

Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2012-TEC-ECM	Trajectory optimization for the GNC function	ESTEC

Overview of the Division missions:

The Control Systems Division is responsible for project support and technology development of space applications covering the fields of

- Control systems and Sensors, including
 - Attitude Control system design, modelling, analysis, testing and verification, covering both operational and FDIR aspects
 - Control law algorithm analysis, design, implementation (S/W and H/W) and testing
 - Attitude Sensors design development testing and verification
- Navigation, Guidance and control, including
 - Rendezvous system design, analysis and verification
 - Entry, Descent and Landing guidance and control system design, analysis and verification
 - Planetary navigation and ascent vehicle system design, analysis and verification
 - Formation flying control systems
 - Advanced control and estimation techniques
- Dynamics and Mathematical Analysis including
 - Trajectory analysis (ascent, re-entry, low thrust) and optimisation
 - Spacecraft dynamics modelling and analysis

The division hosts Avionics Laboratory and computing facilities that allow hands on work in the above fields

Overview of the field of activity proposed:

- Provide technical support to ESA Future Launchers Preparatory Program (FLPP) in the definition, implementation and use of optimal trajectories within the guidance function of a GNC system.
- Provide technical support to the Automatic transfer Vehicle (ATV) in the safety analysis of its destructive re-entry
- Provide support in executing internal TEC-ECM software tools activities in the domain of optimal trajectories and mathematical modelling. In particular, the support shall include the Space Trajectory Analysis development. TEC-ECM is developing a software tool called STA (<http://sta.estec.esa.int>). The STA software suite is conceived as a research tool to support the analysis phase of a space mission having the ability to analyze, determine, simulate, and visualize a wide range of space trajectories.

Required Education:

University degree or equivalent qualification in aerospace, control engineering or mathematical methods for aerospace applications. Command of MATLAB and knowledge of STA and C++ computer programming languages. A good knowledge of English is required.