

# Simulation of AlphaSat Radiation Environment and Effects Facility Component test bed and analysis of in-flight data

## Objectivos

This project aims at: simulating the AlphaSat Component Technology Test Bed and performing the analysis of in-flight data

The student shall:

- Learn about Space Radiation environment and effects
- Learn about Radiation Monitors and radiation effect monitors for space
- Develop a Geant4 simulation model for the CTTB
- Follow the whole process of real in-flight data analysis, from the spacecraft output data to the mapping of events.
- Perform analysis of the in-flight CTTB data, based on the CTTB simulation model

## Requisitos

### Localização

LIP

### Observações

Scope: In-orbit demonstration technology, Radiation Physics, Radiation effects, Space Applications, EEE components. Geant4 simulation, study of the in-orbit radiation environment and analysis of real in-flight data obtained from state-of-the-art technology flying in GEO (Geosynchronous Orbit)

The European Space Agency (ESA) has been strongly supporting the development of Technology demonstration Modules (TDM) for In-Orbit Demonstration (IOD). TDM payloads are state-of-the-art and high innovative technologies.

The ALPHASAT satellite was launched to GEO (Geostationary orbit) in July 2013, carrying the "Alphasat radiation Environment and Effects Facility (AEEF)", a Technology Demonstration Module, composed by a radiation monitor, the MFS, and a Component Technology Test Bed (the CTTB), for testing of EEE components in-flight. The work to be developed will have the main objective of analysing the CTTB in-flight data taking into account the radiation environment at AlphaSat location, measured with the MFS, and a detailed model of the CTTB unit to be developed by the student.

This work will be performed with the LIP "Space Radiation Environment and Effects Group" in the framework of an ongoing contract with the European Space Agency (ESA), EFACEC SA and Evoleo SA, for the Analysis of the CTTB data.

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## Cursos

MEFT

