

**Office of Science
Financial Assistance
Funding Opportunity Announcement
DE-FOA-0000339**

***Research and Development for Next Generation Nuclear
Physics Accelerator Facilities***

SUMMARY:

The Office of Nuclear Physics (NP), Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving applications for Research and Development (R&D) efforts directed at challenges for next generation NP accelerator facilities.

A companion Program Announcement to DOE Laboratories (LAB 10-339) will be posted on the Office of Science Grants and Contracts web site at: <http://www.science.doe.gov/grants/>.

APPLICATION DUE DATE: June 8, 2010, 11:59 p.m. Eastern Time

Formal applications submitted in response to this FOA must be received by June 8, 2010, 11:59 p.m. Eastern time, to permit timely consideration of awards. **APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

IMPORTANT SUBMISSION INFORMATION:

The full text of the Funding Opportunity Announcement (FOA) is located on FedConnect. Instructions for completing the Grant Application Package are contained in the full text of the FOA which can be obtained at: <https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000339&agency=DOE>. To search for the FOA in FedConnect click on "Search Public Opportunities". Under "Search Criteria", select "Advanced Options", enter a portion of the title "Research and Development for Next Generation Nuclear Physics Accelerator Facilities", then click on "Search". Once the screen comes up, locate the appropriate FOA.

In order to be considered for award, Applicants must follow the instructions contained in the Funding Opportunity Announcement.

WHERE TO SUBMIT: Applications must be submitted through Grants.gov to be considered for award.

You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually. If you have any questions about your registration, you

should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in [Grants.gov](http://www.grants.gov).

Registration Requirements: There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See <http://www.grants.gov/GetStarted>. Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in the CCR registration process. Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS:

When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

Questions: Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. Part VII of the FOA explains how to submit other questions to the Department of Energy (DOE).

GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:

Technical/Scientific Program Contact:

Program Manager: Dr. Manouchehr Farkhondeh
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SUPPLEMENTARY INFORMATION:

Include:

- Report of 2007 DOE/National Science Foundation (NSF) Nuclear Science Advisory Committee (NSAC) Long Range Plan. NSAC's report can be found at <http://www.sc.doe.gov/np/nsac/nsac.html>
- Website of the Office of Science Accelerator symposium "Accelerators for America", October 26, 2009, Washington DC sponsored by the Office of High Energy Physics. <http://www.acceleratorsamerica.org/symposium/index.html>
- Report of Electron Ion Collider Advisory Committee (EICAC) meeting held at Thomas Jefferson National Accelerator Facility (TJNAF) on November 2-3, 2009,

Program Objective:

The Nuclear Physics (NP) program supports a broad range of activities aimed at research and development (R&D) related to the science, engineering, and technology of heavy-ion, electron, and proton accelerators and associated systems. NP operates four accelerator national user facilities in accomplishing its mission. These include the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL), the Continuous Electron Beam Accelerator Facility (CEBAF) at the Thomas Jefferson National Accelerator Facility (TJNAF), the Argonne Tandem Linac Accelerator System (ATLAS) at Argonne National Laboratory (ANL), and the Holifield Radioactive Ion Beam Facility (HRIBF) at Oak Ridge National Laboratory (ORNL). In addition, the NP program is constructing a next generation nuclear structure and nuclear astrophysics accelerator facility, the planned Facility for Rare Isotope Beam Facility (FRIB) at Michigan State University (MSU). RHIC is a storage ring-based collider with heavy ion beam energies up to 100 GeV/amu and polarized proton beam energies up to 250 GeV to study Quantum Chromodynamics (QCD) through the study of hot, dense nuclear matter. CEBAF is a 6 GeV multi-pass superconducting continuous wave electron accelerator with simultaneous beam deliveries to three experimental halls used for the investigation of nuclear and nucleon structure based on the underlying quark substructure. CEBAF is undergoing an upgrade to double the beam energy and to add a new experimental hall for photon beams (the CEBAF 12 GeV Upgrade Project). HRIBF and ATLAS are low-energy rare and stable isotope accelerators for studying the origin and structure of nuclear matter, and tests of fundamental symmetries. ATLAS is a superconducting linear accelerator for heavy ions at energies in the vicinity of the Coulomb barrier. HRIBF is a radioactive nuclear beam facility based on the isotope separator on-line (ISOL) method and accelerates secondary radioactive beams to energies up to 10 MeV per nucleon with a broad selection of light and medium mass ions.

Accelerator R&D described in this FOA supports efforts essential to develop strategies and technologies for next generation NP accelerator capabilities, whether they are needed for new facilities or major upgrades to existing facilities. Some of these challenges were identified by the NP community in various workshops, including the recent symposium "Accelerators for America". As indicated in the 2007 LRP, the NP community has identified the need for an electron-ion collider as a gluon microscope (REF LRP-2007), a collider facility with capabilities beyond those of any existing accelerator complex and has identified corresponding technical challenges associated with such a facility (REF EICAC). Accelerator R&D efforts described in this FOA do not include ongoing facility construction projects such as those associated with FRIB or the 12 GeV CEBAF Upgrade Project; these projects have their own designated accelerator R&D project funds to address key technical issues and are not part of this FOA. This FOA is in support of pre-conceptual accelerator R&D aimed at technological challenges for the next generation NP facilities. Accelerator R&D intended for this FOA should fall in the following general categories:

- Accelerator R&D with the potential for the development of future generation of NP accelerators not under construction or design.

- Accelerator R&D with the potential for major upgrades to existing NP national user facilities that will lead to new capabilities.

Priority will be given to potential initiatives identified by the community as compelling, such as in the NSAC Long Range Plan for Nuclear Science. Relative to a potential electron-ion collider, community sponsored studies and workshops have identified a number of areas where focused R&D and prototyping could develop technical feasibility and advance pre-conceptual design, and priority will be given to these areas of study. The relative priority of R&D for next generation electron-ion collider facility was recently published in the 2009 EICAC report. Relevance of electron-ion collider efforts to the R&D priorities established in this report should be clearly articulated.

Applications requesting support for research and development in multiple areas of effort should indicate a separate task for each area - this would apply to both different areas of study specific to one facility or unrelated tasks. For each task the application should address the goal of the effort; the method or approach to be taken; a cost-breakdown of the effort; the workforce to carry out the effort; the deliverable(s) and performance goals of the work; and the relevance to a next-generation facility or major upgrade. Each task should describe a realistic schedule which includes a minimum of one milestone per quarter. Applicants should note that they will be required to report formally on a quarterly basis regarding R&D expenditures and progress towards achieving the milestones and deliverables of the proposed effort. Institutional contributions to the effort should be clearly indicated.

Collaboration

Collaborative research projects with other institutions, such as universities, industry, non-profit organizations, and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories, are encouraged under this Announcement. Applications submitted from different institutions, which are directed at a single 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. If a university is part of a proposed collaboration, the university must submit a separate proposal that meets all the essentials stated above. It is highly recommended to include on the first page of the proposal narrative a simple table listing every collaborating institution/PI and the amount of funding requested by each. Further information on preparation of collaborative applications may be accessed via the Internet at: <http://www.science.doe.gov/grants/Colab.html>.

Program Funding

It is anticipated that up to **\$2,000,000 will be available for awards** to be made in **Fiscal Year 2011**, and maintained in outyears, contingent on the availability of appropriated funds. Applications may request project support for one year only but may present projected outyear budget requests. The number and size of awards will depend on the number of applications received and selected for award and the availability of appropriated funds.

DOE is under no obligation to pay for any costs associated with the preparation or submission of an application. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

Merit Review

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria which are listed in descending order of importance codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation will include program policy factors such as the relevance of the proposed research to the terms of the FOA and the agency's programmatic needs. It should be noted that external peer reviewers are selected on the basis of their scientific expertise and the absence of conflict- of-interest issues. Both Federal and non-Federal reviewers may be used, and submission of an application constitutes agreement that this review process is acceptable to the investigator(s) and the submitting institution.

In addition, each application should also address these program policy factors:

- Relevance to compelling scientific opportunities identified in the 2007 NSAC Long Range Plan.
- The opportunity for training junior accelerator physicists in accelerator science and technology.
- If appropriate, relevance of proposed electron-ion collider efforts to the R&D priorities identified in the EICAC report.

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

Posted on the Office of Science Grants and Contracts Web Site
April 29, 2010.