Universität der Bundeswehr München
Fakultät für Luft- und Raumfahrttechnik
Professur für Raumfahrttechnik LRT 9.1
Univ. Prof. Dr.-Ing. R. Förstner

INSTITUTE OF SPACE TECHNOLOGY & SPACE APPLICATIONS

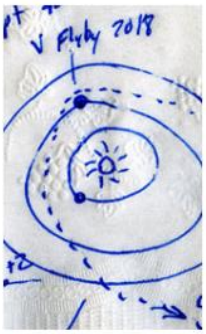
Bachelor-/Project-/Masterarbeit

Rapid Mission Architecture (RMA) study for astrobiology mission to the icy moons

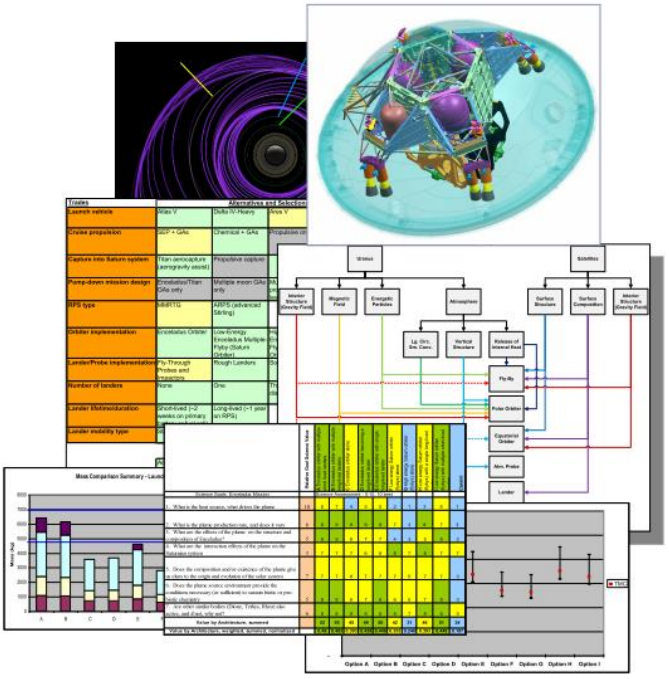
The Rapid Mission Architecture (RMA) assessment method developed at NASA JPL is a novel approach to generate new mission architectures, explore broad trade space options, and conduct architecture-level analyses. RMA studies address feasibility and identify best candidates to proceed to further detailed design studies.

In this thesis, the RMA method is to be used to assess the optimal mission architectures to discover microbial life in the solar system. Some of the best candidates to currently host microbial life in the solar system are the several icy moons of the outer solar system that carry large subsurface oceans. Missions currently planned to visit those moons will investigate their habitability, i.e. the presence of liquid water, the right chemicals and an energy source to sustain life. The next generation of astrobiological missions to be investigated in this thesis will have to go one step further and detect the signatures of existing microbial life itself or even analyze living microorganisms on the spot.

The interested student will then review the RMA method and its past application cases, make the necessary modifications to it, and finally apply it to missions for on the spot astrobiology on the icy moons of the outer solar system. The result will be a ranking of the candidate mission concepts based on their scientific return, risk, and cost.



or



Betreuer: MSc. Kostas Konstantinidis
k.konstantinidis@unibw.de
Geb. 35, Raum 1406
Tel.: 089 / 6004 3592