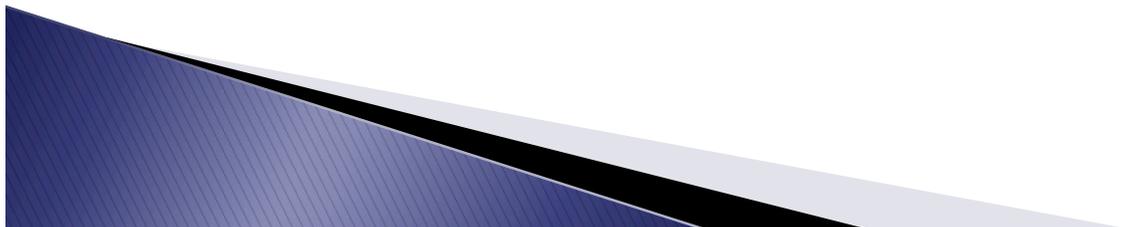




Report from NSF

Gail Dodge

- ▶ Budget
- ▶ Physics Division Personnel
- ▶ NSF Funding Opportunities
 - Accelerator Physics
 - Mid-Scale Instrumentation
 - NRT



NSF FY15 Request Summary



	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

NSF MPS FY15 Request



MPS Funding

(Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate	
				Amount	Percent
Astronomical Sciences (AST)	\$232.17	\$239.06	\$236.24	-\$2.82	-1.2%
Chemistry (CHE)	229.39	235.79	237.23	1.44	0.6%
Materials Research (DMR)	291.09	298.01	298.99	0.98	0.3%
Mathematical Sciences (DMS)	219.02	225.64	224.40	-1.24	-0.5%
Physics (PHY)	250.45	266.30	263.70	-2.60	-1.0%
Office of Multidisciplinary Activities (OMA)	27.22	35.00	35.00	-	-
Total, MPS	\$1,249.34	\$1,299.80	\$1,295.56	-\$4.24	-0.3%

Totals may not add due to rounding.

FY14 Operating Plan has now been approved by Congress.



NSF PHY FY15 Request

PHY Funding (Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over	
				FY 2014 Estimate Amount	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.

Trends in NSF PHY Research



	FY 12 (M\$)	FY 13 (M\$)	FY 14 (M\$)	FY 15 request (M\$)
Research	192.73	164.72	165.99	159.35
Research Resources	5.75	6.97	13.58	15.00
Total	198.48	171.69	179.35	174.35
NSCL	21.5	21.5	22.5	22.5

Research Resources includes mid-scale and accelerator science, which is new this year (FY14).

The Physics Division is committed to midscale and would like to see it grow, even in a flat budget climate.

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

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

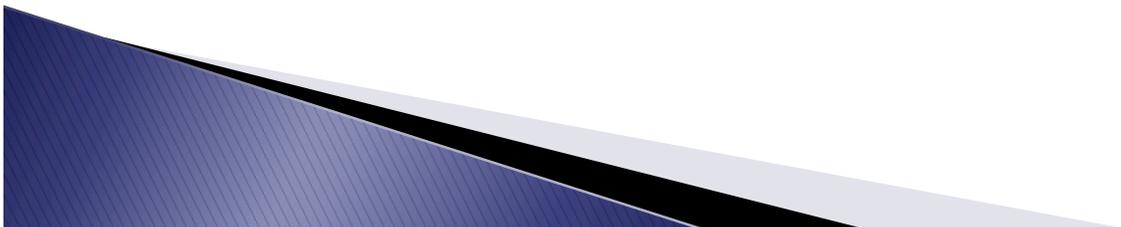
JINA (Joint Institute for Nuclear Astrophysics) \$2,150 K/year

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



NSF People

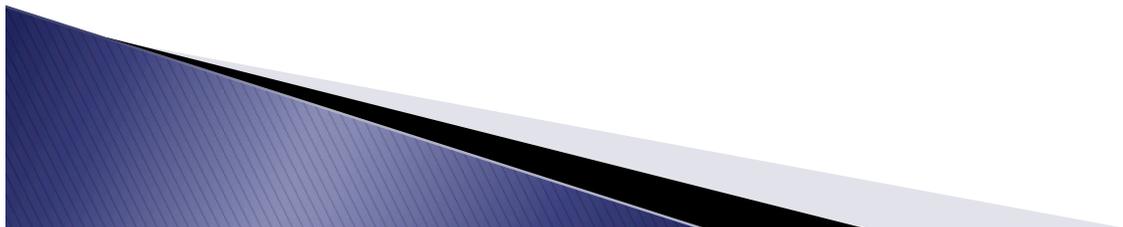
- ▶ **France Cordova** – Director (sworn in April 2, 2014)
- ▶ **Fleming Crim** – Associate Director for MPS
- ▶ **Denise Caldwell** – Physics Division Director
- ▶ **Brad Keister** – Deputy Division Director
- ▶ **Bogdan Mihaila** – nuclear theory program officer
(now permanent)
- ▶ **Gail Dodge** – nuclear experiment program officer - rotator
(will return to ODU in August)
- ▶ **Ken Hicks** – nuclear experiment program officer – rotator
(will start in August)
- ▶ **Alice Mignerey** – nuclear experiment program officer (part time)
- ▶ **Search underway** for permanent program officer in experimental nuclear physics (replacement for Brad Keister)



Accelerator Science



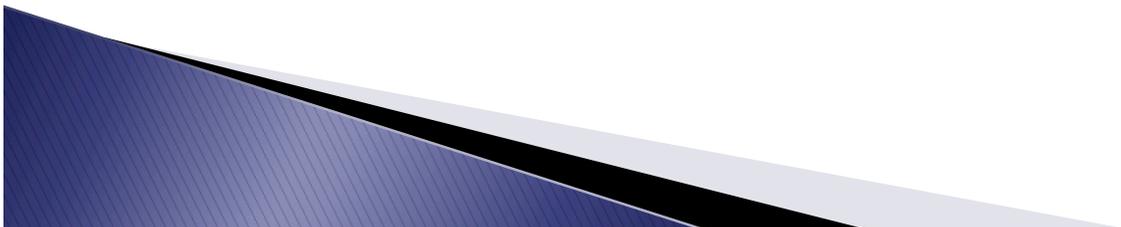
- ▶ The Physics Division is accepting proposals to a new program in accelerator science. Proposals have been received for consideration in FY14. There has been a very robust response to this new program.
- ▶ Next target date is November 28, 2014.
- ▶ Intended to fund accelerator **science**, not R&D for specific projects. Collaboration with a national lab (e.g. prototyping) is fine.
- ▶ Program Description is posted (13-7243).





Mid-Scale Instrumentation

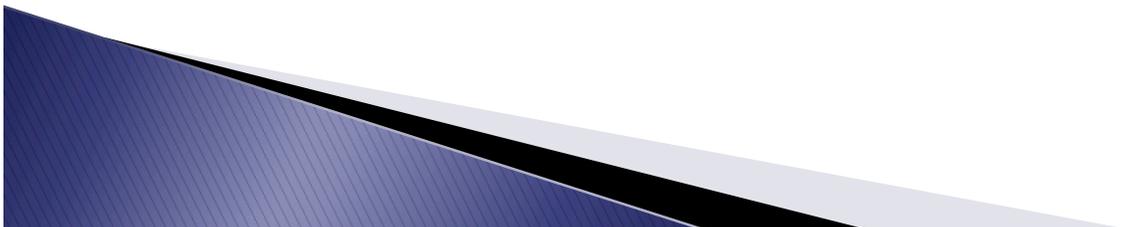
- The Physics Division has established a mid-scale instrumentation fund. The intention is to fund projects above \$4 million (the MRI limit).
- This funding is NOT available for “operations” so program funds will have to be used to run the experiment.
- **Contact us for more information.** You cannot 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.



NSF Research Traineeship Program (NRT) (replaced IGERT)



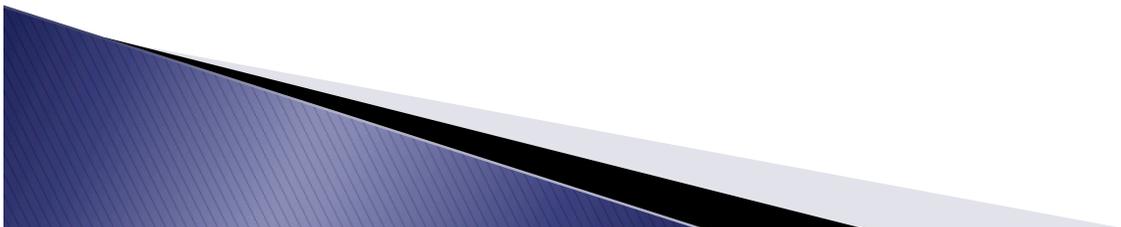
- ▶ Designed to encourage the development of bold, new, potentially transformative, and scalable models for STEM graduate training that ensure that graduate students develop the skills, knowledge, and competencies needed to pursue a range of STEM careers.
- ▶ Priority research theme – data enabled science & engineering
- ▶ Proposals are encouraged on any other crosscutting, interdisciplinary theme
- ▶ Letter of Intent due May 20, 2014 (optional)
- ▶ Full proposal due June 24, 2014





Physics at the Information Frontier (PIF)

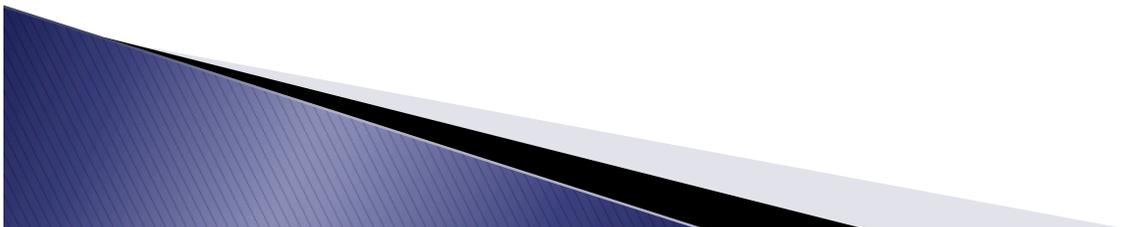
- ▶ MPS, ENG, and OCI have recently established a new cross-directorate program in **Computational and Data-Enabled Science and Engineering** (CDS&E: PD 12-8084). The goal of the CDS&E program is to identify and capitalize on opportunities for major scientific and engineering breakthroughs through new computational and data analysis approaches
- ▶ In Physics this program is implemented in the **Physics at the Information Frontier** program, which includes support for data-enabled science, community research networks, and new computational infrastructure, as well as for next-generation computing. It focuses on cyber-infrastructure for the disciplines supported by the Physics Division while encouraging broader impacts on other disciplines.
- ▶ **Contact Bogdan Mihaila for more information**
- ▶ Target Date: Dec. 1, 2014





REU Supplements

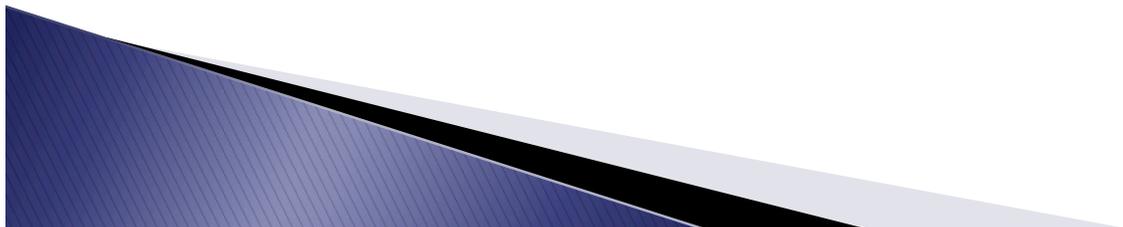
- ▶ Available to NSF grantees to fund an undergraduate student (US citizen or permanent resident) for the summer.
- ▶ Usually \$5,000
- ▶ Submit in Fastlane as a supplement to current grant. **It is a good idea to ask the program officer first if funds are available.**



Career Awards



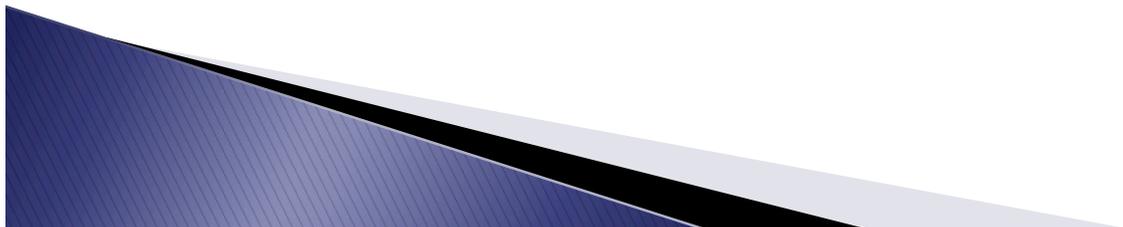
- ▶ Must include **excellent research proposal** as well as **excellent educational plan**
- ▶ There are eligibility requirements: e.g., must be assistant professor, untenured
- ▶ 5 year awards, \$400,000 minimum
- ▶ Full proposal deadline: July 23, 2014 (for MPS)
- ▶ **Contact program officer for information/advice ahead of time (budget, scope)**
- ▶ Solicitation: 14-532
- ▶ PECASE nominees are chosen from eligible CAREER winners



Major Research Instrumentation (MRI)



- ▶ Two types of awards: development and acquisition
- ▶ Contact program officers well ahead of submission to discuss (avoid pitfalls)
- ▶ 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
- ▶ Solicitation 13-512
- ▶ Deadline: Jan. 22, 2015

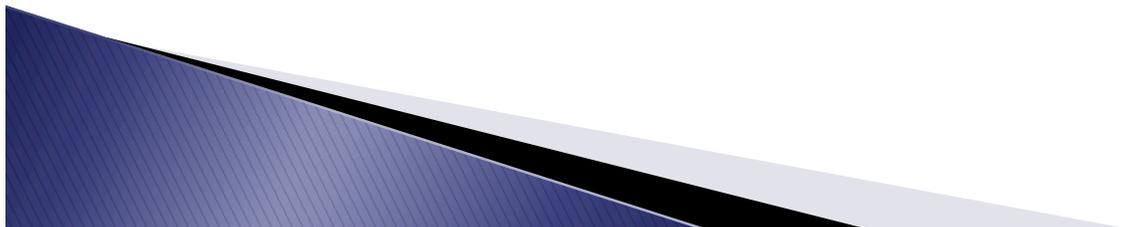




Physics Frontier Centers

- ▶ The Physics Frontiers Centers (PFC) program supports university-based centers and institutes where the collective efforts of a larger group of individuals can enable transformational advances in the most promising research areas.
- ▶ **Joint Institute for Nuclear Astrophysics (JINA)** is an existing PFC. JINA-CEE just renewed for another five years!
- ▶ Competition for FY14 is now complete.

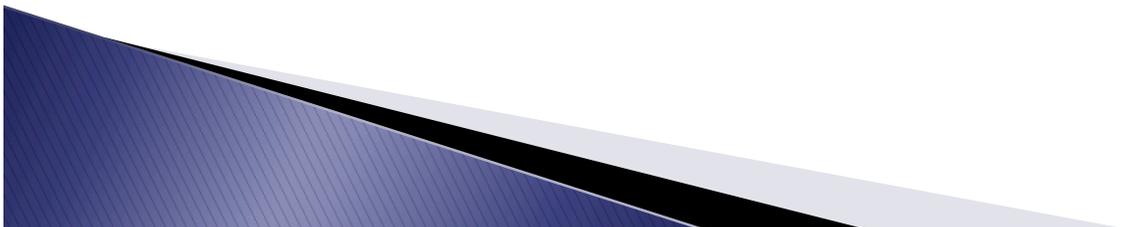
There is usually a new competition every three years.



International Collaborations



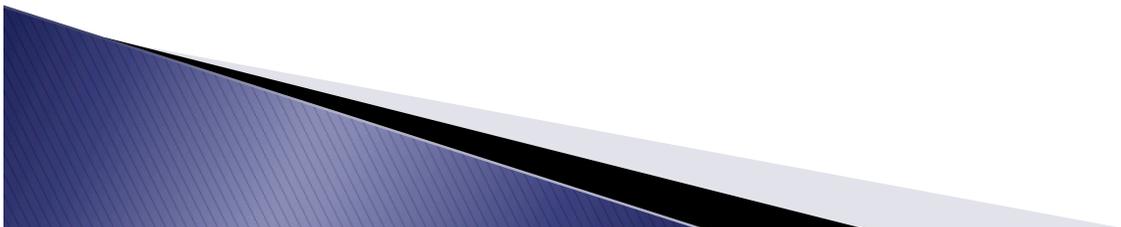
- ▶ The NSF physics division can work with funding agencies in other countries to do a joint review of a proposal that involves PIs from both countries.
- ▶ There will be a Dear Colleague Letter on the web site sometime this summer stating this opportunity.



Highlights



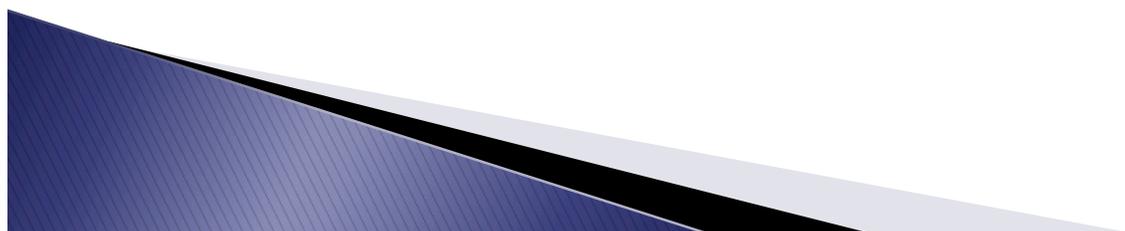
- ▶ Keep program officers informed of major new results.
- ▶ These results may not appear on the NSF web page, but we need them to respond to inquiries by management, to make the case for nuclear physics, Committee of Visitor reports, etc...



Final Thoughts



Consider spending two years at NSF as a rotator.





Backup Slides



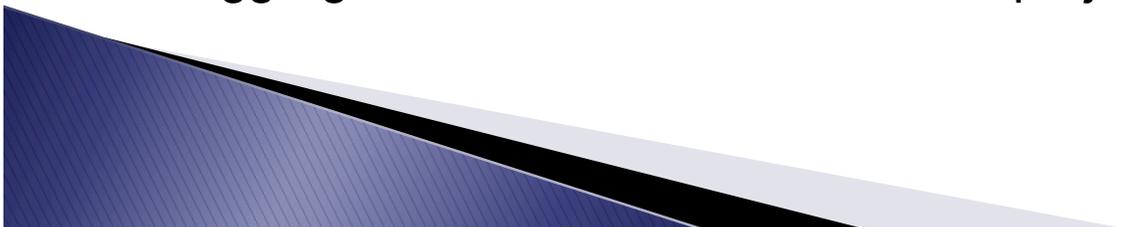
Other Programs

- ▶ **EARLY-concept Grants for Exploratory Research (EAGER)** funding mechanism “may be used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches.” not intended for projects that are appropriate for the regular funding process.
- ▶ **RAPID** “for proposals having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events.”
- ▶ These are very unlikely to be useful to this community.



Merit Review Principles

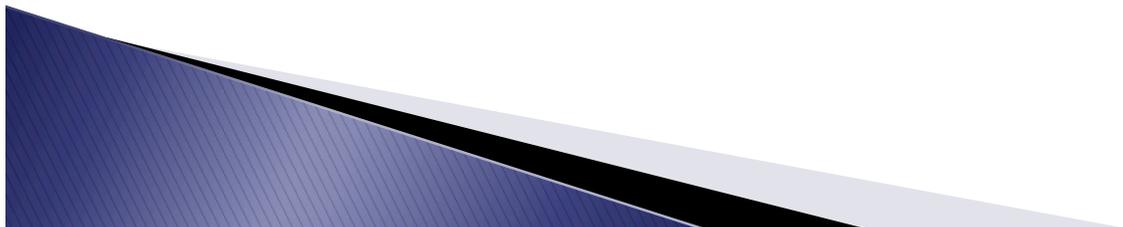
- ▶ All NSF projects should be of the **highest quality** and have the **potential to advance**, if not transform, the frontiers of knowledge.
- ▶ NSF projects, in the aggregate, **should contribute more broadly to achieving societal goals**. These broader impacts may be accomplished through the research 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?





CDS&E Program Organization

The CDS&E program was created as a “meta-program.” Individual programs that reside in the divisions and directorates are integrated through a single funding announcement (PD 12-8084) and organized with a CDS&E Coordination Group.

Mathematical and Physical Sciences:

Division Mathematical Sciences: Computational and Data-Enabled Science and Engineering
in Mathematical and Statistical Sciences

Physics Division: Physics at the Information Frontier

Division Materials Research: Computational and Data Driven Materials Research

Astronomy Division: Theoretical and Computational Networks
Astronomy and Astrophysics Research Grants
Advanced Technologies and Instrumentation

Chemistry Division: Chemical Theory, Models and Computational Methods,
Chemical Measurement and Imaging

Engineering Directorate:

Civil, Mechanical and Manufacturing Innovation (CMMI)

Chemical, Bioengineering, Environmental, and Transport Systems (CBET)

Office of Cyber Infrastructure





NSF FY15 Request Summary

National Science Foundation Summary Tables FY2015 Request to Congress (Dollars in Millions)

NSF by Account	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	FY 2015 Request over:			
				FY 2013 Actual		FY 2014 Estimate	
				Amount	Percent	Amount	Percent
BIO	\$679.21	\$721.27	\$708.52	\$29.31	4.3%	-\$12.75	-1.8%
CISE	858.13	894.00	893.35	35.22	4.1%	-0.65	-0.1%
ENG	820.18	851.07	858.17	37.99	4.6%	7.10	0.8%
<i>Eng Programs</i>	<i>658.84</i>	<i>691.68</i>	<i>693.18</i>	<i>34.34</i>	<i>5.2%</i>	<i>1.50</i>	<i>0.2%</i>
<i>SBIR/STTR</i>	<i>161.34</i>	<i>159.39</i>	<i>164.99</i>	<i>3.65</i>	<i>2.3%</i>	<i>5.60</i>	<i>3.5%</i>
GEO	1,273.77	1,303.03	1,304.39	30.62	2.4%	1.36	0.1%
MPS	1,249.34	1,299.80	1,295.56	46.22	3.7%	-4.24	-0.3%
SBE	242.62	256.85	272.20	29.58	12.2%	15.35	6.0%
IIA	434.28	481.59	473.86	39.58	9.1%	-7.73	-1.6%
U.S. Arctic Research Commission	1.39	1.30	1.41	0.02	1.4%	0.11	8.1%
Research & Related Activities	\$5,558.88	\$5,808.92	\$5,807.46	\$248.58	4.5%	-\$1.46	0.0%
Education & Human Resources	\$834.62	\$846.50	\$889.75	\$55.13	6.6%	\$43.25	5.1%
Major Research Equipment & Facilities Construction	\$196.49	\$200.00	\$200.76	\$4.27	2.2%	\$0.76	0.4%
Agency Operations & Award Management	\$293.50	\$298.00	\$338.23	\$44.73	15.2%	\$40.23	13.5%
National Science Board	\$4.10	\$4.30	\$4.37	\$0.27	6.7%	\$0.07	1.6%
Office of Inspector General	\$13.17	\$14.20	\$14.43	\$1.26	9.5%	\$0.23	1.6%
OIGFY 2013 ARRA Actual Obligation	\$1.16						
Total, NSF	\$6,901.91	\$7,171.92	\$7,255.00	\$353.09	5.1%	\$83.08	1.2%

Totals may not add due to rounding

FY14 Budget Request

DIVISION OF PHYSICS (PHY)



\$289,020,000
+\$11,650,000 / 4.2%

PHY Funding (Dollars in Millions)

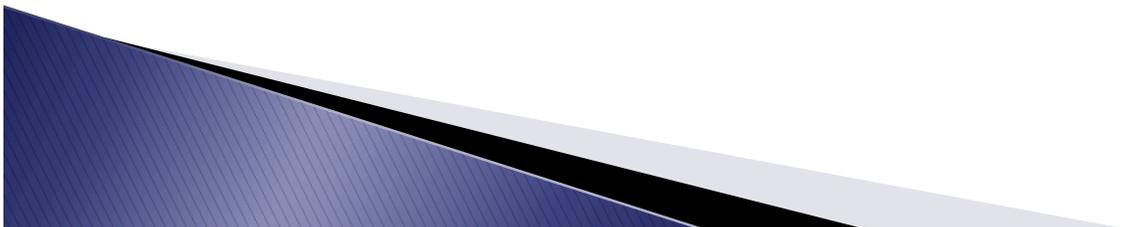
	FY 2012		FY 2014 Request	Change Over	
	FY 2012 Actual	Enacted/ Annualized FY 2013 CR		FY 2012 Enacted Amount	Percent
Total, PHY	\$277.44	\$277.37	\$289.02	\$11.65	4.2%
Research	192.73	193.68	177.48	-16.20	-8.4%
CAREER	8.03	7.01	7.34	0.33	4.7%
Centers Funding (total)	1.16	1.14	-	-1.14	-100.0%
Nanoscale Science & Engineering Centers	1.16	1.14	-	-1.14	-100.0%
Education	5.61	5.34	6.09	0.75	14.0%
Infrastructure	79.10	78.35	105.45	27.10	34.6%
IceCube	3.45	3.45	3.45	-	-
Large Hadron Collider (LHC)	18.00	18.00	18.00	-	-
Laser Interferometer Grav. Wave Obs. (LIGO)	30.40	30.40	39.50	9.10	29.9%
Nat'l Superconducting Cyclotron Lab. (NSCL)	21.50	21.50	22.50	1.00	4.7%
Research Resources	5.75	5.00	22.00	17.00	340.0%

Totals may not add due to rounding.

Academic Research Initiative (ARI)



- ▶ Funded by Domestic Nuclear Detection Office
- ▶ This is no longer handled by NSF. DNDO is accepting proposals directly for this program.



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.
- ▶ There is a small pot of money available to encourage **broadening participation** and address these types of issues.