



# National Science Foundation

Pedro Marronetti

APS April Meeting  
Denver, CO – April 2019

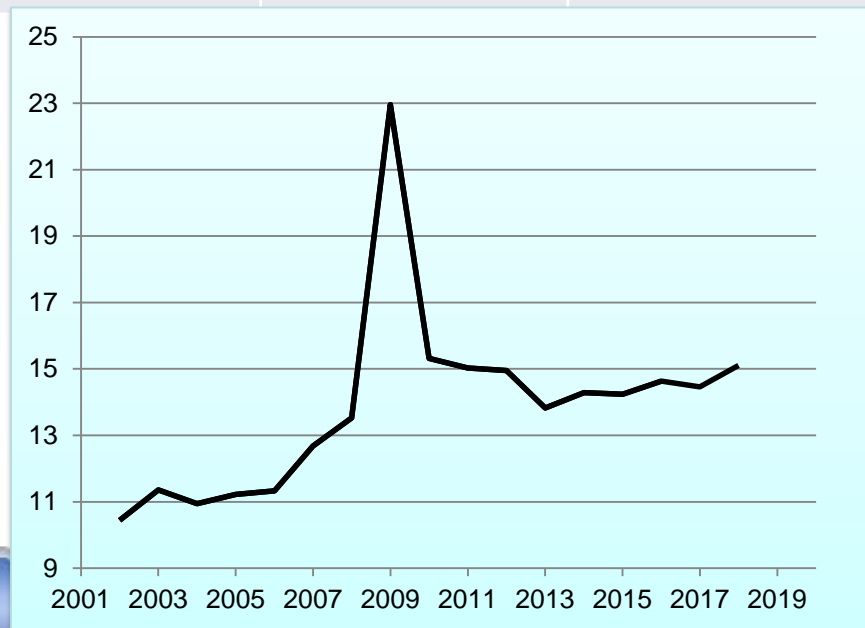
# Budget news

Progression of NSF budget in the last three fiscal years (FY) and FY18/FY19 request (in millions):

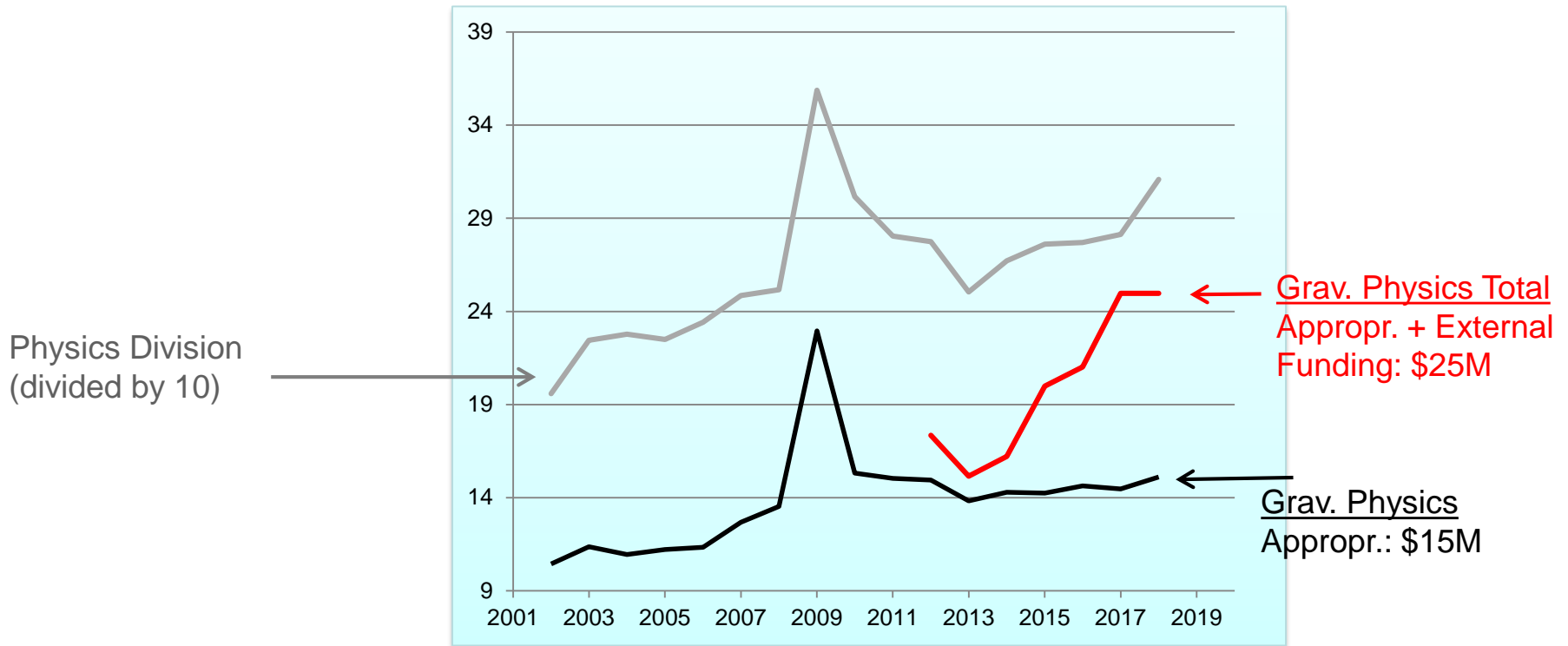
	FY17 Actual ( $\Delta$ from last FY)	FY18 Enacted ( $\Delta$ from last FY)	FY19 Request ( $\Delta$ from FY17)
NSF	\$7,504 (0.1%)	\$7,767 (3.5%)	\$7,472 (-3.8%)
MPS Directorate	\$1,362 (1.0%)	\$1,498 (10%)	\$1,345 (-10%)
PHY Division	\$281 (1.4%)	\$311 (11%)	?
Gravity programs	\$14.6 (2.1%)	\$15.1 (3.4%)	?

### Three Gravitational Physics programs:

- Grav. Theory
- Grav. Experiments
- LIGO Research Support



# Budget: Appropriation + External sources (in millions)



In 2018 almost **40% of the NSF funding awarded to Grav. Physics PIs** was obtained from outside the Grav. Physics programs (i.e., RAISE/INSPIRE, PFC, MRI, PIF/CP, SI2 (OAC), Co-funding with other programs In and out of Physics Division, External agencies, etc.).



# Gravitational Physics Programs

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- Programs
  - Gravitational Physics – Theory
  - Gravitational Physics – Experiments
  - LIGO Research Support
- Deadline **November 27, 2019**
- Gravitational Physics – Theory
  - Proposals are split in two panels: Multi-Messenger Astrophysics Theory and Gravity Theory
- Gravitational Physics – Experiments
  - This year no panel was convened for this program due to low participation. Proposals were evaluated by ad-hoc reviews and/or on other Physics Division panels
- LIGO Research Support
  - This year we had the second panel with LSC members!
- **If you are interested in participating in the review process, let me know**



# Other programs' deadlines

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- **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: **April 8, 2019 and November 1, 2019**
- **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**
  - New revised solicitation in 2014
  - Major change: In **Acquisition** proposals the 70% cost requested from NSF can only be used for **equipment**: personnel costs (if any) have to come from the cost-sharing 30%.
  - Deadline: **Early January, 2020**
- **CAREER**
  - Deadline: **July 19, 2019**
- **CDS&E / PIF – Computational Physics**
  - This program is being discontinued



# EPSCoR Research Fellows (Track 4)

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- New track for EPSCoR states PIs

Deadline: **March 20, 2020**

- 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



# 10 Big Ideas for Future NSF Investments

([https://www.nsf.gov/about/congress/reports/nsf\\_big\\_ideas.pdf](https://www.nsf.gov/about/congress/reports/nsf_big_ideas.pdf))

## NSF's 10 BIG IDEAS FY 2019 REQUEST FUNDING

(Dollars in Millions)

Big Ideas	FY 2019 Request
<b>Research Ideas</b>	<b>\$180.00</b>
→ Harnessing the Data Revolution for 21st- Century Science and Engineering - HDR (CISE/ITR) <sup>1</sup>	30.00 ←
Navigating the New Arctic - NNA (GEO/ICER)	30.00
The Future of Work at the Human-Technology Frontier - FW-HTF (ENG/EFMA) <sup>1</sup>	30.00
The Quantum Leap - QL (MPS/OMA)	30.00
Understanding the Rules of Life - URoL (BIO/EF)	30.00
→ Windows on the Universe - WoU (MPS/OMA)	30.00 ←
<b>Process Ideas</b>	<b>\$102.50</b>
Growing Convergence Research - GCR (IA)	16.00
Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science - NSF INCLUDES (EHR)	20.00
→ Mid-Scale Research Infrastructure (IA)	60.00 ←
NSF 2026 Fund (IA)	6.50
<b>Total, NSF Big Ideas</b>	<b>\$282.50</b>



# 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**.

Announcement published last fall (NSF 18-5115). But do not submit your proposals to this call!  
**Keep using NSF 18-564!**

Close to 200 proposals were received in 2018!





# 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 4<sup>th</sup> meeting was held on April 8. Members of GWAC gave a presentation on GWAC’s 3G reports. An in-person GWAC meeting is planned for this year.
- Current member agencies: ARC (Australia), CFI (Canada), CNRS (France), CONACYT (Mexico), DFG (Germany), DAE (India), ESA (Europe), FWO (Belgium), INFN (Italy), NASA (US), NSF (US), NWO (Netherlands), STFC (UK).



# “One award per PI” Practice

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- **Gravitational Physics programs have had for a long time the practice of awarding up to one GP grant to each investigator as PI.** This does not include NSF awards from other programs (in or outside Physics Division) and there is no limit on how many grants can be had a Co-PI). NSF encourages you to apply for grants out GO programs!
- There are two exceptions to this rule

DFG – NSF proposals: Proposals submitted under DCL NSF 15-033

DOE – NSF proposals: Proposals with collaborations between DOE funded and GP researchers. If you are considering submitting a proposal of this type, please, **contact me first!**



For the latest news:

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

NSF 18-564



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## LIGO pioneers awarded 2017 Nobel Prize in Physics

Three scientists who led the development of the National Science Foundation (NSF)-funded Laser Interferometer Gravitational-wave Observatory (LIGO) have won the 2017 Nobel Prize in Physics for their work detecting gravitational waves.

[Read More](#)

### Announcements


PHY Uses Solicitation for Investigator Proposals [Read More](#) >


Special Announcements [Read More](#) >


LIGO Detects Gravitational Waves [Read More](#) >

[See All](#) >

### News

 JILA team invents new way to 'see' the quantum world  
MARCH 5, 2018

 Dressing atoms in an ultracold soup  
FEBRUARY 28, 2018

 UMass Amherst physicists contribute to dark matter detector success  
FEBRUARY 21, 2018

[See All](#) >

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



# Auxiliary slides

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- Common mistakes in proposal preparation
- Mentoring program
- DFG-NSF : Joint review of German – US proposals
- New Panel of MMA
- Solicitation NSF 18-564 “Division of Physics: Investigator-Initiated Research Project”



# 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!



# DFG-NSF Lead Agency Agreement

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

- 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: **Nov 27, 2019**
  - If DFG is Lead Agency: **None**



# New Panel on Multi-Messenger Astrophysics (MMA)

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- Jointly organized by the Astronomy and Physics Divisions at NSF. NSF and NASA coordinate the funding of proposals submitted to both agencies.
- No modification in proposal submission:
  - PIs submit their proposals to their program of choice (AAG in Astronomy or Gravitational Physics in Physics)
  - Deadlines are those of each program
  - Program officers sort out which proposals qualify for the joint panel
- **Why is this good for GP?**
  - MPS Directorate provided an extra \$1M in funding both in FY17 and FY18.
  - While there is a unique ranking, Grav. Physics funds proposals coming to the panel through its programs (i.e., similar success rate as other GP panels)
  - NSF Astronomy & Physics and NASA coordinate awards, reducing double funding





# Division of Physics: Investigator-Initiated Research Project

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## NSF 18-564

- Starting in 2014, **all proposals** submitted to the Division of Physics programs (*LIGO Research Support, Theor. Grav. Physics, Exp. Grav. Physics, etc.*) **have to 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 19-1 GPG
- It has **Deadlines** (instead of Target Date).
  - All three Grav. Physics programs: **Nov 27, 2019**
- See Auxiliary slides for more information



## On Fastlane, choose solicitation NSF 18-564

Do **NOT** choose  
NSF 19-1 GPG or anything else.  
Prop. will be **returned w/o review!**

Choose the Program in the next  
screen

### 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.

