News from National Science Foundation

Outline

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

Allena K. Opper
June 2023

NSF/MPS/PHY Personnel

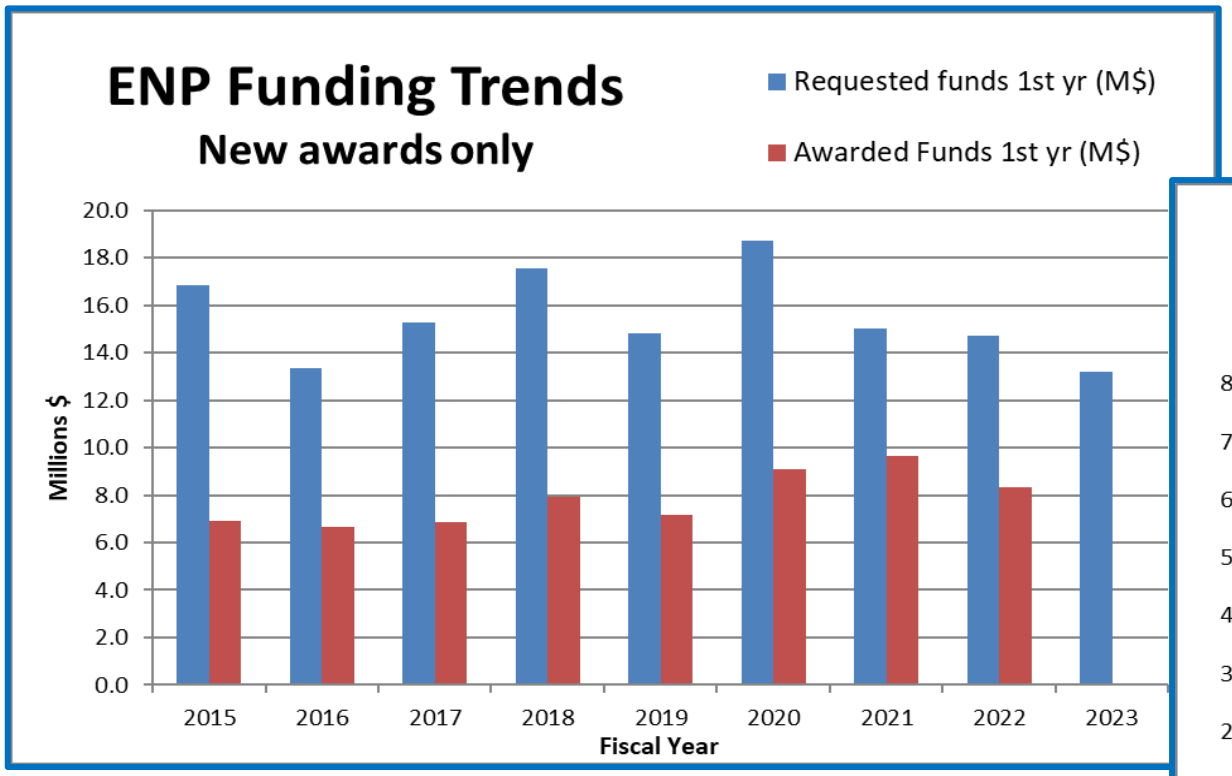
- Sethuraman Panchanathan – Director
- Sean L. Jones – Assistant Director for MPS
- Denise Caldwell – Physics Division Director
- Jean Cottam Alan – Deputy Division Director
- Bogdan Mihaila – Nuclear Theory Program Director
- Alfredo Galindo-Uribarri – Expt'l Nuclear Physics Program Director
- Allena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

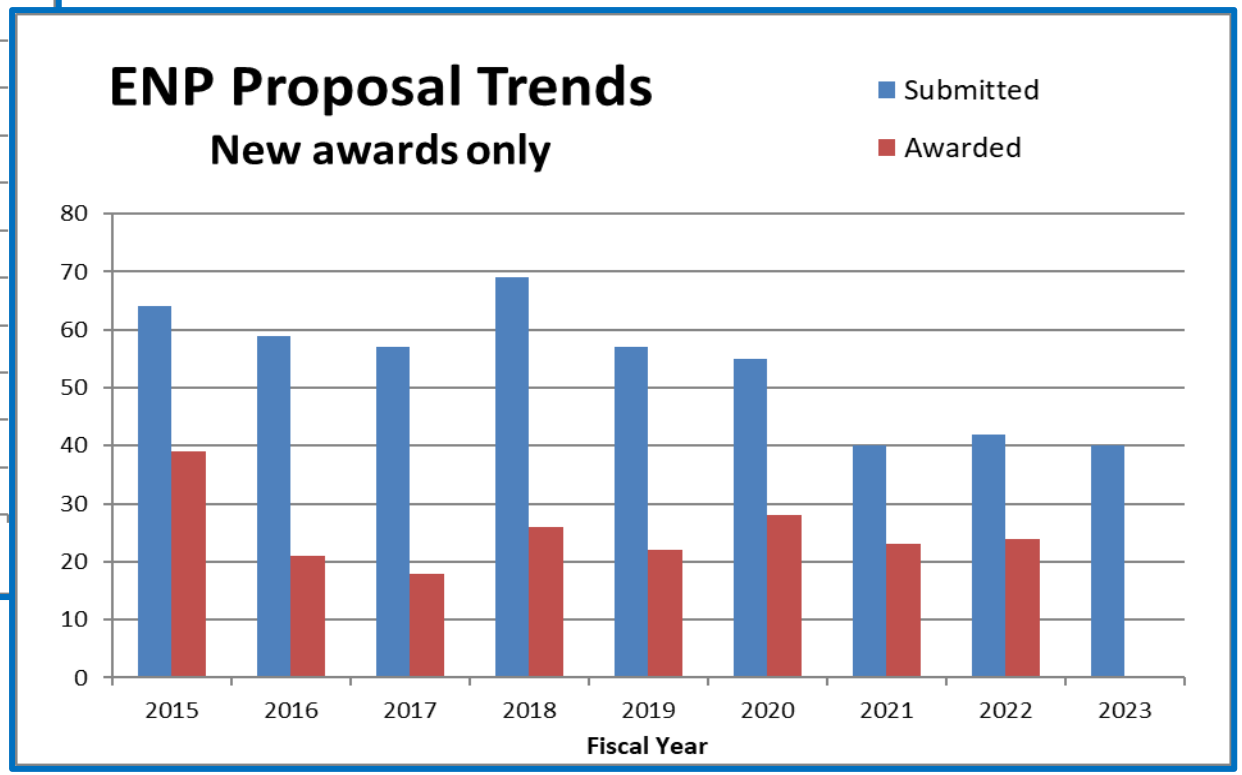
https://beta.nsf.gov/careers/openings/mps/phy/phy-21-001
www.nsf.gov/careers/rotator

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





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[1]	FY 2023 Estimate Base[2]	FY 2023 Estimate Total	FY 2024 Request	FY 2024 Request Compared to FY 2022 Actual Amount	FY 2024 Request Compared to FY 2022 Actual Percent	FY 2024 Request Compared to FY 2023 Base Total[3] Amount	FY 2024 Request Compared to FY 2023 Base Total[3] Percent
Research & Related Activities	**$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[1]	**$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%**
Total, NSF Discretionary Funding	**$8,675.61**	**$8,838.85**	**$9,876.51**	**$11,314.68**	**$2,639.07**	**30.4%**	**$1,775.67**	**18.6%**
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%	-	-
Total, NSF Mandatory Funding	**$304.42**	**$232.54**	**$232.54**	**$238.84**	**-$65.58**	**-21.5%**	**$6.30**	**2.7%**
Total, NSF Budgetary Resources	**$8,980.03**	**$9,071.39**	**$10,109.05**	**$11,553.52**	**$2,573.49**	**28.7%**	**$1,781.97**	**18.2%**

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

	FY 2022 Actual[1]	FY 2023 Estimate Base	Disaster Relief Supplemental Base	Disaster Relief Supplemental RI Damage Mitigation	FY 2023 Estimate Total	FY 2024 Request	Change over FY 2023 Base Total[2] Amount	Change over FY 2023 Base Total[2] 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)[3]	169.50	169.20	48.45	2.50	220.15	315.10	97.45	44.8%
Total	**$1,615.26**	**$1,612.90**	**$70.44**	**$2.50**	**$1,685.84**	**$1,835.79**	**$152.45**	**9.1%**

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”; $6M < total request < $20M
  - Design/development = to prepare MsRI implementation proposal; $600,000 < total request < $20M
- Mid-scale Research Infrastructure-2 (MsRI-2) NSF 23-570
  - Total request: $20M - $100M
  - “Shovel ready”
  - LOIs (required) due 15-may-2023, Preproposals due 20-jun-2023
- Solicitations published in alternate years
- Solicitation scope: NSF-wide

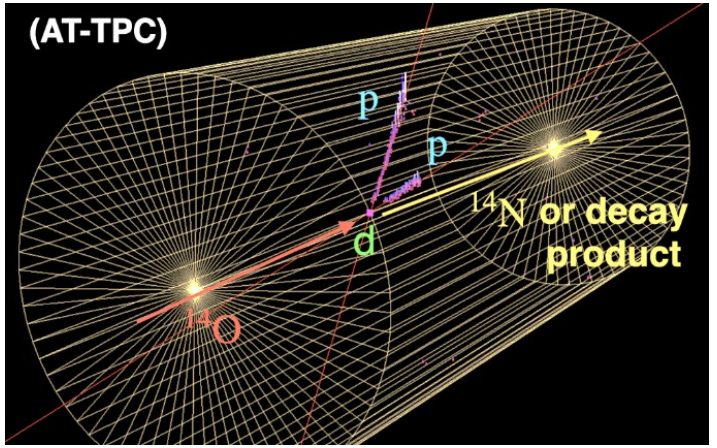
Questions? Contact me

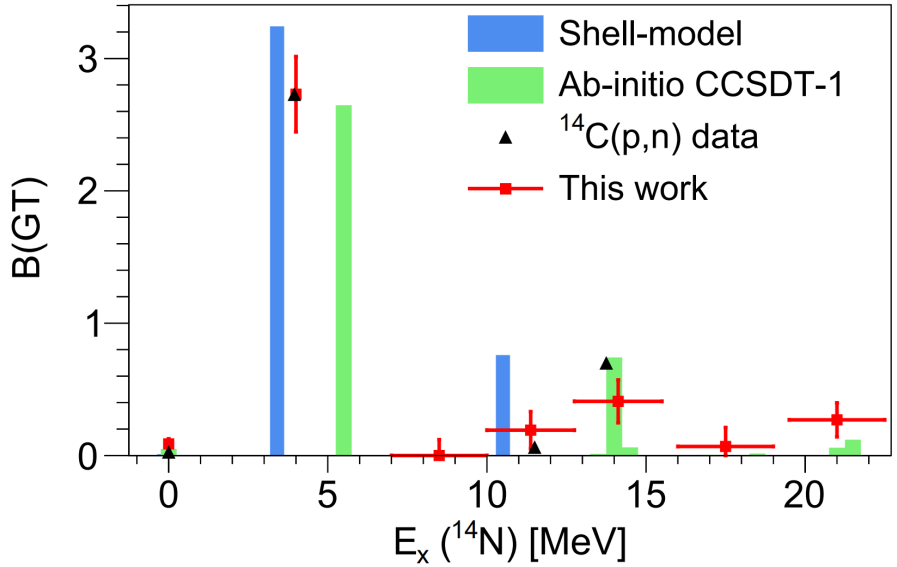
(d,2He) Inverse Kinematics → novel probe to constrain e-capture rates in astrophysical phenomena

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

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

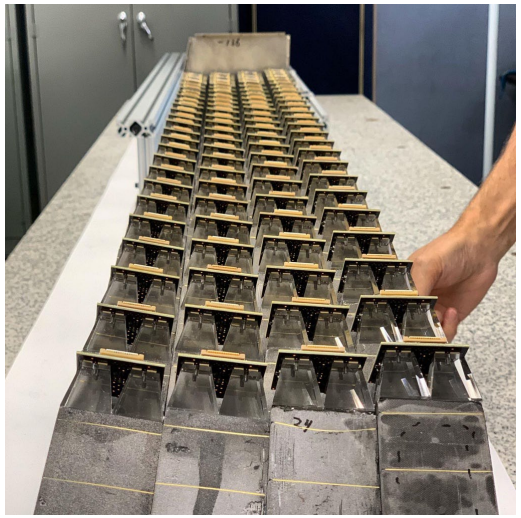
- ATTPC (filled with d) + S800



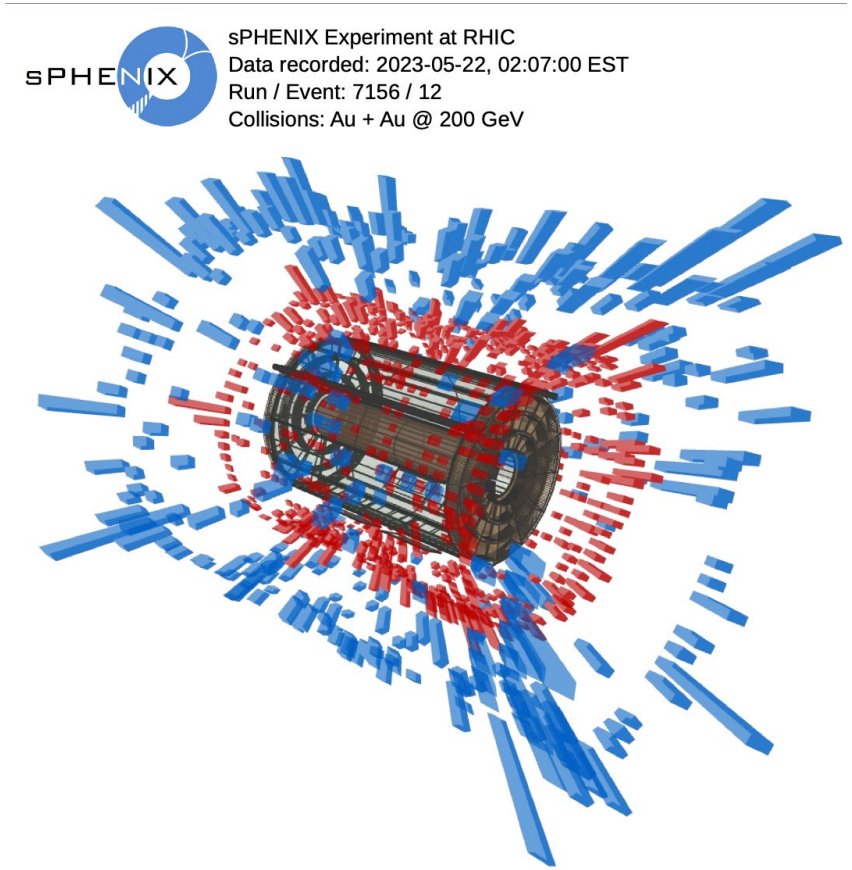


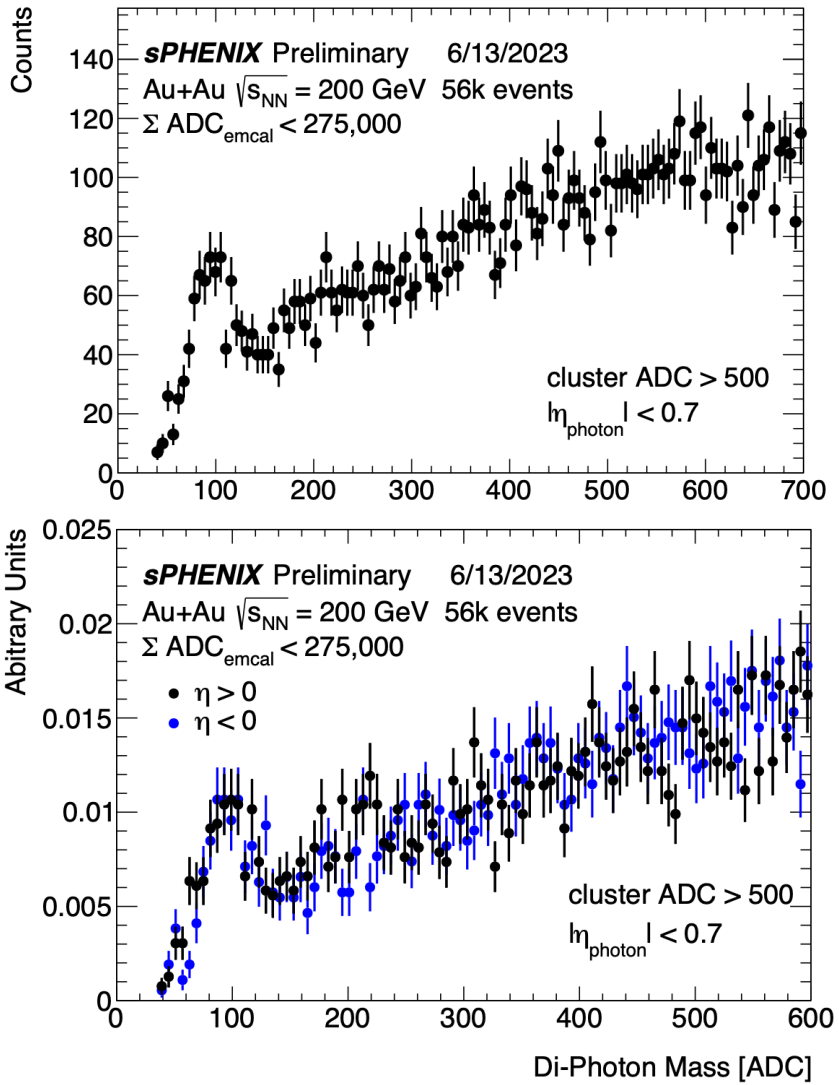
π^0 candidates in Au-Au collisions at sPHENIX

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



1 of 64 sectors of 96 blocks





For the latest updates:

https://www.nsf.gov/physics

Contact us at:

- Bogdan Mihaila bmihaila@nsf.gov or call (703)292-8235
- Alfredo Galindo-Uribarri agalindo@nsf.gov or call (703)292-5139
- Allena Opper aopper@nsf.gov or call (703)292-8958