

# IGOSat Project

Internship Proposal - Spring 2020

## System Engineering and Electronic Design for IGOSat

**Skills, Keywords** : System engineering, knowledge in electronic, microcontroller, KiCad, electronic validation, communication protocols, embedded software, satellite.

**Desired Level:** 4th year, master degree **Duration** : 4 to 6 months **Stipend** : > 500 € / month

**Contacts** : [sdurand@ipgp.fr](mailto:sdurand@ipgp.fr), [benhizia@apc.in2p3.fr](mailto:benhizia@apc.in2p3.fr),

### Project Description :

The Laboratory of Excellence (LabEx) UnivEarthS, set up by laboratories AIM (Astrophysique et Interactions Multi-Echelles), APC (AstroParticule et Cosmologie) and IPGP (Institut de Physique du Globe de Paris) from Paris Diderot University, is carrying carrying transverse projects between those 3 laboratories.

Using the strong involvement of those laboratories in numerous space experiments and instrumentation, an educational nanosatellite project has begun in 2013, with the financial and technical support from CNES (Centre National d'Etudes Spatiales) and the Space Campus of Paris Diderot University.

More specifically, the project is to develop a scientific 3U CubeSat, and launch it in 2021. The satellite will carry 2 payloads, one to study the Ionosphere and one to study the radiation belt.

### Internship Description :

The purpose of the internship is to participate on the "Flat-Satellite", the Engineering Model and the preparation of the qualification campaign of the 3U CubeSat. A large part of the satellite is home-made and some prototypes have already been done for each sub-systems and currently integrated within the flat-sat. The role of the student will be to iterate on the flat-sat toward an engineering model (with functions and performances validation), as well as to ensure the good interface of the different sub-systems between each other's. The intern will work closely with the project manager/system engineer to update and review the technical documentation (Interface Control Document, pin attribution, assembly and tests procedures, harness manufacturing and assembly, etc.). The intern will also be in charge of updating the power budget of the satellite and be in touch with the manufacturers.

Moreover, relevant documentation will have to be done, as well as a presentation in front of experts from the French Space Agency (CNES).

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. Experience with KiCad and sub-contractors for realization is a strong asset for this internship.

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

**Website:** <http://www.igosat.fr>