

## Internal Research Fellow (PostDoc) - for In Space Construction and Space Resources

**Job Req ID:** 12469

**Closing Date:** 25 May 2021

**Publication:** External Only

**Vacancy Type:** Internal Research Fellow

**Date Posted:** 27 April 2021

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

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.

### **Location**

EAC, Porz-Wahn, Germany

### **Our team and mission**

The European Astronaut Centre's tasks are centered around the “human” component of human spaceflight: astronaut selection, training, medical support and surveillance, as well as support of astronauts and their families during preparation for and during while on space missions to the International Space Station (ISS).

In order to make the operational experience of EAC available also to other ESA activities, in particular for the preparation of human exploration, EAC has created the Spaceship EAC initiative, to foster innovation and low technology readiness (TRL) concepts and technologies. Within this initiative, the topics around utilizing Space Resources have been broadly engaged with, supporting the ongoing activities of ESA around ISRU (in-situ resource utilization) and sustainable exploration. At EAC, the lunar analogue facility known as LUNA is also planned to be realized – this will be a world leading location for analogue training activities and can be utilized for ISRU demonstrations as well. It is envisioned that this position will support the LUNA facility team in developing LUNA for Space Resource related activities.

This position is made available by the Italian Space Agency (ASI) as part of the ESA-ASI integrated team.

### **Field(s) of activity/research for the traineeship**

You will join the Spaceship EAC team, which is part of the Exploration Preparation, Research and Technology (ExPeRT) team of ESA. The Spaceship EAC team is composed of Research Fellows, Young Graduate Trainees and university interns performing their final year projects within the fields of research and development indicated below. You will mentor some university students and assure an appropriate level of research to be compliant with their university requirements.

The proposed topic shall be in the area of ISRU construction – specifically research into realizing demonstrable mission concepts and technologies and demonstrating them, if appropriate, at the LUNA facility. This includes topics relating to resource extraction and collection, construction and the mission concepts around such systems. A strong focus is

expected on the research activity to be of an innovative nature. Importantly, the Spaceship EAC initiative approaches ISRU activities with a practical brainstorming philosophy – demonstrable, empirically driven research should be the focus.

You will also be working on the following activities:

- Performing applied research in the area of ISRU construction and related Space Resource fields;
- Assuring that the research is coordinated and aligned with
  - The ESA Exploration Strategy, Space Resources Strategy and the objectives of the Directorate
  - Currently discussed lunar exploration scenarios and related logistical constraints;
  - Relevant on-going R&D activities at ESA or funded by ESA;
- Liaising closely with other ESA teams active in the area of radiation studies relevant to human spaceflight and exploration, in particular ExPeRT and teams within our Technology Directorate;
- Supporting the development of the Spaceship initiatives and related EAC and ExPeRT activities;
- Helping to identify partners in ESA, industry and academia that are willing to engage with this topic of research and planned activities at LUNA;
- Being actively engaged with academic scholarship, with a view to disseminate their research outputs to the larger exploration community.

### **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**

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 materials science, metallurgy, engineering, robotics or a related field that is relevant for the above fields of activity. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

You must have research experience in the proposed area of this position (ISRU), or be able to indicate parallels between past experience and your proposed ISRU research topic.

### **Additional requirements**

You are required have strong analytical, problem-solving and communication skills and must be able to work in a multi-cultural environment and in an autonomous manner.

You should be proficient in the use of MS Office packages and have experience in working with research-relevant software tools.

The working languages of the Agency are English and French. A good knowledge of English is required for this post. As the position is sponsored by the Italian Space Agency (ASI), Italian language knowledge at B1 level of the Common European Reference Framework for Languages (CERF) is required. Knowledge of other member state languages is considered 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