


Any opinions or recommendations expressed in this material are those of the presenter and do not necessarily reflect the views of the National Science Foundation.

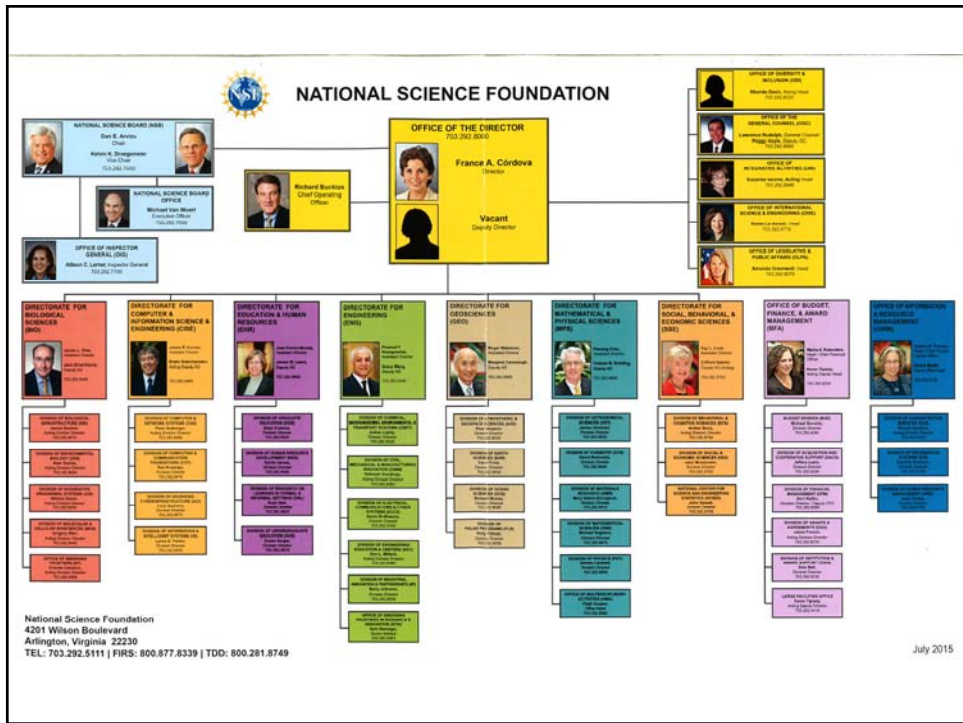

**National Science Foundation**

## NSF/MPS & Proposal Writing



**Kathleen McCloud**  
**Physics (PHY)**

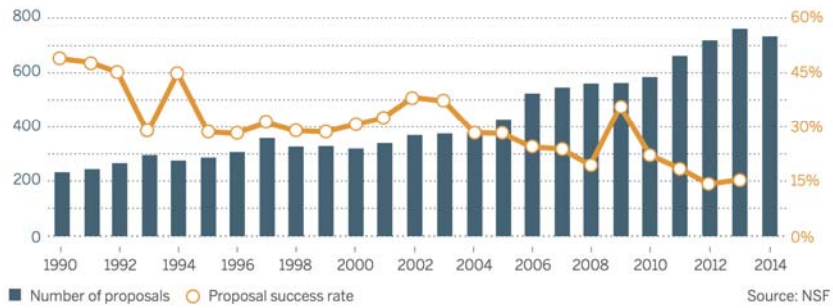
Physically located in Arlington, VA  
Virtually located at <http://www.nsf.gov/>





### The no's have it

More astronomy proposals contribute to plunging success rates at NSF



Science Magazine, June 20, 2014

## CAREER

### Faculty Early Career Development Program NSF 17-537

#### Find Link on Crosscutting Programs Page

- NSF's most prestigious awards in support of junior faculty exemplifying the role of teacher-scholar
- Enhances and emphasizes the importance of balanced academic careers
- Career development plan to integrate research and education



## CAREER

### ELIGIBILITY: As of Directorate Deadline

- Hold a doctoral degree by the deadline date in a field supported by NSF;
- Be untenured until October 1 following the deadline; and
- Have not previously received a CAREER award (prior or concurrent Federal support for other types of awards or for non-duplicative research does not preclude eligibility);

AND

- By October 1st following the deadline for submission of CAREER proposals: Be employed in a tenure-track (or tenure-track-equivalent) position as an **assistant professor (or equivalent title)** at an accredited institution located in the U.S., its territories, or possessions, or the Commonwealth of Puerto Rico, that awards degrees in a field supported by NSF;

OR

- Be employed in a tenure-track position (or tenure-track-equivalent position) as an **assistant professor (or equivalent title)** at an organization located in the U.S., its territories or possessions, or the Commonwealth of Puerto Rico, that is a non-profit, non-degree-granting organization such as a museum, observatory, or research lab.



## CAREER

- **Additional Requirements**
  - Associate professors cannot apply
  - No Co-Investigators allowed in Cover Page
  - Requires letter from Department Chair or Equivalent
- **SIZE**
  - Lower Limit \$400K (total)
- **DURATION**
  - 5 Years
- **PECASE**
  - HONORARY ONLY (Unlike DOE)
- **DEADLINES:**

– July 19, 2017	BIO, CISE, EHR
– July 20, 2017	ENG
– July 12, 2017	GEO, <b>MPS</b> , SBE



## MRI Proposals

**Next Deadline:** Second Wednesday in January (unless solicitation is revised)

**Restrictions on organization submission eligibility**

**Submission limit** - Three (3) per organization: *If three proposals are submitted, at least one of the proposals must be for instrument development.*

**Cost-sharing** at the level of 30% of the **total project cost** is required for Ph.D.-granting institutions and non-degree-granting organizations. **Cost-sharing is not required for non-Ph.D. granting institutions.**

**Merit Review** - At the time of submission, PI's are asked to identify an NSF division(s) to review proposal. NSF reserves the right to place proposals in the appropriate division(s) for review.



## Facilitating Research at Primarily Undergraduate Institutions: RUI

### Submissions/Deadlines

- Current information on submission of RUI-designated proposals can be found in the Facilitating Research at Primarily Undergraduate Institutions solicitation, **NSF 14-579**. (Updated information expected in the upcoming PAPPG.)
- RUI-designated proposals must be submitted in response to existing NSF funding opportunities and must abide by guidelines and deadlines in those documents.

***There is no single Foundation-wide deadline for RUI-designated proposals***



## Sections of a Proposal

- Cover Sheet
- Project Summary
- Table of Contents
- Project Description: Research and Broader Impacts
- References
- Biographical Sketches
- Budget
- Current and Pending Support
- Facilities, Equipment, and Other Resources
- Special Information and Supplementary Documentation:
  - Short letters of commitment to collaborate **NOT** Support
  - **Post-Doc Mentoring**
  - **Data Maintenance**



## Proposal & Award Policies & Procedures Guide

- **(PAPPG) NSF 16-1**
  - Combination of the Grant Proposal Guide (**GPG**) and the Award & Administration Guide (**AAG**)
  - Contains guidelines for all proposals (except when program solicitation stipulates otherwise)
  - Provides guidance for Award process, from issuance and administration through closeout
  - Describes NSF organizations and offices most relevant to grantees
  - Provides a list of Statutes and Executive Orders



## Proposal Preparation: Reading the Solicitation

In Program Announcement/Solicitation, look for:

- Goal of Program
- Eligibility
- Special proposal preparation and/or award requirements
- Deadlines/Target dates/ Submission windows
- Pre/Full proposal

**In case of a conflict between the GPG and the solicitation, the solicitation overrides the GPG**



## Proposal Preparation: Before You Start

- Investigate Program Websites
- Search the Award Database
- READ the Solicitation and the **GPG**
- **Contact the Program Director ?**
  - One or two paragraph describing projects
  - Possible phone call to talk about the project
- Especially if collaborative: Start Early
- Possible co-review if inter/cross-disciplinary



## Contents of an NSF Proposal

- **Intellectual Merit & Broader Impact** must be explicitly addressed in both **Project Summary** and **Project Description**
- **Project Description**
  - Results from Prior NSF support
- **References**
  - See Grant Proposal Guide Chapter II, Section C.2e
  - All Authors, Titles of Articles
- **Biographical Sketch**
  - See Grant Proposal Guide Chapter II, Section C.2f.
  - Collaborators, Advisors, Advisees
- **Post Doc Mentoring – One page in Supplementary Docs**
- **Data Maintenance Plan – Two pages in Supplementary Docs**

**Non-conforming proposals may be returned without review!!!**



## Before Your Submit Your Proposal

- Get someone else (with experience) to read the proposal, and leave your ego behind
- Don't wait until the deadline to submit
- **Download and Print** the PDF file after finishing and **double-check** the font size, diagrams, etc.



## Merit Review Criteria

*NSF Projects are expected to be of the highest intellectual quality with the potential to advance, if not transform, the frontiers of knowledge. Projects are also expected to contribute more broadly to achieving societal goals, either through the research itself or through activities related or complementary to the research projects.*

Two Merit Review criteria are considered when evaluating ALL NSF proposals:

- **Intellectual Merit**: the potential to advance knowledge; and
- **Broader Impacts**: the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.



## Broader Impacts

NSF Broader Impacts are (intentionally) broadly defined. Examples include, but are *not limited to*:

- improved STEM education and educator development at any level;
- increased public scientific literacy and public engagement with science and technology;
- full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM);
- improved well-being of individuals in society;
- development of a diverse, globally competitive STEM workforce;
- increased partnerships between academia, industry, and others;
- improved national security;
- increased economic competitiveness of the United States; and
- enhanced infrastructure for research and education.





## Funding Decisions

Along with the advice provided by reviewers/panels, 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. ...

### **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, are 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.



## Important NSF requirements

- **Cost-sharing: Inclusion of voluntary cost-sharing is prohibited.**
  - In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information.
- **Post-doc Mentoring Plan:**
  - Required whenever a postdoc is to be supported through the award
- **Data Management Plan:**
  - All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. Up to two pages in the Supplementary Docs; must be labeled "Data Maintenance Plan"



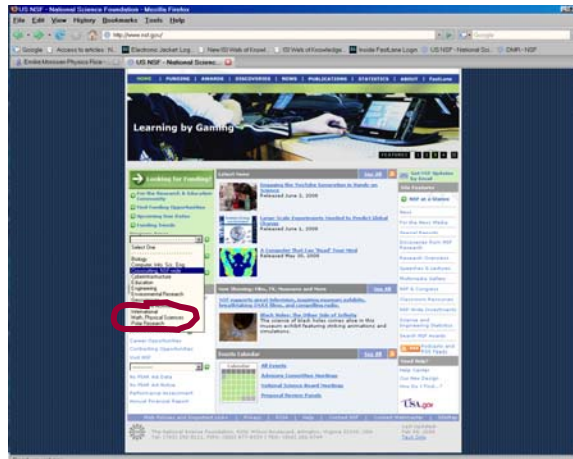
# Finding Information

Award Search on <http://www.nsf.gov>



# Finding Information

Directorate Pages from <http://www.nsf.gov>





## Things to consider

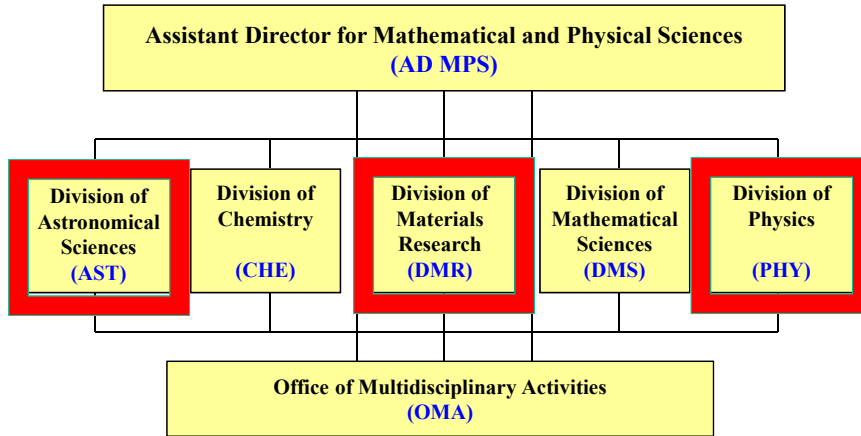
- **Why do it?**
- Why you and not someone else?
  - Uniqueness of research, educational opportunities, available facilities...
- What are your strengths?
  - Capture the reviewers' attention in the summary and introduction. Make them want to read more.
- YOU must convince the reviewer you are worthy of funding
- Express yourself clearly
  - It's not the reviewer's job to figure out what you are trying to accomplish and why



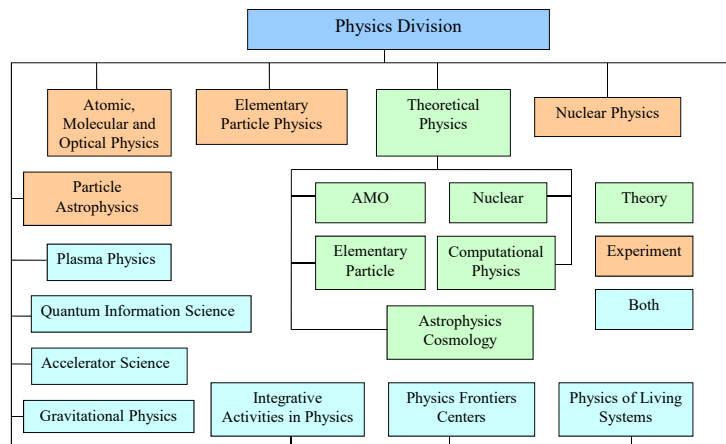
## Questions?



## Mathematical and Physics Sciences



## Physics Division





## Physics Division

### Division of Physics: Investigator-Initiated Research Projects (16-566)

**Initiated deadlines instead of target dates**  
**New requirements for some PIs**  
**Separate deadlines for different Physics programs**  
**Does not override existing solicitations such as**  
**CAREER, REU sites, etc**

**CHECK DEADLINES FOR INDIVIDUAL  
PROGRAMS**



## Physics Division

### PIs with **concurrent sources of support**:

- Explain how the proposed work is **distinct** from other funded activities.
- Discuss **commitments** (such as deliverables, specific projects) associated with other support
- Put in either the **Project Description** or in the **Current/Pending Support** section.

Development or construction of **complex instrumentation** (typically at or above the million dollar level) - reviewers will assess the applicant's ability to successfully deliver the instrumentation within the proposed budget, so the PI must:

- **articulate all foreseeable costs in the budget of such projects, including adequate plans for risk mitigation. Prior to final selection, these projects may be evaluated via a cost, schedule, and management review.**
- Project management documentation should be uploaded as a supplementary document, if applicable.

PIs whose **list of collaborators** does not fit into the Biographical Sketches section:

- include as a **supplementary document** a list that provides **the names of the collaborative groups**, and lists of **all collaboration members with whom the PI works directly**.



## Division of Materials Research

- **Individual Investigator Programs**

- Condensed Matter Physics
- Condensed Matter and Materials Theory
- Biomaterials
- Solid-State and Materials Chemistry
- Polymers
- Metals and Metallic Nanostructures
- Ceramics
- Electronic and Photonic Materials

- **Include within IIP:**

- RUI
- GOALI
- CAREER

**Annual submission window:**

Opens: September 1

Closes: October 31 -> **HARD DEADLINE**

**check DMR website**

STRONGLY ENCOURAGED TO **SUBMIT EARLY** IN WINDOW



## Division of Materials Research

- **Predominantly Solicitation Driven Programs**

- Materials Research Science and Engineering Centers
- Partnerships for Research and Education in Materials (PREM) [14-606](#)
- Major Research Instrumentation (NSF-Wide)
- Designing Materials to Revolutionize and Engineer the Future
  - DMR, John Schlueter [jschluet@nsf.gov](mailto:jschluet@nsf.gov)
  - Teams of 2 or more PIs;
  - Theory, computation, and experiment guiding one another in an interactive and iterative loop
  - Lead to significant advances in all components of project
  - Accelerate design/development of materials with specific/desired functions/properties
  - Open access to data and codes
- REU Sites (NSF-Wide)
- **Check website for deadlines/ Program Officers**



## Division of Materials Research

- **National User Facilities:** Open access, free of charge, competitive proposals review
    - National High Magnetic Field Facility (Florida)  
<http://www.magnet.fsu.edu/>
    - Cornell High Energy Synchrotron Source (Cornell, Ithaca)  
<http://www.chess.cornell.edu/>
    - Center for High Resolution Neutron Scattering (NIST, MD)  
<http://ncnr.nist.gov/programs/CHRNS/>
    - National Nanofabrication Infrastructure Network  
<http://www.nnin.org/>
- Materials Instrumentation Platform ( New Midscale Program) Sean Jones, Tessema G.X., and Tom Rieker



## Division of Astronomical Sciences

**The Division supports research in all areas of astrophysics (including some parts of solar physics and planetary sciences) and related multidisciplinary studies.**

Modes of support include:

- single-investigator and collaborative awards,
- acquisition and development of astronomical instrumentation,
- technology development for future ground-based facilities,
- educational projects that leverage the Division's research investments to build research and workforce capacity and to increase scientific literacy.

**<http://www.nsf.gov/astronomy>**



## AST Division Management

Jim Ulvestad (DD), Dave Boboltz (DDD, acting)

### Individual Investigators

(Lead: James Neff)

AAG

AAPF

ATI

CAREER

EARS

MRI

REU

PAARE

TCAN

### Mid-scale

(Lead: Rich Barvainis)

MSIP

### Facilities

(Lead: Jim Ulvestad)

ALMA

Arecibo

Gemini

NOAO

NRAO

NSO/DKIST

## Division of Astronomical Sciences

### Astronomy and Astrophysics Research Grants (AAG)

**Annual deadline: November 15**

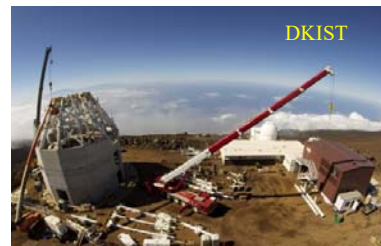
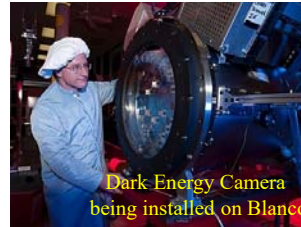
- Research grants for observational, theoretical, laboratory, and archival data studies in all areas astronomy and astrophysics
- Extragalactic, Galactic, Stellar (+ *experiment* for Solar & Planetary)
- Proposals submitted to the AAG Program *do not* require categorization into one of the study areas identified above.
- Proposals may span multiple disciplines and/or areas of study and may utilize multiple techniques.







## Our Facilities



Anyone may propose for observing time on NSF AST-funded facilities



## Recent Research

