

**Office of Science
Financial Assistance
Funding Opportunity Announcement
DE-FOA-0000450**

Applications of Nuclear Science and Technology Initiative

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 initiatives in Applications of Nuclear Science and Technology, aimed at nuclear science research and development being conducted to achieve Nuclear Physics mission goals and that are also relevant to applications important to the Nation. The knowledge, data, techniques, and methods of nuclear science are utilized in a broad portfolio of applications, including energy, nuclear medicine, commerce, medical physics, space exploration, finance, geology, environmental sciences, and national security.

A companion Program Announcement to DOE Laboratories (LAB 11-450) will be posted on the Office of Science Grants and Contracts web site at: <http://www.science.doe.gov/grants/>.

APPLICATION DUE DATE: April 25, 2011, 11:59 p.m. Eastern Time

Formal applications submitted in response to this FOA must be received by Monday, April 25, 2011 at 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-0000450&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 “Applications of Nuclear Science and Technology Initiative”, 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.

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:

Background:

Includes:

- *The Frontiers of Nuclear Science—a Long Range Plan*, DOE/NSF Nuclear Science Advisory Committee (December 2007) <http://www.sc.doe.gov/np/>.

- *Report to the Nuclear Science Advisory Committee*, Submitted by the Subcommittee on Performance Measures, August 2008, <http://www.sc.doe.gov/np/nsac/docs/PerfMeasEvalFinal.pdf>.
- *Report of the Nuclear Physics and Related Computational Science R&D for Advanced Fuel Cycles Workshop*, DOE Offices of Nuclear Physics and Advanced Scientific Computing Research (August 2006) http://www.sc.doe.gov/np/program/docs/AFC_Workshop_Report_Final.pdf.
- *Advancing Nuclear Medicine Through Innovation*, National Academy of Sciences (2007) <http://www.sc.doe.gov/np/>.
- *Report on the Workshop on the Role of the Nuclear Physics Research Community in Combating Terrorism*, DOE Office of Nuclear Physics (July 2002), <http://www.sc.doe.gov/np/homeland/index.html>.
- *Nuclear Forensics—Role, State of the Art, Program Needs*, American Physical Society and American Association for the Advancement of Science <http://www.aps.org/policy/reports/upload/Nuclear-Forensics-Report-FINAL.pdf>.

Program Objective:

The mission of the Nuclear Physics (NP) Program is to discover, explore, and understand all forms of nuclear matter. The fundamental particles that compose nuclear matter—quarks and gluons—are relatively well understood, but exactly how they fit together to create different types of matter in the universe is still largely a puzzle. To solve this mystery, the NP program supports experimental and theoretical research—along with the development and operation of particle accelerators and advanced technologies—to create, detect, and describe the different forms and complexities of nuclear matter that can exist in the universe, including those that are no longer naturally found.

Nuclear science basic research is inherently relevant to a broad suite of applications that are important to the Nation. The advancement of knowledge of nuclear matter and its properties is intertwined with nuclear power, nuclear medicine, national security, the environmental and geological sciences, and isotope production. The NP program develops advanced instrumentation, accelerator techniques, and analytical and computational approaches needed for nuclear science research, and which have broad societal and economic benefits. Equally important, the program trains the highly skilled workforce needed to develop and advance nuclear-related technologies in society, and that enter a variety of other fields that require training in advanced technology and computational and analytical backgrounds.

Under the Fiscal Year 2011 Appropriation, the Office of Nuclear Physics intends to sponsor initiatives in Applications of Nuclear Science and Technology. **The primary goal of these initiatives is to pursue forefront nuclear science research and development needed to achieve Nuclear Physics mission goals and that are also relevant to applications important to the Nation. Proposals that are solely based on pure research or pure applications will not be considered for funding.** Areas of interest include but are not limited to:

- a. Identification and development of approaches to the measurement of nuclear data needed for the nuclear energy industry and other applications;
- b. Measurement of neutron cross sections and other relevant nuclear data such as decay properties, delayed neutrons, fission yields, photon production, etc., required for advanced reactor fuel cycles and other applications.
- c. Development and use of covariances and covariance matrices to support reactor and fuel cycle design and other applications, and to identify priorities for cross section measurements and improved modeling of nuclear reactions.
- d. Existing or new instrumentation and accelerator design and development, and analytical and computational methods that can be applied to nuclear forensics, handling of nuclear wastes, nuclear energy, national defense, medicine, environmental, space exploration, finance, commerce, radiation health physics, etc;

Disciplines and areas that could benefit from this initiative include but are not limited to: National Security, where advances in accelerator and instrumentation technology are relevant to defense and homeland security; Nuclear Energy, where new approaches such as advanced fuel cycles, new fuels, and driven systems are of interest, and where minimization or disposal of nuclear waste and protection of fissile and radioactive material from diversion are important; Nuclear Medicine, in which instrumentation and accelerator developments can be of relevance to diagnostic and therapeutic approaches; Radiation Health Physics, where new instrumentation can lead to cost effectiveness, enhanced performance and safer environments for the public; and Nuclear Forensics, which benefits from a trained nuclear science workforce, instrumentation advances and new analytical and computational approaches. A skilled nuclear science workforce is the underpinning of the applied science workforce.

Applications will be reviewed by experts in nuclear science and in the applications of nuclear science and technology. Awards will be based on how well the applications address the review criteria and program policy factors.

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 FOA. 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 application that meets all the essentials stated. It is highly recommended to include on the first page of the application 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.sc.doe.gov/grants/colab.asp>.

Program Funding

It is anticipated that up to \$3,500,000 will be available for new awards in Fiscal Year 2011, and maintained in out years, subject to availability of appropriated funds and contingent on satisfactory peer review. Applications may request project support for one year only but may present projected out year budget requests. The number and size of awards will depend on the number of meritorious applications and the availability of appropriated funds. Multiple year funding should be requested if the project cannot be completed in one year. A maximum of three years will be considered. Out-year funding will be provided on an annual basis subject to availability of funds and contingent on satisfactory peer review.

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 Part 605.10(d):

1. Scientific and/or Technical Merit of the Project; (*both the nuclear physics research and the application of that research*)
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.
5. *Any other factors relevant to the proposed project.*

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

- a. The particular outstanding scientific opportunity in nuclear physics research afforded by the proposed research and its relevance to the NSAC Performance Measures and/or opportunities identified in the NSAC 2007 Long Range Plan;
- b. The relevance and impact of this opportunity on applications and applied sciences; and
- c. The opportunity for training personnel in key disciplines of nuclear science that are in short supply, such as nuclear chemistry and closely related disciplines, nuclear forensics, nuclear engineering, and radiation health science.
- d. Any other factors relevant to the proposed project.

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.

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: March 10, 2011.