Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2012-TEC-ETN(4)	**Radio-navigation**	**ESTEC**

Overview of the Division missions:

The RF Payload Systems Division is responsible for space instrumentation and communication systems, subsystems, equipment and technologies. This covers:

- Communication systems and subsystems design and validation;
- Radio Navigation systems, subsystems and equipment (GPS, EGNOS, GALILEO);
- Systems for TT&C communication, remote sensing and scientific applications;
- Satellite payloads (e.g. repeaters for telecommunications or navigation instruments for earth remote sensing or scientific applications)
- Microwave and millimetre wave equipment and technologies;
- Complex on-board payloads for communications and remote sensing, and processing core of such systems, including optically based implementations;
- Systems testing for performance evaluation or validation.

The expertise of the Division is essentially used for :

- Preparation and implementation of various ESA R&D programmes
- Support to ESA projects
- Consultancy to customers outside ESA
- Training and supervision of students, graduates, research fellows
- European Standardisation of technologies
- Organization of workshops and conferences

The trainee will be integrated into the Radio Navigation Systems and Techniques Section. The section is involved in:

- Radio navigation systems studies
- Support to the EGNOS and Galileo projects for system design, development and testing
- Advanced research and development in the field of radio navigation techniques and technologies
- Development of receivers for GPS, EGNOS and Galileo

Overview of the field of activity proposed:

Receivers Interference and Spoofing /Mitigation techniques

Jamming and spoofing attack are becoming more and more a threat for the usage of the Open Service Navigation Signals. Radio jamming is the (usually deliberate) transmission of radio signals that disrupt communications/navigation functions by decreasing the signal to noise ratio. Spoofing attack is a situation in which one transmission successfully masquerades as a real navigation signal and thereby falsifying the resulting position solution. The study of those attack and the corresponding mitigation techniques is becoming therefore of high importance for the correct operation of future receivers depending of the operational scenarios and applications. Those mitigation can be defined in the Signal Data message/ Receiver Navigation and Signal processing.

The trainee will work in the following areas:

- Analysis and development Ant-jamming and anti-spoofing techniques
- Prototyping of critical functionalities in Matlab and C/C++
- Lab testing of prototyped functionalities and receivers in the European Navigation Lab at ESTEC

Required Education:

Degree in Telecommunications Engineering or similar

C/C++ and Matlab programming ability
Previous contact with a radiofrequency lab would be desirable
Background in Signal processing would be desirable