

Bachelor and Master Thesis Possibilities:
Aerodynamic Orbit Control in Very Low Earth Orbits (CRC ATLAS)

The Collaborative Research Centre 1667 “Advancing Technologies of Very Low-Altitude Satellites (ATLAS)” addresses the fundamental scientific and engineering challenges of rendering Very Low Earth Orbit (VLEO, about 200 km to 450 km altitude) accessible. These orbits are particularly beneficial for indispensable satellite services of our modern knowledge, information and communication society. Additionally, access to VLEO offers the opportunity to operate satellites without exposure or contribution to the increasing contamination of traditional orbits with space debris.

In Project A06, a simulation tool for planning manoeuvres considering the acting aerodynamic forces, the associated uncertainties and thrust will be developed and investigated at the Institute of Space Systems. The tool will provide the possibility to identify optimal manoeuvre strategies, e.g. with minimum thrust requirements, or to evaluate the effects of satellite design. In particular, aerodynamic lift, which has often been neglected so far, will be taken into account, as it is essential for three-dimensional orbit control.

This continuously offers possibilities for students to perform their Bachelor or Master thesis. **Applications with a short statement and CV are very welcome!**

Possible Tasks:

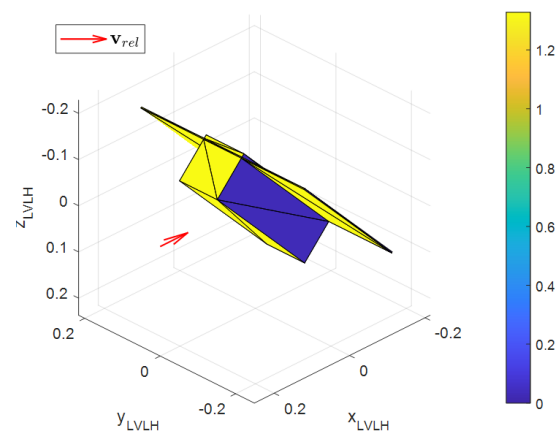
- Development and implementation of orbit propagation algorithms in MATLAB software
- Development of aerodynamic manoeuvring strategies
- Analysis of possible manoeuvre scenarios
- Research on collision avoidance strategies utilizing aerodynamic forces
- Aerodynamic analysis of satellites and satellite design studies
- ...

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*Aerodynamic analysis of SOURCE using ADBSat
(Sinpetru et al., University of Manchester)*



More information on:

<https://www.sfb1667.uni-stuttgart.de/>

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