

# Job Title: Internal Research Fellow (PostDoc) in Power Management for Space Applications

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## 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 Power Management for Space Applications

This post is classified F2 on the Coordinated Organisations' salary scale.

### Location

ESTEC, Noordwijk, The Netherlands

### Our team and mission

The Power Systems, EMC and Space Environment Division is responsible for all aspects of power systems required for ESA spacecraft and payloads. The Division's activities cover power generation, power management, electromagnetic compatibility, energy storage and space weather.

The Power Management Section provides specialist support in the domain of power management and distribution to current ESA missions and development projects. The Section is also responsible for ESA R&D activities in its competence domain, working on internal activities as well as collaborating with industry and academia throughout Europe developing future power management technologies. The work of the Section is supported by the Power Conversion Lab Test Facility on site at ESTEC. The Section performs testing and prototyping in the Power and High Voltage Laboratories to support projects and internal and/or external R&D activities, to promote new concepts and to serve didactical purposes (knowledge and education).

In the recent past, the power management domain has been going through important evolutions due to the generalization of digital control and the disruption of new semiconductor technologies based on GaN and SiC. The Section strives to spin all these new technologies into space applications in order to improve the performance and reliability of power units.

### Field(s) of activities/research

Power electronics is a vast field with various research fields. Power applications in space systems particularly deal with:

- High efficiency DC/DC conversion topologies
- Control techniques
- Reliability
- Failure detection and failure isolation
- Thermal management of power losses.

Nowadays, the technology trends point to higher switching frequencies, GaN and SiC devices and enhanced functionality and performance thanks to the use of digital control. The combination of these techniques opens the door to many research topics that could improve the performance of space power electronics and the selected candidate will carry out their fellowship in one of these domains.

## 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  
General 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 power electronics or related field of electrical engineering. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

## Additional requirements

A solid knowledge of power electronics, digital control techniques and FPGA programming is also required.

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. At the end of the fellowship, the Research Fellow will be required to summarize 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 06 June 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](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).

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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, 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