

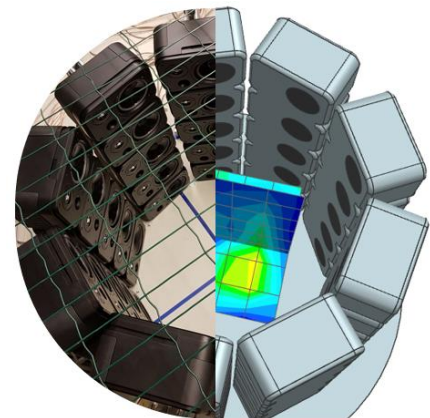
## Internship / Master thesis proposal

# Introduction of numerical and experimental methods to investigate the vibro-acoustic responses of lightweight structures subjected to direct acoustic fields

Start: flexible  
Duration: 6 months

## Background

Environmental acoustic tests are performed as part of the qualification campaign of spacecrafts to ensure that the hardware will survive the extreme conditions of the space launch. In the recent years, direct field acoustic excitation testing (DFAX) has been steadily introduced as a more efficient and flexible methodology to conduct such tests.



## Research Topics and Activities

The student will perform numerical and experimental analyses on a small-scale DFAX set-up with the scope of improving the understanding of the vibro-acoustic responses in the test specimen and surroundings.

- Plan and set-up the acoustic test rig.
- Perform open and close-loop acoustic tests to identify the system responses and investigate best control strategies to achieve the required pressure fields.
- Derive a comprehensive Digital Twin of the electro-acoustic test set-up using analytical and numerical (FEM/BEM) methods.
- Study the vibro-acoustic responses via correlation between the test and numerical solutions, including the sound attenuation due to the structure.

## Requirements

- Enrolled student in a Master course of Mechanical or Aerospace Engineering or similar field of study with strong interest in physical modelling, simulation and environmental testing for space applications.
- Good knowledge in dynamic analysis, FEM/BEM, and Matlab.
- Knowledge in acoustic analysis is a plus.
- Working language: English.
- You are a good team player, have good communication skills, and are able to work independently.

## Contact

Does the proposal fit your objectives and profile? Should you have general questions regarding this position or we attracted your attention please apply by providing all of your application documents (cover letter, CV, current certificate of enrolment) to

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