



Start your mission with DLR.

The German Aerospace Center DLR has a dual mandate as the national research center for aeronautics and space, and as the space agency of the German federal government. Approximately 8,000 people work for DLR on a uniquely diverse range of topics spanning the fields of aeronautics, space, energy, transportation and security research. They collaborate on projects extending from fundamental research to the development of the innovative applications and products of the future. If the idea of joining a top-class team of researchers working in a supportive, inspirational environment appeals to you, then why not launch your mission with us?

For our **Department of Guidance, Navigation and Control Systems** at the **Institute of Space Systems** in **Bremen** we wish to recruit for the

Development of Technologies for Navigation Systems for Space Applications

Two Engineers in the Field of Aerospace/Space Engineering, Control Engineering, Mathematics, Computer Science, or similar

Your Mission:

The Institute of Space Systems in Bremen designs and analyzes future spacecraft and space missions (launchers, orbital and exploration systems, and satellites), and assesses them with regard to their technical performance and cost. It applies state-of-the-art methods of multi-disciplinary engineering in system design and analysis – for example, a computerized system for concurrent design. The Guidance, Navigation and Control Systems Department focuses on the capability to analyze, design, develop, implement, simulate, test, and verify attitude and orbit control systems (AOCS) / guidance, navigation, and control (GNC) systems for space applications and their components. This involves a range of disciplines, including requirements management, systems engineering, algorithm development, software implementation, systems analysis/simulation/verification, and hardware-in-the-loop testing. The GNC Systems Department is also conducting research and development of promising and strategic technologies for AOCS and GNC systems.

The GNC Systems Department is actively involved in several internal and international projects. This encompasses among others the project ReFEx (Reusability Flight Experiment), the project CALLISTO – an international cooperation between DLR and the space agencies JAXA (Japan) und CNES (France), and the EU H2020 project EURISA with partners in France and Switzerland. The work comprises the development of navigation technologies for different space flight applications.



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Within this context, we are looking for scientific staff members to conduct the following tasks within the Navigation Research Group:

- Development of strapdown integration algorithms for inertial measurements in scenarios such as space transportation, operation in the vicinity of Earth and other planetary bodies, and landing on the Moon, Mars, and asteroids
- Development of navigation filters/data fusion algorithms with the focus on the combination of inertial measurements and measurements of GNSS receivers, cameras, star trackers, altimeters, Sun sensors, etc.
- Modelling of realistic environments, dynamics, and sensor signals
- Full characterization of inertial sensors
- Integration and utilization of sensors such as cameras, IMUs, etc. in a real-time environment
- Project/activity results documentation, presentation, and publication
- Commitment to group activities such as maintenance and development of laboratories, development and improvement of procedures, knowledge management, or acquisition of external funding

Your Qualifications:

- Successfully completed university degree on master's level or equivalent (according to § 7 II Tarifvertrag über die Entgeltordnung des Bundes – TV EntGO Bund) in the domain of aerospace/space engineering, control engineering, mathematics, computer science, or similar
- Practical experience in methods of sensor data fusion and state estimation (Kalman-Filter)
- Knowledge in the area of inertial navigation and GNSS navigation
- Good programming skills in C, C++, MATLAB/Simulink
- Fluent in written and spoken English, ideally with work experience abroad
- Experience with scientific publications (articles in peer-reviewed journals, conference contributions, etc.)
- Conformance with the personal requirements for handling of export controlled goods and information according to German, European and American export control laws
- Willingness to domestic and international travels on official business
- Practical experience with methods of inertial navigation is desired (e.g. modelling of space vehicle dynamics; modelling of inertial sensors; strapdown integration algorithms in different types of reference frames; estimation of sensor parameters)
- Experience in modelling complementary sensors such as GNSS receivers, cameras, star trackers, altimeters, Sun sensors is a plus
- Experience in methods of parameter estimation is advantageous
- Experience in handling hardware is ideal
- PhD in the area of INS/GNSS navigation is an advantage
- Supervision of Bachelor or Master theses desirable
- Mastery of written and spoken German is an advantage



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Your Benefits:

Look forward to a fulfilling job with an employer who appreciates your commitment and supports your personal and professional development. Our unique infrastructure offers you a working environment in which you have unparalleled scope to develop your creative ideas and accomplish your professional objectives. Disabled applicants with equivalent qualifications will be given preferential treatment.

Facility:	Institute of Space Systems	DLR Site:	Bremen
Job Type:	scientific activities/projects	Employment Level:	full time
Start:	immediately	Contract Duration:	3 years
Remuneration:	according to German TVöD E13		

Please find further information on this vacancy with the reference number 85398 and details regarding the application procedure at <https://www.dlr.de/dlr/jobs/en/>.

Here is the direct link to this vacancy:

https://www.dlr.de/dlr/jobs/en/desktopdefault.aspx/tabid-10596/1003_read-52008/



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