

**FINANCIAL ASSISTANCE  
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U. S. Department of Energy  
Office of Science  
Office of High Energy Physics**

**FY 2015 Research Opportunities in High Energy Physics**

**Funding Opportunity Number: DE-FOA-0001140  
Announcement Type: **Amendment**  
CFDA Number: 81.049**

**Amended to correct Application Due Date in Grants.gov**

**Issue Date: July 22, 2014**

**Letter of Intent Due Date: August 12, 2014, at 5 PM Eastern Time  
(A Letter of Intent is encouraged)**

**Application Due Date: September 23, 2014, at 11:59 PM Eastern Time**

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## REGISTRATIONS

### **A. Systems to Register In**

There are several one-time actions you must complete in order to submit an application in response to this Funding Opportunity Announcement (FOA). Applicants not currently registered with the System for Award Management (SAM) and Grants.gov should allow at least 44 days to complete these requirements. You are encouraged to start the process as soon as possible.

Applicants must obtain a DUNS number at <http://fedgov.dnb.com/webform>.

Applicants must register with SAM at <http://www.sam.gov/>. If you had an active registration in the Central Contractor Registry (CCR), you should have an active registration in SAM. More information about SAM registration for applicants is found at [https://www.sam.gov/sam/transcript/Quick\\_Guide\\_for\\_Grants\\_Registrations\\_v1.7.pdf](https://www.sam.gov/sam/transcript/Quick_Guide_for_Grants_Registrations_v1.7.pdf).

Applicants must register with FedConnect at [www.fedconnect.net](http://www.fedconnect.net). If an award is made, the full and binding version of the assistance agreement between your institution and the U.S. Department of Energy (DOE) will be posted to FedConnect.

Recipients must register with the Federal Funding Accountability and Transparency Act Subaward Reporting System at <https://www.frs.gov>. This registration must be completed before an award may be made: you are advised to register while preparing your application.

### **B. Registering in Grants.gov**

Applicants must register with Grants.gov.

For organizations, please follow the procedures detailed below, making use of the checklist provided below:

<http://www.grants.gov/web/grants/applicants/organization-registration.html>  
<http://www.grants.gov/documents/19/18243/OrganizationRegChecklist.pdf>

For individuals, please follow the procedures detailed below:

<http://www.grants.gov/web/grants/applicants/individual-registration.html>

Organizations and individuals must have an E-Business (E-Biz) Point of Contact (POC). You may find the checklist at [http://www.grants.gov/documents/19/18243/E-Biz\\_POC\\_Checklist.pdf](http://www.grants.gov/documents/19/18243/E-Biz_POC_Checklist.pdf) useful.

Grants.gov maintains a User Guide at <http://www.grants.gov/documents/19/18243/GrantsGovApplicantUserGuide.pdf> and a list of Frequently Asked Questions at <http://www.grants.gov/web/grants/applicants/applicant-faqs.html>. Questions relating to the registration process, **system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or [support@grants.gov](mailto:support@grants.gov).

**IMPORTANT NOTICE:** When you have completed the Grants.gov registration 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).

Applicants must download the application package, application forms and instructions, from Grants.gov at <http://www.grants.gov/> (Additional instructions are provided in Section IV.A. of this FOA.)

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 SAM 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.

### **C. DOE Office of Science Portfolio Analysis and Management System (PAMS)**

The DOE Office of Science (SC) performs many functions for grants and cooperative agreements in the Portfolio Analysis and Management System (PAMS), which is available at <https://pamspublic.science.energy.gov>.

There are many activities that you can perform in PAMS, and more functionality will be added throughout the near future. Most significantly, you can “register to” your application: you can link yourself to the application after it has been submitted through Grants.gov. You will submit Pre-Applications and Letters of Intent through PAMS.

You must register in PAMS to submit a Pre-Application or a Letter of Intent.

To access PAMS, you may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers.

Notifications sent from the PAMS system will come from the PAMS email address <[PAMS.Autoreply@science.doe.gov](mailto:PAMS.Autoreply@science.doe.gov)>. Please make sure your email server/software allows delivery of emails from the PAMS email address to yours.

Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with (“register to”) your institution. Detailed steps are listed below.

#### **1. CREATE PAMS ACCOUNT:**

To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov/>.

- Click the “No, I have never had an account” link and then the “Create Account” button.
- You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
- On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website,

mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.

- Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
- PAMS will take you the “Having Trouble Logging In?” page.

## 2. REGISTER TO YOUR INSTITUTION:

- Click the link labeled “Option 2: I know my institution and I am here to register to the institution.” (Note: If you previously created a PAMS account but did not register to an institution at that time, you must click the Institutions tab and click the “Register to Institution” link.)
- PAMS will take you to the “Register to Institution” page.
- Type a word or phrase from your institution name in the field labeled, “Institution Name like,” choose the radio button next to the item that best describes your role in the system, and click the “Search” button. (Hint: If your institution has an acronym, such as UCLA for the Regents of the University of California, Los Angeles, you may search for the acronym under “Institution Name like.” Many institutions with acronyms are listed in PAMS with their acronyms in parentheses after their names.)
- Find your institution in the list that is returned by the search and click the “Actions” link in the Options column next to the institution name to obtain a dropdown list. Select “Add me to this institution” from the dropdown. PAMS will take you to the “Institutions – List” page.
- If you do not see your institution in the initial search results, you can search again by clicking the “Cancel” button, clicking the Option 2 link, and repeating the search.
- If, after searching, you think your institution is not currently in the database, click the “Cannot Find My Institution” button and enter the requested institution information into PAMS. Click the “Create Institution” button. PAMS will add the institution to the system, associate your profile with the new institution, and return you to the “Institutions – List” page when you are finished.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission to and inquiries about this FOA should reference **DE-FOA-0001140**.

## RECOMMENDATION

The Office of Science encourages you to register in all systems as soon as possible. You are also encouraged to submit letters of intent and applications well before the deadlines.

## **Section I – FUNDING OPPORTUNITY DESCRIPTION**

### **GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:**

#### **Administrative Contact:**

Questions about non-technical matters including program rules may be sent to [SC.HEPFOA@science.doe.gov](mailto:SC.HEPFOA@science.doe.gov)

#### **Technical/Scientific Program Contact:**

Questions regarding the specific program areas/technical requirements may be directed to the technical contacts listed below for each subprogram within the FOA.

### **STATUTORY AUTHORITY**

Public Law 95-91, U.S. Department of Energy Organization Act  
Public Law 109-58, Energy Policy Act of 2005

### **APPLICABLE REGULATIONS**

U.S. Department of Energy Financial Assistance Rules, codified at 10 CFR 600  
U.S. Department of Energy, Office of Science Financial Assistance Program Rule, codified at 10 CFR 605

### **SUMMARY**

The Office of High Energy Physics (HEP) at the U.S. Department of Energy, Office of Science, hereby invites new grant applications for support of research programs in High Energy Physics.

### **SUPPLEMENTARY INFORMATION**

The following program descriptions are offered to provide more in-depth information on scientific and technical areas of interest to HEP:

**Program Website:** <http://science.energy.gov/hep/>

The mission of the HEP program is to understand how the universe works at its most fundamental level, which is done by discovering the elementary constituents of matter and energy, probing the interactions between them, and exploring the basic nature of space and time.

The HEP program focuses on three scientific frontiers:

*The Energy Frontier*, where powerful accelerators are used to create new particles, reveal their interactions, and investigate fundamental forces;

*The Intensity Frontier*, where intense particle beams and highly sensitive detectors are used to pursue alternate pathways to investigate fundamental forces and particle interactions by studying events that occur rarely in nature, and to provide precision measurements of these phenomena; and

*The Cosmic Frontier*, where non-accelerator-based experiments observe the cosmos and detect cosmic particles, making measurements of natural phenomena that can provide information about the nature of dark matter, dark energy, and other fundamental properties of the universe that impact our understanding of matter and energy.

Together, these three interrelated and complementary discovery frontiers offer the opportunity to answer some of the most basic questions about the world around us. Also integral to the mission of HEP are three cross-cutting research areas that enable new scientific opportunities by developing the necessary tools and methods for discoveries:

*Theoretical High Energy Physics*, where the vision and mathematical framework for understanding and extending the knowledge of particles, forces, space-time, and the universe are developed;

*Accelerator Science and Technology Research and Development*, where the technologies and basic science needed to design, build, and operate the accelerator facilities essential for making new discoveries are developed; and

*Detector Research and Development*, where the basic science and technologies needed to design and build the High Energy Physics detectors essential for making new discoveries are developed.

The scientific objectives and priorities for the field recommended by the High Energy Physics Advisory Panel (HEPAP) are detailed in their recent long-range plan, available at: <http://science.energy.gov/hep/hepap/reports/> [under Particle Physics Project Prioritization Panel (P5) – see P5 Report 2014 link].

The three frontiers and the three cross-cutting research areas are collectively the six research subprograms supported by HEP, and along which HEP staff are organized. All grant applications should address specific research goals in one or more of the six research subprograms (as in the examples given below), and explain how the proposed research or technology development supports the broad scientific objectives and mission of the HEP program. Applications where the investigator is proposing to conduct research across multiple HEP research subprograms during the project period will be considered. For such efforts, the investigator is encouraged to submit only one application that describes the overall research activity, including the fractional time planned in each subprogram, and the timeline for any transitions of effort (as appropriate), to allow reviewers to assess the full scope, relevance and impact of the proposed research in the merit review process.

Applications that are not in direct support of HEP research (e.g., conferences, experimental operations, conceptual research and development (R&D), design, or fabrication directed towards



a specific project, etc.) must not be submitted in response to this Funding Opportunity Announcement. They may be submitted to the annual Office of Science Funding Opportunity Announcement [DE-FOA-0000995], available at [www.grants.gov](http://www.grants.gov), or to other applicable Office of Science Funding Opportunity Announcements published at [www.grants.gov](http://www.grants.gov).

Applications submitted to the HEP FOA for support of *generic detector R&D* efforts should be directed to the Detector Research and Development research area described below. However, applicants proposing physics studies and pre-conceptual R&D efforts directed towards a *specific experiment* within an experimental frontier should submit their application to the relevant HEP scientific frontier research area. Applications for support of *accelerator science and technology R&D* efforts but which are focused specifically on accelerator-based applications outside of HEP should submit their application to the Accelerator Stewardship Funding Opportunity Announcement [DE-FOA-0001142].

**(a) Experimental Research at the Energy Frontier in High Energy Physics**  
**Technical Contact: Abid Patwa, 301-903-0408, [abid.patwa@science.doe.gov](mailto:abid.patwa@science.doe.gov)**

This research area seeks to support studies of fundamental particles and their interactions using proton-(anti)proton collisions at the highest possible energies. This is accomplished through direct detection of new phenomena or through sensitive measurements that probe the Standard Model and new physics beyond it. In particular, applications are sought for physics research utilizing data being collected at the Large Hadron Collider (LHC) by the ATLAS and CMS experiments. This research area also provides graduate and postdoctoral research training for the next generation of scientists, and equipment and computational support for physics research activities. Applications addressing physics studies and pre-conceptual R&D directed towards specific future Energy Frontier experiments are also accepted. Support for Heavy Ion Physics research is not provided under this research area.

**(b) Experimental Research at the Intensity Frontier in High Energy Physics**  
**Technical Contact: Alan Stone, 301-903-7998, [alan.stone@science.doe.gov](mailto:alan.stone@science.doe.gov)**

This research area seeks to support precision studies that are sensitive to new physics at very high energy scales, beyond what can be directly probed with energy frontier colliders. Often these studies involve observing rare processes that require intense particle beams. In addition, recent advances in neutrino physics have opened the first window beyond the Standard Model of particle physics, perhaps signaling significant new properties of neutrinos that will have wide-ranging impact in particle physics and cosmology. This research area includes studies of high intensity electron-positron collisions; studies of the fundamental properties of neutrinos produced by a variety of sources: accelerators, nuclear reactors, and certain rare nuclear decays; and studies of rare processes using high intensity beams on fixed targets. In addition, this research area includes searches for proton decay. This research area also provides graduate and postdoctoral research training for the next generation of scientists, and equipment and computational support for physics research activities. Applications addressing physics studies and pre-conceptual R&D directed towards specific future Intensity Frontier experiments are also accepted. Support for LHCb research is not provided under this research area.

**(c) Experimental Research at the Cosmic Frontier in High Energy Physics**

**Technical Contact: Kathy Turner, 301-903-1759, kathy.turner@science.doe.gov**

This research area includes efforts in direct support of experimental HEP using naturally occurring cosmic particles and observations of the cosmos. Studies of the nature of dark energy and direct-detection searches for dark matter particles are major activities in this program. This area also uses cosmic rays and photons to search for indirect signals of dark matter, the presence of primordial antimatter and other fundamental phenomena related to the properties of particles, space and matter; and measurements of the cosmic microwave background to explore the nature of inflation in the early universe. This program provides support for scientists to participate in these research areas, including graduate and postdoctoral research training for the next generation of scientists, and equipment and computational efforts to support the physics research activities. Applications addressing physics studies and pre-conceptual R&D directed towards specific future Cosmic Frontier experiments are also accepted.

Studies of gravitational physics, classical astrophysics phenomena, or fundamental symmetries are not included in this research area.

**(d) Theoretical Research in High Energy Physics**

**Technical Contact: Simona Rolli, 301-903-0504, simona.rolli@science.doe.gov**

This research area supports activities that range from detailed calculations of the predictions of the Standard Model, to the extrapolation of current knowledge to a new level of understanding, and the identification of the means to experimentally verify such predictions. Thus a thriving theory program is essential for identifying new directions and opportunities for the field. Topics studied in theoretical high energy physics research include, but are not limited to: phenomenological and theoretical studies that support experimental HEP research at the Energy, Intensity and Cosmic Frontiers, both in understanding the data and in finding new directions for experimental exploration; development of analytical and numerical computational techniques for these studies; and construction and exploration of theoretical frameworks for understanding fundamental particles and forces at the deepest level possible. This research area also provides graduate and postdoctoral research training for the next generation of scientists and computational resources needed for theoretical calculations.

**(e) Accelerator Science and Technology Research & Development in High Energy Physics**

**Technical Contact: L.K. Len, 301-903-3233, lk.len@science.doe.gov**

The accelerator technology R&D subprogram develops the next generation of particle accelerators and related technologies that are essential for discoveries in HEP. This research area supports world-leading research in the physics of particle beams and long-range, exploratory research aimed at developing new concepts. This research area also provides graduate and postdoctoral research training, equipment for experiments and related computational efforts.

Topics studied in the accelerator science and technology R&D subprogram include, but are not limited to: accelerator and beam physics, including analytic and computational techniques for modeling particle beams and simulation of accelerator systems; novel acceleration concepts; the

science of high gradients in accelerating cavities and structures; high-power radio-frequency sources; high-brightness beam sources; and beam instrumentation. Also of interest are superconducting materials and conductor development; innovative magnet design and development of high-field superconducting magnets; as well as associated testing and cryogenic systems. Muon collider and neutrino factory R&D is coordinated through the Muon Accelerator Program (MAP) and is outside the scope of this FOA. R&D proposals which are focused on accelerator applications outside of high-energy physics are now coordinated through the new Accelerator Stewardship program [see DE-FOA-0001142] and are outside the scope of this particular FOA.

**(f) Detector Research and Development in High Energy Physics**

**Technical Contact: Glen Crawford, 301-903-4829, [glen.crawford@science.doe.gov](mailto:glen.crawford@science.doe.gov)**

The detector R&D subprogram develops the next generation of instrumentation for HEP. It supports research leading to fundamental advances in the science of particle and radiation detection, and the development of new experimental techniques. This is typically long-term, “generic” R&D that is high-risk, but has the potential for wide applicability and/or high-impact.

Topics studied in the detector R&D research area include, but are not limited to: low-mass, high channel density charged particle tracking detectors; high resolution, fast-readout calorimeters and particle identification detectors; techniques for improving the radiation tolerance of particle detectors; detectors for photons from ultraviolet to infrared wavelengths; detectors for cosmic microwave background radiation; detectors and experimental techniques for ultralow-background experiments; and advanced electronics and data acquisition systems. In addition, this research area develops next-generation computational tools and techniques in support of experimental HEP research. Support for graduate and postdoctoral research training, engineering and other technical efforts, and equipment and computational efforts required for experimental detector R&D and fabrication *is* included in this research area.

**APPLICATION REQUIREMENTS**

All applications submitted to this FOA must address at least one of the six research subprograms described in the previous section. Further, all applications must conform to the format specified in Section IV of this FOA; each proposal will be pre-screened for responsiveness to the research area descriptions and for compliance with the application requirements.

## **Section II – AWARD INFORMATION**

### **A. TYPE OF AWARD INSTRUMENT**

DOE anticipates awarding grants under this FOA.

### **B. ESTIMATED FUNDING**

It is anticipated that approximately \$40,000,000 will be available for all DOE Office of High Energy Physics new and renewal awards in FY 2015, subject to the availability of appropriated FY 2015 funds.

The number, duration and size of awards will depend on the number of applications selected for award, and the actual amount of funds available in FY 2015.

DOE is under no obligation to pay for any costs associated with 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.

### **C. MAXIMUM AND MINIMUM AWARD SIZE**

None.

### **D. EXPECTED NUMBER OF AWARDS**

(See B. Estimated Funding section above.)

### **E. ANTICIPATED AWARD SIZE**

(See B. Estimated Funding section above.)

### **F. PERIOD OF PERFORMANCE**

(See B. Estimated Funding section above.)

### **G. TYPE OF APPLICATION**

DOE will accept new and renewal applications under this FOA. The following material will assist in determining if a renewal application is appropriate.

**New Application:** A new application is appropriate in the following three circumstances:

- An application for funding to create a new research grant that has not previously received DOE funding, including any funding for the current year.
- An application for continued research from the same sponsoring institution as the current grant but with a significant change in scientific research thrust
- An application to continue research performed under an existing DOE grant award but with a

new sponsoring institution.

**Renewal Application:** A renewal application appropriate when funds are requested for an award that was first awarded in 2012 or later and has no changes in the following items:

- The recipient/applicant institution
- The award's senior leadership
- The research thrust(s)
- The research scope(s)

If an institution is currently receiving funds in support of a DOE/SC/HEP award that was first awarded in 2011 or earlier, a renewal proposal will not be accepted. In such cases, the institution should submit a new application when applying to this FOA.

Renewal applications compete for funds with all other peer-reviewed applications and must be developed as fully as though the applicant is applying for the first time. Renewal applications must be submitted by the same sponsoring institution as that holding the current grant award for which renewal funding is requested, and the proposed research topic must be logical scientific extensions of the research that has been performed in the current award.

A renewal application must be marked as such on the SF-424 (R&R) cover page and the current award number must be marked in the appropriate space.

If there are any changes in the recipient/applicant institution, the award's senior leadership, the research thrust(s), and/or the research scope(s), the proposal must be submitted as new.

### **Section III – ELIGIBILITY INFORMATION**

#### **A. ELIGIBLE APPLICANTS**

All types of applicants are eligible to apply, except Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

#### **B. COST SHARING**

Cost sharing is not required.

#### **C. ELIGIBLE INDIVIDUALS**

Individuals with the skills, knowledge, and resources necessary to carry out the proposed research as a Program Director/Principal Investigator are invited to work with their organizations to develop an application for assistance. Individuals from underrepresented groups as well as individuals with disabilities are always encouraged to apply for assistance.

## **Section IV – APPLICATION AND SUBMISSION INFORMATION**

### **A. ADDRESS TO REQUEST APPLICATION PACKAGE**

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>, select “Apply for Grants”, and then select “Download Application Package.” Enter the CFDA number (81.049) and/or the funding opportunity announcement number (DE-FOA-0001140) shown on the cover of this FOA and then follow the prompts to download the application package.

Applications submitted through [www.FedConnect.net](http://www.FedConnect.net) will not be accepted.

### **B. LETTER OF INTENT**

LETTER OF INTENT – DUE DATE

**August 12, 2014, at 5 PM Eastern Time**

A Letter of Intent (LOI) is strongly encouraged and should be submitted by **August 12, 2014, at 5 PM Eastern Time**. LOIs will not be accepted after this time.

The LOI is to help in planning the merit review process and the selection of potential reviewers for the application. For this purpose, the LOI must include the following:

- A cover sheet with the following information:
  - i. Funding Opportunity Announcement (FOA) Number: **DE-FOA-0001140**
  - ii. Title of the planned research application
  - iii. Name and mailing address of the sponsoring institution
  - iv. Administrative Point of Contact, Telephone number, and email address
  - v. Name of Lead Principal Investigator (PI) and Job Title
  - vi. Email address and telephone number of the Lead PI
  - vii. Additional Senior Investigator(s) and Senior/Key personnel expected to be involved in the planned application
  - viii. Indicate type of application planned: New or Renewal
  - ix. Indicate # year(s) for proposal project period for the planned application
  - x. Research area(s) for the planned application as specified in Section I of this FOA
  - xi. Relevant DOE Technical Contact name(s) as listed in Section I of this FOA
- An overview of the research plan **limited to two pages**. Indicate how the proposed research fits into one or more of the six HEP research subprograms (Energy Frontier, Intensity Frontier, Cosmic Frontier, Theory, Accelerator Science and Technology R&D, or Detector R&D). List the major research thrusts (e.g., ATLAS, CMS, LSST, NOvA, phenomenology, lattice gauge theory, etc.) and the Senior Investigator(s) expected to be involved in the proposed research.

The absence of a LOI will not negatively affect a thorough evaluation of a responsive formal application submitted in a timely fashion.

The LOI must be submitted electronically through the DOE Office of Science Portfolio Analysis and Management System (PAMS) website <https://pamspublic.science.energy.gov/>. It is important that the LOI be a single file with extension .pdf, .docx, or .doc. The PI and anyone submitting on behalf of the PI must register for an account in PAMS before it will be possible to submit a LOI. All PIs and those submitting LOIs on behalf of PIs are encouraged to establish PAMS accounts as soon as possible to avoid submission delays.

To access PAMS, you may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers.

Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with (“register to”) your institution. Detailed steps are listed below.

### **Create PAMS Account:**

- To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov/>.
- Click the “No, I have never had an account” link and then the “Create Account” button.
- You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
- On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website, mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.
- Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
- PAMS will take you the “Having Trouble Logging In?” page.

### **Register to Your Institution:**

- Click the link labeled “Option 2: I know my institution and I am here to register to the institution.” (Note: If you previously created a PAMS account but did not register to an institution at that time, you must click the Institutions tab and click the “Register to Institution” link.)
- PAMS will take you to the “Register to Institution” page.
- Type a word or phrase from your institution name in the field labeled, “Institution Name like,” choose the radio button next to the item that best describes your role in the system, and click the “Search” button. (Hint: If your institution has an acronym, such as UCLA for the Regents of the University of California, Los Angeles, you may search for the acronym under “Institution Name like.” Many institutions with acronyms are listed in PAMS with their acronyms in parentheses after their names.)
- Find your institution in the list that is returned by the search and click the “Actions” link in the Options column next to the institution name to obtain a dropdown list. Select “Add me to this institution” from the dropdown. PAMS will take you to the “Institutions – List” page.
- If you do not see your institution in the initial search results, you can search again by clicking the “Cancel” button, clicking the Option 2 link, and repeating the search.



- If, after searching, you think your institution is not currently in the database, click the “Cannot Find My Institution” button and enter the requested institution information into PAMS. Click the “Create Institution” button. PAMS will add the institution to the system, associate your profile with the new institution, and return you to the “Institutions – List” page when you are finished.

### **Submit Your Letter of Intent:**

- Create your LOI outside the system and save it as a file with extension .docx, .doc, or .pdf. Make a note of the location of the file on your computer so you can browse for it later from within PAMS.
- Log into PAMS and click the Proposals tab. Click the “View / Respond to Funding Opportunity Announcements” link and find the current announcement in the list. Click the “Actions/Views” link in the Options column next to this announcement to obtain a dropdown menu. Select “Submit Letter of Intent” from the dropdown.
- On the Submit Letter of Intent page, select the institution from which you are submitting this LOI from the Institution dropdown. If you are associated with only one institution in the system, there will only be one institution in the dropdown.
- Note that you must select one and only one PI per LOI; to do so, click the “Select PI” button on the far right side of the screen. Find the appropriate PI from the list of all registered users from your institution returned by PAMS. (Hint: You may have to sort, filter, or search through the list if it has multiple pages.) Click the “Actions” link in the Options column next to the appropriate PI to obtain a dropdown menu. From the dropdown, choose “Select PI.”
- If the PI for whom you are submitting does not appear on the list, it means he or she has not yet registered in PAMS. For your convenience, you may have PAMS send an email invitation to the PI to register in PAMS. To do so, click the “Invite PI” link at the top left of the “Select PI” screen. You can enter an optional personal message to the PI in the “Comments” box, and it will be included in the email sent by PAMS to the PI. You must wait until the PI registers before you can submit the LOI. Save the LOI for later work by clicking the “Save” button at the bottom of the screen. It will be stored in “My Letters of Intent” for later editing.
- Enter a title for your LOI.
- Select the appropriate technical contact from the Program Manager drop-down.
- To upload the LOI file into PAMS, click the “Attach File” button at the far right side of the screen. Click the “Browse” (or “Choose File” depending on your browser) button to search for your file. You may enter an optional description of the file you are attaching. Click the “Upload” button to upload the file.
- At the bottom of the screen, click the “Submit to DOE” button to save and submit the LOI to DOE.
- Upon submission, the PI will receive an email from the PAMS system <[PAMS.Autoreply@science.doe.gov](mailto:PAMS.Autoreply@science.doe.gov)> acknowledging receipt of the LOI.

You are encouraged to register for an account in PAMS at least a week in advance of the LOI submission deadline so that there will be no delays with your submission.

For help with PAMS, click the “External User Guide” link on the PAMS website,

<https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this Funding Opportunity Announcement should reference **DE-FOA-0001140**.

## C. CONTENT AND APPLICATION FORMS

### BUDGET PRIORITIES AND GUIDANCE

Applicants to this Funding Opportunity Announcement are advised that the Office of High Energy Physics (HEP) places primary importance on maximizing the number of research personnel supported by its financial assistance awards. In particular, budgets should be prepared with an effort towards supporting the greatest number of junior scientific personnel consistent with the proposed research scope. During HEP's decision making process, such support for junior personnel will be considered a high priority relative to other areas of support.

For all personnel for whom support is requested, the budget must include the proposed effort of that person in person-months, the person's institutional base salary, the requested cost for fringe benefits, and the total requested cost for each person. The requested salary cost must be the product of the proposed effort and the institutional base salary (e.g., for a university employee with a 12-month salary basis, a person committing 1.2 person-months of effort and having an institutional base salary of \$85,000 may request salary support of \$8,500). Any proposed voluntary effort commitments should be described in the budget justification or in the research narrative, but not on the actual budget form since said contributions are not mandatory and, therefore, will not be formally recognized by DOE.

HEP may recommend downward adjustments to the budgets contained in the applications based on funds available. HEP may reduce support for Principal Investigators (PIs), co-PIs, and/or co-Investigators (co-Is) prior to considering any reduction in support for postdocs or graduate students. Any recommended reduction in support will be made through a reduction in the supported level of effort with an attendant reduction in cost.

Such recommendations for reductions or adjustments will be communicated to applicants during the selection and recommendation process in writing from HEP. A revised budget conforming to any reductions or adjustments will be requested through the PAMS at <https://pamspublic.science.energy.gov/>.

### INSTRUCTIONS APPLICABLE TO THE ENTIRE APPLICATION

You must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) in accordance with the instructions on the forms and the additional instructions below.

Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement. Attached PDF files must be plain files consisting of text, numbers, and images without editable fields, signatures, passwords, redactions, or other

advanced features available in some PDF-compatible software. Do not attach PDF portfolios.

## 1. SF-424 (R&R)

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 is available on the DOE Financial Assistance Forms Page at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

### PUBLIC POLICY REQUIREMENTS

The applicant assures DOE of its compliance with applicable public policy requirements, including the following:

Animal Welfare Act	7 USC 2131 et seq., 10 CFR 600, 10 CFR 602
Buy American Act	41 USC 10 et seq.
Cargo Preference Act	46 USC 55305, 46 CFR 381.7
Civil Rights Protections	10 CFR 1040, 10 CFR 600
Debarment and Suspension	10 CFR 600, 2 CFR 180, 2 CFR 901
Drug-Free Workplace Act	41 USC 701, 10 CFR 607
Environmental Protections	42 USC 7401, 33 USC 1251, 42 USC 4321, 10 CFR 600
False Claims Act	31 USC 3729, 18 USC 287, 18 USC 1001, 10 CFR 1013
Federal Funding Accountability and Transparency Act	P.L. 109-282, 2 CFR 170
Fly America Act	49 USC 40118
Hatch Act	5 USC 1501 et seq., 10 CFR 600
Human Research Subjects Protections	10 CFR 745, 10 CFR 600
Lobbying Disclosure Act	2 USC 1601 et seq.
Lobbying Prohibitions	31 USC 1352, 10 CFR 601
Metric System use	EO 12770
Non-delinquency on Federal Debt	28 USC 3201
Prohibition on benefitting Members of Congress	41 USC 6306
Seat Belt Use	EO 13043
Terrorist Financing	EO 13224, 66 FR 49079
Text Messaging While Driving	EO 13513, 74 FR 51225
Trafficking in Persons	22 USC 7104, 2 CFR 175

## 2. Research and Related Other Project Information

Complete questions 1 through 6 in the “RESEARCH & RELATED Other Project Information” form.

The following six questions must be answered:

1. Are Human Subjects Involved?
2. Are Vertebrate Animals Used?
3. Is proprietary/privileged information included in the application?
4. Does this project have an actual or potential impact on the environment?
5. Is the research performance site designated, or eligible to be designated, as a historic place?
6. Does this project involve activities outside of the United States or partnership with international collaborators?

Further, attach files for the appropriate fields on the Form. The files must comply with the following instructions:

**PROJECT SUMMARY/ABSTRACT (FIELD 7 ON THE FORM)**

The project summary/abstract is a summary of the proposed activity suitable for distribution to the public and sufficient to permit potential reviewers to identify conflicts of interest. It must be a self-contained document. Provide the name of the applicant, the project title, the project director/principal investigator(s) (PD/PI) and the PD/PI's institutional affiliation, any Co-Investigators and their institutional affiliations, the objectives of the project, a description of the project, including methods to be employed, and the potential impact of the project (i.e., benefits, outcomes). A sample is provided below:

<p>Title: A Really Great Idea</p> <p>A. Smith, Lead Institution (Principal Investigator)</p> <p>A. Brown, Institution 2 (Co-Investigator)</p> <p>A. Jones, Institution 3 (Co-Investigator)</p> <p>Abstract: Text of abstract</p>
--

The project summary must not exceed 1 page when printed using standard 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) with font not smaller than 11 point. To attach a Project Summary/Abstract, click "Add Attachment."

- Do not include any proprietary or sensitive business information.
- DOE may use the abstract to prepare public reports about supported research.

**DOE COVER PAGE**

(PART OF PROJECT NARRATIVE ATTACHED TO FIELD 8 ON THE FORM)

The application narrative should begin with a cover page that will not count toward the project narrative page limitation. The cover page must include the following items:

- The Project Title:
- Applicant/Institution:
- Street Address/City/State/Zip:
- Postal Address:

- Lead PI name, Telephone number, email:
- Administrative Point of Contact name, Telephone number, email:
- Funding Opportunity Announcement (FOA) Number: **DE-FOA-0001140**
- DOE/Office of Science Program Office: **Office of High Energy Physics**
- DOE/Office of Science Program Office Technical Contact: [SC.HEPFOA@science.doe.gov](mailto:SC.HEPFOA@science.doe.gov) or the appropriate Technical Contact listed in Section I under the Supplementary Information subsection in this FOA.
- PAMS Letter of Intent or Pre-proposal tracking number (if applicable):
- Research area(s) as identified in Section I of this FOA:

**COVER PAGE SUPPLEMENT FOR PROPOSALS WITH MULTIPLE RESEARCH AREAS OR THRUSTS  
(PART OF PROJECT NARRATIVE ATTACHED TO FIELD 8 ON THE FORM)**

If the proposal addresses two or more research area(s) (e.g., activities on Energy Frontier, Intensity Frontier, Cosmic Frontier, and/or HEP Theory), and/or research thrusts (e.g., ATLAS, CMS, LSST, NOvA, phenomenology, lattice gauge theory, etc.) provide the following information on a separate page as a supplement to the cover page. This separate supplement page will not count towards the project narrative page limitation.

- List all research area(s) and/or research thrust(s) by name with each Principal Investigator (PI) for the respective research on the same line.
- Indicate the Lead PI who will be the point of contact and coordinator for the combined proposal.
- Include a table modeled on the following chart providing summary budget information for each research area and/or research thrust. Provide the total costs (Direct and Indirect) in the budget request in each funding year for each area or thrust as well as the totals for all rows and columns.
- If necessary, appropriately add rows for additional Co-PI(s), research area(s) and/or research thrust(s).
- PIs should appropriately modify the table below for the correct number of years where a budget is being requested in their application.

<b>Name and Yearly Budget for Proposals with Multiple Research Areas or Thrusts</b>						
	<b>Name</b>	<b>Research Area</b>	<b>Year 1 Budget</b>	<b>Year 2 Budget</b>	<b>Year 3 Budget</b>	<b>Total Budget</b>
Lead PI						
Co-PI						
Co-PI						
Co-PI						

**PROJECT NARRATIVE (FIELD 8 ON THE FORM)**

The Project Narrative comprises the research plan for the project. It should contain enough background material in the Introduction, including review of the relevant literature, to

demonstrate sufficient knowledge of the state of the science. The major part of the narrative should be devoted to a description and justification of the proposed project, including details of the method to be used. It should also include a timeline for the major activities of the proposed project, and should indicate which project personnel will be responsible for which activities.

The project narrative **must not exceed 9 pages per senior investigator** of technical information, including charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right). The font must not be smaller than 11 point.

- For the purposes of calculating the page limit, a senior investigator is considered to be an active tenured or tenure-track faculty member *at the sponsoring institution*. Non-tenure-track faculty (e.g., research faculty) or senior research staffs with term appointments are not included in the page limit of 9 pages per senior investigator *unless* they are the sole senior investigator on the application. Contributions of non-tenure-track faculty and/or term research staff to the application may be described in Appendix 2 if applicable (see below).
- Faculty members *at collaborating institutions* listed on the proposal (if any) are NOT included for the purposes of calculating the page limit.
- As an example, an application with 4 senior investigators cannot exceed 36 pages of research description using the above page and font formatting.
- For each senior investigator, clearly indicate the fraction of total research time during the academic year as well as during the summer that will be spent on the proposed research.
- References needed to cite the research described in the 9 pages per senior investigator narrative can be listed in the Appendix material described below.

Merit reviewers will only consider the number of pages specified in the above requirement. Applications exceeding the page limit will not be reviewed and, therefore, will not be considered for funding.

Do not include any Internet addresses (URLs) that provide supplementary or additional information that constitutes a part of the application. Using Internet sites in an attempt to avoid page limits will fail: the content of those sites will not be reviewed. References posted to an Internet-based archive or publication are permitted in a list of references. See Section VIII. D. for instructions on how to mark proprietary application information. To attach a Project Narrative, click "Add Attachment."

The following information will assist in preparing a better narrative:

**Background/Introduction:** Explanation of the importance and relevance of the proposed work as well as a review of the relevant literature. A brief description of research activities conducted by the Principal Investigator and his/her group, including specific roles and responsibilities in collaborative research efforts, and accomplishments and impacts made during the recent past (typically the past three years), is also encouraged. Investigator(s) proposing to conduct research across multiple HEP research subprograms are encouraged to provide their overall plan for such activities.

**Common Narrative:** Any supporting narrative that is common to all the research areas (e.g., a

description of indirect costs or infrastructure) can be included in a separate single section of the application. Moreover, an overview of each group's activities in the different research areas can be provided in order to describe any synergies and connections between the areas. Reviewers will have access to the complete application and will be asked to comment on the particular benefits of such synergies and institutional support and/or infrastructure as appropriate to the application.

**Multiple Investigators:** In applications with more than one senior investigator, the accomplishments, milestones, and plans of each senior investigator must be clearly identified. Reviewers will be asked to assess the accomplishments and plans of each senior investigator and these evaluations will be used as input to the funding decisions.

**Multiple Research Areas or Thrusts:** An application responding to two or more research areas must be structured such that each research area is clearly distinguishable within the application. Each research area within an application will be reviewed independently, and therefore, the research description must be self-contained.

**Proposed Research and Methods:** Identify the hypotheses to be tested (if any) and details of the methods to be used.

**Project Objectives:** This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

**Proposed Resources:** Identify the resources needed to meet the objectives of the proposed project and accomplish the research goals. Requests for support of any resources in the budgets submitted with the application should be consistent with the scope of research efforts identified in the narrative. Reviewers will be asked to consider if the requests are reasonable, justified, and appropriate in order to reach those goals.

**Timetable of Activities:** This section should outline, year-by-year, all the important activities or phases of the project, including any activities planned beyond the project period. Successful applicants must use this project timetable to report progress.

It is important that the project narrative section provide a complete description of the proposed work. Appendices submitted as Appendix 8: Other Attachment, are optional and merit reviewers are not required to consider the content of Other Attachments when forming their reviews. Applications exceeding the page limits may be rejected without review. The page count of 9 pages per senior investigator does not include the Cover Page and Budget Pages, the Title Page, the biographical material and publication information, or any Appendices.

In any section of the project narrative or in the application, it is important not to include any sensitive personally identifiable information (PII) such as a Social Security Number, date of birth, or city of birth. Do not include information that a merit reviewer should not make use of. Applications containing PII will be declined without review.

APPENDIX 1: BIOGRAPHICAL SKETCH – PROJECT DIRECTOR / PRINCIPAL INVESTIGATOR

Provide a biographical sketch for the project director/principal investigator (PD/PI) and each senior/key person listed in Section A on the R&R Budget form.

- Provide the biographical sketch information as an appendix to your project narrative.
- Do not attach a separate file.
- The biographical sketch appendix will not count in the project narrative page limitation.
- The biographical information (curriculum vitae) for each person must not exceed 2 pages when printed on 8.5” by 11” paper with 1-inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

**Education and Training:** Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

**Research and Professional Experience:** Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

**Publications:** Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. You may use an abbreviated style such as the *Physical Review Letters* (PRL) convention for citations (list only the first author). You may also use this convention in the application bibliography. Patents, copyrights and software systems developed may be provided in addition to or substituted for publications.

**Synergistic Activities:** List no more than 5 professional and scholarly activities related to the effort proposed.

**Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers:** Provide the following information in this section:

- **Collaborators and Co-editors:** List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. For publications or collaborations with more than 10 authors or participants, only list those individuals in the core group with whom the Principal Investigator interacted on a regular basis while the research was being done. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state “None.”
- **Graduate and Postdoctoral Advisors and Advisees:** List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates.
- **Advisory Committees:** List all advisory committees on which the senior investigator serves, including the name of the institution and department (if applicable).



**Personally Identifiable Information (PII):** Do not include sensitive personally identifiable information such as a Social Security Number, date of birth, or city of birth. Do not include information that a merit reviewer should not make use of. Applications containing PII will be declined without review.

#### APPENDIX 2: RESEARCH SCIENTISTS (IF APPLICABLE)

Research Scientists are professional personnel that support the research activities of the research program(s) conducted at the academic institution. Research Scientists are not appointments to the tenured or tenure-track instructional faculty but are typically term appointments through the institution. For the purposes of material for this appendix, the Research Scientist(s) are professional scientific personnel not listed as one of the senior investigator(s) in the application.

Provide a supporting narrative for named Research Scientist(s) listed in the proposal. **The narrative in this section of the appendix (hereafter, the “appendix narrative”) must not exceed 2 pages per Research Scientist** when printed using standard 8.5” by 11” paper with 1-inch margins (top, bottom, left, and right). The font must not be smaller than 11 point. For each Research Scientist for whom support is requested in the application, the appendix narrative should include brief background information as well as a description of the roles, responsibilities, and scope of research efforts to be conducted by the scientist. The scope should support the research activities described in the project narrative of the application and must follow the guidelines indicated below.

In addition to the appendix narrative, provide a brief biographical sketch for each named Research Scientist(s) listed in the proposal. **The biographical information (curriculum vitae) for each person must not exceed 1 page** when printed on 8.5” by 11” paper with 1-inch margins (top, bottom, left, and right) with font not smaller than 11 point and must follow the guidelines indicated below.

#### **Guidelines for Research Scientist Appendix Narrative**

Applications must meet the following guidelines when providing the scope of research activities for Research Scientist(s) in their appendix narratives:

- For each, provide the name of the Research Scientist, his/her supervisor, and major research task(s) that s/he will undertake during the project period in the application.
- The appendix narrative is specifically intended to discuss the research scope of Research Scientist(s) not listed as one of the senior investigator(s), but whose support is requested in the application. The research scope undertaken by the Research Scientist(s) may also be discussed in the main project narrative, and such discussion may be referenced in the appendix narrative as appropriate. However, the appendix narrative must not be used merely to extend the length of the main project narrative of any senior investigator(s) in the proposal. If no support for Research Scientist(s) is requested, then this appendix must be notated “N/A”.
- If the Research Scientist is the sole senior investigator on the application, then the scope of research efforts is already provided in the main project narrative. Therefore, in these cases, this appendix must not be completed, and notated “See Project Narrative”.

- If a Research Scientist's efforts are listed multiple times in a proposal across different research areas and/or thrusts, any appendix narrative for the particular Research Scientist still must not exceed 2 pages. Therefore, the appendix narrative page limitation is irrespective of the number of activities being described.
- In this appendix, it is important not to include any sensitive personally identifiable information (PII) such as a Social Security Number, date of birth, or city of birth. Do not include information that a merit reviewer should not make use of. Applications containing PII will be declined without review.
- Do not attach a separate file.
- This appendix will not count in the main project narrative page limitation.

### **Guidelines for Research Scientist Biographical Sketch**

The 1-page biographical sketch for each Research Scientist listed in the application must include the following information:

**Education and Training:** Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

**Research and Professional Experience:** Beginning with the current position list, in chronological order, professional/academic positions with a brief description. For experimental research efforts, include the name of the collaboration where the research is being conducted.

**Publications:** Provide a list of up to 5 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. You may use an abbreviated style such as the *Physical Review Letters* (PRL) convention for citations (list only the first author). You may also use this convention in the application bibliography. Patents, copyrights and software systems developed may be provided in addition to or substituted for publications.

**Graduate Student and Postdoctoral Mentorship:** List the names and current organizational affiliation of any graduate students and postdoctoral associates that you have helped mentor during the last 5 years while at your institution in order to support your research activities.

**Personally Identifiable Information (PII):** Do not include sensitive personally identifiable information such as a Social Security Number, date of birth, or city of birth. Do not include information that a merit reviewer should not make use of. Applications containing PII will be declined without review.

Applications not in-compliance with the above guidelines for either the narrative or the biographical sketch will not be reviewed, and therefore, cannot be considered for funding.

### **APPENDIX 3: CURRENT AND PENDING SUPPORT**

Provide a list of all current and pending support (both Federal and non-Federal) for the Project

Director/Principal Investigator(s) (PD/PI) and senior/key persons, including subawardees, for ongoing projects and pending applications. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. Do not list simply the title of the current and/or pending grant; provide the “Project Abstract”, which includes brief details on the scope of research. A level of detail sufficient to identify similarities and differences with the work presented in the application being submitted is required. Provide the Current and Pending Support as an appendix to your project narrative. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 4: BIBLIOGRAPHY & REFERENCES CITED

Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. For research areas where there are routinely more than ten coauthors of archival publications, you may use an abbreviated style such as the *Physical Review Letters* (PRL) convention for citations (listing only the first author). For example, your paper may be listed as, “A Really Important New Result,” A. Aardvark *et al.* [MONGO Collaboration], PRL 999 (2011). You may also use this convention in the proposal bibliography. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. Provide the Bibliography and References Cited information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 5: FACILITIES & OTHER RESOURCES

This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. For proposed investigations requiring access to experimental user facilities maintained by institutions other than the applicant, please provide a document from the facility manager confirming that the researchers will have access to the facility. Please provide the Facility and Other Resource information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 6: EQUIPMENT

List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. Provide the equipment information as an appendix to your project narrative.

- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.

#### APPENDIX 7: ADDITIONAL BUDGET REQUIREMENTS

If support is requested from *two or more research areas*, provide a budget and budget justifications for *each research area* in the proposal for each year in which funding is being requested and for the cumulative funding period. This requirement is in addition to completing Section IV Subsection 3 on “Research and Related Budget” for the total project budget.

This requirement does not apply to proposals that request support from a single research area, e.g., Accelerator Science and Technology R&D, Theory, CMS, LUX, NOvA, etc.

Applications must meet the following guidelines when providing the budget information:

- See Subsection 3 on “Research and Related Budget” for further information regarding budget fields and accurate budget information needed within each research area described in the proposal.
- Budgets must be presented in Standard Form (SF) 424 Research and Related (R&R) style. SF-424 (R&R) budgets are available at:
  - [www.grants.gov](http://www.grants.gov)
  - <http://science.energy.gov/~media/hep/pdf/files/pdfs/HEP-BudgetForm-for-Reports-Fillable.pdf>

The use of other sources for budgets that look like an SF-424 (R&R) budget is permissible.

- Do not attach a separate file.
- This appendix will not count against the project narrative page limitation.

#### APPENDIX 8: OTHER ATTACHMENT

If you need to elaborate on your responses to questions 1-6 on the “Other Project Information” document, please provide the Other Attachment information as an appendix to your project narrative. Information not easily accessible to a reviewer may be included in this appendix, but do not use this appendix to circumvent the page limitations of the application. Reviewers are not required to consider information in this appendix, and reviewers may not have time to read extensive appendix materials with the same care they would use with the application proper.

- Do not include copies of previously presented and/or published research papers, technical notes, and/or reports written for respective experiments or collaborations. Further, do not include presentations made at any meetings or conferences
- Do not attach a separate file.
- This appendix will not count in the project narrative page limitation.
- **Do not attach any of the requested appendices described above as files for fields 9, 10, 11, and 12.**
- **Follow the above instructions to include the information as appendices to the project**

narrative file.

- These appendices will not count toward the project narrative’s page limitation.

### 3. Research and Related Budget

Complete the Research and Related Budget form in accordance with the instructions on the form (Activate Help Mode to see instructions) and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (see Section IV. G.).

#### Budget Fields

Section A Senior/Key Person	For each Senior/Key Person, enter the requested information. List personnel, base salary, the number of months that person will be allocated to the project, requested salary fringe benefits, and the total funds requested for each person. The requested salary must be the product of the base salary and the effort. Include a written narrative in the budget justification that justifies the need for requested personnel.
Section B Other Personnel	List personnel, the number of months that person will be allocated to the project, requested salary fringe benefits, and the total funds requested for each person. Include a written narrative in the budget justification that fully justifies the need for requested personnel.
Section C Equipment	For the purpose of this budget, equipment is designated as an item of property that has an acquisition cost of \$5,000 or more and an expected service life of more than one year. If institutional policies provide for a lower threshold of capitalization costs, the designation of an item as equipment on the budget must be consistent with those policies. (Note that this designation applies for proposal budgeting only and differs from the DOE definition of capital equipment.) List <b>each</b> item of equipment separately and justify each in the budget justification section: do not aggregate items. Allowable items ordinarily will be limited to research equipment and apparatus not already available for the conduct of the work. General-purpose office equipment is not eligible for support unless primarily or exclusively used in the actual conduct of scientific research.
Section D Travel	For purposes of this section only, travel to Canada or to Mexico is considered domestic travel. In the budget justification, list each trip’s destination, dates, estimated costs including transportation and subsistence, number of staff traveling, the purpose of the travel, and how it relates to the project. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other

	<p>basis). To qualify for support, attendance at meetings or conferences must enhance the investigator's capability to perform the research, plan extensions of it, or disseminate its results. Domestic travel is to be justified separately from foreign travel.</p>
<p>Section E Participant/Trainee Support Costs</p>	<p>If applicable, submit training support costs. Educational projects that intend to support trainees (precollege, college, graduate and post graduate) must list each trainee cost that includes stipend levels and amounts, cost of tuition for each trainee, cost of any travel (provide the same information as needed under the regular travel category), and costs for any related training expenses. Participant costs are those costs associated with conferences, workshops, symposia or institutes and breakout items should indicate the number of participants, cost for each participant, purpose of the conference, dates and places of meetings and any related administrative expenses.</p> <p>Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</p>
<p>Section F Other Direct Costs</p>	<ul style="list-style-type: none"> <li>• <b>Materials and Supplies (M&amp;S):</b> Enter total funds requested for materials and supplies in the appropriate fields. In the budget justification, indicate general categories such as glassware, and chemicals, including an amount for each category (items not identified under "Equipment"). Categories less than \$1,000 are not required to be itemized. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Publication Costs:</b> Enter the total publication funds requested. The proposal budget may request funds for the costs of documenting, preparing, publishing or otherwise making available to others the findings and products of the work conducted under the award. In the budget justification, include supporting information. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Consultant Services:</b> Enter total funds requested for all consultant services. In the budget justification, identify each consultant, the services he/she will perform, total number of days, travel costs, and total estimated costs. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>ADP/Computer Services:</b> Enter total funds requested for ADP/Computer Services. The cost of computer services, including computer-based retrieval of scientific, technical and education information may be requested. In the budget justification, include the established computer service rates at the proposing organization if applicable. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Subawards/Consortium/Contractual Costs:</b> Enter total costs for all</li> </ul>

	<p>subawards/consortium organizations and other contractual costs proposed for the project. In the budget justification, justify the details. See Section C.4. for additional instructions.</p> <ul style="list-style-type: none"> <li>• <b>Equipment or Facility Rental/User Fees:</b> Enter total funds requested for Equipment or Facility Rental/User Fees. In the budget justification, identify each rental/user fee and justify. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</li> <li>• <b>Alterations and Renovations:</b> Enter total funds requested for Alterations and Renovations. In the budget justification, itemize by category and justify the costs of alterations and renovations, including repairs, painting, removal or installation of partitions, shielding, or air conditioning. Where applicable, provide the square footage and costs.</li> <li>• <b>Other:</b> Add text to describe any other Direct Costs not requested above. Enter costs associated with “Other” item(s). Use the budget justification to further itemize and justify.</li> </ul>
Section G Direct Costs	This represents Total Direct Costs (Sections A through F)
Section H Other Indirect Costs	Enter the Indirect Cost information for each field. Only four general categories of indirect costs are allowed/requested on this form. If additional room is needed, use the budget justification to provide the required data. Include the cognizant Federal agency and contact information if using a negotiated rate agreement.
Section I Total Direct and Indirect Costs	This is the total of Sections G and H.

**BUDGET JUSTIFICATION (FIELD K ON THE FORM)**

Provide the required supporting information for the following costs (see R&R Budget instructions): equipment; domestic and foreign travel; participant/trainees; materials and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. **Attach a single budget justification file for the entire project period in field K.** The file automatically carries over to each budget year.

In addition, include a written narrative in the budget justification that justifies the need for requested personnel. The budget justification must include, for each person:

- the person’s name if known at the time of application (if unknown, state “TBD”);
- the person’s title on the project if known at the time of application (if unknown, state “TBD”);
- the person’s institutional base salary;
- the person’s effort commitment in person-months;
- the person’s requested salary;

- the person’s requested fringe benefits; and
- the person’s total requested cost.

**4. R&R Subaward Budget Attachment(s) Form**

**Budgets for Subawardees, other than DOE FFRDC Contractors:** You must provide a separate R&R budget for each subawardee. Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET ATTACHMENT(S) FORM and e-mail it to each subawardee that is required to submit a separate budget. After the subawardee has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the subawardee’s name (plus.pdf) as the file name (e.g., ucla.pdf or energyres.pdf).

If the project involves more subawardees than there are places in the SUBAWARD BUDGET ATTACHMENT(S) FORM, the additional subaward budgets may be saved as PDF files and appended to the Budget Justification attached to Field K.

Ensure that any files received from subawardees are the PDF files extracted from the SUBAWARD BUDGET ATTACHMENT(S) FORM. Errors will be created if a subawardee sends a prime applicant a budget form that was not extracted from the application package.

**5. Project/Performance Site Location(s)**

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the 2-digit state code followed by a dash and a 3-digit Congressional district code, for example VA-001. Hover over this field for additional instructions.

Use the Next Site button to expand the form to add additional Project/Performance Site Locations.

**6. SF-LLL Disclosure of Lobbying Activities**

If applicable, complete SF-LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

**7. Summary of Required Forms/Files**

Your application must include the following items:

Name of Document	Format	Attach to
SF-424 (R&R)	Form	N/A



<b>RESEARCH AND RELATED Other Project Information</b>	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
<b>RESEARCH &amp; RELATED BUDGET</b>	Form	N/A
Budget Justification	PDF	Field K
<b>PROJECT/PERFORMANCE SITE LOCATION(S)</b>	Form	N/A
<b>SF-LLL Disclosure of Lobbying Activities, if applicable</b>	Form	N/A

#### **D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS**

If selected for award, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (see 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

#### **E. SUBMISSION DATES AND TIMES**

##### **1. Letter of Intent Due Date**

August 12, 2014, at 5 PM Eastern Time

##### **2. Pre-application Due Date**

Pre-applications are not required

##### **3. Application Due Date**

September 23, 2014, at 11:59 PM Eastern Time

You are encouraged to transmit your application well before the deadline.

##### **4. Late Submissions**

Delays in submitting letters of intent, pre-applications, and applications may be unavoidable. DOE has accepted late submissions when applicants have been unable to make timely submissions because of widespread technological disruptions or significant natural disasters. DOE has made accommodations for incapacitating or life-threatening illnesses and for deaths

of immediate family members. Other circumstances may or may not justify late submissions. Unacceptable justifications include the following:

- Failure to begin submission process early enough.
- Failure to provide sufficient time to complete the process.
- Failure to understand the submission process.
- Failure to understand the deadlines for submissions.
- Failure to satisfy prerequisite registrations.
- Unavailability of administrative personnel.
- An upper respiratory infection (a “cold”) the week of the deadline.

You are responsible for beginning the submission process in sufficient time to accommodate reasonably foreseeable incidents, contingencies, and disruptions.

If you chose to wait until the day of the deadline to begin your submission, your request for a late submission will not be viewed favorably.

Applicants must contact the Program Office/Manager listed in this Funding Opportunity Announcement to discuss the option of a late submission. Contacting the Program Office/Manager after the deadline may reduce the likelihood that a request will be granted.

DOE notes that not all requests for late submission will be approved.

You may be able to submit your application in response to the currently available Office of Science Annual Solicitation. Please contact the Program Office/Manager listed in this Funding Opportunity Announcement to discuss this option.

## **F. INTERGOVERNMENTAL REVIEW**

This program is not subject to Executive Order 12372 - Intergovernmental Review of Federal Programs.

## **G. FUNDING RESTRICTIONS**

Funding for all awards and future budget periods is contingent upon the availability of funds appropriated by Congress for the purpose of this program. Anticipated future year funding is contingent upon the availability of budget authority for future years.

**Cost Principles:** Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 10 CFR 600. The cost principles for commercial organization are in the Federal Acquisition Regulation (FAR) Part 31.

**Pre-award Costs:** Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR 600 and 2 CFR 215. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than

this 90 day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

## **H. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS**

### **1. Where to Submit**

Applications must be submitted through Grants.gov to be considered for award.

Submit electronic applications through the "Apply for Grants" function at [www.grants.gov](http://www.grants.gov). If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to [support@grants.gov](mailto:support@grants.gov).

Please ensure that you have read the applicable instructions, guides, help notices, frequently asked questions, and other forms of technical support on Grants.gov.

### **2. Registration Process**

#### **ONE-TIME REGISTRATION PROCESS**

You must complete the one-time registration process (all steps) before you can submit your first application through Grants.gov (see [http://www.grants.gov/applicants/get\\_registered.jsp](http://www.grants.gov/applicants/get_registered.jsp)). We recommend that you start this process at least six weeks before the application due date. It may take 44 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. During the SAM registration process, you will be asked to designate an E-Business Point of Contact (E-BIZ POC). The E-BIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). 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).

### **3. Application Receipt Notices**

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four emails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four emails are:

Number 1 - Grants.gov Submission Receipt Number

Number 2 - Grants.gov Submission Validation Receipt for Application Number

Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number

Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

#### 4. Viewing Submitted Applications

Each Grants.gov application submitted to the DOE Office of Science (SC) automatically transfers into PAMS and is subsequently assigned to a DOE Program Manager (PM). At the time of PM assignment, the three people listed on the SF-424 (R&R) cover page will receive an email with the subject line, “Receipt of Proposal 0000xxxxxx by the DOE Office of Science.” These three people are the Principal Investigator (Block 14), Authorized Representative (Block 19), and Point of Contact (Block 5). In PAMS notation, applications are known as proposals, the Principal Investigator is known as the PI, the Authorized Representative is known as the Sponsored Research Officer/Business Officer/Administrative Officer (SRO/BO/AO), and the Point of Contact is known as the POC.

There will be a period of time between the application’s receipt at Grants.gov and its assignment to a PM. Program managers are typically assigned two weeks after applications are due at Grants.gov: please refrain from attempting to view the proposal in PAMS until you receive an email providing the assignment of a PM.

Once the email is sent, the PI, SRO/BO/PO, and POC will each be able to view the submitted proposal in PAMS. Viewing the proposal is optional.

Following are two sets of instructions for viewing the submitted proposal, one for individuals who already have PAMS accounts and one for those who do not.

If you already have a PAMS account, follow these instructions:

1. Log in to PAMS at <https://pamspublic.science.energy.gov/>.
2. Click the “Proposals” tab and click “Access Previously Submitted Grants.gov Proposal.”
3. Enter the following information:
  - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeroes (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
  - Email (as entered in Grants.gov proposal): Enter your email address as it appears on the SF-424 (R&R) Cover Page.
  - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF-424 (R&R) cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF-424 (R&R) as the point of contact, select “Other (POC).”
4. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal. Note that the steps above will work only for proposals submitted to the DOE Office of Science since May 2012.

If you do not already have a PAMS account, follow these instructions:

1. To register, click the “Create New PAMS Account” link on the website

<https://pamspublic.science.energy.gov/>.

2. Click the “No, I have never had an account” link and then the “Create Account” button.
3. You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
4. On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website, mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.
5. Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
6. You will be taken to the Register to Institution page. Select the link labeled, “Option 1: My institution has submitted a proposal in Grants.gov. I am here to register as an SRO, PI, or POC (Sponsored Research Officer, Principal Investigator, or Point of Contact).”
7. Enter the following information:
  - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeroes (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
  - Email (as entered in Grants.gov proposal): Enter your email address as it appears on the SF-424 (R&R) Cover Page.
  - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF-424 (R&R) cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF-424 (R&R) as the Point of Contact, select “Other (POC).”
8. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal.

If you were listed as the PI on a prior submission but you have not previously created an account, you may already be listed in PAMS. If this is the case, you will be taken to the PAMS home page after agreeing to the Rules of Behavior. If that happens, follow the instructions listed above under “If you already have a PAMS account...” to access your Grants.gov proposal.

The steps above will work only for proposals submitted to the DOE Office of Science since May 2012.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9 AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this Funding Opportunity Announcement should reference **DE-FOA-0001140**.

## **Section V - APPLICATION REVIEW INFORMATION**

### **A. CRITERIA**

#### **1. Initial Review Criteria**

Prior to a comprehensive merit evaluation, DOE will perform an initial review in accordance with 10 CFR 605.10(b) to determine that (1) the applicant is eligible for the award; (2) the information required by the FOA has been submitted; (3) all mandatory requirements are satisfied; (4) the proposed project is responsive to the objectives of the funding opportunity announcement, and (5) the proposed project is not duplicative of programmatic work. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

#### **2. Merit Review**

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following criteria found in 10 CFR 605.10 (d), the Office of Science Financial Assistance Program Rule. These criteria, and those following, are listed in descending order of importance.

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

Merit reviewers will be asked to evaluate two additional criteria:

- Relevance of the proposed research to the mission of the HEP program.
- Accomplishments and plans of each senior investigator.

The questions below are provided to the merit reviewers to elaborate the criteria:

#### **SCIENTIFIC AND/OR TECHNICAL MERIT OF THE PROPOSED RESEARCH**

- What is the scientific innovation of proposed effort?
- How does the proposed work compare with other efforts in its field, both in terms of scientific and/or technical merit and originality?
- How might the results of the proposed work impact the direction, progress, and thinking in relevant scientific fields of research?
- What is the likelihood of achieving influential results?

#### **APPROPRIATENESS OF THE PROPOSED METHOD OR APPROACH**

- Does the proposed effort employ innovative concepts or methods?
- How logical and feasible are the approaches?
- Are the conceptual framework, methods, and analyses well justified, adequately developed, and likely to lead to scientifically valid conclusions?

- Does the applicant recognize significant potential problems and consider alternative strategies?

#### COMPETENCY OF APPLICANT’S PERSONNEL AND ADEQUACY OF PROPOSED RESOURCES

- Does the proposed work take advantage of unique facilities and capabilities?
- What is the past performance of the team?
- How well qualified is the team to carry out the proposed work?
- Are any proposed plans for recruiting any additional scientific and/or technical personnel including new senior staff, students and postdocs reasonable, justified, and appropriate?
- Are the environment and facilities adequate for performing the proposed effort?
- Are the senior investigator(s) or any members of the research group that are being reviewed leaders within the proposed effort(s) and/or potential future leaders in the field?
- For senior investigator(s) proposing to work across multiple research thrusts, are the plans for such cross-cutting efforts reasonably developed and will the proposed activities have impact?

#### REASONABLENESS AND APPROPRIATENESS OF THE PROPOSED BUDGET

- Are the proposed budget and staffing levels adequate to carry out the proposed work?
- Are all travel, student costs, and other ancillary expenses adequately estimated and justified?
- Is the budget reasonable and appropriate for the scope?

#### RELEVANCE OF THE PROPOSED RESEARCH TO THE MISSION OF DOE OFFICE OF HEP PROGRAM

- How does the proposed research of each senior investigator contribute to the mission, science goals and programmatic priorities of the subprogram in which the application is being evaluated?
- Is the proposed research consistent with HEP’s overall mission and priorities?
- For multi-thrust proposals, does the scope of the full proposed program provide synergy or additional benefits to the HEP mission beyond the individual thrusts?
- How likely is the research to impact the mission or direction of the overall HEP program?
- For senior investigator(s) proposing to work and/or transition across multiple research thrusts during the project period, will their overall efforts add value in the context of HEP program goals and mission?

#### ACCOMPLISHMENTS AND PLANS OF EACH SENIOR INVESTIGATOR

- The scientific merit and potential impact of the senior investigator’s proposed work
- The competency of senior investigator’s team and likelihood of success
- A comparison to other senior investigators working in the same research area

Note that external peer reviewers are selected with regard to both 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 is acceptable to the investigator(s) and the submitting institution.

## **B. REVIEW AND SELECTION PROCESS**

## **1. Merit Review**

Applications that pass the initial review will be subjected to a formal merit review and will be evaluated based on the criteria codified at 10 CFR 605.10(d) in accordance with the guidance provided in the “Office of Science Merit Review System for Financial Assistance,” which is available at: <http://science.energy.gov/grants/policy-and-guidance/merit-review-system/>.

## **2. Selection**

Selection of applications for award will be based upon the following criteria, listed in decreasing order of relative importance:

- The scientific and technical merit of the proposed activity as determined by merit review, using the criteria established in Section A.2;
- The availability of funding;
- The importance and relevance of the proposed activity to Office of Science priorities and mission, as commented on by merit reviewers;
- The applicant’s performance under existing awards (of relevance to renewal applications and new applications that constitute an outgrowth or next step of currently-supported work);
- Other available advice and information; and
- The following Program Policy Factors:
  - The application’s relevance to compelling scientific opportunities identified in the 2014 Particle Physics Project Prioritization Panel (P5) strategic plan;
  - The application’s role in ensuring an appropriate balance of activities within the research program areas of the Office of High Energy Physics;
  - The institutional, jurisdictional and other commitment described in the application; and
  - The opportunity for training junior scientific personnel consistent with the proposed research scope.

## **3. Discussions and Award**

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR 600 and 10 CFR 605; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

## **C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES**

DOE is striving to make awards within six months of the receipt of applications. It is anticipated that selections will be completed in the winter of 2014 and that awards will be made during the spring of 2015.



## **Section VI - AWARD ADMINISTRATION INFORMATION**

### **A. AWARD NOTICES**

#### **1. Notice of Selection**

**Selected Applicants Notification:** DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Section IV.G. with respect to the allowability of pre-award costs.)

**Non-selected Notification:** Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

#### **2. Notice of Award**

An Assistance Agreement issued by the contracting officer is the authorizing award document. It normally includes either as an attachment or by reference: (1) Special Terms and Conditions; (2) Applicable program regulations, if any; (3) Application as approved by DOE; (4) DOE assistance regulations at 10 CFR 600; (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist, and Instructions, which identifies the reporting requirements.

### **B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS**

#### **1. Administrative Requirements**

The administrative requirements for DOE grants are contained in 10 CFR 600 and 10 CFR 605. Grants made to universities, non-profits and other entities subject to 2 CFR 215 are subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

#### **DUNS AND SAM REQUIREMENTS**

Additional administrative requirements for DOE grants are contained in 2 CFR 215 (see: <http://www.ecfr.gov>). Prime awardees must keep their data at the System for Award Management (SAM) current at <http://www.sam.gov>. SAM is the government-wide system that replaced the Central Contractor Registry (CCR). If you had an active registration in the CCR, you have an active registration in SAM. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

#### **SUBAWARD AND EXECUTIVE REPORTING**

Additional administrative requirements necessary for DOE grants to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR 170. (See: <http://www.ecfr.gov>). Prime awardees must register with the new FSRS database and report the required data on their first tier subawardees. Prime awardees must report the executive

compensation for their own executives as part of their registration profile in SAM.

## 2. Terms and Conditions

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

The standard DOE financial assistance intellectual property provisions applicable to various types of recipients are located at:

<http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>

## 3. National Policy Assurances

The National Policy Assurances To Be Incorporated As Award Terms are located at <http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf> and at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

## 4. Additional Conditions

### CONFERENCE SPENDING (MARCH 2014)

The recipient shall not expend funds for the purpose of defraying the cost to the United States Government of a conference held by any Executive branch department, agency, board, commission, or office funded by FY2013 or future year appropriations for which the cost to the United States Government was more than \$20,000, or circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference that is not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded.

### CORPORATE FELONY CONVICTION AND FEDERAL TAX LIABILITY REPRESENTATIONS (MARCH 2014)

In submitting an application in response to this FOA the Applicant represents that:

- It is **not** a corporation that has been convicted of a felony criminal violation under any Federal law within the preceding 24 months,
- It is **not** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

- A Corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and non-profit organizations.

#### LOBBYING RESTRICTIONS (MARCH 2012)

By accepting funds under this award, you agree that none of the funds obligated on the award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 USC 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

#### **C. REPORTING**

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions, DOE F 4600.2, attached to the award agreement. The checklist is available at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Forms.

## Section VII - QUESTIONS/AGENCY CONTACTS

### A. QUESTIONS

Questions relating to the Grants.gov 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](mailto:support@grants.gov). DOE cannot answer these questions.

- Please only contact the Grants.gov help desk for questions related to Grants.gov.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: [sc.pams-helpdesk@science.doe.gov](mailto:sc.pams-helpdesk@science.doe.gov). All submission and inquiries about this FOA should reference **DE-FOA-0001140**.

- Please contact the PAMS help desk for technological issues with the PAMS system.

Questions regarding the specific program areas and technical requirements may be directed to the technical contacts listed for each subprogram within the FOA or below.

- Please contact the program staff with questions not directly related to the Grants.gov or PAMS systems.

General questions about non-technical matters may be directed to common email account monitored by administrative personnel.

- Please contact [sc.hepfoa@science.doe.gov](mailto:sc.hepfoa@science.doe.gov) with any administrative or non-technical questions.

### B. AGENCY CONTACTS

Grants.gov Customer Support	800-518-4726 (toll-free) <a href="mailto:support@grants.gov">support@grants.gov</a>
PAMS Customer Support	855-818-1846 (toll-free) 301-903-9610 <a href="mailto:sc.pams-helpdesk@science.doe.gov">sc.pams-helpdesk@science.doe.gov</a>
Administrative Contact	For questions about non-technical matters, including program rules, please contact <a href="mailto:sc.hepfoa@science.doe.gov">sc.hepfoa@science.doe.gov</a> .
Program Manager Scientific/Technical Contact	For questions about specific program areas and/or technical requirements, please contact the DOE personnel listed in Section I of this FOA.

## **Section VIII - OTHER INFORMATION**

### **A. MODIFICATIONS**

Notices of any modifications to this FOA will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an FOA message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other FOAs. More information is available at <http://www.fedconnect.net>.

### **B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE**

DOE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

### **C. COMMITMENT OF PUBLIC FUNDS**

The contracting officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the contracting officer, either explicit or implied, is invalid.

### **D. PROPRIETARY APPLICATION INFORMATION**

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

“The data contained in pages \_\_\_\_\_ of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government’s right to use or disclose data obtained without restriction from any source, including the applicant.”

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

“The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation.”

## **E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL**

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

## **F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM**

**Patent Rights:** The Government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 USC 5908 provides that title to such inventions vests in the United States, except where 35 USC 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See “Notice of Right to Request Patent Waiver” in paragraph G below.)

**Rights in Technical Data:** Normally, the Government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE’s own needs or to insure the commercialization of technology developed under a DOE agreement.

## **G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER**

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this FOA, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784. For more information, see <http://energy.gov/gc/patents-licensing-and-patent-waivers>.

Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

## **H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES**

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of

information related to potential, planned or pending legislation.

## **I. AVAILABILITY OF FUNDS**

Funds are not presently available for this award. The Government's obligation under this award is contingent upon the availability of appropriated funds from which payment for award purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the contracting officer for this award and until the awardee receives notice of such availability, to be confirmed in writing by the contracting officer.

## **Section IX - APPENDICES/REFERENCE MATERIAL**

### **Glossary of Useful Grants and Cooperative Agreement terms**

<b>acquisition cost</b>	The cost of an asset, including the cost to put it in place. When used with equipment (capital expenditure), the term means the net invoice price of property or supplies including cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the property usable for the purpose for which it was acquired. Other charges, such as the cost of installation, transportation, taxes, duty, or protective in-transit insurance, are included or excluded from the unit acquisition cost in accordance with the recipient's regular accounting practices. It does not include costs for rental of property or alteration and rental of real property.
<b>administrative requirements</b>	The general business management practices that are common to the administration of all grants, such as financial accountability, reporting, equipment management, and retention of records.
<b>allocation</b>	The process of assigning costs to one or more cost objectives, in reasonable and realistic proportion to the benefit provided or other equitable relationship.
<b>allocability</b>	The principle which requires that an expense or service charged must directly benefit and be necessary for the performance of the project; when multiple projects are benefited reasonable proportions must be able to be assigned.
<b>allowable cost</b>	A cost incurred by a recipient that is: (1) reasonable for the performance of the award; (2) allocable; (3) in conformance with any limitations or exclusions set forth in the Federal cost principles applicable to the organization incurring the cost or in the award documents as to the type or amount of cost; (4) consistent with regulations, policies, and procedures of the recipient that are applied uniformly to both federally supported and other activities of the organization; (5) accorded consistent treatment as a direct or indirect cost; (6) determined in accordance with generally accepted accounting principles; and (7) not included as a cost in any other federally supported award (unless specifically authorized by statute).
<b>application</b>	A request for financial support of a project or activity submitted to DOE on specified forms and in accordance with DOE instructions. Also known as a proposal
<b>Appropriation Act</b>	The statute that provides the authority for Federal agencies to incur obligations to and make payments out of the U.S. treasury for specified purposes.
<b>approved budget</b>	The financial expenditure plan for the grant-supported project or activity, including revisions approved by DOE and permissible revisions made by the grantee. The approved budget consists of Federal (grant) funds and, if required by the terms and conditions of the award, non-Federal participation in the form of matching or cost sharing. The approved budget specified in the award documents may be shown in detailed budget categories or as total costs without a categorical breakout. Expenditures charged to an approved budget that consists of both Federal and non-Federal shares are deemed to be borne by the grantee in the same proportion as the percentage of Federal/non-Federal participation in the overall budget.
<b>assurance</b>	A certification by an applicant, normally included with the application or State plan, indicating that the entity is in compliance with, or that it will abide by, a particular requirement if awarded a Federal grant.
<b>authorized organizational representative award</b>	The individual, named by the applicant organization, who is authorized to act for the applicant and to assume the obligations imposed by the Federal laws, regulations, requirements, and conditions that apply to grant applications or grant awards. The provision of funds by DOE, based on an approved application and budget or progress report, to an organizational entity or an individual to carry out a project or activity.
<b>award documents</b>	The entirety of the documents describing the legal relationship between DOE and an awardee or recipient. The award documents include an Assistance Agreement and other documents which may be incorporated by reference or as attachments to the Assistance



Agreement. The award documents are the official, legally binding document, signed (or the electronic equivalent of signature) by a contracting officer that:

- notifies the recipient of the award of a grant;
- contains or references all the terms and conditions of the grant and Federal funding limits and obligations; and,
- provides the documentary basis for recording the obligation of Federal funds in the DOE accounting system.

<b>Bayh-Dole Act</b>	Law which encourages universities and researchers to develop their inventions into marketable products; formal citation is Section 6 of the Patent and Trademark Amendment of 1980, Pub. L 96-517
<b>budget</b>	An estimate of expenditures to be incurred in the performance of a proposed statement of work, or the financial plan or cost assessment for the grant proposal. The budget represents costs associated with project implementation.
<b>budget period</b>	The intervals of time (usually 12 months each) into which a project period is divided for budgetary and funding purposes.
<b>business officer</b>	The financial official of the grantee who has primary fiscal responsibility for the grant. Also known as authorized organizational representative.
<b>carryover</b>	Unobligated Federal funds remaining at the end of any budget period that, with the approval of the contracting officer or under an automatic authority, may be carried forward to another budget period to cover allowable costs of that budget period (whether as an offset or additional authorization). Obligated, but unliquidated, funds are not considered carryover.
<b>change in scope</b>	An activity whereby the objectives or specific aims identified in the approved grant application are significantly changed by the grantee after award. Contracting officer prior approval is required for a change in scope to be allowable under an award.
<b>closeout</b>	The process by which a Federal awarding agency determines that all applicable administrative actions and all required work under an award have been completed by the grantee and the Federal awarding agency.
<b>competitive segment</b>	The initial project period recommended for support (up to 5 years) or each extension of a project period resulting from a renewal award.
<b>conference (domestic or international)</b>	A symposium, seminar, workshop, or any other organized and formal meeting, whether conducted face-to-face or via the Internet, where individuals assemble (or meet virtually) to exchange information and views or explore or clarify a defined subject, problem, or area of knowledge, whether or not a published report results from such meeting.
<b>consortium or subaward agreement</b>	A formalized agreement whereby a research project is carried out by the grantee and one or more other organizations that are separate legal entities. Under the agreement, the grantee must perform a substantive role in the conduct of the planned research and not merely serve as a conduit of funds to another party or parties. These agreements typically involve a specific level of effort from the consortium organization's PD/PI and a categorical breakdown of costs, such as personnel, supplies, and other allowable expenses, including F&A costs. The relationship between the recipient and the collaborating organizations is considered a subaward relationship.
<b>consultant</b>	An individual who provides professional advice or services for a fee, but normally not as an employee of the engaging party. In unusual situations, an individual may be both a consultant and an employee of the same party, receiving compensation for some services as a consultant and for other work as a salaried employee. To prevent apparent or actual conflicts of interest, grantees and consultants must establish written guidelines indicating the conditions of payment of consulting fees. Consultants also include firms that provide professional advice or services.
<b>continuation application/award</b>	A financial assistance request (in the form of an application or progress report) or resulting award for a subsequent budget period within a previously approved project period for which a recipient does not have to compete with other applicants.
<b>contract</b>	An award instrument used to acquire from a non-federal party, by purchase, lease, or barter, property or services for the direct benefit or use of the Federal government. The

<b>Contract (or Grants Management) Officer</b>	<p>same term may be used to describe a vendor relationship between a recipient and another party under a grant (to acquire routine goods and services); however, the recipient may use subaward to describe the contract under a grant relationship.</p> <p>A DOE official responsible for the business management aspects of grants and cooperative agreements, including review, negotiation, award, and administration, and for the interpretation of grants administration policies and provisions. COs and GMOs are delegated the authority to obligate DOE to the expenditure of funds and permit changes to approved projects on behalf of DOE.</p>
<b>Contract (or Grants Management) Specialist</b>	<p>A DOE staff member who works with a contract or grants management officer and is assigned the day-to-day management of a portfolio of grants and/or cooperative agreements. These activities include, but are not limited to, evaluating grant applications for administrative content and compliance with statutes, regulations, and guidelines; negotiating grants; providing consultation and technical assistance to grantees; and administering grants after award.</p>
<b>cooperative agreement</b>	<p>A type of financial assistance used when there will be substantial Federal scientific or programmatic involvement. Substantial involvement means that, after award, scientific or program staff will assist, guide, coordinate, or participate in project activities.</p>
<b>cost principles</b>	<p>The government-wide principles, issued by OMB (or, in the case of commercial organizations, the Federal Acquisition Regulation [48 CFR 21], or, in the case of hospitals, 45 CFR 74, Appendix E, “Principles For Determining Costs Applicable to Research and Development Under Grants and Contracts with Hospitals”), on allowability and unallowability of costs under federally sponsored agreements.</p>
<b>cost sharing</b>	<p>The portion of the costs of a project or program not borne by the sponsor; these could be grantee contributions or third-party in-kind contributions; costs used to satisfy cost sharing requirements are subject to the same policies governing allowability as other costs of the project. Research grants are generally not subject to cost sharing requirements. Also known as matching.</p>
<b>deadline</b>	<p>The published date and/or time that a grant application is to be either postmarked/mailed or electronically submitted to the funding agency.</p>
<b>debarment and suspension</b>	<p>The actions taken by a debarring official in accordance with OMB guidance at 2 CFR 180, “Non-procurement Debarment and Suspension,” to exclude a person or organization from participating in grants and other non-procurement awards government-wide. If debarred or suspended, the person or organization may not receive financial assistance (under a grant, cooperative agreement, or subaward, or contract under a grant) for a specified period of time. Debarments and suspensions carried out pursuant to 2 CFR 376 are distinct from post-award suspension action by an awarding agency.</p>
<b>direct costs</b>	<p>Costs that can be identified specifically with a particular sponsored project, an instructional activity, or any other institutional activity, or that can be directly assigned to such activities relatively easily with a high degree of accuracy.</p>
<b>disallowance</b>	<p>A charge to a grant that the Federal awarding agency determines to be unallowable in accordance with the applicable Federal cost principles or other terms and conditions contained in the award.</p>
<b>domestic organization</b>	<p>A public (including a State or other governmental agency) or private non-profit or for-profit organization that is located in the United States or its territories, is subject to U.S. laws, and assumes legal and financial accountability for awarded funds and for the performance of the grant-supported activities.</p>
<b>DUNS number</b>	<p>A nine-digit number established and assigned by Dun and Bradstreet to uniquely identify a business entity.</p>
<b>effort</b>	<p>The amount of time, usually expressed as a percentage of the total, which a faculty member or other employee spends on a sponsored project. No one is allowed to spend more than 100% total commitment on all academic activities, including grant-sponsored research, university-sponsored research, teaching, administration, advising and other contracted duties. Effort is indicated on the budget in units of person-months.</p>
<b>equipment</b>	<p>An article of tangible nonexpendable personal property that has a useful life of more</p>

	than 1 year and an acquisition cost per unit that equals or exceeds \$5,000 or the capitalization threshold established by the organization, whichever is less.
<b>expanded authorities</b>	Authorization to grantees under certain research grant mechanisms which waives the requirement for prior agency approval for specified actions related to awards. Example: 90-day preaward spending authority, no cost extensions for up to one additional year, and automatic carryover of unobligated funds from one budget period to the next. The expanded authorities are now contained in the standard terms and conditions for most research grants.
<b>expiration date</b>	Generally, the date signifying the end of the current project period, after which the grantee is not authorized to obligate grant funds.
<b>facilities and administrative costs</b>	Costs that are incurred by a grantee for common or joint objectives and that, therefore, cannot be identified specifically with a particular project or program. These costs also are known as indirect costs.
<b>Federal Financial Report</b>	Submitted on Standard Form (SF) 425, to indicate the status of awarded funds for the period covered. Frequency of reporting is specified in the Reporting Checklist provided as part of the award documents. Replaces the SF-269 Financial Status Report (FSR)
<b>financial assistance</b>	Transfer by DOE of money or property to an eligible entity to support or stimulate a public purpose authorized by statute.
<b>Financial Status Report foreign travel</b>	See Federal Financial Report. Foreign travel includes travel outside of the United States and its territories and possessions (Guam, American Samoa, Puerto Rico, the Virgin Islands, and the Canal Zone) and Canada. A trip is considered foreign travel for all legs of the itinerary if the traveler does not return to his or her post prior to departure for a foreign destination. Costs for foreign travel may be restricted by the language of a Funding Opportunity Announcement.
<b>funding opportunity announcement</b>	A publicly available document by which a Federal Agency makes known its intentions to award discretionary grants or cooperative agreements, usually as a result of competition for funds. Funding opportunity announcements may be known as program announcements, requests for applications, notices of funding availability, solicitations, or other names depending on the Agency and type of program. Funding opportunity announcements can be found at <a href="http://Grants.gov/FIND">Grants.gov/FIND</a> . An FOA may also be known as a solicitation.
<b>grant</b>	A financial assistance mechanism providing money, property, or both to an eligible entity to carry out an approved project or activity. A grant is used whenever DOE anticipates no substantial programmatic involvement with the recipient during performance of the financially assisted activities.
<b>grant-supported project or activity</b>	Those activities specified or described in a grant application or in a subsequent submission that are approved by DOE for funding, regardless of whether Federal funding constitutes all or only a portion of the financial support necessary to carry them out.
<b>grantee</b>	The organization or individual awarded a grant or cooperative agreement by DOE that is responsible and accountable for the use of the funds provided and for the performance of the grant-supported project or activity. The grantee is the entire legal entity even if a particular component is designated in award documents. The grantee is legally responsible and accountable to DOE for the performance and financial aspects of the grant-supported project or activity. Also known as awardee or recipient.
<b>Grants.gov</b>	Grants.gov ( <a href="http://www.grants.gov/">http://www.grants.gov/</a> ) has been designated by the Office of Management and Budget as the single access point for all grant programs offered by 26 Federal grant-making agencies. It provides a single interface for agencies to announce their grant opportunities and for all applicants to find and apply for those opportunities.
<b>indirect costs</b>	See facilities and administrative costs definition.
<b>institutional base salary</b>	The annual compensation paid by an organization for an employee's appointment, whether that individual's time is spent on research, teaching, patient care, or other activities. Base salary excludes any income that an individual may be permitted to earn outside of duties for the applicant/grantee organization. Base salary may not be

<b>matching or cost sharing</b>	increased as a result of replacing organizational salary funds with grant funds. The value of third-party in-kind contributions and the portion of the costs of a federally assisted project or program not borne by the Federal government. Matching or cost sharing may be required by statute or program regulation. Costs used to satisfy matching or cost-sharing requirements are subject to the same policies governing allowability as other costs under the approved budget.
<b>merit (or peer) review</b>	The process that involves the consistent application of standards and procedures that produce fair, equitable, and objective examinations of applications based on an evaluation of scientific or technical merit or other relevant aspects of the application. The review is performed by experts (reviewers) in the field of endeavor for which support is requested. Merit review is intended to provide guidance and to the DOE individuals responsible for making award decisions.
<b>monitoring</b>	A process whereby the programmatic and business management performance aspects of a grant are assessed by reviewing information gathered from various required reports, audits, site visits, and other sources.
<b>no-cost extension</b>	An extension of time to a project period and/or budget period to complete the work of the grant under that period, without additional Federal funds or competition.
<b>non-Federal share</b>	When cost sharing or matching is required as a condition of an award, the portion of allowable project/program costs not borne by the Federal government.
<b>Notice of Financial Assistance Award obligations</b>	See award documents
<b>OMB Circulars</b>	<p>The amounts for which the recipient has made binding commitments for orders placed for property and services, contracts and subawards, and similar transactions during a funding period that will require payment during the same or a future period. Government-wide guidance issued to Heads of Federal agencies by the Director of OMB. OMB Circulars directly pertinent to grants include the following:</p> <ul style="list-style-type: none"> <li>• cost principles (OMB Circular A-21, OMB Circular A-87, and OMB Circular A-122);</li> <li>• uniform administrative requirements (OMB Circular A-102 and OMB Circular A-110);</li> <li>• audit requirements for non-profit organizations (OMB Circular A-133).</li> </ul> <p>Some (but not all) of these OMB Circulars have been reissued in Title 2 of the Code of Federal Regulations. DOE administrative regulations are located in Title 10 of the Code of Federal Regulations.</p>
<b>Other Significant Contributors</b>	Individuals who have committed to contribute to the scientific development or execution of the project, but are not committing any specified measurable effort (i.e., person months) to the project. These individuals are typically presented at “effort of zero person months” or “as needed.” Individuals with measurable effort may not be listed as Other Significant Contributors (OSCs). Consultants should be included if they meet this definition.
<b>participant</b>	Program participants are the recipients of service or training provided at a workshop, conference, seminar, symposium or other short-term instructional or information-sharing activity funded by an external grant or award, or the training beneficiaries of the project or program funded by an external grant or award. A participant is not involved in providing any deliverable to the grantee or a third party or would not be terminated or replaced for failure to perform.
<b>participant costs</b>	Costs used to pay program participants small stipends and reimbursement of travel costs or other out-of-pocket costs incurred to support attendance at a workshop, conference, seminar, symposium, or other short-term training or information-sharing activity.
<b>person months</b>	The metric for expressing the effort (amount of time) PD/PI(s), faculty and other senior/key personnel devote to a specific project. The effort is based on the type of appointment of the individual with the organization; e.g., calendar year, academic year, and/or summer term; and the organization’s definition of such. For instance, some institutions define the academic year as a 9-month appointment while others define it as

<b>pre-application or pre-proposal</b>	<p>a 10-month appointment.</p> <p>A brief outline or narrative of proposed work and sometimes budget, for informal review by a sponsor to determine whether a full application should be submitted. Three predominant reasons for requiring submission of a preliminary pre-application are:</p> <ul style="list-style-type: none"> <li>• Reduce the applicant’s unnecessary effort in proposal preparation when the chance of success is very small. This is particularly true of exploratory initiatives where the community senses that a major new direction is being identified, or competitions that will result in a small number of actual awards.</li> <li>• Increase the overall quality of the full submission.</li> <li>• Distill the number of applications that will be submitted to the agency and the number of anticipated reviewers needed to review.</li> </ul>
<b>pre-award costs</b>	Any cost incurred prior to the beginning date of the project period or the initial budget period of a competitive segment (under a multi-year award), in anticipation of the award and at the applicant’s own risk, for otherwise allowable costs.
<b>prior approval</b>	Written approval from the designated contracting officer required for specified post-award changes in the approved project or budget. Such approval must be obtained before undertaking the proposed activity or spending DOE funds
<b>Program Director/ Principal Investigator</b>	The individual(s) designated by the applicant organization to have the appropriate level of authority and responsibility to direct the project or program to be supported by the award. The applicant organization may designate multiple individuals as program directors/principal investigators (PD/PIs) who share the authority and responsibility for leading and directing the project, intellectually and logistically. When multiple PD/PIs are named, each is responsible and accountable to the applicant organization, or as appropriate, to a collaborating organization for the proper conduct of the project or program including the submission of all required reports. The presence of more than one PD/PI on an application or award diminishes neither the responsibility nor the accountability of any individual PD/PI.
<b>program income</b>	Program income is gross income earned by a research grant recipient from the activities, part or all of which are borne as a direct cost by the grant. Examples are fees for services performed under the grant, rental or usage fees charged for use of equipment purchased with grant funds, third party patient reimbursements for hospital or medical services paid from the grant, funds generated by the sale of commodities, such as cell lines or research animals developed from or paid for from the grant, and patent or copyright royalties.
<b>Program Manager</b>	The DOE official responsible for the programmatic, scientific, and/or technical aspects of a grant. The same role is filled by Program Directors, Program Officers, or Project Directors at other Federal agencies.
<b>progress report</b>	Periodic, frequently annual, report submitted by the grantee and used by DOE to assess progress and to determine whether to provide funding for the budget period subsequent to that covered by the report.
<b>project/performance site</b>	Location(s) of where the work described in the research plan will be conducted.
<b>project period</b>	The total time for which Federal support of a project has been programmatically approved as shown in the award documents; however, it does not constitute a commitment by the Federal government to fund the entire period. The total project period comprises the initial competitive segment, any subsequent competitive segments resulting from a renewal award(s), and extensions.
<b>proposal re-budgeting</b>	See application. Reallocation of funds available for spending between budget categories to allow best use of funds to accomplish the project goals.
<b>recipient</b>	The organizational entity or individual receiving a grant or cooperative agreement.
<b>renewal application</b>	An application requesting additional funding for a period subsequent to that provided by a current award. Renewal applications compete for funds with all other peer reviewed applications and must be developed as fully as though the applicant is applying for the first time.

<b>research</b>	A systematic, intensive study intended to increase knowledge or understanding of the subject studied, a systematic study specifically directed toward applying new knowledge to meet a recognized need, or a systematic application of knowledge to the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements. Also termed “research and development.”
<b>research misconduct</b>	Fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the scientific community in proposing, performing, or reporting research, or in reporting research results; does not include honest error or honest differences in interpretations or judgments of data.
<b>SAM.gov</b>	The System for Award Management (SAM) is the Government-wide system that consolidated the Central Contractor Registration (CCR), the Excluded Parties List System (EPLS), the Online Representations and Certifications Application (ORCA), and the Federal Agency Registration (FedReg).
<b>scope of work</b>	The aims, objectives, and purposes of a grant; as well as the methodology, approach, analyses or other activities; and the tools, technologies, and timeframes needed to meet the grant’s objectives. This includes the research or training plan included with the original grant application, along with any approved modifications.
<b>Senior/Key Personnel</b>	The PD/PI and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the grant. Typically these individuals have doctoral or other professional degrees, although individuals at the masters or baccalaureate level may be considered senior/key personnel if their involvement meets this definition. Consultants and those with a postdoctoral role also may be considered senior/key personnel if they meet this definition. “Zero percent” effort or “as needed” is not an acceptable level of involvement for Senior/Key Personnel.
<b>significant rebudgeting</b>	A threshold that is reached when expenditures in a single direct cost budget category deviate (increase or decrease) from the categorical commitment level established for the budget period by more than 25 percent of the total costs awarded. Significant rebudgeting is one indicator of change in scope.
<b>small business concern</b>	A business that is independently owned and operated and not dominant in its field of operation; has its principal place of business in the United States and is organized for profit; is at least 51 percent owned, or in the case of a publicly owned business, at least 51 percent of its voting stock is owned by U.S. citizens or lawfully admitted permanent resident aliens; has, including its affiliates, not more than 500 employees; and meets other regulatory requirements established by the SBA at 13 CFR 121.
<b>solicitation subaward</b>	See Funding Opportunity Announcement A legal instrument by which a recipient provides funds (or property in lieu of funds) to an eligible subrecipient (or a lower-tier transaction) to perform a substantive portion of the grant-supported program or project. The term includes such financial assistance when provided by any legal agreement (even if the agreement is called a contract) but does not include any form of assistance which is excluded from the definition of a grant, including the recipient’s procurement of property or services needed to carry out the project or program. The term includes consortium agreements.
<b>subrecipient</b>	A party that receives a subaward from a recipient or another subrecipient under a Federal financial assistance award and is accountable to the recipient or subrecipient for the use of the Federal funds provided by the subaward.
<b>supplement</b>	A request for an increase in support during a current budget period for expansion of the project’s scope or to meet increased costs unforeseen at the time of the new or renewal application. A supplement may increase support for future years in addition to the current year. Supplements require applications and are subject to administrative and merit review.
<b>terms and conditions of award</b>	All legal requirements imposed on a grant by DOE, whether based on statute, regulation, policy, or other document referenced in the grant award, or specified by the grant award document itself. The award documents may include both standard and

	special conditions that are considered necessary to attain the grant's objectives, facilitate post-award administration of the grant, conserve grant funds, or otherwise protect the Federal government's interests.
<b>unallowable costs</b>	Specific categories of costs that cannot be charged, directly or indirectly, to federally sponsored agreements in accordance with federal regulations or the terms and conditions of the award.
<b>unliquidated obligation</b>	For reports prepared on a cash basis, the amount of obligations incurred by the recipient that has not been paid; or For reports prepared on an accrued expenditure basis, the amount of obligations incurred by the recipient for which an outlay has not been recorded.
<b>unobligated balance</b>	The portion of the funds authorized by the Federal agency for expenditure by the recipient that has not been obligated by the recipient.