



NSF Nuclear Physics Overview for NSAC

Allena K Opper

- ▶ Experimental Nuclear Physics Program
- ▶ Budget
- ▶ Announcements
 - Solicitations
 - Other funding opportunities
- ▶ Physics Division Personnel

Experimental Nuclear Physics Program



- ▶ 59 proposals submitted
 - 26 Nuclear and Hadron QCD
 - 15 Nuclear Astrophysics, Structure, and Reactions
 - 15 Precision Measurements & Fundamental Symmetries
(7 NLDBD)
 - 3 Mid-Scale

- ▶ Total request for first year = \$13.3M

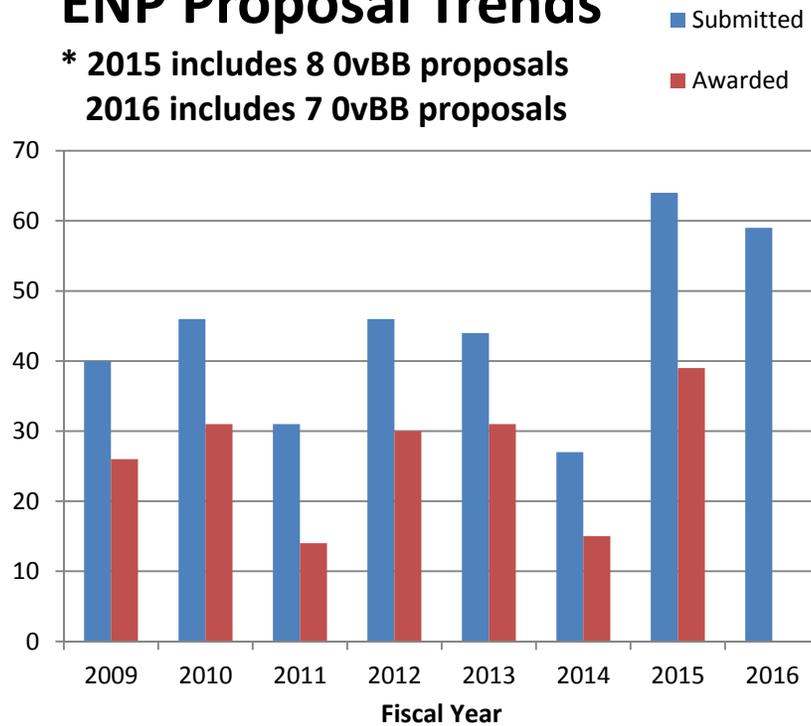
- ▶ 6 CAREER proposals → 1 awarded

Experimental Nuclear Physics Program



ENP Proposal Trends

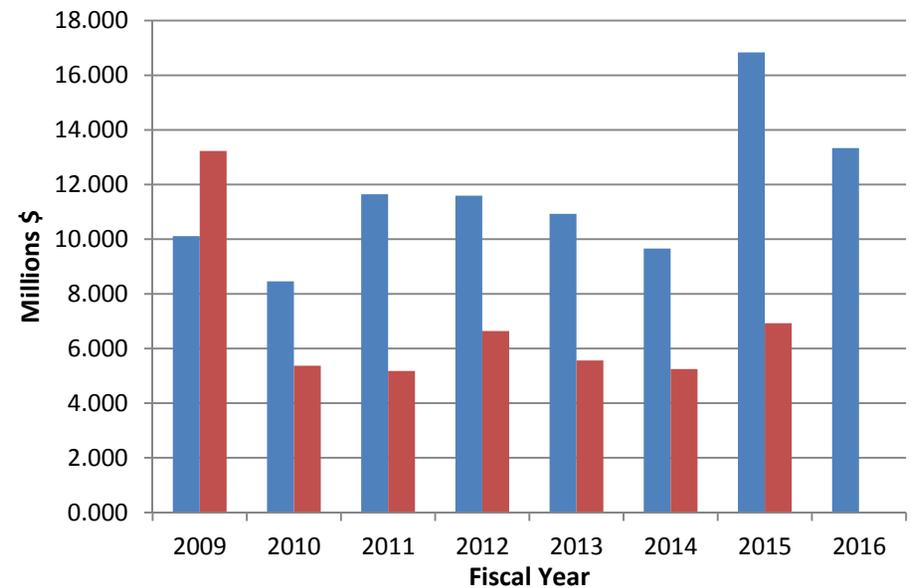
* 2015 includes 8 0vBB proposals
2016 includes 7 0vBB proposals



ENP Funding Trends

New awards only

■ Requested funds 1st yr (M\$)
■ Awarded Funds 1st yr (M\$)



NSF PHY FY16 Estimate & FY17 Request



PHY Funding (Dollars in Millions)

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Request	Change Over FY 2016 Estimate	
				Amount	Percent
Total, PHY	\$276.10	\$277.03	\$295.26	\$18.23	6.6%
Research	169.33	174.51	189.69	15.18	8.7%
CAREER	8.83	7.55	7.74	0.19	2.5%
Education	5.60	5.16	5.16	-	-
Infrastructure	101.17	97.36	100.41	3.05	3.1%
IceCube	3.45	3.45	3.50	0.05	1.4%
Large Hadron Collider (LHC)	18.00	18.00	20.50	2.50	13.9%
Laser Interferometer Grav. Wave Obs. (LIGO)	33.00	39.43	39.43	-	-
Nat'l Superconducting Cyclotron Lab. (NSCL)	23.00	24.00	24.50	0.50	2.1%
Midscale Research Infrastructure	23.72	12.48	12.48	-	-

Totals may not add due to rounding.

Budget Trends – NSF Nuclear Physics



~ 25% = Research

~ 75% = Operations



FY	Hadrons & Light Nuclei (k\$)	Structure & Heavy Ions (k\$)	Fund. Sym. (k\$)	Nucl. Astro. (k\$)	Theory (k\$)	Program Total (k\$)	NSCL (k\$)	JINA JINA -CEE (k\$)	MRI (k\$)	Mid-Scale (k\$)	Total Nuclear Physics (k\$)
2009	7,663	4,734	5,572	N/A	5,825	23,794	22,500	2,000	8,058	9,524	65,877
2010	6,421	6,863	5,532	1,078	3,855	22,672	21,000	2,150	1,134		46,956
2011	5,349	6,485	5,336	1,994	3,719	22,883	21,500	2,150	729		47,262
2012	7,657	3,375	5,855	1,610	3,829	22,326	21,500	2,150	2,744		48,720
2013	5,218	4,259	5,304	1,754	3,474	20,008	21,500	2,150	2,996	490	47,144
2014	5,275	4,215	5,250	2,475	3,514	20,728	22,500	2,280	1,038	1,188	47,733
2015	5,941	3,722	6,818	2,245	4,183	22,908	23,000	2,280	1,801	1,367	51,357

FY15 Fundamental Symmetries: includes \$1.32M for $0\nu\beta\beta$

MRI: competes each year; supplemental one-time acquisition/development funds

Mid-scale: ad hoc competition; supplemental construction funds

Focused Research Hubs in Theoretical Physics (FRHTP) 16-501



One of the two focused research hub will support theoretical work in the area of **Fundamental Symmetries, Neutrinos, and their applications to Nuclear Astrophysics** relevant to research within the purview of the Division of Physics

Number of awards: 1

Duration: 5 years

Anticipated funding: \$250k-\$500k/year, pending availability of funds

The scientific goals of the hub should be achieved in the first five years of the project.

Provide support for:

- * Postdoctoral Researchers
- * Hub related activities

Does NOT provide *additional* support for:

- * Senior Personnel
- * Graduate or Undergraduate Students

Deadline: January 22, 2016

Follow Grant Proposal Guide (GPG)

http://www.nsf.gov/pubs/policydocs/pappguide/nsf15001/gpg_index.jsp

Follow instructions that are specific to this solicitation ...

Contact Bogdan Mihaila for more information

Announcements: Major Research Instrumentation (MRI)



- Solicitation: NSF 15-504
- Due date = 13-jan-2016 (past)
- Maximum award is \$4 million; awards above \$1 million compete across the entire foundation
- Proposals from non-PhD granting institutions have slightly different requirements
- *Physics received 34 proposals, NP received 10 proposals*
- Currently being reviewed

Under Review!

Neutrinoless Double Beta Decay



- **NSF and DOE are working in a coordinated way to optimally utilize resources in support of NLDBD R&D.** The joint charge to the standing NSAC subcommittee on NLDBD to assess the critical R&D needs and technology driven schedules required to demonstrate the down-selection criteria for each candidate technology is part of that coordinated effort.
- In light of the R&D assessments provided by the NSAC subcommittee and within funding availability, the agencies and offices will move forward in a coordinated, unified approach to address these R&D needs, similar to the process used in the recent joint effort on the second generation dark matter experiments. That process included independent calls for proposals with coordinated requirements, and a joint review. A summary of the DOE/NSF Joint G2 Dark Matter Program can be found in the proceedings of the High-Energy Physics Advisory Panel meeting from September 29-30, 2014.

<http://science.energy.gov/hep/hepap/meetings/201409/>

NSF INCLUDES



Inclusion across the Nation of Learners of Underrepresented Discoverers in Engineering and Science

- Comprehensive initiative to enhance U.S. leadership in science and engineering discovery and innovation by *proactively seeking and effectively developing STEM talent from all sectors and groups in our society.*
- Support, over the next ten years, *innovative models, networks, partnerships, and research that enable the U.S. science and engineering workforce to thrive by ensuring that women, blacks, Hispanics, and people with disabilities are represented.*

Looking For New Ideas and New Communities



- Novel systems approaches and designs for achieving scale are critical for advancing diversity and inclusion in STEM
- New research, models, networks, and partnerships to lead measureable progress at the national level and the ability to scale the concepts of diversity and inclusion, using collective impact-style strategies.
- Mobilize communities concerned with STEM opportunities
- Collaborative alliances spanning education levels, public and private sectors, scaling social innovations

Using Collective Impact-style Approaches to Scaling Social Innovation



- Common agenda
- Shared measurements
- Mutually reinforcing activities
- Continuous communications
- Backbone support organizations

Strongly encourage collaboration with colleagues in Behavioral and Cognitive Sciences as well as Social and Economic Sciences

NSF INCLUDES in FY2016 Solicitation: NSF16-544



- INCLUDES Design and Development Launch Pilots
- INCLUDES Alliances
- INCLUDES Backbone Organization

Design and Development Launch Pilots



- Are expected to test the feasibility of developing a full-scale plan beyond the pilot including sustainability
 - Year 1: Refine collective commitment to common set of objectives
 - Year 2: Implement and report the results of the collective-impact style approach
- Deadlines:
 - Preproposal (required): April 15, 2016
 - Full proposal: June 24, 2016
- Number of awards: 30-40 Design and Development Launch Pilots
- Budget: Approximately \$300,000 over 2 years for a total investment of \$12.5M

INCLUDES – Components, Timeline, and Implementation



	FY16	FY17	FY18 and beyond
Design and Development Launch Pilots	2 year awards @ \$300K (30-40 awards)	2 year awards @ \$300K	2 year awards @ \$300K
Alliances		5 year awards @ \$12.5M (3-5 awards)	5 year awards @ \$12.5M
Backbone Organizations	Conferences and Workshops \$250K	5 year award(s) @ \$3.5M (option to split into 2)	5 year awards @ \$3.5M
Other Activities	Conferences and Workshops \$250K	Linkages to existing BP Programs	Linkages to existing BP Programs Evaluation and Assessment



NSF/MPS/Physics Personnel

- **France Cordova** – Director
- **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

Ken plans to return to Ohio University August 2016
Search underway for a “rotator” Program Director in
Experimental Nuclear Physics

<http://www.nsf.gov/pubs/2015/phy15001/phy15001.jsp?org=PHY>

<http://www.nsf.gov/careers/rotator/index.jsp>



For the latest updates, check out

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

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The screenshot shows the NSF website's navigation and content for the Physics (PHY) division. The top navigation bar includes links for HOME, FUNDING, AWARDS, DISCOVERIES, NEWS, PUBLICATIONS, STATISTICS, ABOUT NSF, and FASTLANE. Below this is the NSF logo and the text "National Science Foundation Directorate for Mathematical & Physical Sciences (MPS)". A search bar and a "QUICK LINKS" button are also visible. The main navigation bar for the MPS section includes links for MPS HOME, MPS FUNDING, MPS AWARDS, MPS DISCOVERIES, MPS NEWS, and ABOUT MPS. The page title is "Physics (PHY)". On the left side, there is a sidebar with a "Physics (PHY)" header and a list of links: PHY Home, About PHY, Funding Opportunities, Awards, News, Events, Discoveries, Publications, Career Opportunities, Facilities and Centers, PHY Program Director Jobs, See Additional PHY Resources, and View PHY Staff. Below these links is a search box for PHY Staff. The main content area features three sections: "PHY Replaces DCL with Solicitation NSF 14-576", "PHY Int'l Activities - Potential Co-Review", and "Special Announcements". The first section contains a paragraph about a new solicitation for FY2015. The second section contains a paragraph about a Dear Colleague Letter regarding international activities. The third section contains two links: "MPS Alliances for Graduate Education and the Professoriate - Graduate Research Supplements (AGEP-GRS) Dear Colleague Letter (NSF 13-071)" and "Dear Colleague Letter - Announcement of Instrumentation Fund to Provide Mid-Scale Instrumentation for FY2014 Awards in Physics Division (NSF 13-118)".