

IGOSat Project

Thermal Engineering for IGOSat

Skills, key-words: THERMICA, Assembly, Integration, Testing, Qualifications, Engineering Model, electronics instrumentation

Study level: 4th Year/ Master Degree

Duration: 5 - 6 months

Stipend: 570 € / months

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Internship description :

The Laboratories of Excellence (LabEx) UnivEarthS [1], set up by AIM (Astrophysics, Instrumentation and Modelling [2]), APC (AstroParticle and Cosmology [3]) and IPGP (Institut de Physique du Globe de Paris [4]) of Paris Diderot University [4], allowed the emergence of cross-cutting projects in these three laboratories.

Taking advantage of the strong involvement of these laboratories in numerous experiments and space instruments, a nanosatellite project developed by student was initiated by the LabEx UnivEarthS in October 2012, with the technical and financial support of the CNES (French Space Agency) and the Paris Diderot Space Campus [6]. More specifically, it is a question of developing, by 2019, a 3-unit CubeSat satellite (i.e. with a size of 10x10x30 cm [7]). This satellite, called **IGOSat**, will carry 2 payloads (a dual frequency GPS to study the ionosphere and a scintillator for the study of radiation belts)

The objective of this internship is verify and validate the Structural Thermal Model (STM) of IGOSat project. A first version of the STM model is available but needs some modifications to fit the final design of the satellite.

A large part of the internship will be dedicated to the thermal model and qualifications tests of the satellite in collaboration with an AIT engineer and the Mechanical Engineer of the laboratory. Another part of the internship is to model, design and test heaters for the thermal control of the batteries.

In interaction with a team of several students, engineers and scientists, the student needs autonomy, precision and a comprehensive vision of space systems.

Bibliography

[1] LabEx UnivEarthS : <http://www.univearths.fr>

[2] Laboratoire AIM : <http://irfu.cea.fr/Sap/>

[3] Laboratoire APC : <http://www.apc.univ-paris7.fr>

[4] Institut de Physique du Globe : <http://www.ipgp.fr>

[5] Université paris Diderot : <http://www.univ-paris-diderot.fr>

[6] Campus Spatial Paris Diderot : <http://www.campuspatial-paris.fr>

[7] CubeSat Informations: <http://www.cubesat.org>

[8] IGOSat Project : <http://www.igosat.fr>