EUROPEAN SPACE AGENCY

Internal Research Fellow in Radiation Hardness Assurance

Job Req ID: 12245
Closing Date: 02 July 2021
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Vacancy Type: Internal Research Fellow
Date Posted: 04 June 2021

Research Fellowship Opportunity in the Directorate of Technology, Engineering and Quality.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. For this purpose, we welcome applications from all qualified candidates irrespective of gender, sexual orientation, ethnicity, beliefs, age, disability or other characteristics. Applications from women are encouraged.

This post is classified F2 on the Coordinated Organisations' salary scale.

Location
ESTEC, Noordwijk, The Netherlands

Description
The Radiation Hardness Assurance and Component Analysis Section is one of the three sections of the Technical Reliability and Quality Division in the Product Assurance and Safety Department. The Section's main responsibility is providing direct and indirect engineering support to ESA projects and European industry in the area of EEE component radiation effects and reliability assessment. The Section's activities are strongly laboratory-oriented and the Radiation Hardness Assurance and Component Analysis Section is responsible for the day-to-day operation of the Technical Reliability and Quality Division component laboratory. The Radiation Hardness Assurance and Component Analysis Section operates state-of-the-art space environment simulation facilities (temperature, shock, vibration, radiation, etc.) as well as instruments to characterise electronic components for their electrical performance, materials and workmanship. The Radiation Hardness Assurance and Component Analysis Section provides quality and engineering support to all ESA projects and development programmes in the area of EEE components and associated space environmental effects.

Field(s) of activity/research
The research activity will focus on the acquisition and analysis of scientific data collected by the ESA-furnished radiation monitors during the lifetime of the satellites. The area of research will involve providing support for the operational experiment plans, analysing the data retrieved and interfacing with the projects as the focal point for the radiation monitors under development. Target radiation monitors are the BERM flying on board BepiColombo, the RADEM to be mounted on board JUICE, and the SEU monitor to be mounted on a CubeSat-class satellite.

In addition, analysis of in-flight anomalies due to radiation effects on components, provision of support for creation of a European radiation database of in-orbit SEE anomalies and promotion of the results achieved in the form of publications, presentations and training is envisaged.

You will also help prepare radiation test campaigns for advanced microelectronics, including developing test set-up and subsequent data analysis, with the emphasis on TID, DD and SEE effects on EEE components. There will also be operation and development of best industrial practices for the radiation testing of memories, GaN and SEE board level testing. The use of irradiation sources available at ESTEC (Co-60, Cf-252, pulse laser testing) and heavy ion and proton accelerators available in Europe and coordinated by the Radiation Hardness Assurance and Component Analysis Section to simulate the effects of space radiation on microelectronics devices is envisaged.

Technical competencies

- Ability to conduct research autonomously
- Breadth of exposure coming from past and/or current research/activities
- Research/publication record
- Knowledge relevant to the field of research
- General interest in space and space research
- Ability to gather and share relevant information

Behavioural competencies

- Result Orientation
- Operational Efficiency
- Fostering Cooperation
- Relationship Management
- Continuous Improvement
- Forward Thinking

Education

You should have recently completed, or be close to completion of, a PhD in a related technical or scientific discipline, preferably in microelectronics and radiation effects. Preference will be given to candidates awarded their doctorate within the past five years.

Additional requirements

You should have a Master's degree or equivalent qualification in electrical/electronic engineering or (solid- state) physics as well as substantial experience in the area of radiation effects on semiconductor components and all aspects of irradiation testing. You should be experienced in SEE rate prediction tools and have sufficient knowledge of the space environment to correctly use those tools. You should demonstrate familiarity with shielding analysis tools (sectoring and 3D MonteCarlo based), device physics simulation tools, modern programming techniques, and modelling and simulation of radiation effects on EEE components for radiation hardening and software engineering practices. Basic knowledge of component engineering and product assurance principles and modelling / simulation of radiation effects on EEE components for radiation hardening is an asset.

The working languages of the Agency are English and French. A good knowledge of one of these is required. Knowledge of another Member State language would be an asset.

Other information

For behavioural competencies expected from ESA staff in general, please refer to the ESA Competency Framework.

The Agency may require applicants to undergo selection tests.

The closing date for applications is 02 July 2021.

In addition to your CV and your motivation letter, please add your proposal of no more than 5 pages outlining your proposed research in the "additional documents" field of the "application information" section.
At the Agency we value diversity and we welcome people with disabilities. Whenever possible, we seek to accommodate individuals with disabilities by providing the necessary support at the workplace. The Human Resources Department can also provide assistance during the recruitment process. If you would like to discuss this further please contact us at contact.human.resources@esa.int.

Please note that applications are only considered from nationals of one of the following States: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the United Kingdom. Nationals from Latvia and Slovenia, as Associate Member States, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Lithuania and Slovakia as European Cooperating States (ECS).
Priority will first be given to candidates from under-represented Member States.

In accordance with the European Space Agency’s security procedures and as part of the selection process, successful candidates will be required to undergo basic screening before appointment