

# Office of Science Notice 03-19

## *Research in Innovative Approaches to Fusion Energy Sciences*

Department of Energy

**Office of Science Financial Assistance Program Notice 03-19; Research in Innovative Approaches to Fusion Energy Sciences**

**AGENCY:** U.S. Department of Energy

**ACTION:** Notice inviting grant applications.

**SUMMARY:** The Office of Fusion Energy Sciences (OFES) of the Office of Science (SC), U.S. Department of Energy (DOE), announces its interest in receiving grant applications for research in innovative approaches to fusion energy sciences. All individuals or groups planning to submit applications for new or renewal funding in Fiscal Year 2004 should submit in response to this Notice.

Specifically, projects funded under this Notice should be responsive to the MFE Goal 2 of the Report of the Integrated Program Planning Activity for the DOE OFES Program (IPPA 2000), Report DOE/SC-0028 (<http://vlt.ucsd.edu/IPPAFinalDec00.pdf>). The Goal calls for resolving outstanding scientific issues and establishing reduced-cost paths to more attractive fusion energy systems by investigating a broad range of innovative magnetic confinement configurations, as recommended in the report on "Priorities and Balance within the Fusion Energy Sciences Program" by the Fusion Energy Sciences Advisory Committee (FESAC), September 1999 (<http://vlt.ucsd.edu/revisedpanel.pdf>). Proposals exploring new and innovative approaches for creating compact plasmas with high  $\beta$  and high temperatures in pulsed or steady state, and for the active control of magnetized plasmas are particularly welcome. Research involving highly innovative experimental approaches to improve our understanding of magnetized plasmas, and exploration of highly innovative plasma operations in support of proof-of-principle and higher performance plasmas in support of the above Goal, may also be considered. Although the main thrust of the research efforts funded under this Notice is experimental, consideration will also be given to applications that are directed at scientific assessment of new concepts and approaches that are not ready for experimental investigation. Applications for research on existing large facilities, or initiatives in Inertial Fusion Energy should not be submitted in response to this Notice.

Due to the limited availability of funds, Principal Investigators with continuing grants may not submit a new application in the same area(s) of interest as their previous application(s) which received funding. A Principal Investigator may submit only one application under this Notice.

OFES may also solicit proposals from time to time under separate announcements of Initiatives to support coordinated, goal-directed community efforts. These Initiatives will be funded to achieve specific programmatic and scientific aims and will be subject to requirements that are different from those of this Notice. Such grants, if funded, will be subject to periodic reviews of progress.

**DATES:** To permit timely consideration for awards early in Fiscal Year 2004, applications submitted in response to this Notice must be received by DOE no later than 4:30 p.m., May 1, 2003. Electronic submission of formal applications in PDF format is required using a minimum number of files.

Applicants are requested to submit a letter-of-intent by April 4, 2003, which includes the title of the application, the name of the Principal Investigator(s), the requested funding, and a one-page abstract. These letters-of-intent will be used to organize and expedite review processes. Failure to submit a letter-of-intent will not negatively prejudice a responsive formal application submitted in a timely fashion. The letters-of-intent should be sent by E-mail to the following E-mail address: [john.sauter@science.doe.gov](mailto:john.sauter@science.doe.gov) and the Subject line should state: Letter-of-intent regarding Program Notice 03-19.

**ADDRESSES:** Formal applications in response to this solicitation are to be electronically submitted by an authorized institutional business official through DOE's Industry Interactive Procurement System (IIPS) at: <http://e-center.doe.gov/>. IIPS provides for the posting of solicitations and receipt of applications in a paperless environment via the Internet. In order to submit applications through IIPS, your business official will need to register at the IIPS website. It is suggested that this registration be completed several days prior to the date on which you plan to submit the formal application. The Office of Science will include attachments as part of this Notice that provide the appropriate forms in PDF fillable format that are to be submitted through IIPS using a minimum number of files. Color images should be submitted in IIPS as a separate file in PDF format and identified as such. These images should be kept to a minimum due to the limitations of reproducing them. They should be numbered and referred to in the body of the technical scientific grant application as Color image 1, Color image 2, etc. Questions regarding the operation of IIPS may be e-mailed to the IIPS Help Desk at: [HelpDesk@pr.doe.gov](mailto:HelpDesk@pr.doe.gov), or you may call the help desk at: (800) 683-0751. Further information on the use of IIPS by the Office of Science is available at: <http://www.sc.doe.gov/production/grants/grants.html>.

If you are unable to submit an application through IIPS, please contact the Office of the Director, Grants and Contracts Division, Office of Science, DOE at: (301) 903-5212 in order to gain assistance for submission through IIPS, or to receive special approval and instructions on how to submit printed applications.

**FOR FURTHER INFORMATION CONTACT:** Office of Fusion Energy Sciences, Germantown Building, U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585-1290. Dr. Francis Thio is the Team Leader for the ICC Program. Specific contacts for each area of interest within the ICC program, along with telephone numbers and Internet addresses, are listed below:

1. Spherical torus: Dr. Don Priester, Research Division, SC-55, Telephone: (301) 903-3752, or by Internet address: Don.Priester@science.doe.gov. **(Dr. Priester has retired. The contact for Spherical torus will now be Dr. Steve Eckstrand, Research Division, SC-55, Telephone: (301) 903-5546, or by Internet address: Steve.Eckstrand@science.doe.gov.)**

2. Stellarator, electric tokamak, levitated dipole configuration, innovative research in tokamaks: Dr. Charles Finfgeld, Research Division, SC-55, Telephone: (301) 903-3423, or by Internet address: Charles.Finfgeld@science.doe.gov.

3. Reversed Field Pinch, field reversed configuration, spheromak, magnetized target fusion, electrostatic confinement, plasma heating: Dr. Francis Thio, Research Division, SC-55, Telephone: (301) 903-4678, or by Internet address: Francis.Thio@science.doe.gov.

4. Configuration with strong shear flow stabilization: Dr. Curt Bolton, Research Division, SC-55, Telephone: (301) 903-4914, or by Internet address: Curt.Bolton@science.doe.gov.

5. Active and passive plasma control: Dr. Steve Eckstrand, Research Division, SC-55, Telephone: 301) 903-5546, or by Internet address: Steve.Eckstrand@science.doe.gov.

6. All other innovative concepts and approaches: Dr. Francis Thio, Research Division, SC-55, Telephone: (301) 903-4678, or by Internet address: Francis.Thio@science.doe.gov.

**SUPPLEMENTARY INFORMATION:** General information about development and submission of applications, eligibility, limitations, evaluations and selection processes, and other policies and procedures may be found in the Application Guide for the Office of Science Financial Assistance Program and 10 CFR Part 605. Electronic access to SC's Financial Assistance Guide and required forms is possible via the Internet using the following Web site address: <http://www.sc.doe.gov/production/grants/grants.html>. DOE is under no obligation to pay for any costs associated with the preparation or submission of an application if an award is not made.

In selecting applications for funding, the DOE Office of Fusion Energy Sciences will give priority to applications that can produce experimental results within three to five years after grant initiation. Theoretical research will be accepted for consideration under this Notice when bundled with and in support of an experimental application.

Applications concerned with scientific assessment of new concepts or approaches that are not ready for experimental investigation should have a well-defined scope. The product of such assessment would be a clear scientific description of the concept and its operation, its physics and engineering basis, critical analysis of major difficulties to be overcome in developing the concept as a net producer of energy through the fusion process, and an analysis of what would be achieved by moving to experimental research.

## **Program Funding**

It is anticipated that about \$6,000,000 of Fiscal Year 2004 funding will be available to fund new work or renewals of existing work from applications received in response to this Notice. The number of awards and range of funding will depend on the number of applications received and selected for award. Future year funding will depend upon suitable progress and the availability of funds. The cost-effectiveness of the application will be considered when comparing applications with differing funding requirements. Applications for scientific assessment of new concepts will be limited to a maximum of \$150,000 in any year. Applications requiring annual funding as low as \$50,000 are welcome and encouraged.

Collaborative research projects involving more than one institution are encouraged. Applications submitted from different institutions, which are directed at a common research activity, should clearly indicate they are part of a proposed collaboration and contain a brief description of the overall research project. However, each application must have a distinct scope of work and a qualified principal investigator, who is responsible for the research effort being performed at his or her institution. Synergistic collaborations with researchers in federal laboratories and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories are also encouraged, though no funds will be provided to these organizations under this Notice. Further information on preparation of collaborative applications may be accessed via the Internet at: <http://www.sc.doe.gov/production/grants/Colab.html>.

Applications from individual PIs or small groups (1-4 people) should be limited to a maximum of twenty (20) pages (including text and figures) of technical information, while applications from larger research groups should be limited to thirty (30) pages. The PDF file may also include a few selected publications in an Appendix as background information. In addition, in the electronic submission, please limit biographical and publication information for the principal investigator and key personnel to no more than two pages each. Each principal investigator should provide an e-mail address.

In addition to the information required by 10 CFR Part 605 each application should contain the following items: (1) A statement about the goal of the proposed investigation, (2) a synopsis of the research plan, (3) the specific results or deliverable expected at the end of the project period, (4) a discussion of why this research would have an important impact on the prospects for fusion energy, or why this research would lead to an attractive pathway towards practical fusion energy, (5) a discussion of how the research would elucidate the physics principles of the innovation, (6) a detailed research plan, and (7) information on the adequacy of the facilities and budget.

### **Merit Review**

Applications will be subjected to formal merit review and will be evaluated against the following criteria, which are listed in descending order of importance as set forth in 10 CFR Part 605. (<http://www.sc.doe.gov/production/grants/605index.html>)

1. Scientific and/or technical merit of the project;
2. Appropriateness of the proposed method or approach;
3. Competency of the applicant's personnel and adequacy of the proposed resources; and
4. Reasonableness and appropriateness of the proposed budget.

The Office of Fusion Energy Sciences shall also consider, as part of the evaluation, other available advice or information as well as program policy factors such as ensuring an appropriate balance among the program areas and within the program areas, coupling to the theory and computational efforts, and quality of previous performance. Selection of applications/proposals for award will be based upon the findings of the technical evaluations, the importance and relevance of the proposed research to the Office of Fusion Energy Sciences' mission, and funding availability. Funding under this Notice is limited to supporting research activities based in the U.S., though subcontracts with limited funding for collaborators outside the U.S. may be allowed with appropriate justifications.

The Catalog of Federal Domestic Assistance number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605.

John Rodney Clark  
Associate Director of Science  
for Resource Management

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