Job Title: Internal Research Fellow (PostDoc) in Radio Occultation Measurements with ExoMars TGO

Req ID **8750** - Posted **05/07/2019**

EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of Human & Robotic Exploration Programmes.

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 Occultation Measurements with ExoMars TGO
This post is classified F2.

Location
ESTEC, Noordwijk, The Netherlands

Our team and mission
The Internal Research Fellow will be based in Directorate of Human Spaceflight and Robotic Exploration and he/she will receive tutoring from the ExoMars Project Scientist, from the Science Support Office, Directorate of Science.

Interested candidates are encouraged to visit the ESA website: www.esa.int

Field(s) of activities/research
The radio occultation technique, to send a signal from a spacecraft to a ground station on Earth through the atmosphere of the other planet, is a powerful tool to probe planetary atmospheres and ionospheres from orbit. It is used regularly by many spacecraft in orbits around planets in the solar system, in order to provide high-resolution profiles of electron densities in ionospheres and neutral densities in atmospheres. It does however suffer from some inherent limitations; the coverage is very limited at low and equatorial latitudes, the signal is affected by the Earth ionosphere and atmosphere and by the interplanetary plasma during the propagation from the planet to the Earth ground station, the signal to noise ratio can be low when the planet is far away, and it is only possible to measure in seasons, when occultations actually take place.

Overview of the field of research proposed

In order to get around the limitations described above we are planning to make a set of innovative observations with ExoMars-TGO, using a UHF signal sent by Mars Express. This is what we call a Mutual Radio Occultation Measurement. The objective is to probe the ionosphere and the atmosphere in a much more flexible and accurate way than the conventional S/C to Earth occultation technique.
These measurements will be the first regular observations of its kind at Mars.

The main tasks of the Research Fellow will therefore cover:
- forwarding modelling of the measurements, using actual flight parameters, and inversion of modelled data to derive profiles and compare with input data;
- planning of real observations, selecting the best opportunities;
- analysis of the measured data and derive atmospheric and ionospheric profiles. Further process the results and study effects with respect to atmospheric and ionospheric processes.

The detailed tasks will depend on the background and the interests of the individual candidate

The Research Fellow is also expected to create research and collaborative links as needed with other areas of the Directorate of Human Spaceflight and Robotic Exploration as well as the ESA Science Directorate and ESA Technical Directorate in order to profit from existing expertise and for exploiting synergies within ESA's various activity areas.

Information on the ExoMars-TGO project can be found here: http://exploration.esa.int/mars/

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
General interest in space and space research
Ability to gather and share relevant information

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. Preference will be given to applications submitted by candidates within five years of receiving their PhD.
In particular for this position, the candidates are expected to have research experience in at least one of the following areas, with a demonstrated interest in others: Radio signal propagation, planetary atmospheres and ionospheres, spacecraft instrumentation, space instrumentation data analysis.

Additional requirements

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.
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.

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 16 August 2019.

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, and the United Kingdom. Nationals from Slovenia, as an Associate Member, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Latvia, 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