

Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2022-OPS-SWa)	AURORA Wide Field Imagers Instrument Development	ESOC
<p><u>Overview of the mission</u></p> <p>The Aurora mission is currently in the preparatory phase and is expected to be implemented within ESA's Space Safety Programme as one of the small satellite missions in the coming years. The mission has the primary objective to monitor the Auroral Oval of the Aurelia Borealis via the observation of Far UV and visible line emissions which are generated by the interaction of the ionosphere with the precipitating particles originating from the Solar Wind and Coronal Mass Ejections of the Sun. The observations are a direct measure of the Space Weather conditions in the Earth environment, the identification and localization of geo-magnetic storms, and the determination of their impact on the Earth. Constant monitoring of the Auroral Oval shall be achieved by the implementation of a small-satellite constellation with each satellite carrying Auroral Imagers with a sufficiently large field of view that enables continuous observation of the entire Auroral Oval.</p>		
<p><u>Overview of the field of activity proposed</u></p> <p>The dynamics of the solar wind and the related magnetic field variations constantly push energetic particles into the Earth's magnetosphere, which leads to a bombardment of the outer Earth atmosphere (ionosphere and thermosphere). The interactions of these particles with the constituents (Oxygen and Nitrogen molecules and atoms) lead to excited electronic states that when subsequently deexcited shine in various colors starting from the X-ray and UV, over the visible, up to the far-infrared bands. The Auroral Imagers will employ the line emissions in the Far UV and visible band to monitor the strength of the particle precipitation and their energies.</p> <p>You will support the development of the Auroral Imagers in the frame of the mission development covering all aspects from the underlying space weather effects that lead to the generation of the signals, the instrument performance evaluation and detection processes, and the on-going industrial activities related to the optimisation of the instrument designs including the demonstration of their functionality by building the engineering models and technology prototypes before the development of the initiation of the flight instrumentation development. Your work will be part of the Aurora mission and satellite development team and be involved in the definition of the satellite interfaces and operational requirements that are key to successful future instrument integration and operation.</p>		
<p><u>Required education and skills</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, both independently and as part of a team • Fluency in English and/or French, the working languages of the Agency 		