

Training Opportunity for Portuguese Trainees

Reference	Title	Duty Station
PT-2014-TEC-MMO	Optical engineering – LIDAR systems	ESTEC
<p>Overview of the Unit missions:</p> <p>The Mechatronics and Optics Division provides engineering support for space projects and executes technology developments in the areas of Optics, Opto-Electronics, Automation and Robotics, and Life and Physical Sciences Instrumentation. One of the Sections of this Division, the Optics Section, is the focal point for matters relating to optical system design, engineering and verification. This entails in particular the responsibility for:</p> <ul style="list-style-type: none"> • optical system definition and requirements specification, design and engineering; • optical design performance evaluation and analysis; • optical component technology (including micro-optics, fibre optics and passive integrated optics); • spectro-radiometric imaging instruments operating in the visible and infrared; • optical communications; • laser metrology, ranging and imaging LIDARs; • interferometry and optical aperture synthesis; • optical component, equipment and system verification (optics laboratory); • definition, update, and usage of specialised optical computing tools <p>The Optics section maintains and operates a laboratory specialized on interferometry, ellipsometry, polarimetry and BRDF measurements and operates the Optical Ground Station in Tenerife (Spain).</p>		
<p>Overview of the field of activity proposed:</p> <p>This Training Opportunity will focus on optical modelling, design and testing activities concerning Imaging LIDAR technologies and systems. In particular novel ranging techniques/technologies shall be investigated, modelled and demonstrated by testing.</p> <p>The trainee will start with a familiarisation of ESA's developments in Imaging LIDAR technologies and existing performance models. Simulation of optical systems shall be performed using optical and mathematical computing tools. Novel ranging techniques/ technologies shall be investigated and their performance shall be estimated by developing dedicated mathematical models. This will be followed by the development of a breadboard in the laboratory that will enable validation of the novel techniques/technologies and the verification of the estimated performances. Based on the outcome of the investigations, the modelling results and the laboratory demonstrations the trainee shall propose novel designs for future Imaging LIDAR space systems.</p> <p>In parallel the trainee will participate in the conception, analysis and development of optical systems for use in space. In assistance to ESA engineers working in this domain, the holder of the training position will be given specific tasks which may include:</p> <ul style="list-style-type: none"> • feasibility assessment of new optical design concepts; • critical review and analysis of design solutions for optical instruments; • participation in the experimental verification of component and subsystem performances; • assistance in the implementation and monitoring of R&D contracts; • participation in the writing of technical specifications for R&D contracts. 		
<p>Required Education:</p> <p>Applicants should have, or be in their final year for a University or Graduate engineering degree in Optical Engineering and/or Physics. A good grasp of system aspects and a good understanding of other engineering disciplines is desirable, e.g., mechanical, structural, electrical, etc. Proficiency in the use of optical engineering software tools and experiences in the laboratory is an asset.</p> <p>Candidates should have good interpersonal and organisation skills, and show genuine enthusiasm, dynamism and self-motivation. They should be able to work in a multi-cultural environment, both independently and as part of a team.</p> <p>Candidates must be fluent in English or French, the official languages of the Agency.</p>		