

October, 2008 – Grant Opportunities

Here is our October, 2008 listing of grant opportunities and other information of interest for faculty members in Science. We continue to work on establishing a good list of grant opportunities, and would appreciate any suggestions you might have.

Please let my office know if we can help in any way with grant proposals for these or other opportunities.

Deep Underground Science and Engineering Laboratory (DUSEL S4) Development of Technical Designs for Potential Candidates for the DUSEL Suite of Experiments

National Science Foundation

Directorate for Mathematical & Physical Sciences
Division of Physics

Directorate for Engineering
Civil, Mechanical and Manufacturing Innovation

Directorate for Geosciences
Division of Earth Sciences

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):
January 09, 2009

Synopsis of Program:

The particle physics, cosmology/astrophysics and nuclear physics communities have identified the need for a deep underground laboratory infrastructure in order to address some of the most compelling, transformational questions at the frontier of their disciplines. Some of these questions include:

- What are the fundamental symmetries and absolute mass of the neutrino? Can these provide a window into the origin and pattern of particle masses that make up our universe?
- What are the fundamental properties and interactions of the three families of neutrinos, e.g., CP violation, mass hierarchy, CKM matrix and mixing angles? What can these and other neutrino studies tell us about the matter/antimatter asymmetry in the universe? Can it reveal new insights into the unification of the fundamental forces that govern physical laws as we now understand them?
- What is the proton lifetime, and does it decay? Is ordinary matter inherently (un)stable?
- What is dark matter?

- What is the spectrum of neutrinos from supernovae and the Big Bang, and what can this tell us about the history and evolution of our universe?

Physicists are on the threshold of advancing and deepening our understanding of nature's basic laws by probing these fundamental questions, which requires a deep underground environment and associated infrastructure. While such an underground infrastructure is envisioned to specifically address forefront physics research, it may also provide cost effective opportunities for other communities to address important new research areas. (Section I of this solicitation - Introduction - contains references to community-based planning documents which have guided the development of such an underground research facility.)

The Deep Underground Science and Engineering Laboratory (DUSEL) is proposed to address the need for such an underground infrastructure, and is in the planning stages at the National Science Foundation for possible consideration for funding as a Major Research Equipment and Facilities Construction (MREFC) project, in accordance with the process described in the NSF Large Facilities Manual (LFM, NSF-07-38, <http://www.nsf.gov/pubs/2007/nsf0738/nsf0738.pdf>). If approved or funded as an MREFC project, DUSEL would include funds to support construction of both the facility and its infrastructure, the design of which is supported through the DUSEL Solicitation 3 award (S3, NSF-06-614, <http://www.nsf.gov/pubs/2006/nsf06614/nsf06614.pdf>), and the suite of DUSEL experiments that this infrastructure would host. This solicitation (DUSEL Solicitation 4, S4) invites proposals to develop project plans for specific candidate experiments that could be considered for the suite of DUSEL experiments.

The funds awarded for the proposals selected in S4 will allow the proposing team to complete the design phase(s) through Preliminary Design or beyond, as defined in the LFM, within the three year solicitation funding period. The project design phases are defined in detail in the LFM. The S4 selection will be based on the peer review of those proposals that put forward experiments that address the most cogent and transformational science questions that require the unique capabilities of an underground facility. Awards will be made for those experiments addressing the most compelling science, and will support design and development for those experiments. The suite of experiments will define the scope of the DUSEL infrastructure.

Proposals targeting research in physics will be the primary target for this Solicitation. Proposals targeting research in engineering and geosciences may also be submitted to this Program Solicitation, and if positively reviewed will be considered for funding by those Directorates, such funding would be separate from the Anticipated Funding Amount identified in this Solicitation. To the extent that engineering or geosciences proposals may represent significant cost drivers for the DUSEL infrastructure, for the needed instrumentation, or for operations, such proposals should be discussed with the relevant Program Directors in the Geosciences or Engineering Directorates for expressions of interest in co-funding, and/or to identify appropriate other agency funding partners, including other U.S. federal agencies, states, private sector organizations, and/or

countries. More Information:

http://www.nsf.gov/pubs/2009/nsf09500/nsf09500.htm?govDel=USNSF_25

GEM/ASEE Fellowship. The National GEM Consortium and ASEE are looking for applicants for a joint GEM-ASEE fellowship position. This fellowship is aimed at minority graduate students. The fellow will help develop one or more college-level online introductory engineering courses for the web site, www.curriki.org, which provides free educational resources for students and educators in third world countries and across the globe. Under the guidance of an ASEE staff member, course creation will take place through an internship at ASEE headquarters in Washington, DC during the summer of 2009. Prior to this time, the fellow will be expected to gather course materials from ASEE-member (and other) professors, and propose outlines for one or more courses. A technical background in electrical, materials, mechanical, aerospace, civil, or related engineering fields is a plus. M.S. program applicants (preferred) and Ph.D. program applicants will apply through the existing GEM fellowship module and adhere to all guidelines set forth by GEM (http://www.gemfellowship.org/apply/general_instructions.php). For full consideration, applications must be received by November 15, 2008.

The National Defense Science and Engineering Graduate Fellowship Program (NDSEG). The fellowship program is sponsored by the Army Research Office, Office of Naval Research, Air Force Office of Scientific Research and the DoD High Performance Computing Modernization Program. This program is intended for U.S. citizens at or near the beginning of their doctoral studies in science or engineering programs. The fellowships are for three year tenures and include full tuition and fees, a competitive stipend, and a health insurance allowance. The application deadline is **January 5, 2009**. Go to: <http://www.asee.org/ndseg> for applications and detailed program information.

Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program. The purpose is to promote the education, recruitment and retention of outstanding undergraduate and graduate students in science, mathematics, and engineering studies; the DoD is also interested in supporting the education of future scientists and engineers in a number of interdisciplinary areas. Scholarships and fellowships awarded include salary or stipend, full tuition, required fees, federal employee benefits, and up to \$1000 book allowance per year. The SMART Program will allow individuals to acquire an education in exchange for a period of employment with the Department of Defense. The program is intended for citizens of the United States; students must be at least 18 years of age to be eligible for an award. Application deadline is **December 15, 2008**. For information and

to apply online, go to <http://www.asee.org/smart> .

The East Asia and Pacific Summer Institutes (EAPSI). These programs are designed to provide U.S. graduate students in science and engineering: 1) first-hand research experience in Australia, China, Japan, Korea, New Zealand, Singapore or Taiwan; 2) an introduction to the science and science policy infrastructure of the respective location; and 3) orientation to the society, culture and language. The goals of EAPSI are to introduce students to East Asia and Pacific science and engineering in the context of a research setting, and to help students initiate scientific relationships that will better enable future collaboration with foreign counterparts. The institutes last approximately 8-10 weeks from June to August. New EAPSI solicitation for summer 2009 are now available. Application deadline: **December 9, 2008**. For more information, please visit: <http://www.nsf.gov/eapsi> or <http://www.nsf.org> .