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

Directed by: David Weisberg
Activities Coordinating Committee: Chao Yang, Charles Lengsfield, Shahab Shafiei, Ermanno Rebutti

NSAC Meeting NSF NP Overview 23-MAR-2016
## NSF PHY FY16 Estimate & FY17 Request

<table>
<thead>
<tr>
<th>Category</th>
<th>FY 2015 Actual</th>
<th>FY 2016 Estimate</th>
<th>FY 2017 Request</th>
<th>Change Over FY 2016 Estimate</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Amount</td>
</tr>
<tr>
<td>Total, PHY</td>
<td>$276.10</td>
<td>$277.03</td>
<td>$295.26</td>
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<td>Research</td>
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<td>174.51</td>
<td>189.69</td>
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<td>CAREER</td>
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<td>7.55</td>
<td>7.74</td>
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<td>Education</td>
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<td>5.16</td>
<td>5.16</td>
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<td>Infrastructure</td>
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<td>97.36</td>
<td>100.41</td>
<td>3.05</td>
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<tr>
<td>IceCube</td>
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<td>3.45</td>
<td>3.50</td>
<td>0.05</td>
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<tr>
<td>Large Hadron Collider (LHC)</td>
<td>18.00</td>
<td>18.00</td>
<td>20.50</td>
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<td>Laser Interferometer Grav. Wave Obs. (LIGO)</td>
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<td>24.00</td>
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<td>Midscale Research Infrastructure</td>
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<td>12.48</td>
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Totals may not add due to rounding.
## Budget Trends – NSF Nuclear Physics

~ 25% = Research  
~ 75% = Operations

<table>
<thead>
<tr>
<th>FY</th>
<th>Hadrons &amp; Light Nuclei (k$)</th>
<th>Structure &amp; Heavy Ions (k$)</th>
<th>Fund. Sym. (k$)</th>
<th>Nucl. Astro. (k$)</th>
<th>Theory (k$)</th>
<th>Program Total (k$)</th>
<th>NSCL (k$)</th>
<th>JINA JINA-CEE (k$)</th>
<th>MRI (K$)</th>
<th>Mid-Scale (K$)</th>
<th>Total Nuclear Physics (k$)</th>
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<tbody>
<tr>
<td>2009</td>
<td>7,663</td>
<td>4,734</td>
<td>5,572</td>
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<td>5,825</td>
<td>23,794</td>
<td>22,500</td>
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<td>8,058</td>
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<td>2010</td>
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<td>6,863</td>
<td>5,532</td>
<td>1,078</td>
<td>3,855</td>
<td>22,672</td>
<td>21,000</td>
<td>2,150</td>
<td>1,134</td>
<td>46,956</td>
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<td>2011</td>
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<td>6,485</td>
<td>5,336</td>
<td>1,994</td>
<td>3,719</td>
<td>22,883</td>
<td>21,500</td>
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<td>729</td>
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<td>2012</td>
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<td>3,375</td>
<td>5,855</td>
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<td>3,829</td>
<td>22,326</td>
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<td>2013</td>
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<td>3,474</td>
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<td>490</td>
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<td>2014</td>
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<td>5,250</td>
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<td>3,514</td>
<td>20,728</td>
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<td>1,038</td>
<td>1,188</td>
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<td>3,722</td>
<td>6,818</td>
<td>2,245</td>
<td>4,183</td>
<td>22,908</td>
<td>23,000</td>
<td>2,280</td>
<td>1,801</td>
<td>1,367</td>
<td>51,357</td>
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**FY15 Fundamental Symmetries:** includes $1.32M for 0νββ  
**MRI:** competes each year; supplemental one-time acquisition/development funds  
**Mid-scale:** ad hoc competition; supplemental construction funds
One of the two focused research hubs 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)  

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
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. 
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
- **Design and Development Launch Pilots**: 2 year awards @ $300K (30-40 awards)
- **Alliances**: Conferences and Workshops @ $250K
- **Backbone Organizations**: Conferences and Workshops @ $250K

### FY17
- **Design and Development Launch Pilots**: 2 year awards @ $300K
- **Alliances**: 5 year awards @ $12.5M (3-5 awards)
- **Backbone Organizations**: 5 year award(s) @ $3.5M (option to split into 2)
- **Other Activities**: Conferences and Workshops @ $250K

### FY18 and beyond
- **Design and Development Launch Pilots**: 2 year awards @ $300K
- **Alliances**: 5 year awards @ $12.5M
- **Backbone Organizations**: 5 year awards @ $3.5M
- **Other Activities**: Linkages to existing BP Programs
- **Evaluation and Assessment**: Linkages to existing BP Programs
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
• Allena Opper – Expt’l Nuclear Physics Program Director

Ken Hicks – 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

For the latest updates, check out


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