



## VACANCY NOTICE – 2023-IPR-S4001-FGIV-022710

### FG IV Scientist - Exploratory Research Project

### Quantum computing for radio spectrum Monte Carlo simulations (QUORUM)

<b>Type of contract</b>	Member of the European Commission's contract staff, Function Group IV (article 3b of the <a href="#">Conditions of Employment of Other Servants</a> )
<b>Duration of contract</b>	36 months employment contract for the Exploratory Research Project Quantum computing for radio spectrum Monte Carlo simulations (QUORUM). Employment contracts for this category of staff can be renewed up to maximum 6 years.
<b>Area</b>	Applied Computer Science
<b>Place of employment</b>	Ispra (IT)
<b>Indicative basic salary</b>	3877,47 - 5616,29 € (applicable as of 1 <sup>st</sup> of July 2022) For more detailed information please consult: <a href="#">Working Conditions</a>

#### **WE ARE**

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The [Joint Research Centre \(JRC\)](#) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

The current vacancy is in the Technologies for Space, Security and Connectivity Unit of the Directorate for Space, Security and Migration of the JRC, whose mission is to foster the EU's resilience and citizens' trust and wellbeing by enhancing the security and resilience of essential space-based, terrestrial and connectivity infrastructures and services.

The unit does this through research, assessing current and emerging technological trends and anticipating the geopolitical security landscape including hybrid threats and technological risks.

The Scientific Development Programmes Unit is in charge of the overall JRC Exploratory Research Programme.

The vacancy is within the **Exploratory Research Project Quantum computing for radio spectrum Monte Carlo simulations (QUORUM)**. The JRC Exploratory Research Programme is a strategic initiative characterised by ideas that might lead to novel results and qualitatively enrich current JRC scientific work.



## **WE PROPOSE**

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The successful candidate will carry out scientific tasks in accordance with the Exploratory Research Project 'Quantum computing for radio spectrum Monte Carlo simulations' (QUORUM) with special emphasis on use of available online and open-source quantum computers and quantum simulators and application of quantum algorithms for Monte Carlo simulation.

The successful candidate will:

- Investigate what quantum computing resources relevant to the application are available;
- With the project team, select the most promising ones for the application;
- Code test cases;
- Analyse results to assess if quantum computing could be advantageous for the application, with respect to existing Monte Carlo-based software simulators;
- Report to the Project Leader on progress, achievements and potential problems in a timely manner; a report on scientific activities every twelve months and a final report are foreseen;
- Provide feedback and maintain interactive communication with colleagues;
- Explain the research activities and achievements to third parties, such as scientific communities and the general public;
- Write, publish and present scientific reports, articles and conference papers;
- Propose new activities, including competitive activities, where relevant.

## **WE LOOK FOR**

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A scientist with the following essential qualifications:

- A doctoral diploma in mathematics, computer science, physics, electronic engineering or a related field, alternatively completed university studies of at least three years attested by a diploma and at least five years professional experience in a field relevant to the position;
- Extensive knowledge/experience in mathematical modelling and simulation, including writing computer code;
- Broad knowledge in the area of quantum information science;
- Good oral and written communication skills in English (B2).

In addition, the following competences will be considered as an advantage:

- Knowledge of radio frequency engineering and/or Monte Carlo methods;
- Knowledge of other languages;
- Solid record of research activities relevant for the post including publications in international peer-reviewed journals;
- Ability to work in a team and in a multi-cultural environment.

The candidate is expected to be creative and work independently

## **HOW TO APPLY**

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If you are **already on a valid CAST FG IV reserve list**, or you **have already applied to one of the calls below**, you can directly submit your application at <http://recruitment.jrc.ec.europa.eu/?type=AX>.

**Interested candidates should provide a CV and cover letter explaining their motivation and aptitude for the vacancy and the described research areas and tasks. In the list of**



**publications accompanying the CV, please highlight your five most relevant publications.**

If not, before applying to this position, **you must register** for one of the two following:

- the [Call for Expressions of Interest | EU Careers \(europa.eu\)](#) (CAST Permanent FG IV), which is used by a wide range of organisations (institutions, bodies, offices and agencies of the European Union), or
- the [specialised call for researchers](#) (JRC Call COM/1/2015/GFIV – Research), which is mainly used by the JRC.

Note that each of the calls above has **different minimum eligibility requirements and different selection tests**.

*The JRC cultivates a workplace based on respect for other people and the environment, and embraces non-discriminatory practices and equality of opportunity. In case of equal merit, preference will be given to the gender in minority.*