter, sail and associated devices.

The E-Sail electron gun needs a power-processing-unit to provide the required voltages and currents. As a start, voltages in the range of 20 kV and currents in the hundreds of μA are needed, to be determined in close cooperation with E-Sailor 6. The challenge is to design a PPU that can withstand vacuum and space environments and therefore needs to be very efficient to minimize cooling. The design shall form the basis for variations that can power other related propulsion concepts in the TUD lab like those developed by E-Sailor 3.

Prototypes shall be built and thoroughly tested to match performance and lifetime requirements. In the end, support shall be given to support payload integration for the ESTCube-LuNa mission.

Tasks:

- Undertake innovative and independent research in terms of developing new concepts or improving existing methodologies.
- Carry out literature review, hypothesis development, and experimental design.
- Adapt, develop and learn new tools, software, and methodologies independently.
- Present and publish research in both academic and non-academic audiences. Attend and participate in academic and non-academic conferences, events and seminars.
- Communicate results in professional written English thorough reports and publications.
- Work independently while effectively communicating progress and challenges.
- Work in international teams and on interdisciplinary problems, while also identify and address technical challenges independently.
- Stay current with the relevant literature and technologies.
- Actively contribute to the public engagement and outreach activities of the project.
- The above job descriptions are not exhaustive, the PhD candidate may be required to undertake other tasks, which are broadly in line with the above duties and responsibilities.

Requirements:

- university degree (e.g. Master) electrical engineering, aerospace engineering or related field. Copies of bachelor's and master's diplomas and academic transcripts/diploma supplements (with translations, if applicable). Candidates may apply prior to obtaining their master's degree, by sending a provisional Master's degree. But cannot receive an employment contract before having obtained the master's degree.
- Solid knowledge in designing high-voltage circuits. Space electronics background is an advantage.
- Excellent command of written and spoken English. Proof of English language proficiency.
- The primary workplace will be in Dresden, Germany. Therefore, candidates from outside the EU must be eligible to obtain a visa. The position is expected to start in the first half of 2026.
- Residency history of last 36 months and main activity (work, studies, etc.) in the country of the host organization of last 36 months.
- As secondments and events are foreseen, applicants must be ready to travel
- Applicants must be eligible to enroll on a PhD program at TU Dresden (see https://tu-dresden.de/ing/maschinenwesen/postgraduales/promotion?set_language=en)

Eligibility requirements

- The applicant must have a university degree (MSc degree or equivalent).
- The applicant must not already be in possession of a doctoral degree at the date of the recruitment.
- At the time of recruitment, the researcher must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the three years immediately prior to the recruitment date. Compulsory national service and/or short stays such as holidays are not considered.

Applicants can be of any nationality within laws of EU to enter the EU countries.

Candidates may apply prior to obtaining their master's degree, but cannot receive an employment contract before having obtained the master's degree.

Candidates may apply to multiple positions offered within E-Sailors, but should carefully choose the ones that they apply for.

We offer / Benefits:

- A competitive salary according to [MSCA regulations](#) (see page 118ff), including a living allowance, a mobility allowance and, if eligible, a family allowance. The stated allowances represent the gross funding amounts. Employer contributions to social security, health insurance, and other statutory costs will be deducted in accordance with the applicable national regulations.
- Covered tuition costs, research costs and funding for short term mobility (i.e. conference attendance).
- Interdisciplinary and international research projects.
- Becoming a Marie Skłodowska-Curie PhD fellow.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

How to apply: Interested candidates are invited to submit one single PDF containing the following documents in this exact order:

- Application form (https://www.verw.tu-dresden.de/VerwRicht/Formulare/download.asp?file=E-Sailors_Application_Form.docx)
- Motivation letter – explaining the following topics:
 - Research experience and independent work experience evident through technical projects, theses, publications, or technical reports.
 - Experience in managing multiple concurrent tasks and priorities independently and track record of meeting project deadlines and delivering results without constant supervision.
 - Proven ability to work autonomously on complex technical problems and demonstrated problem-solving skills in technical/engineering contexts.
 - Leadership experience in terms of leading or significantly contributing to multi-month technical projects and taking initiative in research or development activities.
 - Experience working with interdisciplinary and international teams while maintaining individual accountability, such as driving projects forward without extensive guidance.
 - Example of at least one practical project completed within the deadline with minimal supervision, and evidence of self-motivation and proactive problem-solving. Please submit description of personal contributions and level of independence, project outcomes and impact, and references in terms of publications, theses, technical reports, simulations, analysis, code samples, or documentation (multiple references are considered beneficial).
- An evidence-based CV that reflects a representative array of achievements and qualifications appropriate to the position you are applying for
- Reference letters or, at minimum, the contact details of persons that may be contacted for reference
- Educational and professional certificates (university degree(s) with marks, internships, workshops, languages, etc.)
- Copy of passport

Moreover, you must submit in a separate e-mail:

- Short video (maximum 30 seconds, not longer). The video must include: personal introduction, background and your motivation to apply to the research position.

Please submit your application as stated above by **January 30, 2026** quoting the **reference “Application for DC5 position”** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the TUD SecureMail Portal <https://securemail.tu-dresden.de> by sending it as a single pdf file to esailors@tu-dresden.de or to:

TU Dresden, Institute of Aerospace Engineering, Prof. Dr. Martin Tajmar, Helmholtzstr. 10, 01069 Dresden, Germany.

Applications and enclosures received after the deadline will not be considered.

The email size of each e-mail incl. attachments must not exceed 10 MB in total. You will receive an automatic reply if we have received your email. Please avoid any questions on the status of the selection process. We will inform you as soon as there is an update. Candidates whose application is not compliant with the requirements above will not be considered.

Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Selection procedure:

- Applications will be reviewed for eligibility and suitability based on the criteria listed for each position.
- After shortlisting, candidates will be invited for online interviews with the respective recruitment committees.
- The recruiting institution will send out notification of the selection outcome after the online interview.

In addition: More information can be found from the E-Sailors project web page – <https://sisu.ut.ee/esailors/>.

Horizon Europe MSCA Mobility Rule: Researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organization (Germany) for more than 12 months in the 36 months immediately before the recruitment date – unless as part of a compulsory national service or a procedure for obtaining refugee status under the Geneva Convention.

Horizon Europe MSCA Eligibility Criteria: Doctoral Candidates (DC) must, at the date of recruitment by the host organization, have not been awarded a doctoral degree.

Applicants who do not fulfill the Mobility Rule and the Eligibility Criteria CANNOT be considered for the research position.

TUD is a founding partner in the DRESDEN-
concept alliance.

DRESDEN
concept



Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: <https://tu-dresden.de/karriere/datenschutzhinweis>.