

# Job Title: Internal Research Fellow (PostDoc) in the Ultra-Deep SubMicron Devices for Space

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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 the Ultra-Deep SubMicron Devices for Space

This post is classified F2.

### Location

ESTEC, Noordwijk, The Netherlands

### Description

The core responsibilities of the Microelectronics Section of the Data Systems, Microelectronics & Components Division cover technical support to ESA missions and research activities in:

- (i) digital and analogue integrated circuits (ASIC and FPGA) and Intellectual Property (IP) core developments for space applications,
- (ii) techniques to mitigate radiation effects for ASIC and FPGA
- (iii) tools and methods for IC design and development (from specifications to tested devices).

Candidates interested are encouraged to visit the ESA website:

[http://www.esa.int/Enabling\\_Support/Space\\_Engineering\\_Technology/Microelectronics/ESA\\_Microelectronics\\_Section](http://www.esa.int/Enabling_Support/Space_Engineering_Technology/Microelectronics/ESA_Microelectronics_Section)

### Field(s) of activities/research

#### ULTRA DEEP SUBMICRON DEVICES FOR SPACE: MITIGATION OF RADIATION EFFECTS AND LOW POWER EFFICIENCY

The project aim is the assessment, design, fabrication and testing of integrated circuits to provide innovative solutions for the design of key power-efficient and radiation-hardened microelectronic solutions for the next generation of Ultra Deep SubMicron (UDSM) space devices.

Basic sequential and combinatorial logic cells as well as other key analogue functions (filters, mixers, amplifiers, V and I references, comparators, oscillators, etc.) will be the subject of the work, as key building-blocks needed for the development of large integrated circuit systems (e.g. ASIC, FPGA, microprocessors).

The work will involve functional and electrical simulations, including state-of-the-art 3D modelling of radiation effects in UDSM integrated circuits with highly specialised tools (Robust Chip Accuro, IRoC TFIT, Cadence Virtuoso), all of them available at ESA's microelectronics lab. This work will be done in coordination with, and complementary to, the design, simulation and test work being done at ESA and CNES R&D activities that are characterising the power efficiency and radiation hardness of technologies such as 16/12 nm Fin Field-Effect Transistor (FinFET).

### 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

You should have recently completed, or be close to completing, a PhD in microelectronics. Preference will be given to you if you were awarded your doctorate within the past five years.

## Additional requirements

- Experience in analogue integrated circuit design and testing is required
- Expertise in radiation effects modelling in semiconductors would be a very valuable asset.

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 17 February 2020.**

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.

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, 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