

# INTERNSHIP OFFER

## Battery Management System Design

## 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

Context: For the ROB3A mission, the Electrical Power Subsystem is responsible for energy harvesting, storing and distribution on the satellite. It uses a Battery Manager System (BMS) provided by another company. The goal of this internship is to design a BMS fitting to CSUM satellite's needs.

Description of the tasks: The intern will be in charge of designing a BMS fitting to CSUM missions' needs.

- Create the models
- Create the setup for the measures of the parameters
- Do the measures
- Compare with the measured curves and update the model
- Update the ROB3A power budget



Figure 1: Logo of the ROB3A mission.

### Skills/Languages:

- Experience with Hardware/Software Development, Circuit Design, Electronics parts
- Experience in circuit analysis
- Digital and analog circuits knowledge and design comprehension
- Digital circuit functions (gates, Flip-flops, shift registers, etc.) and applications
- Digital processors (microprocessors, Digital signal processors, floating point gate arrays)
- Semiconductors (transistors, FETs, diodes, op-amps, comparators)
- Circuit block concepts (Linear and switching power supplies, filters, transistor switches, ESD protection)
- Write documentation and deliver documents

### Plus (not required):

- Circuit board design (substrates, layouts, floor plans).
- C
- Git
- Matlab

Level: Licence

Location: CSUM Montpellier – Campus St Priest – Building 6

Duration: 3 months

Supervisor, Function at CSUM: Sara Vega Martinez

File name:  
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dt  
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Stipend: 3.90 euros/worked hours if longer than 2 months, 35 hours/week.

### 3 CONTACT

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