# Call for proposals for Broader Approach simulation projects in the Pitagora HPC at Bologna, Italy and Plasma Simulator at Rokkasho, Japan

## (2026/4/1 to 2027/3/31)

**Deadline for answers: Wednesday, 4th February 2026**

### 1. Preface

The Broader Approach (BA) activities entered the BA Phase II in April 2020 building on the successful results of the BA Phase I (from June 2007 to March 2020). The objectives of the International Fusion Energy Research Centre (IFERC) in BA Phase II are to support ITER, JT-60SA and IFMIF/EVEDA and to consolidate the know-how for the development of future fusion reactors (DEMO). In line with the objectives, F4E together with EUROfusion and QST continuously promote simulations as part of the IFERC project activities (IFERC-CSC).

For this purpose, the high-performance computer resources provided both by QST in Rokkasho (Japan) and EUROfusion in Bologna (Italy) are available to implement EU and Japan projects as well as EU-JA joint projects from April 2026 to March 2027. Resources are reserved for projects targeting priority areas relevant to the objectives of the IFERC project, and the projects must address issues relevant to fusion development programmes such as ITER, JT-60SA, DEMO or IFMIF/EVEDA.

### 2. Scope of simulation projects

To effectively support the HPC simulation projects, with this call for proposals, we would like to invite scientists and engineers to propose project(s) addressing issues relevant to

- ITER,
- JT-60SA,
- DEMO,
- IFMIF/EVEDA.

The issues in prime categories fall under the following topics:

- Divertor physics:
  (improved models, detached conditions, poloidal asymmetry, plasma surface interactions, heat load, issues related to ITER re-baselining etc.),
- Edge physics:
  (improved confinement, L-H transition, Edge Localised Modes, 3D effects such as Resonant Magnetic Perturbations, issues related to ITER re-baselining such as W first wall etc.),
- Disruption:
  (overall modelling, effects of runaway electrons and mitigation systems, etc.),
- Plasma turbulence and related transport processes:
  (core or edge turbulence, transport barrier, etc.),
- Fast Particle physics:
  (influence of Alfvén Eigenmodes on Fast Particle confinement and/or burning plasma, influence of energetic ions on turbulent transport, etc.),
- Integrated modelling of fusion plasmas:
  (overall modelling and model validation, creation of datasets for surrogate / reduced models, application to burning plasma, etc.),
- Heating and current drive:
  (NBI, ECH, ICRF, etc.)
- Reactor materials:
  (irradiation effects on reactor materials, structural materials [Reduced Activation Ferritic Martensitic steels], functional materials [neutron multiplier, tritium breeder], divertor materials [W], etc.)
- Reactor technology:
  (nuclear analysis, neutronics, etc.).

**3. Specifications of the computer systems available**

Four computer partitions are made available for selected projects in the computer centre in **Bologna, Italy** and **Rokkasho, Japan**, respectively, as specified in the tables below:

| **Conventional CPU node in Pitagora [Bologna, Italy]** |
| --- |
| 15.3PF HPL (19.8PF peak) |
| 1008 nodes - 2 x AMD EPYC™ 9745 (AMD Turin 128c (Zen5c) 2.4 GHz) |
| - 768GB DDR5 6400 MT/s |

https://www.amd.com/en/products/processors/server/epyc/9005-series/amd-epyc-9745.html
Programming environment:
https://docs.hpc.cineca.it/hpc/pitagora.html#pitagora-card (Under construction)

**Advanced GPU node in Pitagora [Bologna, Italy]**
27.3PF HPL (37PF Peak FP64)
168 nodes - 4 x NVIDIA H100 SXM (94GB HBM2e) - 512 GB DDR5 6400 MT/s
https://resources.nvidia.com/en-us-gpu-resources/h100-datasheet-24306
Programming environment:
https://docs.hpc.cineca.it/hpc/pitagora.html#pitagora-card (Under construction)

**Conventional CPU node in Plasma Simulator [Rokkasho, Japan]**
5.89PF (peak)
360 nodes
- 2 x Intel Xeon 6980P (2.0GHz/128C)
- 768GB DDR5 MRDIMM
https://download.intel.com/newsroom/2024/data-center/Fact-Sheet-Xeon-6-P-Core.pdf
Programming environment: Intel oneAPI

**Advanced APU node in Plasma Simulator [Rokkasho, Japan]**
34.32PF (FP64 matrix peak)
70 nodes
- 4 x AMD MI300A (128GiB HBM3 5.3TB/s)
https://www.amd.com/content/dam/amd/en/documents/instinct-tech-docs/data-sheets/amd-instinct-mi300a-data-sheet.pdf
Programming environment:
(for CPU) AOCC, AOCL
(for GPU) AMD ROCm
https://www.amd.com/en/products/software/rocm.html

## 4. Resources available for allocation

Resource available for allocation to projects during this cycle (from April 1, 2026 to March 31, 2027) as follows:

***Pitagora***

*157 000 node-hours (for CPU)*
*105 000 node-hours (for GPU)*

***Plasma Simulator***

*157 000 node-hours (for CPU)*
*105 000 node-hours (for GPU)*

Please note that the above-mentioned total amount of available node-hours will be shared among the selected proposals.

**5. Eligibility of proponents and participants in projects**

The Principal Investigator, and co-Principal Investigator if any, of each project must have a contractual link with some recognised fusion research organisation in EU or JA, and be empowered in this organisation to propose this kind of project. In the case of scientists not belonging to such organisations, they can participate in the project only as collaborators and their participation in the project must be covered by a formal agreement. Also, the Principal Investigator, and co-Principal Investigator if any, will ensure that the total amount of node-hours allocated to all the scientists belonging to neither EU nor JA research organizations in a project is limited to a maximum of 50% of the node-hours allocated to the project. The acceptance of recognised fusion research organisations will be under the responsibility of the Implementing Agencies (F4E or QST).

**6. Proposals and selection**

The proposal should detail the objectives of the project, the relationship of the project to scientific and technical issues pertaining to issues of ITER, JT-60SA, DEMO and IFMIF/EVEDA, and the required resources following the attached “Application form for BA sim. in FY 2026.docx”.

It should be noted that the conventional (CPU) resources will be allocated in priority to simulation projects related to the Cooperation Arrangement between the Broader Approach Activities and the ITER Project.

In the proposal, it must be described in detail the justification/rationale for the use of the resources requested, by including the information in terms of expected number of runs, number of nodes used, and elapsed time per run and the relationship to the scientific objectives. Proposals will be rejected if no proper justification/rationale for the use of resources is provided.

Proposals will be selected based on a peer review process defined by the Joint

Allocation Committee. Only proposals which are technically fit for the partitions made available in this call will be considered while the final selection will be made according to the scientific and technical merit of the proposals, taking into account the following criteria:

(1) Relevance to issues of fusion development programmes: ITER, JT-60SA, DEMO and IFMIF/EVEDA, and clearness of research plan (40%, threshold: 2),
(2) Quantitative justification of the requested computer resources and relationship to the objectives (20%, threshold: 2),
(3) Scientific excellence including innovation potential (20%, threshold: 2),
(4) EU/JA collaborative aspects (20%).

Proposals with one or more evaluations below the threshold of 2 (the range of evaluated values is from 0 to 5) in categories (1), (2) and (3) will fail. Note that the criterion (4) has no threshold, and a well evaluated project contains a Principal Investigator from one side and a co-Principal Investigator from the other side, and has clearly defined benefits of a EU/JA joint collaboration together with the roles of both EU and JA researchers.

*Remark-1*: for proposals using data from experimental facilities (including the usage of data from ITER, JT-60SA, DEMO and IFMIF/EVEDA), a collaboration agreement should be concluded separately. In such cases, please contact the authority managing the data.

*Remark-2*: the use of any MCNP code by users affiliated with institutions outside of Japan is not allowed on Plasma Simulator. Such a proposal should be avoided, otherwise the proposal would suffer a considerable disadvantage.

**7. Presentation and publication of obtained results**

The participants must agree to acknowledge EUROfusion and QST when the results of the projects are presented and published. A suitable acknowledgement is as follows: “This work was carried out (partially) using supercomputer resources, in the Pitagora HPC at Bologna, Italy and/or Plasma Simulator at Rokkasho, Japan provided under the EU-JA Broader Approach collaboration and the Computational Simulation Centre of International Fusion Energy Research Centre (IFERC-CSC).”

**8. User Access and Export control**

Japan and European Union countries are parties to the Wassenaar Arrangement, which ensures an Export Control with respect to high level, possible dual-use technology components, including supercomputer technical information, knowledge, set-up, and user

access. For the purpose of obtaining user access, all prospective users will have to provide personal information such as nationality and the place of abode, which will be used only for this purpose.

This process is completely independent of the selection process for research projects by the Joint Allocation Committee. This process will be done separately and in parallel with the selection process, enabling the checking to be followed by EUROfusion and CINECA (Pitagora at Bologna), F4E and QST (Plasma Simulator at Rokkasho) that will have to be completed before account opening after the project is granted. The JA (EU) management staff will notify EU (JA) applicants for using the Plasma Simulator at Rokkasho (Pitagora at Bologna) of details of this process through e-mail after receiving the application forms.

**9. Contact points**

The proposals should reach the Joint Allocation Committee (alloc-com@iferc.org) by **Wednesday, 4th February 2026**. Selected projects will be implemented from 2026/4/1 to 2027/3/31. Questions on the call for proposals should be sent to the Joint Allocation Committee (alloc-com@iferc.org).

After completion of the project, a short written report (i.e. 1-2 pages) presenting the main results is required and shall be sent to the Joint Allocation Committee (alloc-com@iferc.org) by the end of February 2027. If applicable, this report will be taken into account when assessing a continuation of the future simulation projects in the BA framework.