



**University of Stuttgart**

Institute of Space Systems

## Hiwi Position (m/w/d)

# Plasma Wind Tunnels for Atmospheric Entry Simulations (Mars/Venus)

Starting Date: 04/2023

Contract: minimum 30h/month

### Motivation:

Internationally, the exploration and habitation of Mars is seen as a major step towards establishing humankind as an interplanetary species. One mission-critical phase is the spacecraft entry into Mars atmosphere. Here, suitable TPS materials are necessary to protect the S/C and its payload from convective and radiative heat loads.

At the Institute of Space Systems, the plasma wind tunnel facility PWK3, powered by the inductive plasma generator IPG4, is used to study the material response to Martian atmospheric entry scenarios. To better understand the underlying principles it is important to characterize the CO<sub>2</sub> plasma by means of optical and intrusive diagnostics. In the course of this research assistant position, a measurement setup for Fourier-Transform Infrared Spectroscopy (FTIR) shall be designed and build.

### Tasks:

- Design and construction of a measurement setup for infrared spectroscopy at plasma wind tunnel PWK3
- Support during plasma wind tunnel tests, applying the designed setup
- Modeling of infrared radiation/absorption in Python
- Documentation/publication of the work

### Skills:

- Strong interest in Physics and Chemistry
- Motivation and self-reliance/autonomy
- Basic knowledge in atomic structure, radiation and optics (preferred)
- Programming skills in Python (preferred)

If you are interested in hands-on scientific work, just send me an email including a recent transcript of records and your CV:

**Hendrik Burghaus**

Institut für Raumfahrtssysteme  
Universität Stuttgart  
Pfaffenwaldring 29  
70569 Stuttgart

E-Mail: [hburghaus@irs.uni-stuttgart.de](mailto:hburghaus@irs.uni-stuttgart.de)  
Tel.: +49 711 685-62074

