

IGOSat Project

Internship proposal - Fall 2017

Flight Software Programming for IGOSat

Skills, key-words : C/C++, Real Time and Critical microcontroller programming, Embedded software

Study level: 4th Year/ Master Degree

Duration : 6 months

Stipend : 554 € / 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 2018, 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 internship, with a strong real-time and critical constraint (high level of reliability) will aim to develop the flight software of IGOSat.

The future intern will code the software of different modules of the satellite using the flight software global architecture of IGOSat. This latter is being implemented by a current intern as Grafcet. The software will then be tested in the Engineering Model of the satellite.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team, have a sense of rigor especially in writing presentation, and already a global vision of information transmission.

This internship is a good opportunity to address numerous points of space engineering.

Bibliographie

[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.campusspatial-paris.fr>

[7] CubeSats informations : <http://www.cubesat.org>

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