



# News from National Science Foundation

## Outline

- Nuclear Physics Info
- FY24 Budget Info
- Funding Announcements
- Highlights

Allena K. Oppen  
June 2023

JLab Users' Meeting

June 2023

NOVA

PBS WGBH

# NSF/MPS/PHY Personnel

- Sethuraman Panchanathan – Director
- Sean L. Jones – Assistant Director for MPS
- Denise Caldwell – Physics Division Director
- Jean Cottam Alan – Deputy Division Director
- Bogdan Mihaila – Nuclear Theory Program Director
- ★ Alfredo Galindo-Uribarri – Expt'l Nuclear Physics Program Director
- Allena Oppenheimer – Expt'l Nuclear Physics Program Director



<https://beta.nsf.gov/careers/openings/mps/phy/phy-21-001>  
[www.nsf.gov/careers/rotator](https://www.nsf.gov/careers/rotator)



# March 2023 NSAC Meeting:

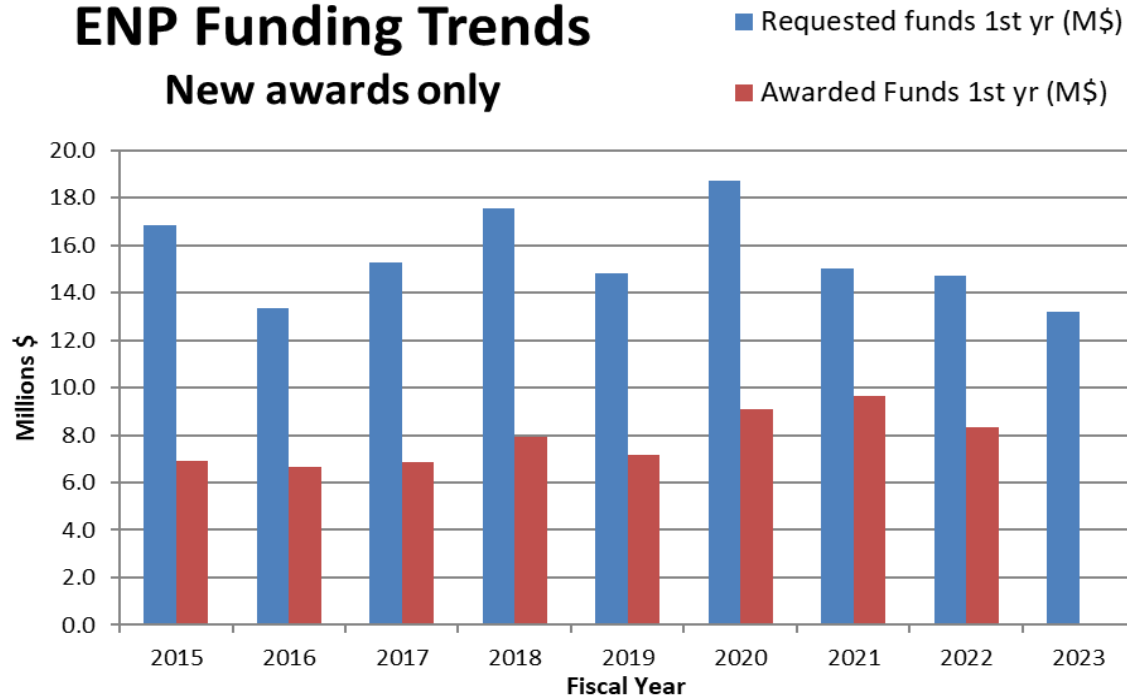
- **Job Announcement**
- We are currently looking for a Division Director for the Division of Physics
- Appointment to begin January 2024
- Details can be found at:
- SES Career/SES Limited Term appointment options:
  - <https://www.usajobs.gov/job/707560000>
- IPA appointment option:
  - <https://www.usajobs.gov/job/707560800>



# Proposal Trends in Experimental Nuclear Physics

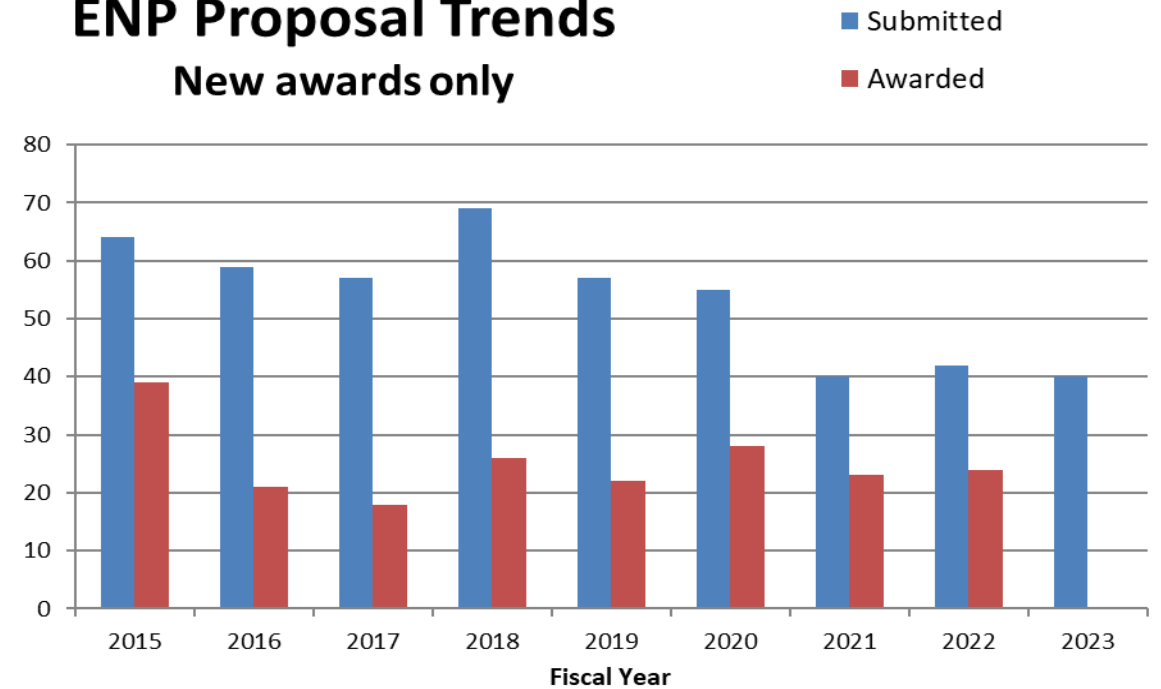
## ENP Funding Trends

### New awards only



## ENP Proposal Trends

### New awards only



# FY2024 BUDGET REQUEST TO CONGRESS



## Director's vision points to:



- Strengthening Established NSF
  - NSF's central focus = accelerate discovery and enhance state of the art research capabilities
- Bringing the “Missing Millions” into the STEM Workforce
  - There is tremendous untapped STEM potential throughout the nation
- Accelerating Technology and Innovation
  - NSF will foster partnerships with other agencies, private industry, philanthropy, like-minded countries – and thriving partnership environments



# FY24 President's Budget Request – NSF (\$M)



NSF by Account	FY 2022 Actual <sup>1</sup>	FY 2023 Estimate Base <sup>2</sup>	FY 2023 Estimate Total	FY 2024 Request	FY 2024 Request Compared to			
					FY 2022 Actual		FY 2023 Base Total <sup>3</sup>	
					Amount	Percent	Amount	Percent
<b>Research &amp; Related Activities</b>	\$6,964.66	\$7,006.136	\$7,826.80	\$9,029.90	\$2,065.24	29.7%	\$1,415.60	18.6%
STEM Education	\$1,146.72	\$1,154.00	\$1,371.00	\$1,444.18	\$297.46	25.9%	\$198.18	15.9%
Major Res. Equip. & Fac. Construction <sup>1</sup>	\$120.60	\$187.23	\$187.23	\$304.67	\$184.07	152.6%	\$117.44	62.7%
Agency Operations & Award Mgmt.	\$420.21	\$463.00	\$463.00	\$503.87	\$83.66	19.9%	\$40.87	8.8%
Office of Inspector General	\$18.89	\$23.39	\$23.39	\$26.81	\$7.92	41.9%	\$3.42	14.6%
National Science Board	\$4.52	\$5.09	\$5.09	\$5.25	\$0.73	16.2%	\$0.16	3.1%
<b>Total, NSF Discretionary Funding</b>	<b>\$8,675.61</b>	<b>\$8,838.85</b>	<b>\$9,876.51</b>	<b>\$11,314.68</b>	<b>\$2,639.07</b>	<b>30.4%</b>	<b>\$1,775.67</b>	<b>18.6%</b>
STEM Education - H-1B Visa	278.48	192.54	192.54	198.84	-79.64	-28.6%	6.30	3.3%
Donations	25.94	40.00	40.00	40.00	14.06	54.2%	-	-
<b>Total, NSF Mandatory Funding</b>	<b>\$304.42</b>	<b>\$232.54</b>	<b>\$232.54</b>	<b>\$238.84</b>	<b>-\$65.58</b>	<b>-21.5%</b>	<b>\$6.30</b>	<b>2.7%</b>
<b>Total, NSF Budgetary Resources</b>	<b>\$8,980.03</b>	<b>\$9,071.39</b>	<b>\$10,109.05</b>	<b>\$11,553.52</b>	<b>\$2,573.49</b>	<b>28.7%</b>	<b>\$1,781.97</b>	<b>18.2%</b>



# FY24 President's Budget Request – MPS (\$M)

	FY 2022 Actual <sup>1</sup>	FY 2023 Estimate Base	Disaster		FY 2023 Estimate Total	FY 2024 Request	Change over FY 2023 Base Total <sup>2</sup>	
			Relief Supplemental Base	RI Damage Mitigation			Amount	Percent
Astronomical Sciences (AST)	\$283.61	\$283.57	\$8.76	-	\$292.33	\$303.33	\$11.00	3.8%
Chemistry (CHE)	265.19	264.46	4.37	-	268.83	279.83	11.00	4.1%
Materials Research (DMR)	338.75	338.78	0.63	-	339.41	350.41	11.00	3.2%
Mathematical Sciences (DMS)	248.32	247.99	4.00	-	251.99	262.99	11.00	4.4%
Physics (PHY)	309.89	308.90	4.23	-	313.13	324.13	11.00	3.5%
Office of Strategic Initiatives (OSI) <sup>3</sup>	169.50	169.20	48.45	2.50	220.15	315.10	97.45	44.8%
<b>Total</b>	<b>\$1,615.26</b>	<b>\$1,612.90</b>	<b>\$70.44</b>	<b>\$2.50</b>	<b>\$1,685.84</b>	<b>\$1,835.79</b>	<b>\$152.45</b>	<b>9.1%</b>

# Early Faculty Career Development Program (CAREER)



- Awards in support of early-career faculty who have the potential to serve as academic role models in research **and education**, and to lead advances in the mission of their department or organization.
- Eligibility – must be untenured assistant professor in position that is at least 50% tenure-track
- Required department chair may not be a letter of support; should
  - Affirm PI's pre-tenure status
  - Indicate that the proposed research and education objectives of the proposal are supported by and advance department's goals
  - Describe how proposed goals are related to mission of department and how dept will provide appropriate mentoring
- Submission through Research.gov or Grants.gov (not FastLane 😞)
- Deadline: Fourth Wednesday in July ⇒ **July 26, 2023**

**NSF 22-586**



# Major Research Instrumentation (MRI) NSF 23-519

- Two tracks:
  - Track 1 \$100 k < \$ from NSF < \$1.4 M; up to 2/university
  - Track 2 \$1.4 M < \$ from NSF < \$4 M; 1/university
  - Track 3 acquisition, development, installation, operation, and maintenance of equipment and instrumentation to reduce consumption of helium; 1/university
- Two types: development and acquisition; both need to be “shovel ready”
- Deadlines & details
  - October 16 – November 15, 2023, (a window of opportunity)
  - <https://www.nsf.gov/od/oia/programs/mri/>
  - <https://www.nsf.gov/pubs/2023/nsf23519/nsf23519.htm>
  - *Contact your program directors well ahead of time to discuss & avoid pitfalls*
  - Awards above \$1M compete across the entire Foundation
  - ~~30% cost share req'd for PhD granting institutions~~

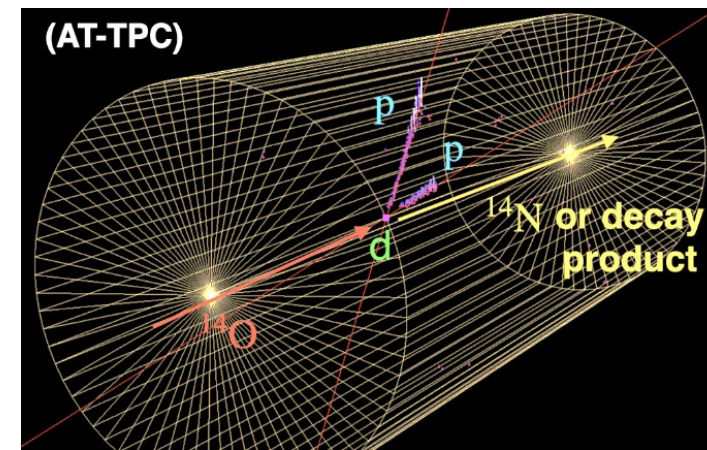


# NSF Mid-scale Research Infrastructure

- Mid-scale Research Infrastructure-1 (MsRI-1) [NSF 22-637](#)
  - Implementation = “shovel ready”;  $\$6\text{M} < \text{total request} < \$20\text{M}$
  - Design/development = to prepare MsRI implementation proposal;  $\$600,000 < \text{total request} < \$20\text{M}$
- Mid-scale Research Infrastructure-2 (MsRI-2) [NSF 23-570](#)
  - Total request:  $\$20\text{M} - \$100\text{M}$
  - “Shovel ready”
  - LOIs (required) due 15-may-2023, Preproposals due 20-jun-2023
- Solicitations published in alternate years
- Solicitation scope: NSF-wide [Questions? Contact me](#)

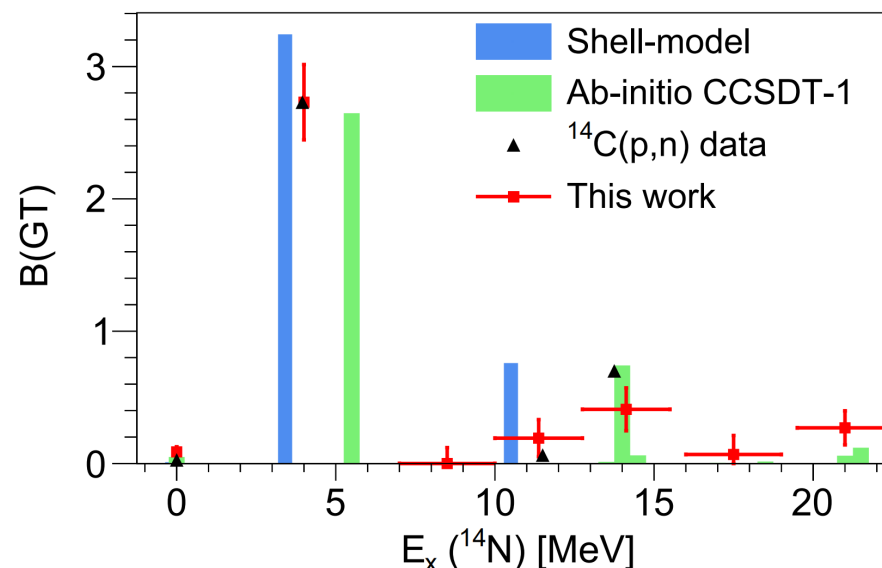
# (d,2He) Inverse Kinematics → novel probe to constrain e-capture rates in astrophysical phenomena

- EC &  $\beta$  decay on medium mass nuclei → stellar evolution
  - Core-collapse SN, thermonuclear SN, neutron star crust
- $B(\text{GT})$  ( $\Delta L = 0$ ,  $\Delta S = 1$ ,  $\Delta T_z = +/- 1$ ) needed to extract EC rates
- 2011:  $B(\text{GT})$  from (p,n) inverse kinematics on  $^{56}\text{Ni}$  → EC rates
- 2023:  $B(\text{GT})$  from (n,p) inverse kinematics!



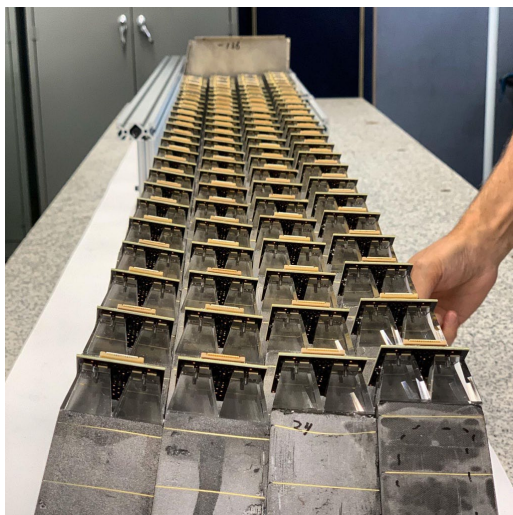
$^{14}\text{O} (d, ^2\text{He}) ^{14}\text{N}$

- ATTPC (filled with d) + S800



# $\pi^0$ candidates in Au-Au collisions at sPHENIX

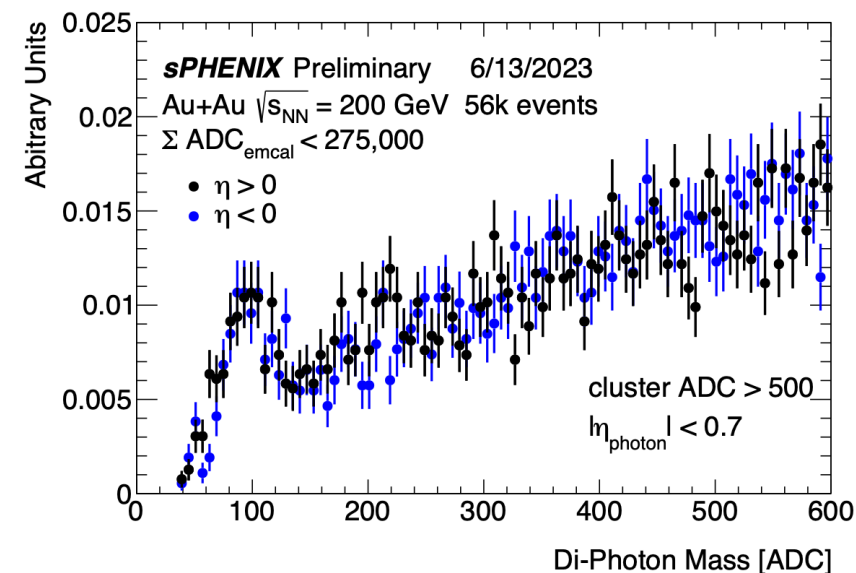
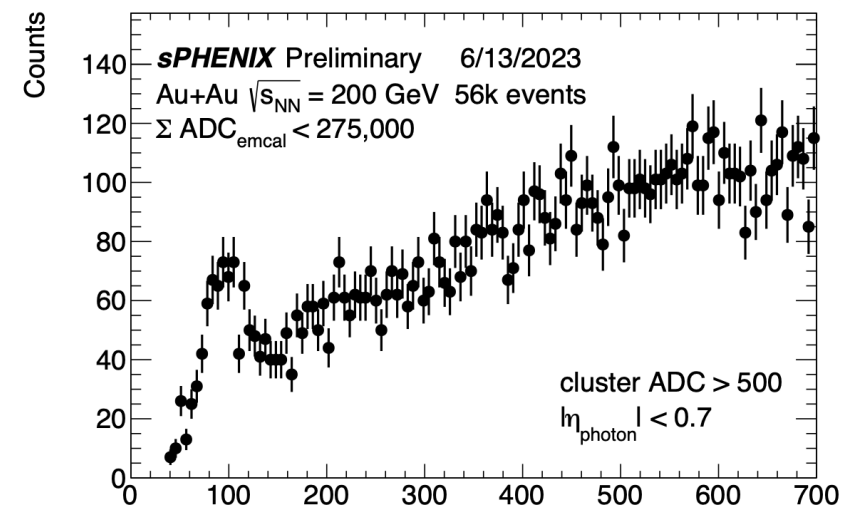
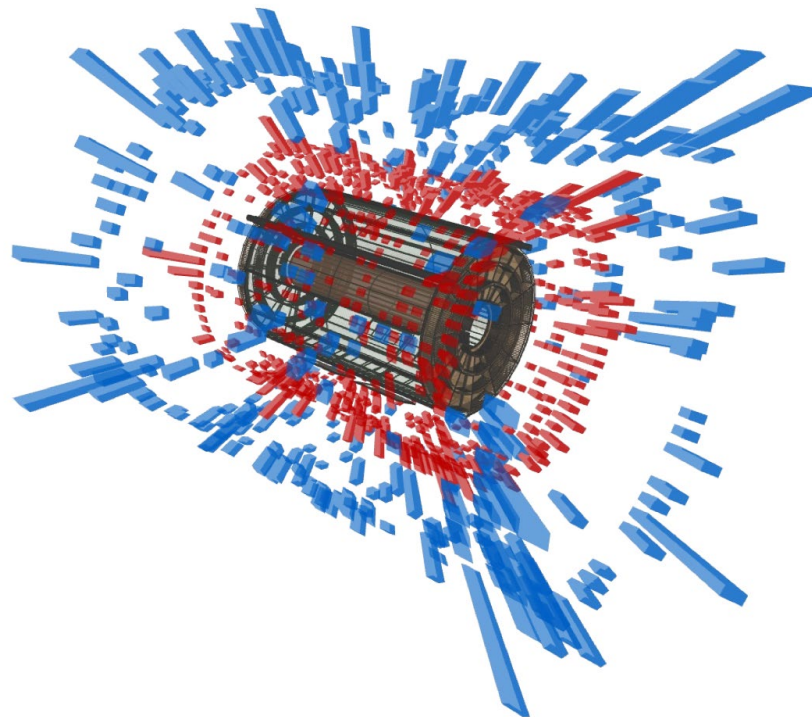
sPHENIX EMCal:  
WSciFi blocks built at UIUC  
& China, assembled at BNL



1 of 64 sectors of 96 blocks



sPHENIX Experiment at RHIC  
Data recorded: 2023-05-22, 02:07:00 EST  
Run / Event: 7156 / 12  
Collisions: Au + Au @ 200 GeV



For the latest updates:  
<https://www.nsf.gov/physics>

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Physics (PHY)

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**Physics (PHY)**

PHY Replaces DCL with Solicitation NSF 14-576

The Physics Division has issued a solicitation ([NSF 14-576](#)) for FY2015 that replaces its prior annual Dear Colleague Letter. The solicitation follows most of the requirements in the Grant Proposal Guide, but has additional requirements that relate primarily to proposers who anticipate having multiple sources of support, and proposals involving significant instrumentation development. The solicitation also has deadlines instead of target dates. All proposals submitted to the Physics Division that are not governed by another solicitation (such as CAREER) should be submitted to this solicitation; otherwise they will be returned without review.

PHY Int'l Activities - Potential Co-Review

The Physics Division has issued a Dear Colleague Letter ([NSF 14-009](#)) to announce the guidelines for "International Activities within the Physics Division - Potential International Co-Review". The DCL outlines a possible coordinated review of projects involving international colleagues and counterpart funding organizations where a mutual review and funding process is beneficial to the advancement of Physics research. Contact with the appropriate NSF Program Officer is a necessary first step and additional time for this coordination must be allowed. Proposals requesting co-review will be competing with all other proposals in that area and must succeed on the strengths of their intellectual merit and broader impact.

Special Announcements

[MPS Alliances for Graduate Education and the Professoriate - Graduate Research Supplements \(AGEP-GRS\) Dear Colleague Letter \(NSF 13-071\)](#)

[Dear Colleague Letter - Announcement of Instrumentation Fund to Provide Mid-Scale Instrumentation for FY2014 Awards in Physics Division \(NSF 13-118\)](#)

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