

Faculty Development in the Space Sciences

Program Solicitation

NSF 04-582



National Science Foundation
Directorate for Geosciences
Division of Atmospheric Sciences

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

September 30, 2004

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Faculty Development in the Space Sciences

Synopsis of Program:

The Upper Atmospheric Research Section of the Division of Atmospheric Sciences, in response to several recent surveys of the health and vitality of solar and space sciences on university teaching faculties, is pleased to offer awards for the creation of new tenure-track faculty positions within the intellectual disciplines which comprise the space sciences. The aim of these awards is to integrate research topics in solar and space physics into basic physics, astronomy, electrical engineering, geoscience, meteorology, computer science, and applied mathematics programs, and to develop space physics graduate programs capable of training the next generation of leaders in this field. Space Science is interdisciplinary in nature and the Faculty Development in the Space Sciences awardees will be expected to establish partnerships within the university community.

Cognizant Program Officer(s):

- Richard A. Behnke, Section Head, Directorate for Geosciences, Division of Atmospheric Sciences, 775 S, telephone: (703) 292-8518, fax: (703) 292-9022, email: rbehnke@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.050 --- Geosciences

Eligibility Information

- **Organization Limit:** Proposing organizations are restricted to research and teaching institutions that offer one or

more advanced degrees (M.A., M.S., Ph.D., D.Sc.) in astronomy, engineering, physical sciences, geosciences, computer sciences, mathematics or related sciences. The institution must be based in the United States, its territories or possessions. The institution must be able to grant tenure status.

- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** 1. Institutions may submit only one proposal in response to this solicitation.

Award Information

- **Anticipated Type of Award:** Continuing Grant
- **Estimated Number of Awards:** 3 to 5 - Typical award duration will be 3-5 years.
- **Anticipated Funding Amount:** \$1,000,000 Typical award size will be \$200,000-\$400,000 per year, pending availability of funds.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
September 30, 2004

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

- **Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

Within the current administrative structure of American universities, research and education in the space sciences does not fall under the purview of any particular department (i.e., physics, astronomy, geophysics, electrical engineering, applied mathematics) or even faculty (arts and science, engineering). It therefore comes as no surprise that the last two decades have witnessed a gradual erosion of faculty positions that are principally devoted to the education and training of future space scientists. At the same time, space scientists are becoming more valuable to our society as we rely more heavily upon technical systems sensitive to conditions in the space environment, the electronic workplace, global positioning systems and high-speed communications networks. Communications, navigation and energy production and distribution are significantly affected by Space Weather, and the climatology of the near-Earth space environment. The ability to forecast disturbances which may impact these technologies hinges upon detailed knowledge and understanding of the connected Sun-Earth system, comprising the disciplines of solar physics, heliospheric physics, magnetospheric physics and aeronomy.

This solicitation provides both support and incentive for universities to reverse this trend, and to create new tenure-track faculty positions in the space sciences. With this Program Solicitation, the National Science Foundation begins to address the recommendation that the Solar and Space Physics Survey Committee of the National Research Council presented in their recent decadal survey that NSF establish a program of "bridged positions" that provides (through a competitive process) partial salary, start-up funding, and research support for new faculty members.

The survey committee's consideration of issues related to education and outreach was focused in two areas: ensuring a sufficient number of future scientists in solar and space physics, and identifying ways in which the solar and space physics community can contribute to national science and technology efforts(<http://www.nap.edu/books/0309085098/html/>). Faculty development in this program solicitation is designed to remedy these two areas of concern.

II. PROGRAM DESCRIPTION

Proposals submitted in response to this program solicitation will have as their principal objective the creation and support of a

single tenure-track faculty position, bearing teaching, educational outreach, and research responsibilities. The faculty position may reside within one department or be shared between several departments. In either case, the proposal must clearly state how topics in space physics will be integrated into the graduate and undergraduate courses offered by the department(s), and it should outline a plan for the development of a space physics graduate program if no such program presently exists.

The proposal should make clear how the position will be integrated into the institution's overall strategic plan. It should set specific goals and milestones to gauge the overall efficacy of the integration and educational outreach. A specific evaluation plan should be presented in the proposal. It will be critical for the institution to state in full the measures it will take to ensure the successful operation of the faculty position.

The proposal should not designate any candidate for the new faculty position, but a description of the desired skills, background and training of the successful candidate should be included. Particular emphasis will be placed upon evaluating the:

- Clear articulation of how the faculty position will be integrated into the university program of education, outreach and research.
- Potential for the faculty position to attract capable students and train future scientists in the space sciences.
- Plan for developing partnerships both within the university and the space sciences community.
- Metrics developed to ascertain the success of the program.
- Pro-active activities to foster participation by women and underrepresented groups.

The proposal should contain a description of how the job search would be carried out. It is required that the search be open and adequately publicized. Consonant with the stated policies of the National Science Foundation, women, minorities and other underrepresented groups should be strongly encouraged to apply.

Once a specific candidate is determined by the university, NSF will decide if the proposed research program and qualifications of the candidate meet the requirements of NSF's review criteria **and** addresses the stated objectives of this solicitation. The successful candidate will be added to the grant as a Co-Principal Investigator.

The duration of the grant may not exceed five years (60 months). The duration must be sufficient to allow the candidate to stand for tenure review at or before the end of the award period.

Principal Investigators may be, but are not limited to, a Dean, a Provost, a Director of a university associated research institute, a Department Chairperson, or a senior tenured faculty member.

III. ELIGIBILITY INFORMATION

Proposing organizations are restricted to research and teaching institutions that offer one or more advanced degrees (M.A., M.S., Ph.D., D.Sc.) in astronomy, engineering, physical sciences, geosciences, computer sciences, mathematics or related sciences. The institution must be based in the United States, its territories or possessions. The institution must be able to grant tenure status.

PI Eligibility Limit: None Specified.

Limit on Number of Proposals: Institutions may submit only one proposal in response to this solicitation.

IV. AWARD INFORMATION

Under this solicitation, proposals may be submitted for any funding amount per year up to \$400,000, and for up to five years. The NSF expects to fund approximately 3 to 5 awards depending upon the quality of the submissions and the availability of funds. Approximately \$1.0 million will be made available for this competition in FY 2005. Anticipated date of awards: March 2005. Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

Additional information regarding proposal preparation is contained in **Section II. Program Description** above.

Proposers are reminded to identify the program announcement/solicitation number (04-582) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

C. Due Dates

Proposals must be submitted by the following date(s):

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

September 30, 2004

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

- Clear articulation of how the faculty position will be integrated into the university program of education, outreach and research.
- Potential for the faculty position to attract capable students and train future scientists in the space sciences.
- Plan for developing partnerships both within the university and the space sciences community.
- Metrics developed to ascertain the success of the program.
- Pro-active activities to foster participation by women and underrepresented groups.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

Special Award Conditions:

The PIs will initiate a job search to determine an appropriate candidate to fill the tenure-track faculty position. When the candidate is identified, the PI will provide the cognizant Program Officer with a synopsis of the search process, including, but not limited to:

1. A curriculum vitae,
2. A publication list, and
3. A statement of research interests, and proposed educational outreach and teaching plans, of the successful candidate.

The award will be made based on the ability of the proposing organization to (1) hire the successful candidate who emerges from the open job search, and (2) agree to put this candidate forward for consideration for tenure at or before the conclusion of the award. After the candidate has been hired and the award has been made, the proposing institution should request (via FastLane) that the successful candidate be added as a co-PI to the award.

If at any time during the award, the candidate hired into the new Space Science faculty line should terminate their association with the award, the cognizant Program Officer will have the discretion to terminate the award, or permit the organization to open a new search process to fill the vacant position. If a new candidate is selected by such a process, the NSF reserves the right to approve or reject this selection based upon the intent of this solicitation.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

The proposal must include a plan (see Synopsis of Program) to be used to gauge the success of the endeavor. The annual

reports should include the results from that evaluation.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Richard A. Behnke, Section Head, Directorate for Geosciences, Division of Atmospheric Sciences, 775 S, telephone: (703) 292-8518, fax: (703) 292-9022, email: rbehnke@nsf.gov

For questions related to the use of FastLane, contact:

- Ruth E. Joel, Program Assistant, Directorate for Geosciences, Division of Atmospheric Sciences, 775 S, telephone: (703) 292-8522, fax: (703) 292-9022, email: rjoel@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF [E-Bulletin](#), which is updated daily on the NSF Website at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's [Custom News Service](http://www.nsf.gov/home/cns/start.htm) (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

Faculty Early Career Development (CAREER) Program: [NSF 02-111](#)

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230

- **For General Information** (NSF Information Center): (703) 292-5111

- **TDD (for the hearing-impaired):** (703) 292-5090

- **To Order Publications or Forms:**
 - Send an e-mail to: pubs@nsf.gov
 - or telephone: (703) 292-7827

- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

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