

Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2018-TEC-EPS	Space Radiation Environment Data Analyses and Modelling	ESTEC
<p>Overview of the unit's mission:</p> <p>The ESA Space Environments and Effects Section (TEC-EPS), based at ESTEC, supports all ESA programmes and missions regarding the effects of the space radiation, plasma and micrometeorite environments on spacecraft. Aside from direct project support, TEC-EPS also coordinates and runs a significant R&D portfolio for data analyses, modelling and space environment instrument development. Specifically in the Belgian context, TEC-EPS is the ESA contact point for the Space Environment Information System (SPENVIS), managed by the Belgian Institute of Space Aeronomy (BISA).</p>		
<p>Overview of the field of activity proposed:</p> <p>The past years have seen an increase in the amount of European radiation monitor data available from instruments developed under ESA contracts, including units such as the Standard Radiation Environment Monitor (SREM) units on Integral, Giove-A, Proba-1, Herschel, Planck and Rosetta; the Energetic Particle Telescope (EPT) on Proba-V; the Multifunctional Spectrometer (MFS) on Alphasat; and two Environment Monitoring Units (EMU) on Galileo. A range of new instruments are also in development. These monitors are highly useful for improving the knowledge and modelling of the space radiation environment, particularly regarding energetic solar particle events and the near-Earth trapped particle environment.</p> <p>The significant solar particle events in September 2017 provide an opportunity to compare and cross calibrate the fluxes from the various instruments. Furthermore, recent engineering model developments for specifying the solar energetic particle environment have taken different approaches to exploit such data in terms of how flux, time, energy, spatial and relative ion species abundance of their distributions are derived.</p> <p>Regarding the near-Earth environment, particularly the increasing use of Electric Orbit Raising (EOR) will pose new challenges due to the large short-term variability of the Earth's radiation belt and the increased time the EOR spacecraft will spend in that part of the environment.</p> <p>The Belgian National Trainee will evaluate the European data sources and investigate the different modelling approaches in support of validation of the various relevant models for these radiation environments. For wider dissemination and utilisation, any derived particle flux data sets and new or improved models resulting from the work will be made available for inclusion in the SPENVIS framework.</p>		
<p>Required education:</p> <p>M.Sc or Ph.D in space environment, radiation/particle physics and/or IT domains</p>		