IGOSat Project

Internship proposal - 2018

Flight Software Command Control Programming for IGOSat

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

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 internship, with a strong real-time and critical constraints (high level of reliability) will aim to develop the main flight software of IGOSat. The future intern will have to develop and validate the command control partition on the On-Board Computer (OBC) and the interfaces with all the nanosatellite's subsystems. The intern will be in close collaboration with the senior software engineer of IGOSat.

Within a team of interns, engineers and scientists, the student need to be able to work autonomously as well as part of a team and have a good communication and interpersonal skills.

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

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Flight Software FDIR Programming for IGOSat

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

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 internship, with a strong real-time and critical constraints (high level of reliability) will aim to develop the main flight software of IGOSat. The future intern will have to develop the Fault Detection, Isolation and Recovery (FDIR) software by monitoring all the subsystems as well as validate it with functional tests. The intern will be in close collaboration with the senior software engineer of IGOSat.

Within a team of interns, engineers and scientists, the student need to be able to work autonomously as well as part of a team and have a good communication and interpersonal skills.

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

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Ground Segment Software Programming for **IGOSat**

Skills, key-words : Java, MySQL , DataBase Development, HMI Development, Wordpress, Windows

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 internship will aim to develop the ground software of IGOSat. The objective of the internship is to define, manage and develop a model of the database of the IGOsat project: data reception and storage in the database as well as generating verified commands from a developed graphical interface in Java.

The intern will be in close collaboration with the senior command control software engineer of IGOSat.
Within a team of interns, engineers and scientists, the student need to be able to work autonomously as well as part of a team and have a good communication and interpersonal skills.
This internship is a good opportunity to address numerous points of space engineering.

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Flat-Sat Electronic Design and Tests Engineer for IGOSat

Skills, key-words : Electronic, KiCad, communication protocols, electronic validation, functional tests, Arduino programming.

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 purpose of the internship is to participate in a functional bench («Flat-Satellite ») and Engineering Model 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 validated). Moreover, relevant documentation has to be done.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team. 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.

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

EPS Electronic Design and Tests Engineer for IGOSat

Skills, key-words : Electronics, KiCad, Microcontroller/Arduino, electronic validation, functional tests.

Study level: 4th Year/ Master Degree

Duration :5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 purpose of the internship is to continue the design and tests of the Electrical Power System (EPS) of IGOSat. A large part of the satellite is home-made and a prototype of each product of the EPS has already been done and currently in testing phase. The role of the student will pursue the tests toward an engineering model (with functions and performances validated). Moreover, relevant documentation has to be done for the end of phase C/D review.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team. 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.

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

General Electronic Design and Tests Engineer for IGOSat

Skills, key-words : Electronics, KiCad, Microcontroller/Arduino, electronic validation, functional tests.

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 purpose of the internship is to pursue the design and tests of the On-board Computer (OBC) Board and the Attitude Determination Control System (ADCS) Board of IGOSat. A large part of the satellite is home-made and some prototypes have already been done and currently in testing phase. The role of the student will be to finalize the electronic design and tests of the OBC and ADCS as well as any other subsystem if needed toward an engineering model (with functions and performances validated). Moreover, relevant documentation has to be done for the end of phase C/D review.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team. 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.

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Attitude Determination and Control System Engineer for IGOSat

Skills, key-words : Matlab/Simulink, C programming, Arduino Programming, Electronics, microcontroller, Space Mechanics, Space Environment

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 purpose of this internship is to have a complete hardware-in-the-loop test bench of the ADCS subsystems. The intern will have to model the attitude determination sensors on Matlab/Simulink, convert it in C language and implement it into the global ADCS C-programming software. The intern will also have to integrate the software on the ADCS board and ensure all the related functional tests.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team. Experience with Arduino and electronics will be a strong asset for this internship.

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

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Assembly, Integration and Tests System Engineer for IGOSat

Skills, key-words : Matlab/Simulink, C programming, Arduino Programming, Electronics, microcontroller, Space Mechanics, Space Environment

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 IGOSat System Engineer will be in charge of the coordination of all the technical activities and especially the one related to the integration phase of the satellite. The intern will ensure the compliance with the specifications and a clear definition of the sub-systems interfaces. In close collaboration with the Project Manager, the intern will update the instrument configuration, ensure the technical consistency of the satellite and establish the assembly, integration, tests and validation procedures.

Within a team of students, engineers and scientists, the student need to be able to work autonomously as well as part of a team with good communication and interpersonal skills.
This internship is a good opportunity to address numerous points of space engineering.

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.campusspatial-paris.fr
[7] CubeSats informations : http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Scintillator test bench for IGOSat

Skills, key-words: Analog electronics, Micro-controller programming, instrumentation, arduino

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 7

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 scintillator will measure the energy spectrum of electrons and photons from the Van Allen belts within the satellite orbit. The project has the main components to carry out the development and test bench of this instrument (scintillator, photomultiplier, acquisition card).

The objective of this internship is to finish the design of the readout of the payload, and to test and characterize the Engineering Model (EM) of the whole scintillator with gamma and electron sources. The student will have to generate the detector response matrix of the new detectors, which will make it possible to trace the incident energy from the measured energy of the particles.

Another part of the internship will be, in collaboration with a software engineering intern, to finish the code for processing the data on board and to test on the data measured in the laboratory. These subjects will be studied in collaboration with the researchers and students of the project, and in particular with the PhD student currently working on the scintillator payload in the laboratory.

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Mechanical and Thermal Engineering for IGOSat

Skills, key-words: CAD, CATIA, Mechanical Simulations, AIT, Assembly, Integration, Testing, Qualifications, Engineering Model

Study level: 4th Year/ Master Degree

Duration: 5 - 6 months

Stipend: 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 participate in the Phase D mechanical engineering activities of the IGOSat project. The CAD model is available but needs some few modifications to fit the final design of the satellite.

A large part of the internship will be dedicated to the Assembly, Integration and Test of the Engineering Model of the satellite, in collaboration with an AIT engineer of the laboratory. Finally, if the time allows it, the Qualification of the Engineering Model will be done too.

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project
Internship proposal - 2018

Ground/Space Telecommunication link for IGOSat

Skills, key-words: Onboard Software, radio-frequencies, ground station, antenna, modulation, coding, AX-25.

Study level: 4th Year/ Master Degree

Duration : 5 - 6 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 Telecommunication link between the satellite and the ground station in Paris is currently under development. The Telecommunication flight software is almost finished, as well as the ground station. The objective of the internship is to integrate and test all the elements of the chain, in interaction with interns responsible for the ground segment software and for the onboard flight software.

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

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Ionospheric radio-occultation payload development for **IGOSat**

Skills, key-words: instrumentation, radio occultation, functional test, GNSS, onboard software, ionosphere, GPS

Study level: 4th Year/ Master Degree

Duration : 4 months

Stipend : 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 radio-occultation payload is a GPS receiver, measuring the phase of 2 signals to retrieve information about the Electronic Content encountered during the propagation. Using a specific software for data processing, it is possible to know the Total Vertical Electronic Content of the Ionosphere.

All the components of the Engineering Model are available. The tasks of the internship will be to take care of the integration of the payload within the EM platform, perform functional tests and supervise the development of the onboard flight software with a software engineer student.

In interaction with a team of several students, engineers and scientists, the student needs autonomy, precision and a good comprehension of both science and engineering at stake.

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Development of the flight software of the Scintillator payload for IGOSat

Skills, key-words: Real time, C, microcontroller, space project, scintillator, functional test

Study level: 4th Year/ Master Degree

Duration: 5 - 6 months

Stipend: 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 scintillator will measure the energy spectrum of electrons and photons from the Van Allen belts within the satellite orbit. The project has the main components to carry out the development and test bench of this instrument (scintillator, photomultiplier, acquisition card).

The objective of the internship is, in collaboration with the student responsible for the payload, to finish the algorithm for processing the data, controlling as well as monitoring the payload, and integrate the code in the satellite. A large part of the internship will be to test the algorithm on the engineering model of the payload, and to perform functional tests.

In interaction with a team of several students, engineers and scientists, the student needs autonomy, precision and a good comprehension of real time operating software.

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr

IGOSat Project

Internship proposal - 2018

Development of the flight software of the Radio-occultation payload
for IGOSat

Skills, key-words: Real time, C, microcontroller, space project, GPS, functional test

Study level: 4th Year/ Master Degree

Duration: 5 - 6 months

Stipend: 570 € / months

Contact :
Hana BENHIZIA : benhizia@apc.in2p3.fr
IGOSAT Project Manager
Phone: 01 57 27 69 55
Hubert HALLOIN: halloin@apc.univ-paris7.fr
IGOSAT Scientific leader
Phone: 01 57 27 60 76

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 radio-occultation payload is a GPS receiver, measuring the phase of 2 signals to retrieve information about the Electronic Content encountered during the propagation. Using a specific software for data processing, it is possible to know the Total Vertical Electronic Content of the Ionosphere.

The objective of the internship is, in collaboration with the student responsible for the payload, to finish the algorithm for processing the data, controlling as well as monitoring the payload, and integrate the code in the satellite. A large part of the internship will be to test the algorithm on the engineering model of the payload, and to perform functional tests.

In interaction with a team of several students, engineers and scientists, the student needs autonomy, precision and a good comprehension of real time operating software.

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.campusspatial-paris.fr
[7] CubeSat Informations: http://www.cubesat.org
[8] IGOSat Project : http://www.igosat.fr