



Masterarbeit

Simulation of Large In-Space Structures

In-Space Manufacturing (ISM) is being researched as the next step in enabling larger, more powerful spacecraft. Current research and concepts will enable the manufacture of structures with unlimited size directly in space. As these structures do not need to withstand launch, they can be optimised for the mechanical and thermal loads experienced in orbit, theoretically making them lighter and cheaper.

This master thesis topic will investigate what such a large structure could look like through the use of mechanical and thermal simulation. It is expected that the student will choose an example geometry and use a variety of simulation tools to design a structure which is adapted for the in-space environment.



In general, the tasks to be completed are:

- Literature research investigating the mechanical and thermal loads which must be withstood by a large structure
- Selection of an example structure (e.g. Truss for space station or large solar arrays)
- Design of a large structure with the aid of mechanical and thermal simulation tools
- Comparison to traditional in-space structures

Key skills which would be useful for the successful completion of this project are:

- Experience in FEA simulation (preferably ANSYS)
- Good understanding of thermal engineering and how it applies in space
- Curiosity in the area of designing for the space environment

If interested, please send Declan Jonckers your CV and grade transcript.

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