

Training Opportunity for Belgian Trainees

Reference	Title of Training Opportunity	Duty Station
BE-2020-address code	LAGRANGE EUV Coronal Imager instrument development	ESOC/ESTEC
<p><u>Overview of the unit's mission:</u></p> <p>ESA's Space Safety Programme has the overall aim to detect, predict and assess threats from space and their potential risk to life, property and infrastructure. The Space Weather Office under Space Safety Programme Office is addressing those risks associated to the activity of our Sun with the goal of providing owners and operators of critical spaceborne and ground-based infrastructure timely and accurate information that will enable mitigation of the adverse impacts of space weather. ESA's Space Weather Office is responsible for defining and implementing European space based observation systems to enable operational space weather services. It is also responsible for pre-operational developments and R&D activities geared towards fulfilling the needs of European space weather service users.</p> <p>This traineeship shall be integrated into the LAGRANGE Mission Project as part of the Space Safety Programme. LAGRANGE is entering the implementation phase and shall be carried out in close collaboration with the Space Weather Office. LAGRANGE will position a satellite at the Lagrangian point L5 with the objective to perform continuous observations of the Sun and the space between the Earth and the Sun to provide measurement data for space weather nowcasting and forecasting and for event based warnings and alerts when solar events take place. The LAGRANGE observatory will complement space weather monitoring from Sun-Earth line and enable more accurate space weather impact predictions and early warnings of potentially hazardous solar weather conditions emerging. This traineeship shall support the development of the LAGRANGE EUV Coronal Imager (LUCI).</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>EUV imaging is used to monitor solar activity in the solar transition region and corona. This allows imaging and monitoring of active regions, coronal holes and quiet Sun, as well as other solar activity such as flares and prominence eruptions. Images in selected EUV emission lines are valuable for the monitoring of magnetic complexity and impending Earth-affecting solar activity. Particularly from the L5 position regions of the Sun that are not yet visible from Earth and that are rotating towards the Earth can be monitored. Different EUV wavelengths provide information on different optical depth layers of the solar atmosphere. For the Lagrange mission a single channel/bandpass monitoring at 19.5 nm has been selected as the threshold baseline as this wavelength allows monitoring of the coronal dimming associated with CME onset and good detection of coronal holes associated with high speed solar wind streams. One of the main tasks of the LUCI is to allow identification and monitoring of the corresponding Active Region once a solar flare has been observed by the X-ray flux monitor.</p> <p>Due to the heritage of the instrument from PROBA 2, the lead institute of LUCI is Centre Spatiale Liège with support from the Royal Observatory of Belgium with a strong contribution of the Meteorological Observatory in Davos (PMOD), Switzerland.</p> <p>You will support the LUCI instrument development with a major focus on the instrument performance assessment and verification, the optimisation of the processing chain and the development of the on-board and ground processing algorithms. Depending on the available skills, an involvement in the preparations for the instrument development, testing and verification tasks using the related engineering models and prototypes may be considered.</p>		
<p><u>Required education:</u></p> <ul style="list-style-type: none"> • Master-level degree in physics or engineering preferably with experience and interest in optical instrument developments for space, observation techniques and data processing algorithms; • Technical knowledge: computation, simulations, engineering and analyses; • Good interpersonal and communication skills; • Ability to work in a multi- cultural environment as part of a team; • Fluency in English and/or French, the working languages of the Agency; A good proficiency of English is required; • Belgian nationality is a mandatory condition. 		

