

# ANNOUNCEMENT FOR PROVISION OF THE WORKPLACE

## VAC-2023-35 – Postdoc position in High Performance Computing

**Number of places:** 1

**Category:** PDOC3

**Workplace:** Barcelona

**Salary (gross):** According to the CIMNE salary scale

**Weekly working hours:** 40h

### Functions to be developed:

The position is funded by the project AMBBOS, Advanced computational Mathematics for Breeding Blanket Optimal deSign, a 3-year Spanish project focused on the development of numerical methods for the optimal design of breeding blankets in fusion reactors, a key component of fusion reactors.

The selected candidate will be responsible for the development of unfitted finite elements (FE) algorithms that permit to deal with complex geometries, as required by the application. Because mesh generation is a bottleneck in the FE simulation pipeline, unfitted FE methods are a must to exploit high performance computing architectures. However, a careful treatment of the geometry representation is required to preserve accuracy.

Unfitted FE are currently well understood for the numerical approximation many problems, ranging from the standard Poisson to incompressible Navier-Stokes equations. Their extension for magnetohydrodynamics will be carried out by the selected candidate. The developed methods will be implemented in the Julia programming language, using the Gridap ecosystem as a basis (<https://github.com/gridap>).

### Required skills:

- A PhD in applied mathematics or engineering in the field of computational mechanics.
- Programming experience in scientific computing.

- Experience in the development of finite element software.
- Writing and communication skills (oriented towards the production of project reports).

**Other valued skills (not mandatory):**

- Advanced programming skills, e.g. distributed parallel programming, object-oriented and/or functional programming. Experience in the Julia programming language will be positive evaluated.
- Experience in finite element modelling with immersed, unfitted and embedded methods.

**Qualification system:**

The requisites and merits will be evaluated with a maximum note of 100 points. Such maximal note will be obtained summing up the following points:

- **Publication and career track:** 10%
- **Previous research and academic experience in the field of the position:** 10%
- **Programming skills:** 10%
- **Language skills:** 10%
- **Interview:** 60%

Candidates must complete the "Application Form" form on our website, indicating the reference of the vacancy and attaching the required documents.

The deadline for registration to the offer ends on July 4th, 2023 at 12 noon.

The preselected candidates may be requested to send the documentation required in the "Requirements" and "Merits" sections, duly scanned, and may be called to go through selection tests (which might be of eliminatory nature) and / or personal interviews.

Este contrato es parte del proyecto de I+D+i PID2021-123611OB-I00 financiado por MCIN/AEI/10.13039/501100011033/ y "FEDER: Una manera de hacer Europa"

Proyecto PID2021-123611OB-I00 Financiado por:

