



PhD/Doktorand\*in  
(Wissenschaftlicher  
Mitarbeiter\*in)



## PROJECT HYGO-BW

### PhD: Software-defined Avionics Robustness

The avionics systems is the brain of a satellite launcher. It is responsible for following the trajectory, activating the stages and positioning the payload. Moreover, the avionics systems is responsible for the failure management and contributes significantly to the development effort, cost as well as weight of the rocket. The avionics computers in a launcher must be robust in respect to harsh environments (i.e. extreme temperatures, humidity and radiation) and fault tolerant. This cause high cost for space-hardened avionics components. In HYGO-BW a new upper stage of a small satellite orbital launcher is developed. The aim of this PhD is to develop a fault tolerant low-cost computing platform with commercial-of-the-shelf hardware and increase the robustness (e.g. reliability and integrity) topologies and algorithms. It is to be investigated to what extend, robustness can be achieved by software. For that purpose a generic method shall be developed that allows to automatically derive the appropriate software-defined robustness for given requirements. In addition, a test and evaluation environment shall be setup. The best computing system for the HYGO-BW rocket shall be designed with the partners and shall be evaluated.

Offered is a full position payed according to the German tariff (TV-L 13). A self-controlled management of project duties, publications, and technical and scientific progress is expected.

#### Preferred Profile

- PhD-eligible diploma or master in aerospace engineering, computer science or math
- Background in distributed computing or avionics systems
- Knowledge and interest in domain-specific modeling and discrete optimization

**Startdate** ~Sep 2022 or later

#### Application

Interested? Send your application including motivation, CV, and certificates to the email below. German or English both are fine.

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