



Bachelor or Masters thesis

Modelling and Assessing Strategic Stability in Outer Space

Supporting Arms Control in Space (SACS) - Junior Research Group
Faculty of Social Sciences & Faculty of Aerospace Engineering

Description of proposed topic

The growing militarisation of outer space poses significant risks to global security and the sustainable use of orbital resources. Space assets became essential for communication, navigation, internet etc., and their increasing vulnerability to external attacks threatens strategic stability. This research uses mathematical and computational modelling to better understand deterrence, escalation, and arms control dynamics in space. It aims to identify stability indicators and explore mechanisms that can support future space arms control.

Thesis topics

- Research global space capabilities through open-source data
- A (simple) simulation model of:
 - Cooperation and defection or
 - Escalation
- A signalling game on space transparency

Skills Required (depending on thesis topic)

- Motivation, creativity and enthusiasm for this crucial topic
- Basic/advanced data analysis (Python or Excel)
- Basic/advanced modelling (Python)

Supervisor

M.Sc. Helena Althoff
SACS Junior Research Group
helena.althoff@unibw.de

Co-supervisor

Dr.-Ing. Konstantinos Konstantinidis
SACS Junior Research Group
konstantinos.konstantinidis@unibw.de