

## INTERNSHIP OFFER

### Title: Improve CSUM's UHF Ground Station Infrastructure

## 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, 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.

## 2 INTERNSHIP DESCRIPTION

Description of the tasks: The CSUM team has developed its new generation of a UHF Ground Station based on software-defined Radio technology. The current design now needs to be improved and standardized for CSUM partners who are interested in having an operational UHF ground station at their facilities. This internship will cover the process of refactoring the components of the UHF Ground Station for that purpose. Apart from the technical tasks of the project, the intern will also be in charge of collecting information from CSUM partners about the implemented system.



Figure 1: CSUM Ground Station Room

With that goal, the intern will be involved in the process of registering CSUM in the platform, setting up the hardware to acquire data from satellites, installing and configuring the software tools to track these satellites and send the data packets to SatNogs. During this project, you will be in contact with the following technologies/topics:

- Python programming language;
- Linux Operating System;
- Radio Frequency in the UHF band;
- Software Defined Radio technologies and tools (ex: Gnuradio);
- Communications systems for space applications;
- Architect, design and implementation of RF systems operating in UHF frequency band.
- Measurement and characterization of RF systems at both the satellite and ground station levels.
- Responsible for planning and implementing agreed test strategies during development.
- Conception and definition of test procedures, test plans and test strategies in alignment with design.
- Creation and execution of tests on demand from analysis, requirements.
- Provide design feedback according to testing results.
- Provide support to the satellite operations and design team.

**Skills/Languages:** General Knowledge of any programming language (C, C++, Python, etc...)

**Plus (not required):**

- Communications Systems

File name: CSUM-M-RH-PROP\_GS\_Hardware\_UHF\_v1.0.0  
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- RF Systems
- Linux

**Location:** Montpellier - France

**Preferred starting date:** 08/03/2021 (flexible)

**Duration:** 3-6 months

**Supervisor, Function at CSUM:** Rafael DUARTE - Ground to Space Division Manager

**THIS IS A REMUNERATED INTERNSHIP.**

### 3 CONTACT

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