

Internship offer

Product Design Engineer for Star Tracker Demonstration Setup



Context

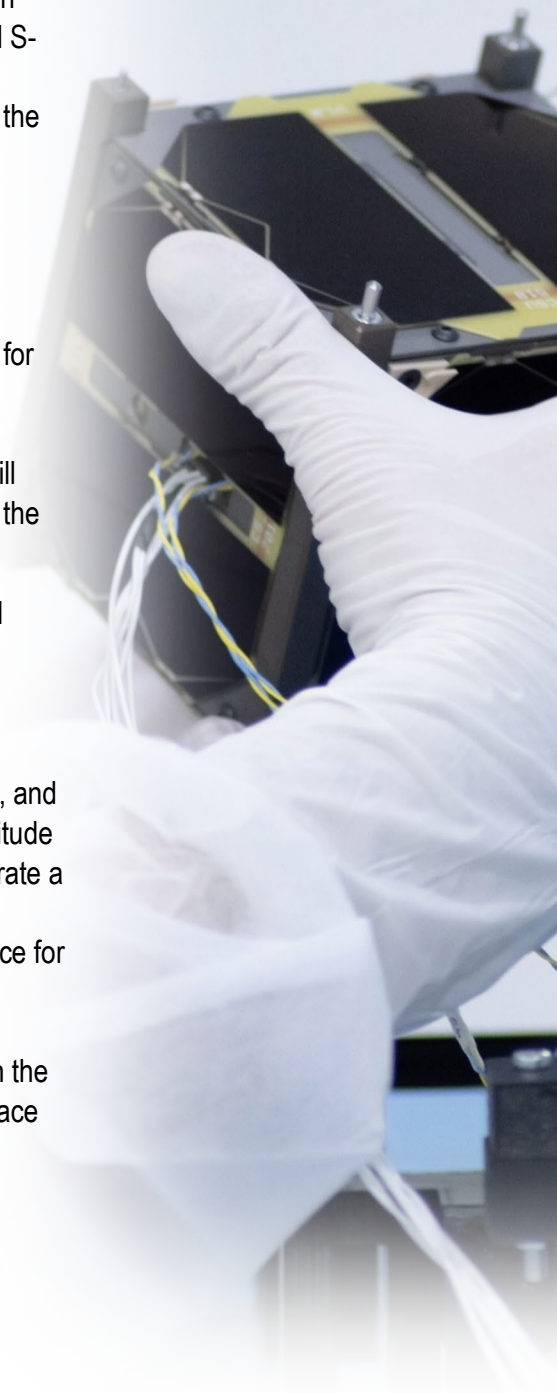
The University Space Center of Montpellier (CSUM) is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the 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 to 12U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and the French and European space agencies.

Internship description

As part of a collaboration between CSUM and Sodern, a company specializing in high precision optronic equipment, a demonstration setup for the Auriga star tracker is to be developed. With extensive experience in nanosatellite development and flight-proven Attitude Determination and Control System (ADCS) technology currently operating in orbit, CSUM will leverage its expertise to demonstrate the functionality and capabilities of the Sodern Auriga star tracker.

The demonstration setup is intended to be presented at conferences and other public events. As its centrepiece, a compact rotary platform will be developed to provide a physical representation of three-dimensional spacecraft attitude dynamics using a single rotational axis.

The objective of this internship is to design a visually appealing, modular, and portable 3D-printed mechanical system that demonstrates spacecraft attitude dynamics and showcases the Auriga star tracker. The design must integrate a rotary platform that also functions as a mounting solution for a CubeSat model, a dedicated display case for the star tracker, and a control interface for ease of use of the demonstration setup. Mechanical and electrical components have already been selected, but the servo motor mounting solution still needs to be developed. The internship will primarily focus on the mechanical and enclosure design. Depending on the progress and the pace of the intern, the scope may be extended to include the development of firmware to operate the system.



Main activities related to your mission:

- Define mechanical and functional requirements for the demonstration platform
- Develop the mechanical design of the rotary platform and motor mount
- Design the enclosure with modularity and portability criteria in mind
- Produce 3D CAD models
- Prototype
- Manufacture and assemble the end product

Level: 1st or 2nd year of Master Degree or equivalent.

Duration: 3 to 6 months

Skills (it is not mandatory to have all of them)

- Creativity and an eye for visually appealing design
- Experience with 3D CAD software
- Understanding of mechanical components and assembly principles
- Ability to design for portability, robustness, and ease of assembly
- English: being able to have a technical discussion with experts and to write documentation
- Ability to produce clear technical reports and presentations

Location: Centre Spatial Universitaire de Montpellier, Campus Saint-Priest, Montpellier, France.

Stipend: 4.5 euros/hour for duration between 308 and 924 hours, 35 hours/week.

Preferred starting date: March 2027

Supervisor: Marcis Livmanis – Control Systems Engineer ADCS –
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