NSF Nuclear Physics Overview for NSAC

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- NSF Funding Opportunities
  - NSF 14-576 Solicitation
  - Other opportunities Computational Physics (CDS&E), CAREER, MRI, etc.
- Announcements
  - Highlights
  - Diversity
- Budget
- Physics Division Personnel

New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

As of October 2014, all proposals submitted to the Division of Physics programs (Expt'l Nuclear Physics, Theoretical Nuclear Physics, Particle Astrophysics, Computational Physics, *etc*.) must go through this solicitation!

- **Deadlines** instead of target dates:
  - ✓ October 29, 2014 for Experimental Nuclear Physics
  - ✓ October 29, 2014 for Particle Astrophysics
  - ✓ November 14, 2014 for Theoretical Nuclear Physics
  - December 4, 2014 Computational Physics
  - February 4, 2015 for Accelerator Science
  - 17:00 in the PI's time zone

New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

- PI Effort and Sources of Support:
  - PIs who have or anticipate additional concurrent sources of support should clearly explain the differences between this proposal and the other awards (including ALL grants regardless of the agency of origin)
  - Where? Project Description or Current & Pending
  - "*The proposal review process will include an assessment of the proposers' ability to carry out the proposed research in light of these commitments*"
  - PIs with similar proposals for different agencies will be expected to withdraw all other applications should one of them be funded

New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

- Instrumentation:
  - For proposals involving development or construction of complex instrumentation (typically above $1M), the following aspects will be assessed during the review:
    - Ability of the proposers to deliver within the proposed budget
    - Cost, schedule and risk mitigation management (project management documentation should be uploaded as a Supplementary Document)
    - Prior to final selection, these projects may be evaluated via a cost, schedule, and management review.
    - Contact the corresponding NSF Program Officer for details

New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

- Collaborators:
  - List of collaborators that do not fit in the Bio sketches (such as those of large collaborations) should be included as a Supplementary Document
    - For those who belong to large collaborations (> 30 members), identify those members with whom the PIs and Co-PIs work closely e.g. members of the same Working Group.
    - Indicate collaborations which the PIs and Co-PIs left more than 48 months ago but are still listed as co-authors because of the publishing rules of the collaboration.
    - Include collaborations for experiments that have been proposed if the PIs and Co-PIs have worked closely with others in the collaboration in the last 48 months, *even if the proposed measurements have not taken place.*

Accelerator Science

- Second year for this program and there has been a very robust response to this new program. Twelve awards in FY14.
- Intended to fund accelerator science, not R&D for specific projects. Collaboration with a national lab (e.g. prototyping) is fine.
- Next deadline is February 4, 2015
- Apply to Physics Division Solicitation 14-576

Mid-Scale Instrumentation

- The Physics Division has established a mid-scale instrumentation fund. The intention is to fund projects above the MRI limit ($4M).
- This funding is NOT available for “operations” so program funds will have to be used to run the experiment.
- Contact us for more information. PIs cannot apply to mid-scale directly; all proposals must go through the program.
- A priority of the division (and the directorate) is to increase the resources available for mid-scale.

Major Research Instrumentation (MRI)

- Solicitation is posted: NSF 15-504
- Due date = 22-jan-2015
- New things to be aware of:
  - Description of single and multiple instruments revised
  - **Acquisition proposals:** equipment cost > 70% of TPC
    - PhD granting institutions – grant funds only for equipment; any eligible cost beyond equipment must be in cost sharing
- Two types of awards: development and acquisition
- Limited submissions from each university
- Maximum award is $4 million; awards above $1 million must compete across the entire foundation
- Will be judged in part by merit of science that will be done with instrument
- Proposals from non-PhD granting institutions have slightly different requirements
- Contact program officers well ahead of submission to discuss (avoid pitfalls)

At beginning of solicitation – read it carefully!

Computational Physics (CP)

- MPS, ENG, and OCI have established a new cross-directorate program in Computational and Data-Enabled Science and Engineering (CDS&E: PD 12-8084).
- In Physics this program is implemented in the Computational Physics program under the PHY solicitation14-576. It focuses on cyber-infrastructure for the disciplines supported by the Physics Division.
  - » Deadline = December 4, 2014
  - » Bogdan Mihaila bmihaila@nsf.gov

REU Supplements

- Available to NSF grantees to fund an undergraduate student (US citizen or permanent resident) for the summer.
- Usually $5,000
- Submit in Fastlane as a supplement to current grant – after talking with your program officer!
- *Requests submitted early in the FY are most easily accommodated in the budget*

Career Life Balance

- Instituted in 2012, NSF's Career-Life Balance (CLB) Initiative is an ambitious, *ten-year initiative that will build on the best of family-friendly practices among individual NSF programs to expand them to activities NSF-wide*. This agency-level approach will help attract, retain, and advance graduate students, postdoctoral students, and early-career researchers in STEM fields.
- See the Dear Colleague Letter: NSF 13-075 for information about requesting supplements to CAREER awards.
- *The Physics Division will consider such requests from all awardees. Contact your program officer for information.*

Diversity

The Physics Division is undertaking a year-long study to increase diversity in the research community:

- What efforts have been most successful?
- Where can we best focus limited resources?
- How can we provide resources beyond funding to the community?
- How can we engage researchers in the field?

Highlights

- Keep program officers informed of major new results.
- These results may not appear on the NSF web page, but we need them to respond to inquiries by management, to make the case for nuclear physics, Committee of Visitor reports, etc...
- Examples:
  - Measurement of parity violation in electron-quark scattering JLab PVDIS collaboration (X. Zheng *et al.*) *Nature* **506**, 67 (2014) JLab press release; NSF *informed ahead of time and posted our own link*.
  - Upcoming article in Science with NSF-funded PIs

NSF FY15 Request Summary

CR through Dec. 11

	FY 12 (M$)	FY 13 (M$)	FY 14 (M$)	FY15 Request (M$)	Change (from FY14)
NSF Total	7,105.41	6,901.91	7,171.92	7,255.00	+1.2%
R&RA	5,758.30	5,558.88	5,808.92	5,807.46	0.0%
MPS	1,308.70	1,249.34	1,299.80	1,295.56	-0.3%

R&RA: Research and Related Activities (includes directorates)
MPS: Mathematical and Physical Sciences

- Senate Mark-up = President's Request
- House Mark-up = President's Request + ~ $150M

NSF PHY FY15 Request

PHY Funding

(Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate Amount	Change Over FY 2014 Estimate Percent
Total, PHY	**$250.45**	**$266.30**	**$263.70**	**-$2.60**	**-1.0%**
Research	**164.72**	**165.99**	**159.35**	**-6.64**	**-4.0%**
CAREER	7.68	7.34	7.34	-	-
Centers Funding (total)	1.16	0.02	0.02	-	-
Nanoscale Science & Engineering	1.16	0.02	0.02	-	-
Education	**5.31**	**6.98**	**5.97**	**-1.01**	**-14.5%**
Infrastructure	**80.42**	**93.33**	**98.38**	**5.05**	5.4%
IceCube	3.45	3.45	3.45	-	-
Large Hadron Collider (LHC)	18.00	17.37	18.00	0.63	3.6%
Laser Interferometer Grav. Wave Obs.	30.50	36.43	39.43	3.00	8.2%
Nat'l Superconducting Cyclotron Lab.	21.50	22.50	22.50	-	-
Research Resources	6.97	13.58	15.00	1.42	10.5%

Totals may not add due to rounding.

Budget Trends – NSF Nuclear Physics

FY	Hadrons & Light Nuclei (k$)	Structure & Heavy Ions (k$)	Fund. Sym. (k$)	Nucl. Astro. (k$)	Theory (k$)	Program Total (k$)	NSCL (k$)	Total Nuclear Physics (k$)
2009	7,663	4,734	5,572	N/A	1,149	19,118	20,500	39,618
2010	6,421	6,863	5,532	1,078	3,855	23,749	21,000	44,749
2011	5,349	6,485	5,336	1,994	3,719	22,883	21,500	44,383
2012	7,657	3,375	5,855	1,610	3,829	22,326	21,500	43,826
2013	5,218	4,259	5,304	1,654	3,474	19,908	21,500	41,408
2014	5,275	4,215	5,250	2,275	3,514	20,813	22,500	43,313

There was an additional $11,811K from ARRA in 2009.

JINA-CEE (Joint Institute for Nuclear Astrophysics) $2,280 k/year

MRI: $2,360 K in FY12 (normally less than $1 M)
$3,021 K in FY13
$1.105 K in FY14 (2 awards)

FY15 Experimental Nuclear Physics Program Proposals

- Proposals = 53; 4 Collaborative
  - Total year 1 request = $14.4M
- FY15 ENP R&RA ~ $16M
  - ~ $10.5 committed

NSF/MPS/Physics Personnel

- France Cordova – Director (sworn in April 2, 2014)
- Fleming Crim – Associate Director for MPS
- Denise Caldwell – Physics Division Director
- Brad Keister – Deputy Division Director
- Bogdan Mihaila – Nuclear Theory Program Director
- Ken Hicks – Expt'l Nuclear Physics Program Director
- Allena Opper – Expt'l Nuclear Physics Program Director
- Jim Whitmore – Particle Astrophysics Program Director
- Jean Cottam – Particle Astrophysics Program Director
- Alice Mignerey – Nuclear Experiment Program Director (part time)

- Gail Dodge – returned to ODU in August

For the latest updates, check out

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

Contact us:

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- aopper@nsf.gov
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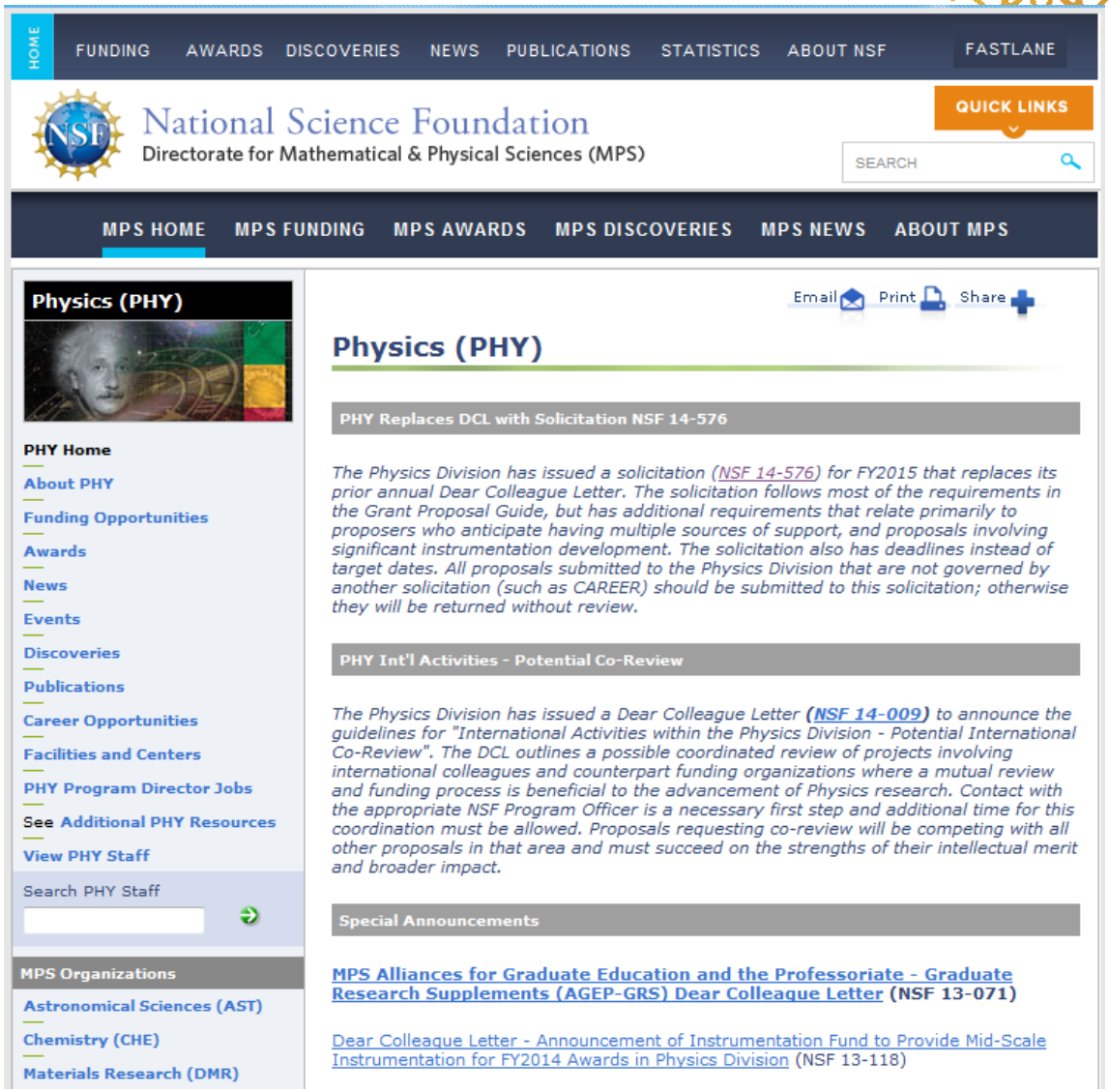


Backup Slides

New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

- Exceptions:

– RUI proposals

Use the RUI solicitation (NSF-14-579) instead but follow the new Deadlines for each Physics program

– CAREER, MRI, INSPIRE, SI2, etc.

NSF-wide solicitations or solicitations from other Divisions (AST, ACI, etc.) are unaffected.

– Supplement proposals and EAGER are unaffected (i.e., you can use NSF 14-1 GPG)

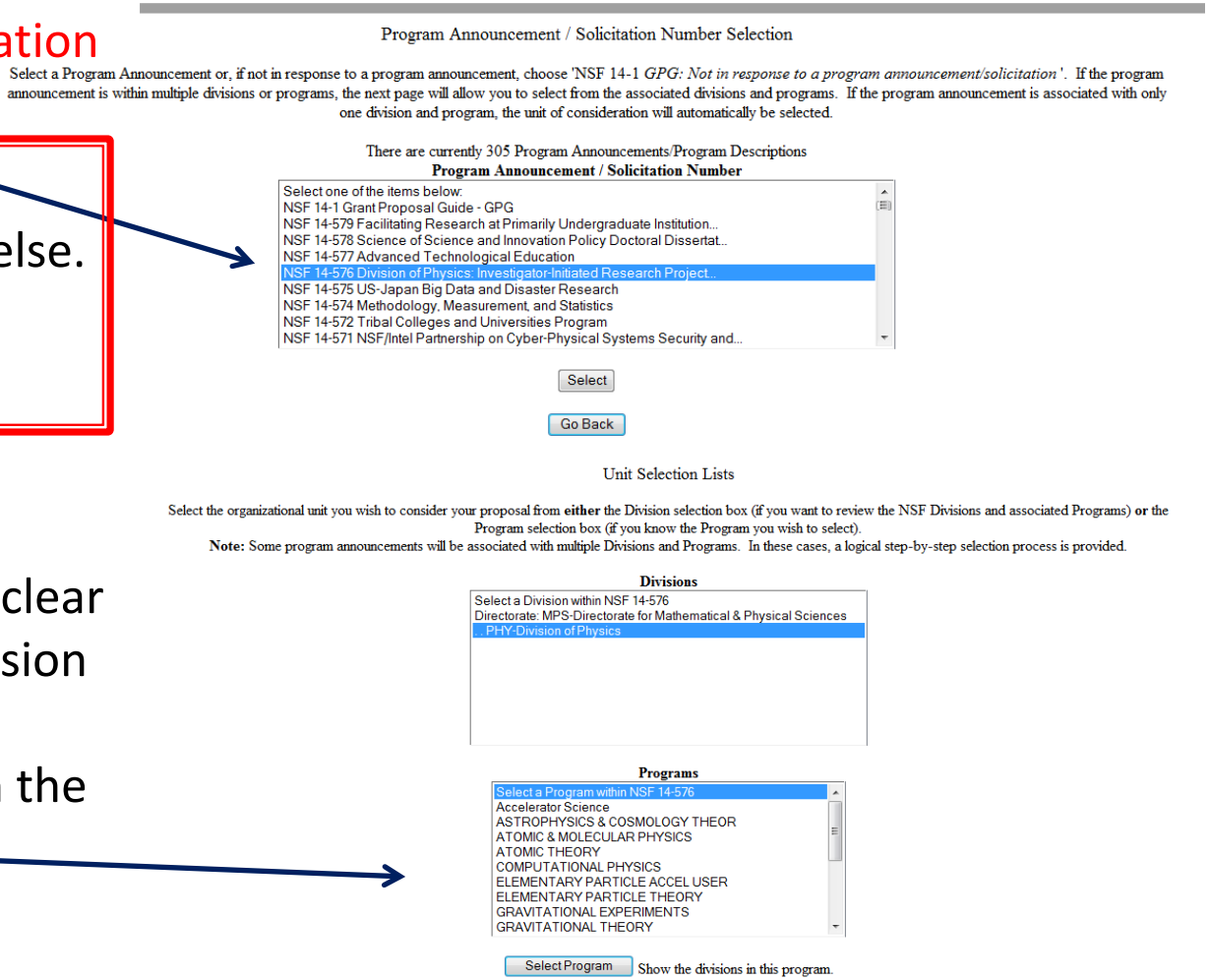
New – NSF Physics Division: Investigator-Initiated Research Projects (14-576)

On Fastlane, choose solicitation **NSF 14-576**

Do **NOT** choose

NSF 14-1 GPG or anything else.

Proposal will be returned without review!



Choose the Program (e.g. Hadrons & Light Nuclei, Nuclear Astrophysics, Nuclear Precision Measurements, Nuclear Structure and Reactions) in the next screen

Talk w/ your SRO!

2013 MRI Snapshot
by Institution Type

	Ph.D.	non-Ph.D.	Non-degree
# reviewed	512 (32% DEV)	301 (7% DEV)	39 (41% DEV)
Mean request	$802,520	$463,500 K	$701,694
Median request	$591,442	$357,400 K	$636,426
# awards	106	73	6
NSF $ awarded	$60.3 M	$23.3 M	$2.6 M
MRI $ awarded	$47.6 M	$20.2 M	$3.2 M
Success rate	20.1%	24.2%	12.8%
Mean award	$568,794	$311,071	$641,766
Median award	$466,908	$249,895	$535,211

Merit Review Principles

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
   a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?