

## Job Title: Internal Research Fellow (PostDoc) in Innovative On-Board Satellite Navigation Technology

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### EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of Navigation.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. Applications from women are encouraged.

#### Post

##### Internal Research Fellow (PostDoc) in Innovative On-Board Satellite Navigation Technology

This post is classified F2.

#### Location

ESTEC, Noordwijk, The Netherlands

#### Our team and mission

The Internal Research Fellow will be based in the GNSS Evolution Programme Implementation Office, GNSS Evolution Programme & Strategy Division, Directorate of Galileo Project and Navigation-related activities.

Interested candidates are encouraged to visit the ESA website.

#### Field(s) of activities/research

##### Overview of the GNSS Evolution Programme & Strategy Division

The GNSS Evolution Programme and Strategy Division is responsible for elaborating programmatic analysis and recommendations for the navigation evolution related activities, and for coordinating and implementing technology research, system activities related to evolutions and upgrades of the European GNSS Infrastructure, including among others:

- establishing and maintaining the strategic planning for navigation activities encompassing on-going programmes and planned future activities, and coordinating ESA inputs with the European Commission;
- elaborating the ESA contribution to the European navigation strategy and plans;
- implementing preparatory activities, technology and studies of the evolutions of the European GNSS infrastructure;
- coordinating and supporting the European Commission and GSA with respect to the GNSS evolution R&D activities;
- definition, execution and monitoring of activities leading to an optimal use of navigation satellites for scientific purposes, in coordination with the Navigation Science Office

##### Overview of the field of research proposed

A research fellow is sought to engage in independent research in one area related to innovative technology for Global Navigation Satellite Systems (GNSS). The specific research topic will fall either in the area of **novel technologies for GNSS satellite payload or platform**, including technologies that may bring significant advantage to the system in terms of improved system performance, new services, increased system/satellite reliability, additional flexibility, and reduction of service time-to-market; or **disruptive concepts for satellite navigation in space**, addressing technologies that could enable a complete change on the current paradigm to Positioning, Navigation and Timing (PNT).

In the first category of novel technologies for GNSS satellite payload or platform, the following potential topics are proposed:

- New on-board clock technologies (vapour cells, trapped ions, cold atoms, optical clocks);
- Advanced timing subsystem approaches (clock ensemble combinations, remote clock steering);
- New Laser Retro-Reflector (LRR) technologies, including detection and timing capabilities;
- Accelerometers on-board;
- Space weather instruments on-board (radiation, plasma, magnetic field).

In the second category of disruptive concepts for PNT, some examples of potential topics are proposed:

- X-ray pulsar navigation;
- Quantum sensors for navigation;
- Quantum communications for PNT;
- Neutrino communications for PNT.

The research fellow shall demonstrate the feasibility, interest and added value of advanced concepts for consideration in future navigation systems from space. The Research Fellow will work in close cooperation with the GNSS Evolutions team working in the future GNSS and with technical specialists in various relevant fields.

#### Technical competencies

Knowledge relevant to the field of research

Research/publication record

Ability to conduct research autonomously

Breadth of exposure coming from past and/or current research/activities

Interest in space and space research

Ability to gather and share relevant information

A good knowledge or experience of the financial regulatory framework systems

#### Behavioural competencies

Innovation & Creativity

Continuous Learning

Communication

Relationship Management

Self Motivation

Problem Solving

Cross-Cultural Sensitivity

#### Education

Applicants should have recently completed, or be close to completion of a PhD in a related technical or scientific discipline (e.g. aeronautical engineering, telecommunication engineering, electrical engineering, applied physics).

#### Additional requirements

Applicants should demonstrate relevant research experience in one or more of the proposed research topics. They will be required to demonstrate competency in the specific skills required to perform the proposed research (e.g. data analysis, software development, synthesis, communication, presentation).

Applicants are required to be able to demonstrate an ability to work in a multidisciplinary environment as part of diverse teams. A proactive approach to identifying opportunities, problem solving and communicating is required.

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 09 March 2018.**

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. Candidates are asked to arrange for 3 reference letters, to be sent by the referees themselves, before the closing date to [temp.htr@esa.int](mailto:temp.htr@esa.int). Please ensure your name is mentioned in the subject of the e-mail.

If you require support with your application due to a disability, please email [contact.human.resources@esa.int](mailto: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, the United Kingdom and Canada and Slovenia as well as Bulgaria, Cyprus, Latvia, Lithuania, 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