



Start your mission with DLR

The German Aerospace Center (DLR) is the national aeronautics and space research centre and the space agency of the Federal Republic of Germany. Here, 10,000 employees work together on a unique variety of topics in the fields of aeronautics, space, energy, transport, security and digitalisation. Their missions range from basic research to the development of innovative applications and products for tomorrow. Cutting-edge research requires excellent minds – particularly more females – at all levels, who fully achieve their potential in an inspiring environment. Launch your mission with us.

For our **Institute of Communications and Navigation** in **Oberpfaffenhofen near Munich**, we are currently looking for a

Scientific Researcher in Electronic Engineering, Communications, Physics, Computer Science or similar (f/m/x)

Development of optical communication systems for satellites with very high (>Tbps) data rates

Your mission:

A central research area of the Satellite Networks department is optical satellite communications for links from low and geostationary orbit to the ground and between satellites. In this topic, the Department is the world-leader thanks to applying highly innovative approaches.

The research group Advanced Optical Technologies (AOT) concentrates on developments for future applications of free-space optical communications through the atmosphere and in space. Research topics cover areas from atmospheric (optical) turbulence and compensation of its influence to development of optical communications systems for the Ground as well as for the space segment. To do that, we cover all areas from the theory through simulation to the laboratory and channel measurements during experimental demonstrations.

The development of such systems is highly complex: for instance, the optical signals travelling through the atmospheric channel are extremely distorted. This prevents reliable communications links that require pointing precision of 1 millionth of a degree. Furthermore, the very high datarate requirements pose extreme challenges for space systems that need to not only accommodate large volumes and weight, but also increase the energy consumption of the payloads. Hence, photonic integration and an efficient signal processing as well as an efficient routing, each assuming corresponding algorithms are required in order to minimize the SWaP of the space segment. The research team is developing in this manner the next generation of communication systems for satellite communications. In your future tasks, you will focus on the technology development for very high throughput satellite optical communications systems in a range of Tbps. This includes system concepts as well as on-board signal processing assuming operational requirements in the context of the mission. You will develop prototypes using methods of model-based system engineering, take charge in the planning and leading of measurement campaigns and space qualification nationally and internationally.

We offer you a pleasant working environment in a core research and development area of our Institute, modern facilities and equipment and an opportunity to work with national and international partners on the research projects. You will work in an international team and develop pioneering results. Personal as well as professional development (e.g. PhD, PMP project management etc.) are given.

Your qualifications:

- finished education at a university level (Master/Diplom) in Electronics, Communications, Physics, Computer Science or similar, with a multiple-year working experience and possibly with PhD in one of the areas
- very good knowledge and proven several years of professional experience in space environment effects and in technological approaches for satellite systems hardware/software qualification
- very good knowledge and proven several years of professional experience in optical satellite communication systems and optoelectronic systems
- several years of practical experience in optical design of hardware and software components for space applications
- practical experience in the management of (space) satellite communication projects
- experience in hardware and software development for space applications including various software and tool programs such as for space effects analysis (ESA), Python as well as C and C+
- experience in documenting and publishing research results in scientific journals and presenting at technical conferences
- fluency in English (business fluent)

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. Our human resources policy places great value on a healthy family and work-life-balance as well as equal opportunities for persons of all genders (f/m/x). Individuals with disabilities will be given preferential consideration in the event their qualifications are equivalent to those of other candidates.

If you have any questions concerning specific aspects of the job, please contact Dr. Juraj Poliak by calling **+49 8153 28-1470** or Dr. Ramon Mata Calvo by calling **+49 8153 28-3448**. Please find further information on this vacancy with the reference number 65198, and details regarding the remuneration and the application procedure, at **www.DLR.de/dlr/jobs/#47677**

