

Call Details

Reference No.	CFP-FSD-AWP26-AC-12	PMU contact	Denis Kalupin
Due Date	17/11/2025	Department	Fusion Science Department
		Status	Draft

Call for Proposals for the use of the EUROfusion High Performance Computer (10th cycle)

Description:

*This Call is open to all Projects that intend to make use of EUROfusion High Performance Computer resources. The proposals must use the appropriate "EUROFUSION HPC AC (25) - Template for applications (10th Call) Version 1.docx" (Please ensure that the submitted proposal file in Word format or converted to **PDF is not larger than 2 MB**) and be submitted using the EUROfusion IMS system. Also, leaders of TSVV and ENR projects that make use of EUROfusion High Performance Computer resources must submit a proposal for the usage of the HPC resources in response to this call as detailed in section 5.*

1. Scope of simulations in the EUROfusion High Performance Computer

In order to make efficient use of the EUROfusion-Fusion High Performance Computer, with this call for proposals, we would like to invite scientists and engineers to propose project(s) to be run on this system. Projects shall be relevant to fusion development (ITER & DEMO) in the field of magnetic confinement and primarily deal with numerical simulations in the following areas:

- Plasma turbulence and related transport processes
- Fast particle physics
- Linear, nonlinear and/or extended MHD
- Edge physics
- Heating and current drive
- Integrated modelling of fusion plasmas
- Reactor materials
- Reactor technology

in order to analyse experimental data on fusion plasmas, to prepare scenarios for ITER operation, to predict the performance of ITER, and to contribute to the DEMO (including HELIAS) design physics basis.

2. Specification of EUROfusion High Performance Computer

A new EUROfusion High Performance Computer (Pitagora) as the following characteristics:

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)

3. Eligibility for proponents and participants in project

The Principal Investigator of each project should be employed by a EUROfusion Beneficiary or Affiliated Entity. 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. The Principal Investigator should inform the Programme Management Unit about the participation of external scientists and get approval.

4. Proposal and selection

Applications that are particularly suited for use on the EUROfusion High Performance Computer are large, highly scalable parallel applications requiring exceptional computational resources: for the conventional node partition the minimum requirement suggested are **0.01M node hours per year** in parallelized applications, where one node corresponds to 128

cores for the conventional node partition.

As an indication from previous allocations to High Performance Computers hosted or organised under EUROfusion, the yearly allocation granted to single projects is expected to be about **0.05 (average) / 0.2 M (maximum) node-hours** for the conventional node partition, however, there is no hard limit and projects can receive larger allocations when requested.

Since most of the performance of the Advanced partition will come from GPUs, the applicants must prove that their codes are able to scale on GPU architectures.

The proposal should *detail the scientific objectives* of the project, the numerical tools used and the required resources following the attached template for applications (c.f. section 5 for the specific case of E-TASC and ENR projects).

In the proposal, the project leader must describe in detail the justification 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. **Without proper justification of the use of resources the project will be rejected.**

Proposals will be selected according to a peer review process defined by the Allocation Committee; only proposals, which are technically fit for the EUROfusion High Performance Computer, requiring exceptional computational resources will be kept while the final selection will be made according to the scientific and technical merit of the proposals taking into account the following criteria:

1. **Quality / scientific excellence of the proposal** (Weight: 40% no threshold)
2. **Impact to the fusion research** (Weight: 30% no threshold)
3. **Quality, skills, recognised expertise and competences of the team to carry out the proposal, including the outcome of the projects in previous cycles** (Weight: 20% no threshold)
4. **Resource management/efficient use of the resources** (Weight: 10% threshold > 2)

Proposals with one or more evaluations below the threshold of 2 (the range of evaluated values is from 0 to 5) in category (4) will fail.

For projects, which are the continuation of projects in a previous cycle of allocation, the peer reviewers will consider the outcome of these projects in making their evaluation. To make this process more efficient, it is requested that proponents provide a concise summary of the outcome of previous relevant projects in the proposal, together with references to reports from previous completed projects (see section 8). The evaluation reports of related projects will be made available to the referees, which will take these into account in the evaluation process.

5. Computing Resources reserved for EUROfusion Theory and Advanced Simulation Coordination (E-TASC), Advanced Computing Hubs and Enabling Research Projects (ENR).

In preparation for Horizon Europe (FP-9), a coherent and ambitious programme of Theory, Simulation, Verification, and Validation (TSVV) Tasks has been initiated. In this context, calls for participation in TSVV Tasks has been issued. These projects have been identified in extensive discussions within the E-TASC Scientific Board and the wider EUROfusion community and leadership. At the EUROfusion HPC Project Committee Meeting, it has been confirmed that specific resources will be allocated, without further scientific selection, to the TSVV tasks under E-TASC and ENR projects that will be selected within the Work Plan. Nevertheless, the HPC Project Committee recognises the importance for a sound technical description of the requests so that the HPC Allocation Committee will assess whether the requests match the offered HPC capabilities.

In this context, the leaders of the proposed TSVV and ENR projects must submit a proposal for the usage of the HPC resources in response to this call providing a technical justification of the requested HPC resources together with the list of the codes to be used (focusing only on the codes that will use most of the HPC resources), i.e. section 2-4 of the template, indicating that the proposal is associated with a specific TSVV and ENR project in the appropriate box.

6. Presentation and publication of obtained results

All related Publications must follow the EUROfusion publication procedure via the EUROfusion pinboard <https://users.euro-fusion.org/publications/>. These include that the participants must agree to acknowledge EUROfusion and the EUROfusion High Performance Computer when the results of the projects are presented and published. In the presentations, the EUROfusion logo must be included when the simulation results are shown.

7. Contact points

Successful projects will be implemented on the EUROfusion computer (10th Cycle) starting from 1st March 2026 and ending on 28th February 2027. Questions on the call for proposals should be sent to Denis Kalupin, the representative of the Allocation Committee (Denis.Kalupin@euro-fusion.org).

8. Reporting

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 (Denis.Kalupin@euro-fusion.org). The reports will be evaluated by the EUROfusion High Performance Computer Allocation Committee. If applicable, this report will be taken into account when assessing a continuation of the

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Issued by: **EUROfusion / FSD department on 1/10/2025**



project.

Proposals are expected against following active call positions

CfP-FSD-AWP26-AC-12- HPC

High Performance Computer

Description

The complete proposal must consist of the following items:

1. Overall Project information, submitted through online proposal form.

- **Proponent** (Principal Investigator, will also be used as contact for the proposal)
- **Title**
- **Abstract**
- **Topic area(s)** (1-6) as a part of Abstract
- **Is this a continuation of a previous project? (yes/no)**

2. Supporting documents, uploaded as attachments to the online proposal (templates are provided in IMS)

- **Detailed Project Description** – in Pdf using the template provided (**strict limit 4,5 pages**). For eligible projects this will be sent to referees

3. MANPOWER: no manpower costs will be covered within the present call. Please **fill the line with ZERO commitment and salary rate = 0.Covered by other means**

Internal financial rules applicable for this position are:

PM 0% AR

Personnel Accompanying Research

Attachments:

The Call includes following attachments available for download at the EUROfusion Information Management System:

TEMPLATE_application_for_use_of_HPC_resources_(10th_cycle).docx

TEMPLATE application for use of HPC resources (10th cycle).docx

EUROFUSION_HPC_AC_(25)_-_Proposal_Evaluation_Form_(10th_Call).docx

EUROFUSION HPC AC (25) - Proposal Evaluation Form (10th Call).docx

Call_Document_(CfP-FSD-AWP26-AC-12).pdf

Call Document (CfP-FSD-AWP26-AC-12).pdf