

Job Title: Internal Research Fellow (PostDoc) in RF plasma discharges for atomic clocks

Req ID 7381 - Posted 12/07/2018



EUROPEAN SPACE AGENCY

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. Applications from women are encouraged.

Post

Internal Research Fellow (PostDoc) in Radio Frequency (RF) plasma discharge modelling and coupling optimisation for atomic clocks

This post is classified F2.

Location

ESTEC, Noordwijk, The Netherlands

Our team and mission

This position is located in the RF Equipment and Technology Section of the RF Payloads & Technology Division and is focused on the RF plasma discharge modelling, characterization and validation for its application in ultra-stable time references such as atomic clocks.

The RF Payloads & Technology Division is responsible for RF payloads, instruments and technologies for space and ground applications, including all equipment having a RF space/ground interface and its associated laboratories. The Division supports the definition, specification and development/procurement of laboratories either for ESA projects and technology programmes or external customers.

Within the Division, the RF Equipment and Technology Section provides functional support to ESA projects and carries out technological research (R&D) in the fields of RF equipment and building blocks, active and passive components, technologies and related design and characterisation tools.

Field(s) of activities/research

Controlled RF plasma discharges are used in atomic clocks for atom flux creation by means of molecular dissociation or as a spectral optical source for population inversion in double resonance schemes. At the same time, atomic clocks are increasingly becoming a key technology for space applications, where on-board ultra-stable time references are required.

This is the case for future scientific missions, such as ACES, which will provide an in-orbit time reference and also, on a much larger scale, for the GNSS constellations for which multiple atomic clocks are embarked on each satellite.

A detailed understanding of RF plasma discharge evolution over clock lifetime and its optimization to improve the signal

to noise and then the performance of the atomic clocks are therefore important research fields.

The tasks assigned to the selected candidate will include RF plasma discharge modelling and validation, discharge optimization, analysis and prevention of wear-out effects and validation of the identified solution by experimental tests in the ESTEC laboratories.

The outcomes of this work will be fed into future developments.

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
Interest in space and space research
Ability to gather and share relevant information

Behavioural competencies

Innovation & Creativity
Continuous Learning
Relationship Management
Self Motivation
Communication
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, preferably in plasma physics. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

Additional requirements

The Research Fellow 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 his/her area of research. Previous experience in experimental research within a laboratory environment as well as competence in optical spectroscopy would be assets. Good knowledge of RF/electromagnetic modeling and multiphysics environment simulation is desirable.

At the end of the fellowship, the Research Fellow 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.

The closing date for applications is 23 August 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. 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.

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