Proposta de dissertação de Mestrado

Período
2013/2014 or 2014/2015
Cursos
Engenharia Física Tecnológica - IST
Número da Proposta
60
Título
Analysis of in-flight data on the MFS, a Particle Spectrometer in Geostationary Orbit

Orientador

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Coorientador Externo

Nome	
Email	
Telefone	
Nome da empresa	
Morada da empresa	

Enquadramento (Indicar adicionalmente Ramo/Área de Especialidade caso aplicável)

In-orbit demonstration technology, Radiation Physics, Radiation effects, Space Applications, EEE components. Study of the in-orbit radiation environment and analysis of real in-flight data obtained from state of the art technology flying in GEO.

Objectivos

This project aims at: analysing Technology Demonstration Modules (TDM) in-flight data; comparing in-flight data with ground based test data; and evaluate the radiation monitoring performance of the module based on the simulation of the TDM radiation effects monitors. The student shall: - Learn about Radiation environment and effects - Learn about Radiation Monitors and radiation effect monitors for space - Follow the whole process of real in-flight data analysis, from the spacecraft output data to the mapping of events. - Learn about spacecraft data synchronization, time issues. - Learn about spacecraft orbit description tools - Interpret ground based test data - Correlate in-flight data with ground based test data and simulation results.

Descrição

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. Using GEANT4 simulation and the ground based test data it is possible to reconstruct and characterize the radiation spectra that gave origin to the observed in

flight error rates. The ALPHASAT satelite 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 radiationMonitor, the MFS and a Component Technology

Test Bed", for testing of EEE components in-flight. The work to be developed will be centered in the data analysis of the in-flight data analysis of MFS, a particle spectrometer capable of measuring electron,proton and ion spectra.

Requisitos (e.g. média,disciplinas concluídas)

The work will have a strong component of radiation interaction simulations with matter. C or C++ programming skills are desirable. Interview required.

Resultado esperado

A successfull thesis
URL da descrição detalhada da dissertação
http://www.lip.pt/~space
Observações
Localização da realização da dissertação
LIP

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