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CENTRE SPATIAL UNIVERSITAIRE MONTPELLIER-NIMES

MECHANICAL ANALYSIS OF CELESTA CUBESAT

1. Background

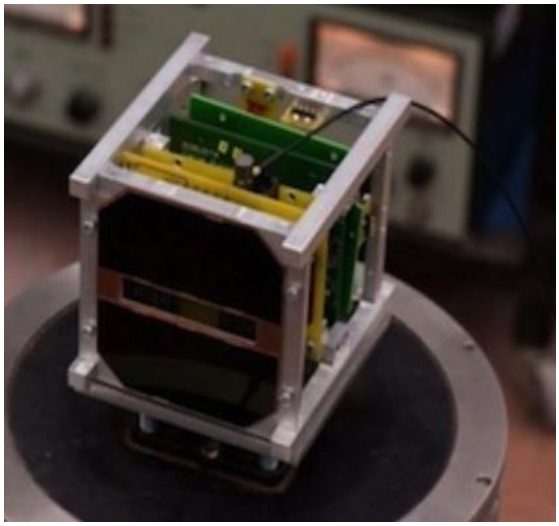
CELESTA (CERN Latch-up Experiment Student Satellite) is a CubeSat project, developed in collaboration by the CERN and the University of Montpellier in the framework of a collaboration agreement defined and signed in 2015. The project aims at a launch in 2018 and successfully passed a preliminary review early this summer.

The mechanical design is performed by students of the CSU. In order to verify the design compatibility with the launcher, it is necessary to perform mechanical calculation to find the stress applied during random vibration and the resonance frequency of the structure. Later on Engineering model and flight model will be tested.

2. Internship Objectives

- Perform a small bibliographic research on the specific aspect of satellite mechanical design
- Create a simple mechanical model of the satellite structure in a dedicated mechanical analysis software
- Perform mechanical analysis for the random vibration level specified by the launcher
- Find the resonance mode(s) and frequencies of the satellite structure
- Update the model with other parts of the satellite and repeat the random vibration analysis and the resonance calculations

- If time and student level allow, it will be possible to start the development of the Engineering Model mechanical test with the aim to validate the structure.



Internship Condition

- The internship will be of 3 months minimum
- The internship will take place in Montpellier
- A report shall be written to document the work