



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



## PROJECT HYGO-BW

### PhD: Launcher Avionics System Optimization

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 system is responsible for the failure management and contributes significantly to the development effort, cost as well as weight of the rocket. The architecture of the avionics system has many variants and choosing the best-suited variant is essential for the performance of the rocket. In HYGO-BW a new upper stage of a small satellite orbital launcher is developed. The aim of this PhD position is to develop a method, that is capable to determine the number of components, the function allocation, topology and placement of the avionics system optimally with respect to one or multiple design objectives like weight, cost, installation effort or similar. The optimization shall be based on formal models and mathematic optimization. Existing domain-specific models for avionics architectures and multi-objective combinatorial optimization methods might be reused and extended for the application to the rocket. The new methods shall be applied to the HYGO-BW launcher together with the partners to identify the optimal system for the rocket.

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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Mass  
Energy need  
Feed-trough

