

Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2019-SCI-FIV(3)	CMOS Detector Testing	ESTEC
<p>Overview of the unit's mission:</p> <p>The Future Missions Department (SCI-F) is in charge of mission preparation activities (system definition studies Phases 0/A/B1 and technology developments) and of small missions implementation in the Science Directorate (D/SCI). The Payload Validation Section (SCI-FIV) in the Future Missions Department is in charge of specific mission oriented validation activities, for science missions, aiming at reducing development risks in the implementation phase. The section also provides general support to the Directorate's other Departments for specific validation activities, for missions under development or during operations (see http://sci.esa.int/sci-fv/57057-payload-technology-validation/).</p> <p>One of the main activities of the section is to validate payload instrument detector and detector readout electronic performances.</p> <p>Overview of the field of activity proposed:</p> <p>The validation activities are currently focused on detectors and electronics, typically for astronomy mission payloads. The support provided by SCI-FIV occurs at different phases of an ESA science mission:</p> <ul style="list-style-type: none"> • During the early precursor technology development (e.g. European Near-Infrared detection systems) • In the assessment/definition phase (e.g., ARIEL) • In the project implementation phase (e.g. Euclid and CHEOPS) • In the mission operations phase (e.g. GAIA) <p>Each validation activity encompasses the following tasks:</p> <ul style="list-style-type: none"> • Definition of activity: interaction with the stakeholders (e.g. study, project or operations team, or payload consortium, instrument developers scientist) for requirements specification, test plan definition and implementation schedule • Design of the validation setup (generally by tailoring existing set-ups to the need) • Commissioning and characterization of the test set-up • Execution of the tests according to the test plan • Data analysis in collaboration with other sections and reporting <p>Verifying detector electro-optical performance including the impact of radiation is a key aspect of the preparation of future science mission instrumentation. This trainee opportunity will be focused on this aspect of the sections work and with a particular emphasis on visible and X-ray CMOS detectors.</p> <p>The role of the trainee will be to :</p> <ul style="list-style-type: none"> • Conduct a literature review on detector characterisation to understand how electro-optical test are performed. • Write a dedicated detector test plan • Specify and adapt the test set up to accommodate the tests • Learn how to operate the detector and the electro-optical components of the test bench • Measure electro-optical performances of visible and X-ray CMOS detectors according to the test plan • Analyze the data and conclude on the electro-optical performances of the tested detector <p>Required education:</p> <p>Master Degree in physics with specialisation in opto-electronics or equivalent. Hands-on experience of detector characterization and knowledge of space radiation effects upon detectors would be an advantage.</p>		