



# National Science Foundation

Pedro Marronetti  
APS April Meeting  
Virtual Meeting– April 2021

# NSF Update

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## New Assistant Director for MPS

- NSF Directorate of Mathematical and Physical Sciences has a new Assistant Director
- Dr. Sean L. Jones has served with NSF for more than a decade, starting as a program director in 2009 and more recently as Director of the Division of Materials Research at MPS.



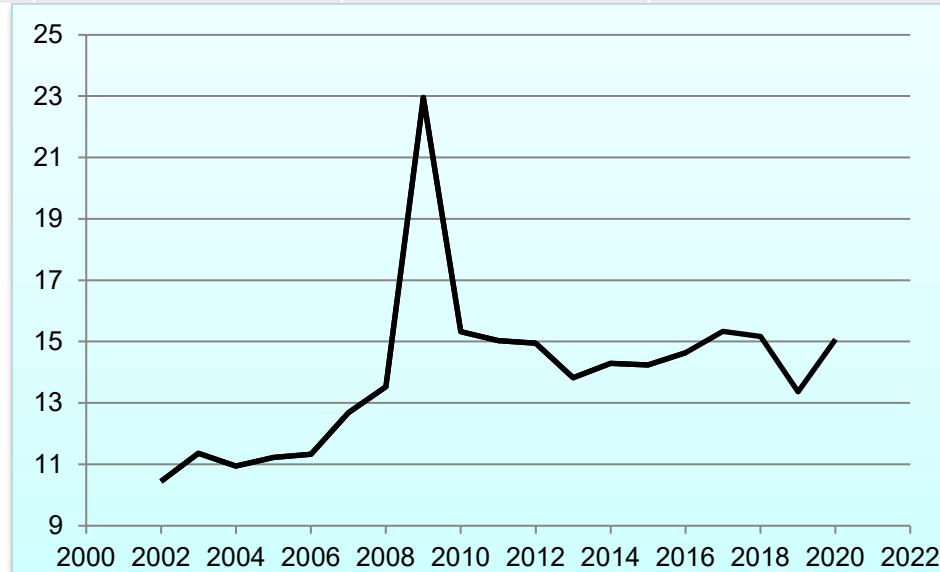
# Budget news

Progression of NSF budget in the last three fiscal years (FY) and FY21 request (in millions):

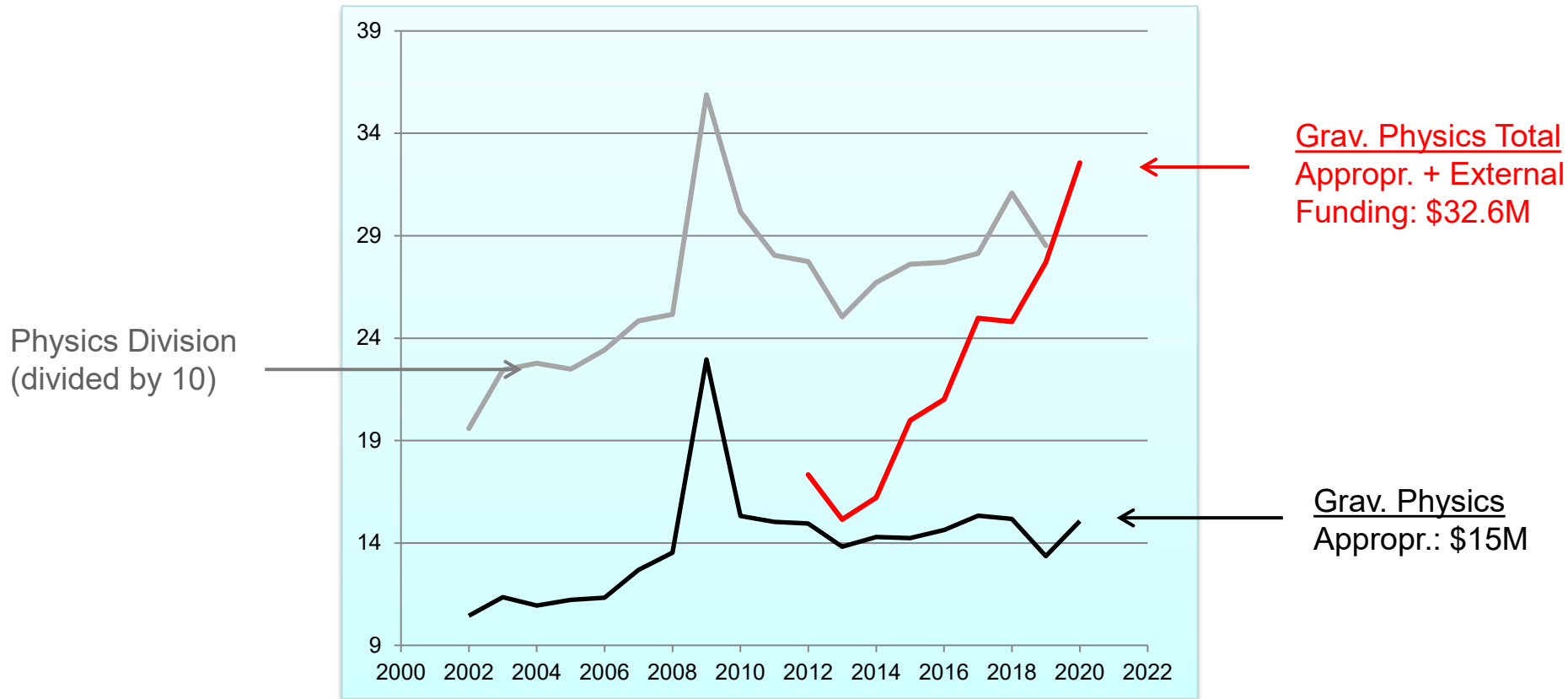
	FY19 Actual (Δ from last FY)	FY20 Actual (Δ from last FY)	FY21 (Δ from last FY)	FY22 Request (Δ from last FY)
NSF	\$8,338 (3.7%)	\$8,578 (2.9%)	\$7,948 (-7.3%)	\$10,170 (20%)
MPS Directorate	\$1,491 (-1%)	-	\$1,448 (-2.9%)	-
PHY Division	\$285 (-8.4%)	-	\$258 (-9.5%)	-
Gravity programs	\$13.36 (-12%)	\$15.07 (13%)	TBD	-

## Gravitational Physics programs:

- Grav. Theory
- Grav. Experiments & Data Analysis
- LIGO Research Support (Instrumentation)



# Budget: Appropriation + External sources (in millions)



In 2020 about **54% of the funding awarded to Grav. Physics PIs** was obtained from outside the Grav. Physics programs (i.e., Windows on the Universe, SI2 (OAC), AAG (Astronomy), PFC, MRI, PIF/CP, RAISE, co-funding with other programs in and out of Physics Division, External agencies, etc.).



# Other programs' deadlines

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- Astronomy & Astrophysics Grants (AAG)
  - Deadline: **November 22, 2021**
- CSSI: New solicitation from Office of Advanced Cyberinfrastructure
  - Replaces SSI, SSE and DIBBS!
  - CSSI is an umbrella program for four classes of proposals: Elements, Frameworks, Cyberinfrastructure Planning Grants, Cyberinfrastructure Implementations.
  - Deadline: **October 27, 2021**
- RAISE (successor of INSPIRE)
  - \$1M max / Duration up to 5 years
  - Support of two or more Prog. Directors from different disciplines
  - No LOI needed / No Deadlines (similar to EAGERs)
- MRI
  - Major change: In **Acquisition** proposals the 70% cost requested from NSF can only be used for **equipment**: personnel costs (if any) must come from the cost-sharing 30%.
  - Proposal window: **January 2022**
- CAREER
  - Deadline: **July 2021**



# Grav. Physics Panels

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- For the first time, LIGO related proposals were split in two groups:
  - **LIGO Research Support** (Program Element 1252) : Covers research in instrumentation for LIGO and 3G detectors
  - **Gravitational Physics Experiments & Data Analysis** (Program Element 1243): Covers detector characterization and data analysis and includes other NSF-funded observatories such as NANOGrav (not LISA!)
- **Several proposals were missing letters of collaboration and of LSC membership. They are required!**
- If you are interested in participating in the review process, please let me know.
- We are also looking for PIs to be Mentors. Your help is greatly appreciated!





# COVID-19 Impacts and Supplemental Funding

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As part of an agency-wide effort to address the impacts of COVID-19, **the Mathematical and Physical Sciences Directorate has set aside funding for supplement awards to PIs whom the pandemic has disproportionately impacted.** The focus will be on providing near-term relief for as many impacted people as possible and on keeping people in the field to minimize longer-term impacts.

- a. The supplements are explicitly aimed at those PIs whom the pandemic has disproportionately impacted.
- b. The supplement request must describe the specific impacts of COVID-19 and how the targeted supplement will help alleviate those impacts. Possible impacts might include dependent-care obligations, laboratory accessibility, hiring freezes, etc. The supplement may request support for PIs, postdocs, or students.
- c. The supplements are expected to be no more than 20% of the original award. A larger supplement can be considered depending on the nature of the specific need.
- d. **Priority is given to PIs in their last year of funding.**



# Physics Division Supplements for Diversity and Inclusion

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“The National Science Foundation is committed to broadening the participation of historically underrepresented groups in science and engineering. As part of that effort, the Division of Physics strongly encourages meaningful actions that address the historical underrepresentation of various groups – including African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and other Pacific Islanders, women, and persons with disabilities – in all fields of research supported by the Division of Physics.”

A new Dear Colleague Letter (DCL) has been released regarding funding opportunities to defray cost associated to increasing the diversity of the workforce in Physics:

<https://www.nsf.gov/pubs/2021/nsf21065/nsf21065.jsp>

The DCL describe existing opportunities (i.e., AGEP, REU Suppl.) as well as a new possibility:

- PHY-GRS: Support of newly recruited graduate students. The DCL encourages broadening participation from underrepresented groups. If your institution is associated with AGEP, you should keep using AGEP Suppl. (NSF 20-083 "DCL: MPS AGEP-GRS")
- Interested PIs should contact me before submitting a supplement (pmarrone@nsf.gov)





## Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowships (MPS-Ascend)

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The purpose of the program is to support **postdoctoral Fellows** who will broaden the participation of groups that are underrepresented in MPS fields in the U.S. including Blacks or African Americans, Hispanics, Latinos, and Native Americans (to include Alaska Natives, Native Hawaiians or other Native Pacific Islanders) as future leaders in MPS fields.

- Solicitation NSF 21-573
- Awards are for up to 36 months and for \$100,000 per year.
- PIs must present research, professional development, and broadening participation plans that fall within the purview of one of the MPS Divisions.
- PIs should be US citizens or permanent residents with a PhD degree conferred before the start of the appointment, and must not have submitted a fellowship proposal concurrently to another NSF program or to a similar program in another Federal agency (e.g., DOE, NASA);



## Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences (LEAPS-MPS)

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With emphasis in helping to launch the careers of **pre-tenure faculty** in Mathematical and Physical Sciences (MPS) fields at minority-serving institutions (**MSIs**), predominantly undergraduate institutions (**PUIs**), and Carnegie Research 2 (**R2**) universities, and with the goal of achieving excellence through diversity, the Directorate for Mathematical and Physical Sciences hereby announces a call for Launching Early-Career Academic Pathways (LEAPS-MPS) proposals. This LEAPS-MPS call also aims to broaden participation to include members from groups underrepresented in the Mathematical and Physical Sciences, including Blacks and African Americans, Hispanics, Native Americans, Alaska Natives, and Native Hawaiians, and other Pacific Islanders.

- Solicitation NSF 21-570
- Awards are for 24 months and are up to \$250,000 total costs (direct plus indirect).
- Proposals in response to this solicitation must be submitted to the Office of Multidisciplinary Activities (OMA) in MPS; they will subsequently be transferred to and managed by an appropriate MPS Division.
- PIs should be US citizens or permanent residents and have not previously served as PI, Co-PI, or Senior Personnel on an NSF research grant, with the exception of Fellowship, Conference/Workshop, Equipment, Travel and Instrumentation proposals.



# Proposal submission for 2022

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## 2022 is slated to be the last year of Fastlane!

- New Physics Division solicitation:  
“Division of Physics: Investigator Initiated Research Projects” NSF 20-580
- Deadline: **November 24, 2021**
- NSF has implemented templates for: Biosketch, Current & Pending, Collaboration and Other Affiliations (COA). No more freeform!
- Physics Division requires that you report other proposals and awards

“PIs who have or anticipate having concurrent sources of support during the performance of the proposed activities (including but not limited to grants from other agencies or private foundations, and/or laboratory appointments) should upload a brief statement as a Supplementary Document entitled “Concurrent Commitments and Activities” that clearly articulates the nature of the commitments (such as deliverables, specific projects, etc.), the relationship between the activities and the currently proposed activities, and the proposers' commitment to accomplishing the activities described in the proposal. The proposal review process will include an assessment of the proposers' ability to carry out the proposed research in light of these commitments. Proposals that fail to provide this information as a Supplementary Document may be returned without review.”



# DFG-NSF Lead Agency Agreement

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DFG-NSF opportunity for collaborations between US and German groups in Gravitational Physics (experimental, computational & theoretical projects)

- Still on hold. DGF underwent a thorough review of international partnerships to comply with the new EU Data Privacy regulations. A new undergoing initiative between DFG and NSF in Chemistry is serving as an operational test.
- Fourth review process conducted in 2019.
- This works in a way similar to the NSF “Collaborative Research” proposals: single proposal core with two sets of budgets, CVs, etc.
- Researchers decided which is the “Lead” agency (NSF or DFG). The Lead Agency conducts the review process with participation of officers from the non-lead agency (i.e., single review simplifies administrative workload)
- It incentivizes international collaborations for small groups. Deadline:
  - If NSF is Lead Agency: On hold
  - If DFG is Lead Agency: On hold



For the latest news:

<http://www.nsf.gov/div/index.jsp?div=PHY>

NSF 20-580



A screenshot of the NSF website's 'Mathematical &amp; Physical Sciences (MPS)' section. The top navigation bar includes 'NSB', 'Research Areas', 'Funding', 'Awards', 'Document Library', 'News', and 'About NSF'. The left sidebar lists various research areas, with 'Physics (PHY)' selected. The main content area features a large banner for 'LIGO pioneers awarded 2017 Nobel Prize in Physics' with a 'Read More' button. Below the banner is an 'Announcements' section with links for 'PHY Uses Solicitation for Investigator Proposals', 'Special Announcements', and 'LIGO Detects Gravitational Waves'. To the right is a 'News' section with three articles: 'JILA team invents new way to 'see' the quantum world', 'Dressing atoms in an ultracold soup', and 'UMass Amherst physicists contribute to dark matter detector success'. A 'See All &gt;' link is at the bottom right of the news section.

Email any questions to  
[pmarrone@nsf.gov](mailto:pmarrone@nsf.gov)  
or call (703)292-7372



# Auxiliary slides

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- LIGO M&O Annual Review 2020
- Windows on the Universe
- Gravitational Wave Agencies Correspondents (GWAC)
- Research.gov: The new Fastlane!
- Common mistakes in proposal preparation
- Mentoring program
- EPSCoR Research Fellow (Track 4)
- Solicitation NSF 20-580 “Division of Physics: Investigator-Initiated Research Project”



# LIGO-LSC NSF annual review

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NSF held the annual LIGO review (virtually) in June 2020. For the first time, the panel was asked to review the LSC, in virtue of the award “*Support for LIGO Scientific Collaboration Core Functions in the Era of Gravitational-Wave Observations*” (PHY-1912598). Some of the recommendations are:

- LSC is encouraged to reduce the 18-month data embargo if possible
- Increase the accountability across the LSC
  - “The LSC should be advised to establish a process, distinct from the annual MOU review, to review the 0.2 FTE per person service contributions of the LSC member groups as a whole and determine whether these contributions provide appropriate value to the LSC, and whether allocation procedures should be revised to improve their effectiveness.”
- LSC to report international integration efforts within IGWN
  - “Questions were raised [as to whether] there is sufficient management effort to effectively integrate all these planned contributions, from LSC and Virgo. The group will have to find ways to bolster the management team, e.g. by adding resource management and tracking. This will require additional dedicated support and effort.”





# Windows On The Universe

## The Era of Multi-Messenger Astrophysics (WoU-MMA)

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The universe is the ultimate laboratory, and we can now probe it as never before through several powerful and diverse windows – electromagnetic waves, high-energy particles, and gravitational waves. Each of these windows provides a different view. Together they reveal a detailed picture of the Universe that will allow us to study matter, energy, and the cosmos in fundamentally new ways.

The WoU-MMA program welcomes proposals in any area of research supported through the participating divisions that address at least one of the following criteria:

- *Coordination*: Hardware, software, or other infrastructure **to coordinate observations involving more than one messenger**.
- *Observations*: **Observations** of astrophysical objects or phenomena that are **potentially sources of more than one messenger**, including the use of existing observatories, experiments, and data archives, as well as the development and construction of new capabilities for advancing multi-messenger astrophysics.
- *Interpretation*: Theory, simulations and other activities **to understand or interpret observations of astrophysical objects that are sources of more than one messenger**.

Solicitation published in 2018 (NSF 18-5115). But do not submit your proposals to this call!  
**Keep using “Division of Physics: Investigators Initiated Research Projects” NSF 20-580!**



# Gravitational Wave Agencies Correspondents (GWAC)

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- The GW scientific community recommended “... a closer link between the global funding agencies, to start to coordinate medium- and long-term planning, and looking for synergy between the agency capabilities to most effectively stimulate the field.” (“What Comes Next for LIGO?” Workshop, May 2015, Silver Spring MD.)
- NSF created an informal communication framework between funding agencies called “*Gravitational Wave Agencies Correspondents*” (GWAC).
- Homepage <http://www.nsf.gov/mps/phy/gwac.jsp>.
- The 6<sup>th</sup> GWAC meeting was held on April 16, 2021. Representatives from 14 agencies in 11 countries are members of GWAC.
- Current member agencies: ARC (Australia), BMBF (Germany – guest), CFI (Canada), CNRS (France), CONACYT (Mexico), DFG (Germany), European Space Agency (ESA), DAE (India), DST (India), FWO (Belgium), INFN (Italy), NASA (US), NSF (US), NWO (Netherlands), STFC (UK).



# Research.gov open for proposal submissions

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- If you are submitting your first NSF proposal this year, use **Research.gov**. **Fastlane will not be available in 2022!**
- Pros of Research.gov:
  - Integrated compliance checks for fonts, margins, and line spacing
  - Real-time compliance feedback and alerts, so proposers know a proposal section is compliant before moving on to another section
  - Specific checks on the budget screens and for Collaborators and Other Affiliations (COA) uploads
  - A few seconds to upload documents versus 30-90 seconds for each document upload in Fastlane
  - Embedded relevant sections of the Proposal & Award Policies & Procedures Guide (PAPPG) and video job aids, so proposers don't have to go to multiple sites to access guidance and tools



# Common proposals mistakes

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In times of tight budgets, the main reason proposals go unfunded **is not fatal flaws in research but imperfections (of different caliber) that make some proposals less competitive than others.**

- Context of research not properly described:
  - Claims that a group is the only one working on a subject or single-handedly carrying out a given type of research
  - What other groups are doing the same or similar work? How is your project different? Who are you collaborating with and what is your role?
- Large increase in request:
  - How well can you justify an increase (in some cases of a factor of 2 or 3) over your current level of funding?
- Lack of details:
  - Typical of long “laundry list” of projects proposals



# Writing proposals: Mentoring program

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Mentoring Program: The goal is to make the expertise of senior researchers on proposal writing available to young investigators

How does it work?

- The Mentee requests a Mentor (email me at [pmarrone@nsf.gov](mailto:pmarrone@nsf.gov)).
- I will send you a list of Mentor Volunteers. You can contact anyone you like without identifying them to NSF.
- The Mentor will read your proposal and provide feedback once. Send the proposal timely! Mentors are busy people.
- NSF accepts no responsibility on the interaction/outcome of the program!



# EPSCoR Research Fellows (Track 4)

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- New track for EPSCoR states PIs
- What is this about?

Support collaborative visits to the nation's premier private, governmental, or academic research centers. During these visits, the EPSCoR Research Fellows will be able to learn new techniques, develop new collaborations or advance existing partnerships, benefit from access to unique equipment and facilities, and/or shift their research toward potentially transformative new directions.
- Who can apply?

Non-tenured investigators (no postdocs!)
- How much funding and for how long?
  - Up to \$300K for a total duration of 24 months.
  - Budgets can include up to six months of salary for PIs (6 out of 24 months).
  - Up to \$75K total in travel expenses



# Division of Physics: Investigator-Initiated Research Project

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## NSF 20-580

- Starting in 2014, **all proposals** submitted to the Division of Physics programs (*LIGO Research Support, Theor. Grav. Physics, Exp. Grav. Physics, etc.*) **must go through this solicitation!**
- This includes:
  - **Conference** proposals.
- This does not include:
  - **CAREER, MRI, INSPIRE, RUI**, etc. and any other proposal that pertains to an NSF-wide solicitation.
  - **Supplements** and **EAGER**. You can use NSF 20-1 GPG
- It has **Deadlines** (instead of Target Date).
  - All three Grav. Physics programs: **Nov 25, 2020**
- See Auxiliary slides for more information





On Research.gov, choose solicitation **NSF 20-580**

Do **NOT** choose NSF 20-1 GPG or anything else. Prop. could be **returned w/o review!**

#### Program Announcement / Solicitation Number Selection

Select a Program Announcement or, if not in response to a program announcement, choose 'NSF 14-1 GPG: Not in response to a program announcement/solicitation'. If the program announcement is within multiple divisions or programs, the next page will allow you to select from the associated divisions and programs. If the program announcement is associated with only one division and program, the unit of consideration will automatically be selected.

There are currently 305 Program Announcements/Program Descriptions

#### Program Announcement / Solicitation Number

Select one of the items below.

- NSF 14-1 Grant Proposal Guide - GPG
- NSF 14-579 Facilitating Research at Primarily Undergraduate Institution...
- NSF 14-578 Science of Science and Innovation Policy Doctoral Dissertat...
- NSF 14-577 Advanced Technological Education
- NSF 14-576 Division of Physics: Investigator-Initiated Research Project...**
- NSF 14-575 US-Japan Big Data and Disaster Research
- NSF 14-574 Methodology, Measurement, and Statistics
- NSF 14-572 Tribal Colleges and Universities Program
- NSF 14-571 NSF/Intel Partnership on Cyber-Physical Systems Security and...

Select

Go Back

#### Unit Selection Lists

Select the organizational unit you wish to consider your proposal from **either** the Division selection box (if you want to review the NSF Divisions and associated Programs) **or** the Program selection box (if you know the Program you wish to select).

**Note:** Some program announcements will be associated with multiple Divisions and Programs. In these cases, a logical step-by-step selection process is provided.

#### Divisions

Select a Division within NSF 14-576

- Directorate, MPS Directorate for Mathematical & Physical Sciences
- PHY-Division of Physics**

#### Programs

Select a Program within NSF 14-576

- Accelerator Science
- ASTROPHYSICS & COSMOLOGY THEOR
- ATOMIC & MOLECULAR PHYSICS
- ATOMIC THEORY
- COMPUTATIONAL PHYSICS
- ELEMENTARY PARTICLE ACCEL USER
- ELEMENTARY PARTICLE THEORY
- GRAVITATIONAL EXPERIMENTS
- GRAVITATIONAL THEORY

Select Program Show the divisions in this program.

Choose the Program in the next screen

