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MTCUBE2-PA-SAT-PROP_Internship Proposal for radiation sector based analysis_2020-11-20_v1.0.0

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INTERNSHIP OFFER

Radiation sector based analysis for shielding evaluation of MT-CUBE-2 satellite

1 UNIVERSITY SPACE CENTER OF MONTPELLIER

The University Space Center of Montpellier (CSUM) is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the area of space project management and product assurance in the framework of university space projects. The CSUM has an AIT (Assembly Integration and Test) Facility including 200 m² of cleanroom, a CDF (Concurrent Design Facility) and both UHF and S-band Ground Stations. The CSUM develops its own 1U and 3U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and both the French and the European space agencies.

In the frame of MT-CUBE-2 satellite, the CSUM develop a 1U CubeSat for ESA to study the radiation effect and various memory parts. The objective of the internship is to perform a radiation sector based analysis to evaluate the dose expected at part level considering an orbit of 5,866 km 70° orbit.

2 INTERNSHIP DESCRIPTION

Description of the tasks:

- (1) Produce a radiation model of the satellite using FASTRAD software
- (2) Evaluate, for each critical subsystem/part, the equivalent “built-in” shielding provided by the satellite structure and close elements
- (3) Run calculations to estimate the received dose on detectors located at critical target locations
- (4) Write a report to summarize the activity, assumptions considered, methodology, outcomes and analysis/discussion of the results

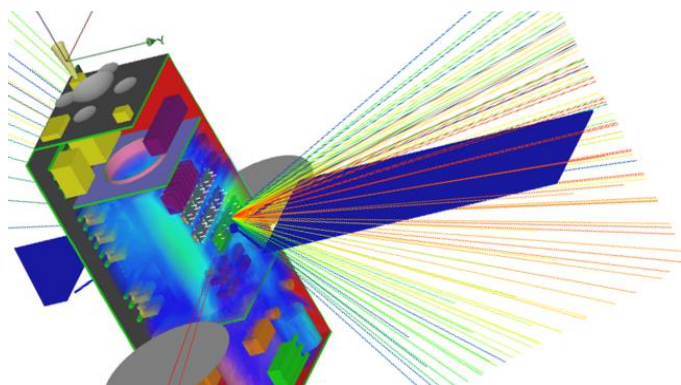


Figure 1: Ray tracing analysis of a satellite with FASTRAD.

Skills: Space radiation environment, Radiation effects on electronics/materials (SEE, TID, TNID)

Level: Master of Science

Location: CSUM - 950 rue de St Priest – bâtiment 6 - 34090 Montpellier

Preferred starting date: January 2021

Duration: 2 to 4 months

Supervisor: Dr. Muriel BERNARD, Product Assurance Manager

3 CONTACT

Please upload your application at: <https://csu.edu.umontpellier.fr/en/job-offers-internship/>

Internship with the support of TRAD.

