

Training Opportunity for Portuguese Trainees

Reference	Title	Duty Station
PT-2019-TEC-EFE(3)	Advances synthesis methods for filters and multiplexers	ESTEC

Overview of the Unit missions:

The RF Payloads & Technology Division is responsible for RF payloads, instruments and technologies for space and ground applications, including all equipment having a RF space/ground interface and its associated laboratories. The Division supports the definition, specification and development/procurement of laboratories either for ESA projects and technology programmes or external customers.

Within the Division, the RF Equipment and Technology Section provides functional support to ESA projects and carries out technological research (R&D) in the fields of RF equipment and building blocks, active and passive components, technologies and related design and characterisation tools.

Overview of the field of activity proposed:

Current development in satellite systems are promising a throughput of Terabit per second based on multibeam systems both at GEO or NON-GEO orbits. The number of filters to be accommodate in a single platform is very high as well as the contribution to the payload in terms of mass.

Footprint can be reduced while providing good RF performance following strategies such as novel synthesis methods. The objective of this trainee opportunity will study advance synthesis methods and novel filters implementations for compact RF/microwave filters. The advance synthesis method will cover both filters and multiplexers. The design will be supported by adequate simulations (circuit or full EM simulations) and experimental validation in breadboards.

Additionally, this trainee opportunity aims to development optimization approaches base on, for example, machine learning in order to apply space mapping and neural networks to the RF filter domain together with the traditional coupling matrix theory.

Required Education:

Applicants should have just completed a University course at Masters Level (or equivalent) in an Engineering or scientific field, with emphasis on electromagnetics or physics.

Good skills with simulations tools (MATLAB, CST, HFSS, FEST, Microwave Wizard) will be highly beneficial.

Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team.

Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.