



10.11.2022

Chair of Space Technology

Topic:

Orbit Design for a Scientific SmallSat Mission to Venus

Thesis Type: Master

Start: December 2022

Contact: e.kloner@tu-berlin.de

Description:

The rise of miniaturized space-proven hardware increases the number of small satellites launched into Earth's orbit. Recent developments and first missions have shown their suitability for interplanetary use.

The chair of space technology is currently working together with the DLR Adlershof on a mission design of a scientific mission to the Venus. For further evaluation of different mission architectures, a trade-off analysis of different orbits designs shall be performed. The goal of this thesis is to conduct an analysis of a set of orbits suitable for a scientific small satellite mission to Venus. Thereby the work will include the following:

- Set-up orbit propagation around Venus including applicable perturbation models
- Derive performance criteria and trade-off parameters
- Derive suitable simulation scenarios
- Run orbit simulations and provide data for the trade-off
- Documentation

As the thesis is strongly linked to current research a starting date as soon as possible is desired.

Required:

- Profound knowledge in spaceflight mechanics
- Experience with orbit propagation
- Coding Skills in Matlab or Python