



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

**Informational Webinar:**  
**SCIENTIFIC DISCOVERY THROUGH ADVANCED**  
**COMPUTING (SciDAC) – FES PARTNERSHIPS**

DE-FOA-0002924

FOA Issue Date:	03/08/23
Submission Deadline for Pre-Application:	04/07/23
Pre-application Response Date:	04/14/23
Submission Deadline for Applications:	05/19/23

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**Disclaimer :** *This presentation summarizes the contents of the FOA. Nothing in this webinar is intended to add to, take away from, or contradict any of the requirements of the FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document.*

# Program Office Introduction

**Fusion Energy Science Program Mission:** The mission of the Fusion Energy Sciences (FES) program is to expand the fundamental understanding of matter at very high temperatures and densities and to build the scientific foundations needed to develop a fusion energy source. This is accomplished by the study of the plasma state and its interactions with its surroundings.<sup>1</sup>

**Advanced Scientific Computing Research Program Mission:** The Advanced Scientific Computing Research (ASCR) program mission is to discover, develop, and deploy computational and networking capability to analyze, model, simulate and predict complex phenomena important to the Department of Energy and the advancement of science.<sup>2</sup>

1 <https://science.osti.gov/fes>

2 <https://science.osti.gov/ascr>

# SciDAC Introduction

**The SciDAC program at DOE Office of Science is recognized, both nationally and internationally, as a leader in accelerating the use of high-performance computing to advance the state of knowledge in science applications.**

- Collaborations enabled by the SciDAC Partnerships have successfully developed computational solutions to science challenges across the SC Programs. Through these, complex scientific or engineering computations have been employed in simulations at a level of fidelity required for the study of real-world systems.
- The SciDAC program consists of two key components: Partnerships and Institutes. This FOA is for FES-ASCR SciDAC Partnerships focusing on collaborative proposals between fusion scientists and the SciDAC Institutes.
- More information on the two SciDAC Institutes and their teams and capabilities can be found at (<https://scidac.gov>)

<https://scidac.gov/about.html>

# FOA Scope Summary

## ➤ **Category 1: Simulation and Algorithm Development**

- This topical area consists of the development and application of individual high-performance computing (HPC) codes for modeling confined plasmas.
- Responsive areas include: Macroscopic Plasma Stability, Boundary Physics, Plasma-Materials Interactions, and the First Wall and Beyond. Other sub-topics related to the performance of the fusion core will be considered as well, such as turbulence and transport, plasma heating, physics of energetic ion populations, etc.

## ➤ **Category 2: Frameworks**

- Applications to this topical area should focus on the integration of HPC codes for the purpose of Whole Facility Modeling (WFM).
- Responsive areas include: Development and support of fusion-relevant modular, flexible frameworks and workflow managers to facilitate integrated simulations on DOE HPC platforms; targeted integrated simulations balancing first-principles approaches with high-fidelity reduced models; and integrated engineering techniques for FPP design.

# Issues and Guidance Common to All Areas

- Successful SciDAC partnerships should be able to exploit the massive concurrency of the DOE HPC systems and not merely their high capacity; Research activities that are relevant to the topical areas described above but are not planning or are not ready to take full advantage of HPC resources should seek support from other FES program elements.
- This FOA is open to multiple confinement configurations, including tokamaks, stellarators, inertial fusion energy, alternates, etc. Applications addressing issues common to multiple configurations or having the flexibility to model multiple configurations are especially welcome.
- Partnerships will be expected to collaborate on whole facility modeling integration efforts, such as implementing Category 1 HPC codes into Category 2 frameworks.
- Partnerships will be encouraged to collaborate with projects awarded under the FES Milestone-Based Fusion Development Program and other efforts associated with the Bold Decadal Vision for commercial fusion energy.
- Partnerships are expected to work with DOE PM's on SciDAC coordination activities.

# Some FOA Details

## ▶ **Key Eligibility Requirements**

- ▶ Universities, private companies, and DOE National Laboratories are eligible to apply.

## ▶ **Limitations on Submissions**

- ▶ Applicant institutions are limited to no more than one pre-application, or application for each lead PI at the applicant institution.
  - ▶ Pre-applications in excess of the limited number of submissions may be discouraged.
  - ▶ Applications in excess of the limited number of submissions may be declined without review.
- ▶ The PI on a pre-application or application may also be listed as a senior or key personnel on separate submissions without limitation.

## ▶ **Collaborations**

- ▶ Each multi-institutional team must be led by a prime awardee with collaborators as sub-awardees. Only the lead institutions will submit pre-applications and, if encouraged, full applications.

# Promoting Inclusive and Equitable Research (PIER) Plans

Appendix: 1-3 pages and should describe the activities and strategies to promote diversity, equity, inclusion, and accessibility in the proposed research project.<sup>1</sup>

- The complexity and detail of Plans are expected to increase with the size of the research team and the number of personnel supported.
- PIER Plans are to be evaluated as part of the merit review criterion: *Quality and Efficacy of the Plan for Promoting Inclusive and Equitable Research*.
- The scope should be integral to and tailored to the research project.
- Applicants are encouraged to consider focusing on areas, including but not limited to:
  - The composition of the project team and partnering institutions.
  - The research environment—cultivating respectful, professional and accessible environments.
  - Equitable and inclusive implementation of the research project.

<sup>1</sup> For a full description of the PIER program, see Appendix 5 in the FOA.

# Program Policy Factors

- ▶ The Selection Official may also consider a number program policy factors in the selection of awards. Among these factors are:<sup>1</sup>
  - ▶ Promoting the diversity of supported investigators, institutions receiving awards, and increasing participation of institutions historically underrepresented in the SC research portfolio and a commitment to improving diversity, equity, and inclusion in the STEM community.
  - ▶ Training and providing career pathways for the next generation of researchers.
  - ▶ Providing placement for postdoctoral researchers.
  - ▶ Training graduate students in conduct of basic research.

<sup>1</sup> For a full list of program policy factors, see page 33 of the FOA.



# FOA Award Information

- **Total Estimated Funding:** \$120M over four years (combined FES and ASCR).
- **Period of Performance:** FY 2023- FY 2026.
- **Ceiling/Floor:** \$3M/year Ceiling and \$1M/year Floor.
- **Expected Number of Awards:** Approximately 8 to 10, depending on strength of applications.
- **Types of Awards:** New awards (no renewals), Cooperative Agreements and Lab Authorizations.
- **Estimated Award Date:** Within FY 2023.

# Where to find this information and more

- Where will this recording be posted
  - Viewgraphs/Recording/Transcript/FAQs:  
<https://science.osti.gov/fes/funding-opportunities>
- Who to contact:
  - FES Program Manager: [michael.halfmoon@science.doe.gov](mailto:michael.halfmoon@science.doe.gov)
  - ASCR Program Manager: [lali.chaterjee@science.doe.gov](mailto:lali.chaterjee@science.doe.gov)
  - PAMS Help Desk: [PAMS-Helpdesk@science.doe.gov](mailto:PAMS-Helpdesk@science.doe.gov)
  - Program Analyst: [marty.carlin@science.doe.gov](mailto:marty.carlin@science.doe.gov)

# Question & Answers

Please submit questions using Zoom Q&A window, which should be accessible at the bottom of your zoom window

If your question is not answered today, or you have additional questions about the presentation, please submit to  
Michael Halfmoon

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