

## Internal Research Fellow (PostDoc) in Radio Navigation

**Job Req ID:** 12253

**Closing Date:** 28 June 2021

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**Vacancy Type:** Internal Research Fellow

**Date Posted:** 11 May 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.

### **Post**

**Internal Research Fellow (PostDoc) in Radio Navigation  
(Assurance, resilience and privacy of position)**

This post is classified F2.

### **Location**

ESTEC, Noordwijk, The Netherlands

### **Description**

The Radio Navigation Systems and Techniques Section provides functional support to ESA projects and carries out technology research (R&D) in radio navigation systems, system performance tools, algorithms (signal and navigation), and techniques and equipment for position-navigation-time (PNT) applications on ground and in space.

The Section also covers radio navigation techniques and technologies, elements and subsystems to generate, receive, exploit and analyse signals from current and upcoming radio navigation systems (GPS, GLONASS, EGNOS, Galileo and BeiDou), including system design tools and navigation equipment. The emphasis is on engineering aspects, GNSS system and sub-system evolution, design and low TRL for technology demonstrator prototyping and, in particular, navigation system design and tools, novel navigation techniques and equipment design/prototyping, on-board receivers and formation-flying RF metrology.

Interested candidates are encouraged to visit the ESA website: [www.esa.int](http://www.esa.int)

### **Field(s) of activity/research**

The R&D performed by the Section contributes to shaping the role of GNSS and space-based positioning concepts in the evolving positioning landscape. As positioning and navigation have become essential functions in everyday life for professional and mass-market use, there is a growing need for capabilities in terms of resilience, and security of the position-related information, and of the underlying algorithms and technologies.

In this context, the selected research fellow will work on challenging, exciting R&D activities with a dynamic team of experts in positioning technologies, aiming to find innovative solutions for PVT assurance, resilience and privacy.

You will have the opportunity to help shape future PNT algorithms, systems and applications in signal processing and navigation algorithms for enhancement to PVT assurance, resilience and privacy, by combining multiple positioning techniques, such as GNSS, 5G, signal of opportunity incoming from terrestrial networks or LEO satcoms, and dead-reckoning.

There are two possible main areas of activity, for which research project proposals are expected:

- The first has as its focus the development of algorithms, in particular navigation algorithms, to enhance PVT assurance and enable provable user privacy (preservation of user privacy by design, in particular in the context of network-based processing or reporting to third-party applications: road-user charging, contact tracing, etc.).
- The second aims at developing innovative resilient and secure positioning for supporting high-accuracy applications (e.g. for UAV, autonomous vehicles, etc.).

For these activities, development should be understood in the broadest sense, covering both innovative steps to design and implementation (e.g. breadboards) and testing of solutions (e.g. testing through laboratory and field campaigns).

### **Technical competencies**

- Ability to conduct research autonomously
- Breadth of exposure coming from past and/or current research/activities
- Research/publication record
- Solid 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 2021. Preference will be given to candidates awarded their doctorate within the past five years.

### **Additional requirements**

A PhD in an engineering domain relevant to the proposed area of research (e.g. hybrid positioning and sensor fusion for high-accuracy positioning, positioning with terrestrial systems, GNSS resilience, wireless security).

Previous experience in radio navigation signal processing design would be an asset, as would knowledge of position estimation algorithms, signal processing and radio communications, in particular for hybrid positioning, resilience and security of the positioning solution.

You must be able to work in a team with other international investigators in a spirit of positive co-operation and, at the same time, be capable of working autonomously in your area of research. At the end of the fellowship, you will be required to summarise the work completed

so that it can be included in papers to be submitted to relevant specialised conferences/journals.

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.

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](mailto:contact.human.resources@esa.int).

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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