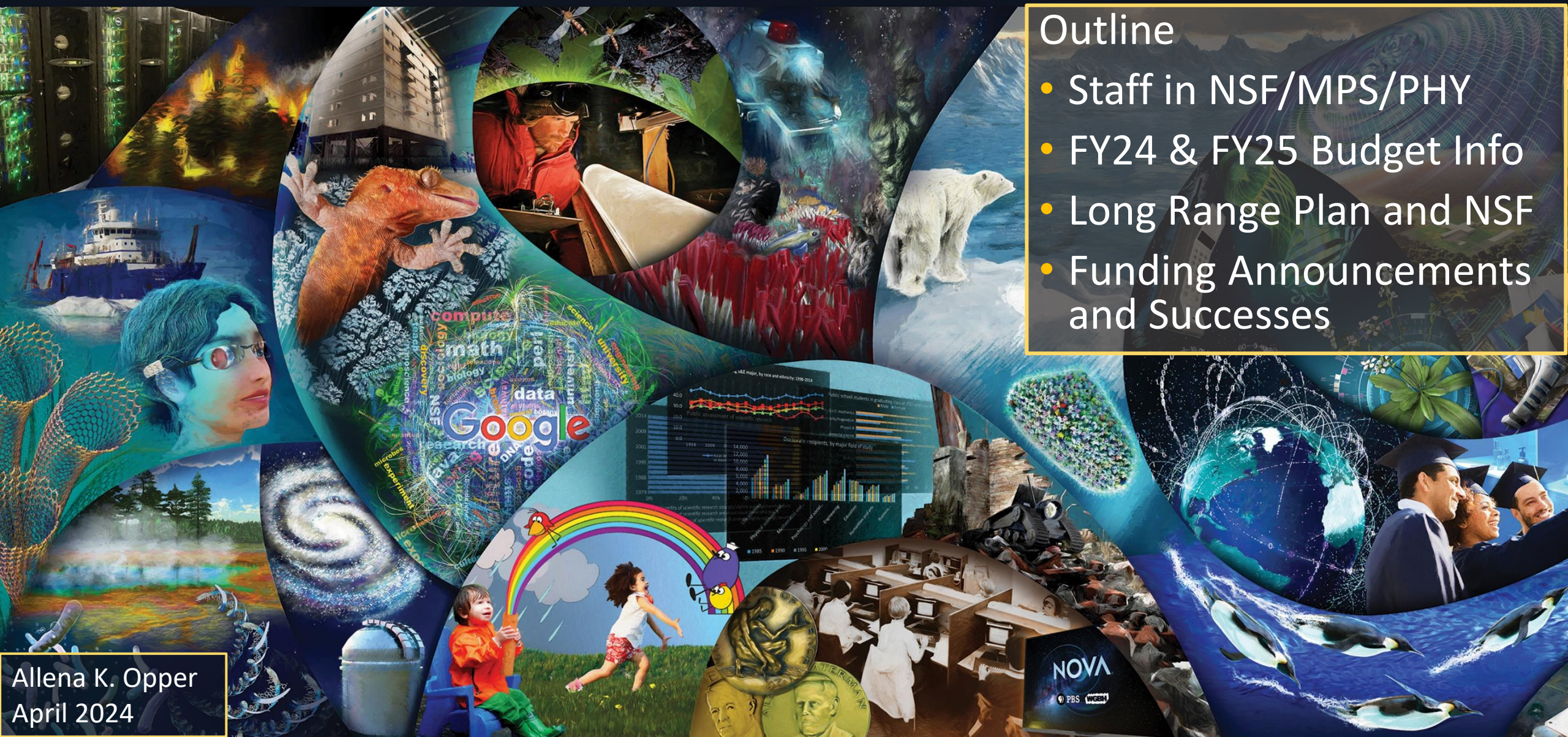




National Science Foundation – Nuclear Physics

- ### Outline
- Staff in NSF/MPS/PHY
 - FY24 & FY25 Budget Info
 - Long Range Plan and NSF
 - Funding Announcements and Successes



Allena K. Opper
April 2024





NSF/MPS/PHY Personnel

No changes since December 2023!

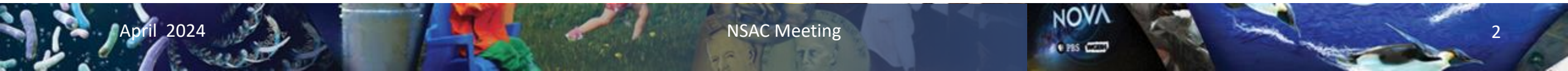
- Sethuraman Panchanathan – Director
- Denise Caldwell – *Acting* Assistant Director for MPS
- Saúl González – Physics Division Director
- Michael Cavagnero – *Acting* Deputy Division Director
- Bogdan Mihaila – Nuclear Theory Program Director
- Senta (Vicki) Greene – Nuclear Physics Program Director
- Allena Opper – Nuclear Physics Program Director



NSF seeks candidates for Program Director for Particle Astrophysics
Permanent Staff Position



<https://www.usajobs.gov/job/787468700>



FY24 Budget: President's Request, House, Senate (\$M)



NSF by Account	FY 2022 Actual	FY 2023 Estimate Total	FY 2024 Request	House Mark	Senate Mark
Research & Related Activities	\$6,964.66	\$7,826.80	\$9,029.90	\$7,867	\$7,608
STEM Education	\$1,146.72	\$1,371.00	\$1,444.18	\$1,006	\$1,228
Major Res. Equip. & Fac. Construction	\$120.60	\$187.23	\$304.67	\$254	\$187
Agency Operations & Award Mgmt.	\$420.21	\$463.00	\$503.87	\$472	\$448
Office of Inspector General	\$18.89	\$23.39	\$26.81	\$27	\$23
National Science Board	\$4.52	\$5.09	\$5.25	\$5	\$5
Total, NSF Discretionary Funding	\$8,675.61	\$9,876.51	\$11,314.68	\$9,630	\$9,500

FY24

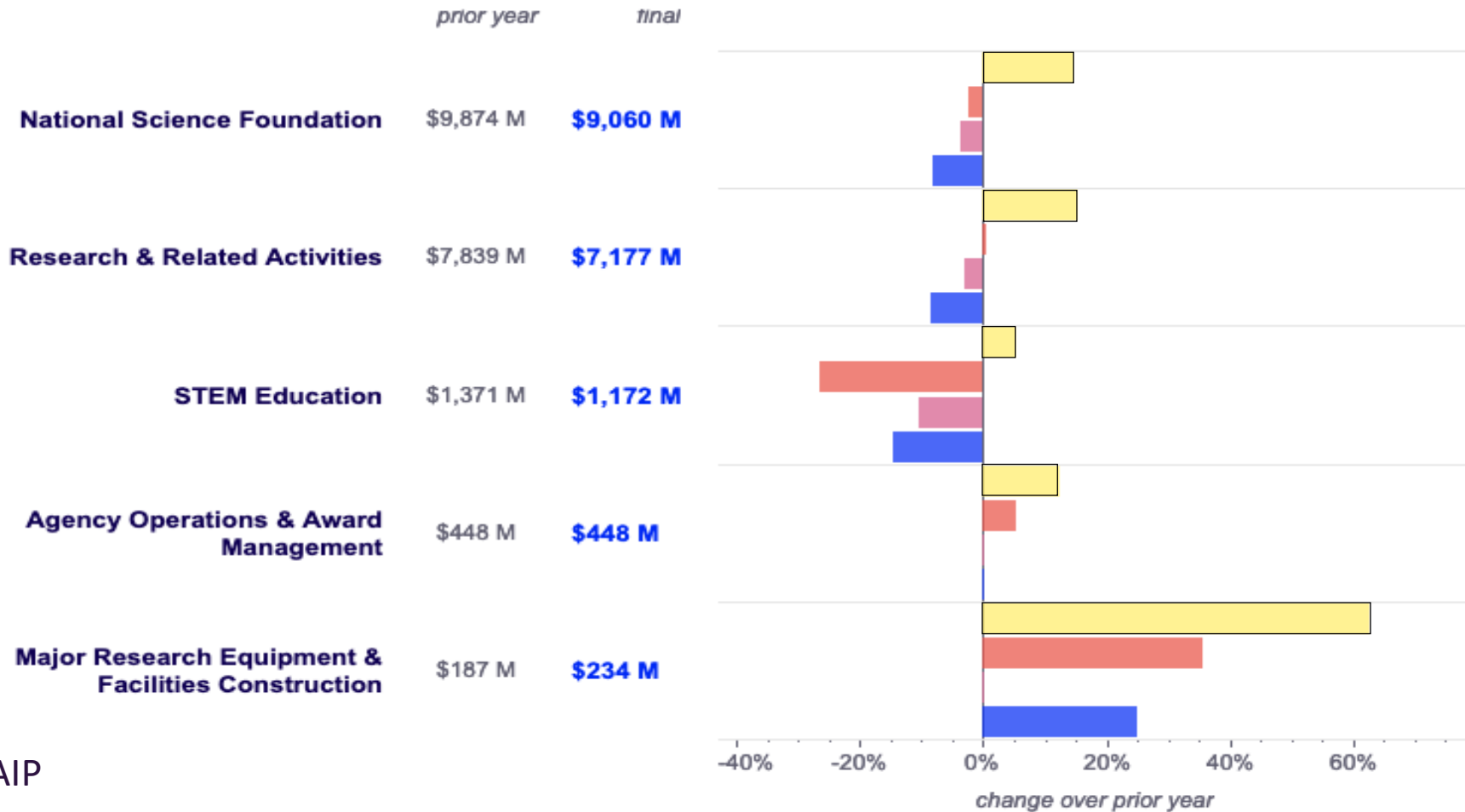
FY2024 Appropriations: National Science Foundation



- REQUEST
- SENATE
- HOUSE
- FINAL

FISCAL YEAR

2024



From AIP





FY24 & FY25 Budget Process

- Agency budget request → OMB ~ end of summer
- “Pass Back”: OMB iterates with agency ~ Fall
 - May also include additional instructions
- President’s Budget Request made public ~ early Feb
 - Much activity → NSF Budget Book
- ...

FY25 ✓

FY25 ✓

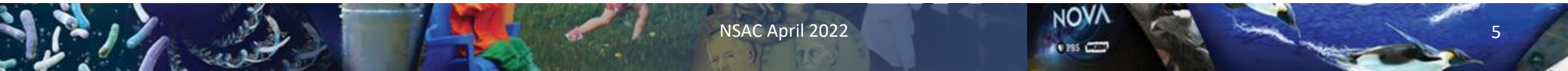
FY25: 11-mar-2024

At least 60 days

- Congress passes appropriation ~ before beginning of FY (1-oct)
 - NSF: Amounts for 6 high-level accounts, occasionally with additional
- President signs appropriation; budget → agency via OMB
- NSF generates a full “Current Plan” and submits to Congress via OMB (within 45 days)
- Congress acts within 30 days: “Current Plan” → “Operating Plan”

FY24:
23-mar-2024

FY24 Operating
Plan ???





FY25 President's Budget Request – NSF (\$M)

NSF by Account	FY 2023 Base Plan ¹	FY 2024 (TBD)	FY 2025 Request	Change over FY 2023 Base Plan	
				Amount	Percent
Research & Related Activities²	\$7,631.02	-	\$8,045.32	\$414.30	5.4%
STEM Education²	\$1,229.28	-	\$1,300.00	\$70.72	5.8%
Major Res. Equip. & Fac. Construction	\$187.23	-	\$300.00	\$112.77	60.2%
Agency Operations & Award Mgmt.	\$463.00	-	\$504.00	\$41.00	8.9%
Office of Inspector General	\$23.39	-	\$28.46	\$5.07	21.7%
National Science Board	\$5.09	-	\$5.22	\$0.13	2.6%
Total, NSF Discretionary Funding	\$9,539.01	-	\$10,183.00	\$643.99	6.8%
Advancing Scientific Discovery: Artificial Intelligence	-	-	50.00	50.00	N/A
STEM Education - H-1B Visa	192.54	-	138.93	-53.61	-27.8%
Donations	40.00	-	40.00	-	-
Total, NSF Mandatory Funding	\$232.54	-	\$228.93	-\$3.61	-1.6%
Total, NSF Budgetary Resources	\$9,771.55	-	\$10,411.93	\$640.37	6.6%

Totals exclude reimbursable amounts.

¹ Reflects the anticipated transfer of \$15.0 M of carryover within R&RA to AOAM to be completed in FY 2024.

² FY 2023 R&RA and STEM Education accounts are restated to show consolidation of NSF mission support activities within R&RA comparably with FY 2025; STEM Education account shifts \$16.72 million to R&RA in FY 2023 display column.



FY25 President's Budget Request – MPS (\$M)

	FY 2023			Change over	
	Base	FY 2024	FY 2025	FY 2023 Base Plan	
	Plan ¹	(TBD)	Request	Amount	Percent
Astronomical Sciences (AST)	\$288.21	-	\$318.53	\$30.32	10.5%
Chemistry (CHE)	264.99	-	264.99	-	-
Materials Research (DMR)	334.50	-	345.72	11.22	3.4%
Mathematical Sciences (DMS)	248.40	-	248.40	-	-
Physics (PHY)	308.65	-	312.90	4.25	1.4%
Office of Strategic Initiatives (OSI)	215.20	-	191.09	-24.11	-11.2%
Total	\$1,659.95	-	\$1,681.63	\$21.68	1.3%



FY 2025 BUDGET REQUEST TO CONGRESS



U.S. National Science Foundation



STRENGTHENING ESTABLISHED NSF

Driving discovery and enhancing state-of-the-art research capabilities are and will continue to be NSF's central focus.



INSPIRING MISSING MILLIONS

NSF will continue to scale up existing pathways into STEM fields for every demographic and socioeconomic group in every geographic region of the country.



ACCELERATING TECHNOLOGY AND INNOVATION

NSF will continue to support advancing breakthrough technologies, translating research results to the market and society, fostering partnerships, and nurturing diverse STEM talent.

Four Major Themes

1. Advance Emerging Industries for National and Economic Security
2. Create Opportunities Everywhere
3. Build a Resilient Planet
4. Strengthen Research Infrastructure

Long Range Plan for the Nation's Nuclear Science effective & strategic planning → credibility & respect



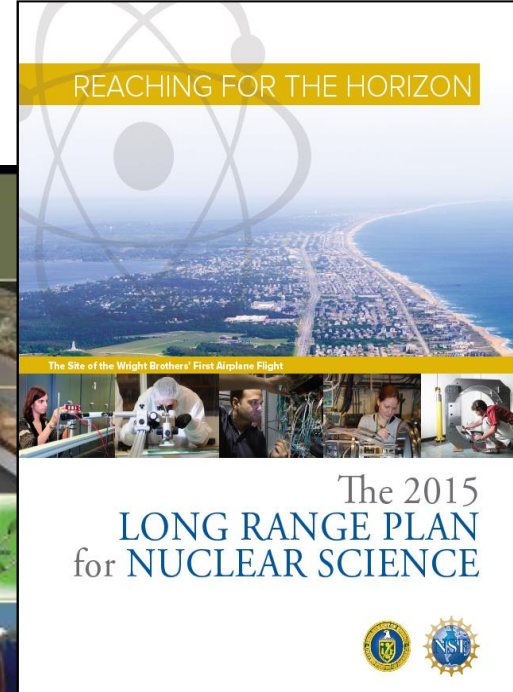
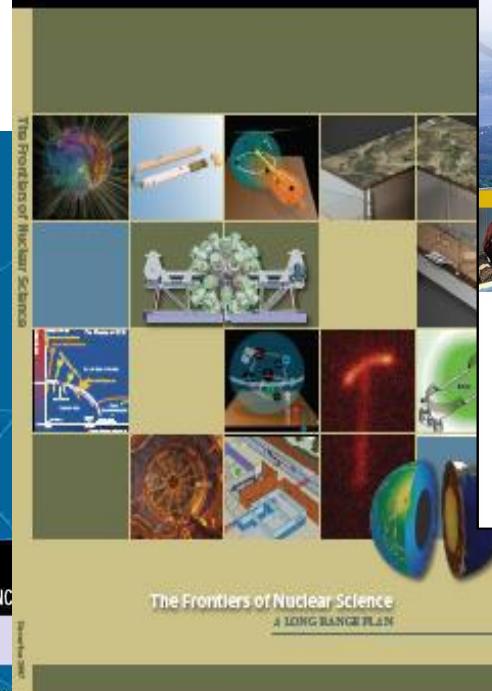
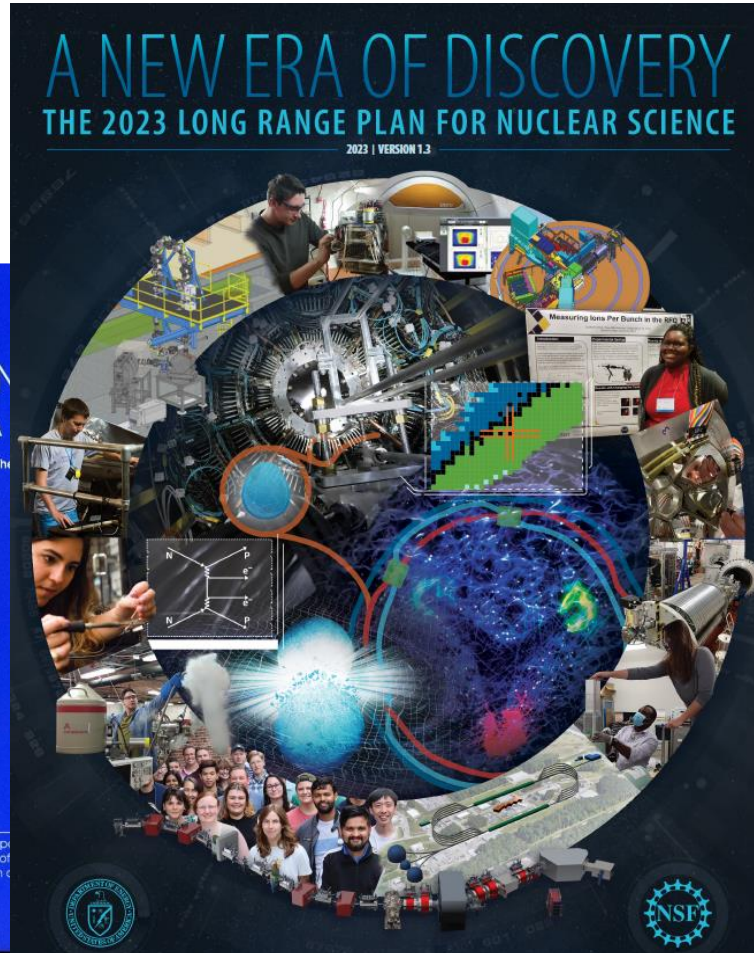
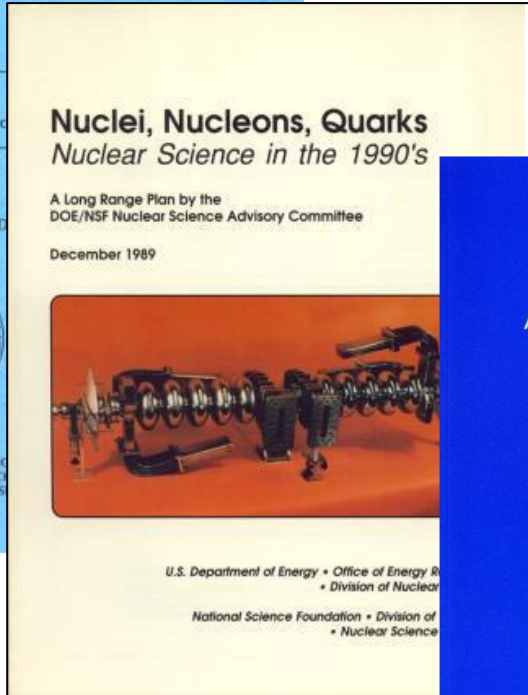
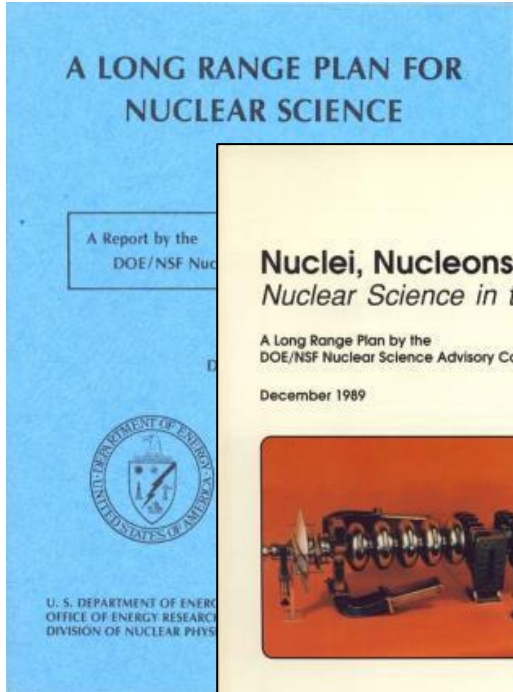
1979

1983

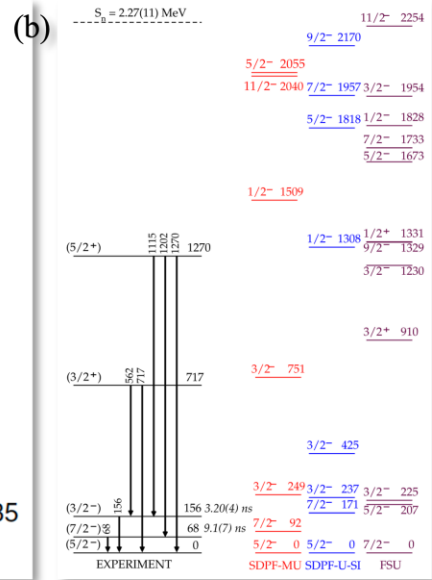
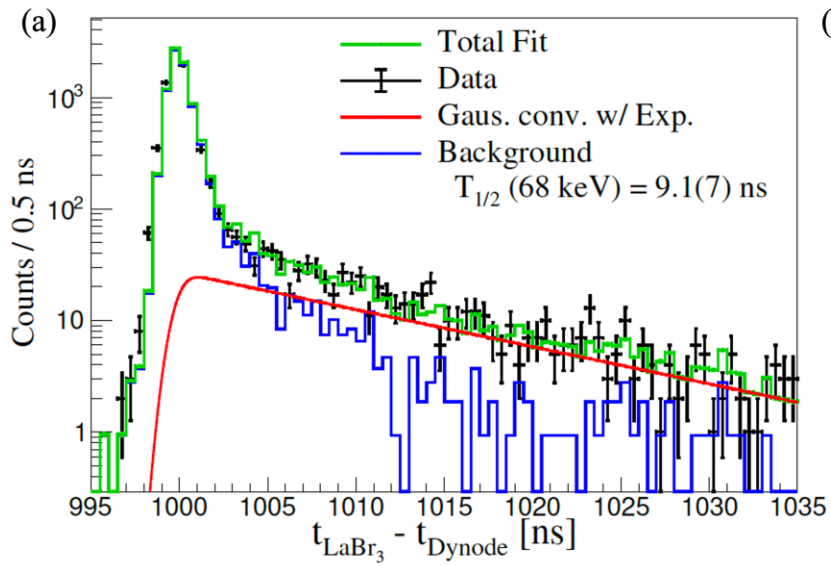
1989

2015

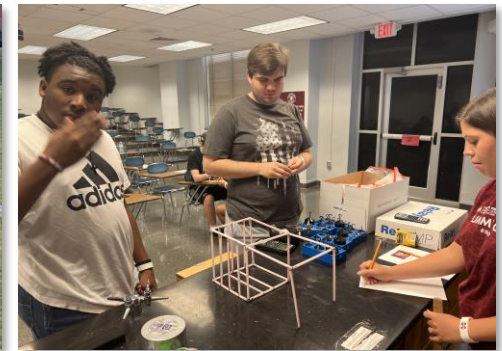
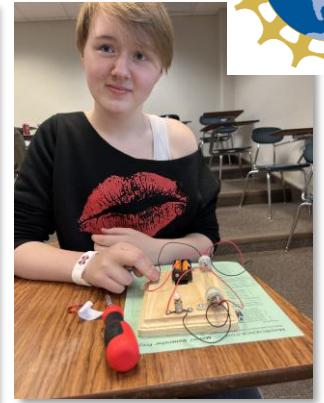
2007



Selected Updates from Mississippi State University and PHY-1848177 (CAREER): PI Ben Crider



Newly observed 68-keV isomer found in ^{37}Si using bg timing techniques (a), which validates SM predictions in neutron-rich, odd-A Si isotopes (b).

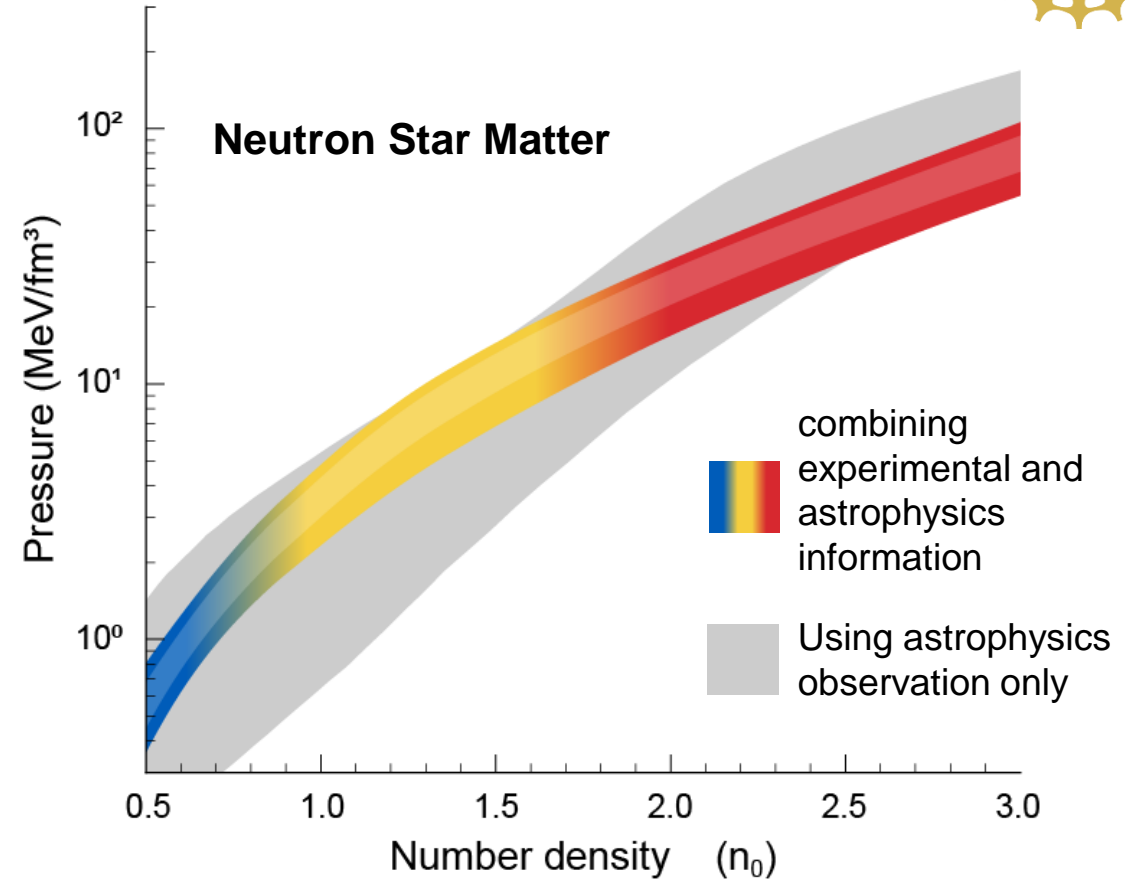
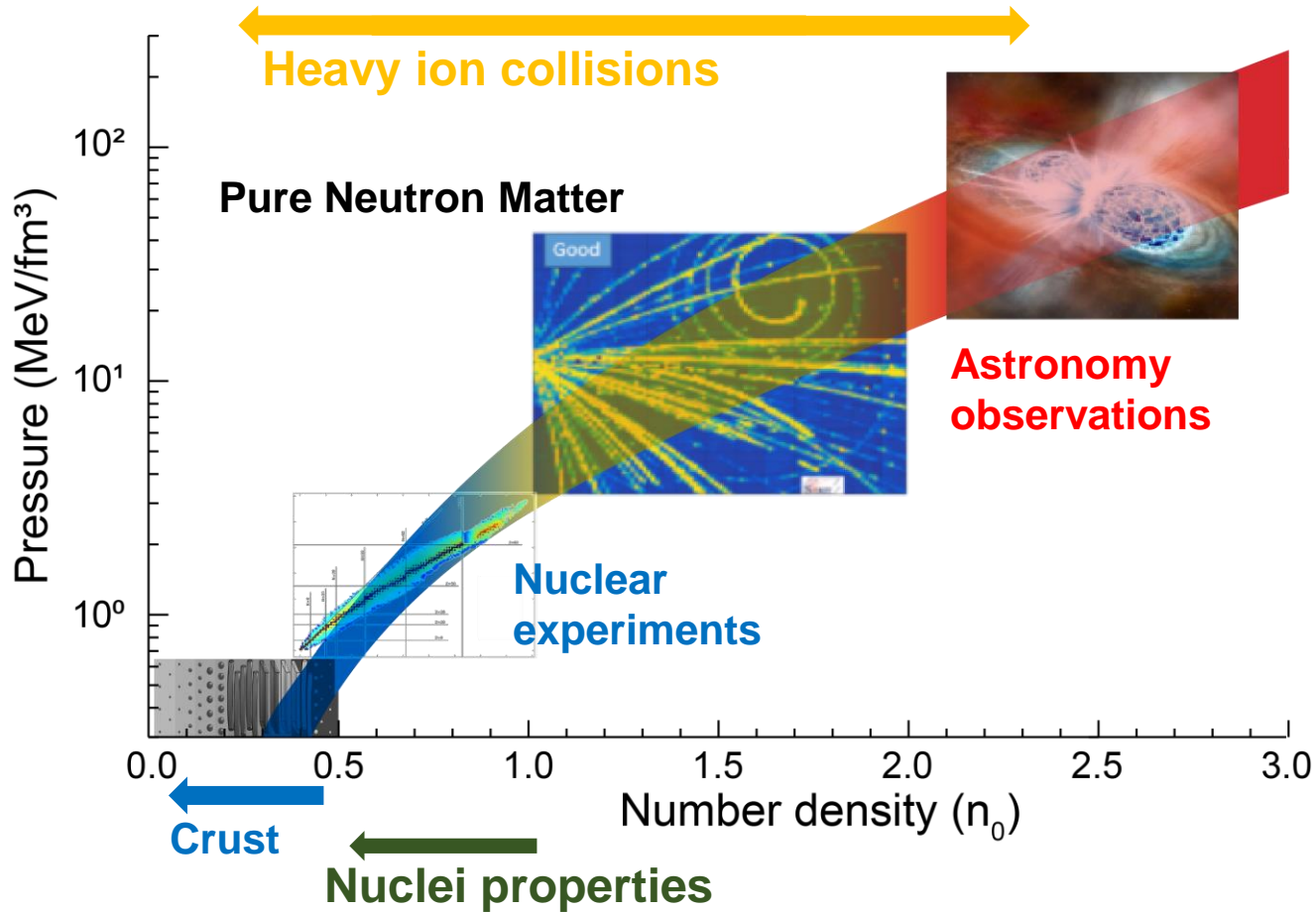


Year 2 of the Physics Summer Camp for Students with ASD was a big success! We nearly doubled the number of campers from year 1 to year 2 while maintaining a high degree of engagement with physics and STEM. We look forward to year 3 of the camp!

<https://www.physics.msstate.edu/phycamp>

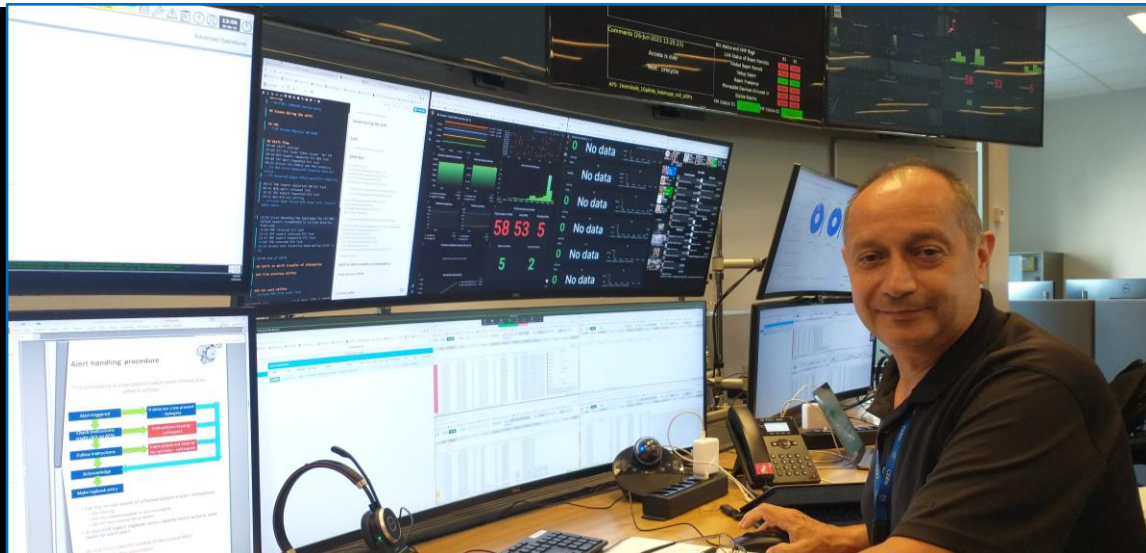
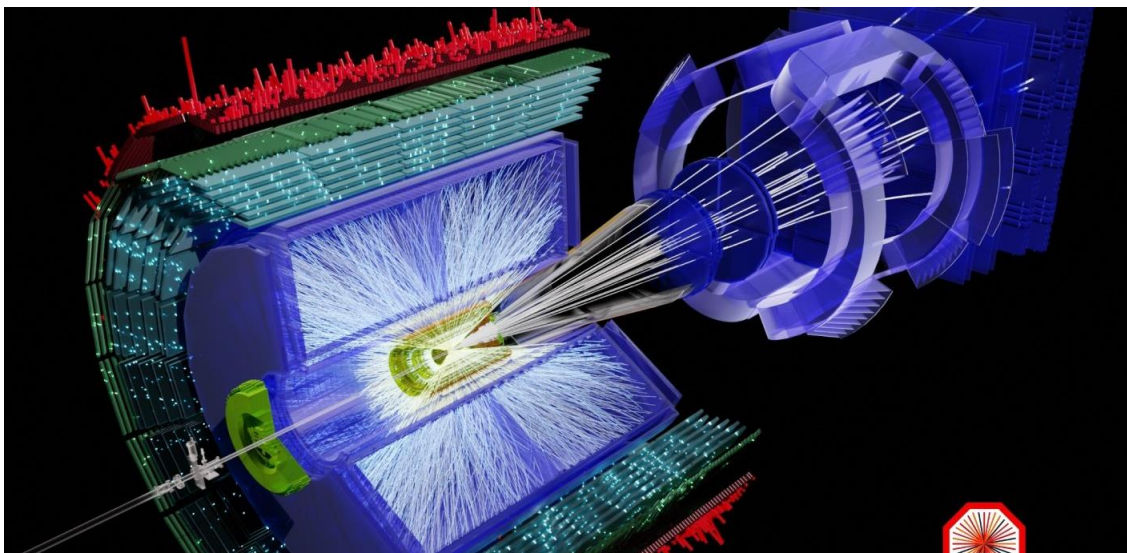


Nuclear Physics Experiments and Astronomical Observations Advance Equation-of-State Research

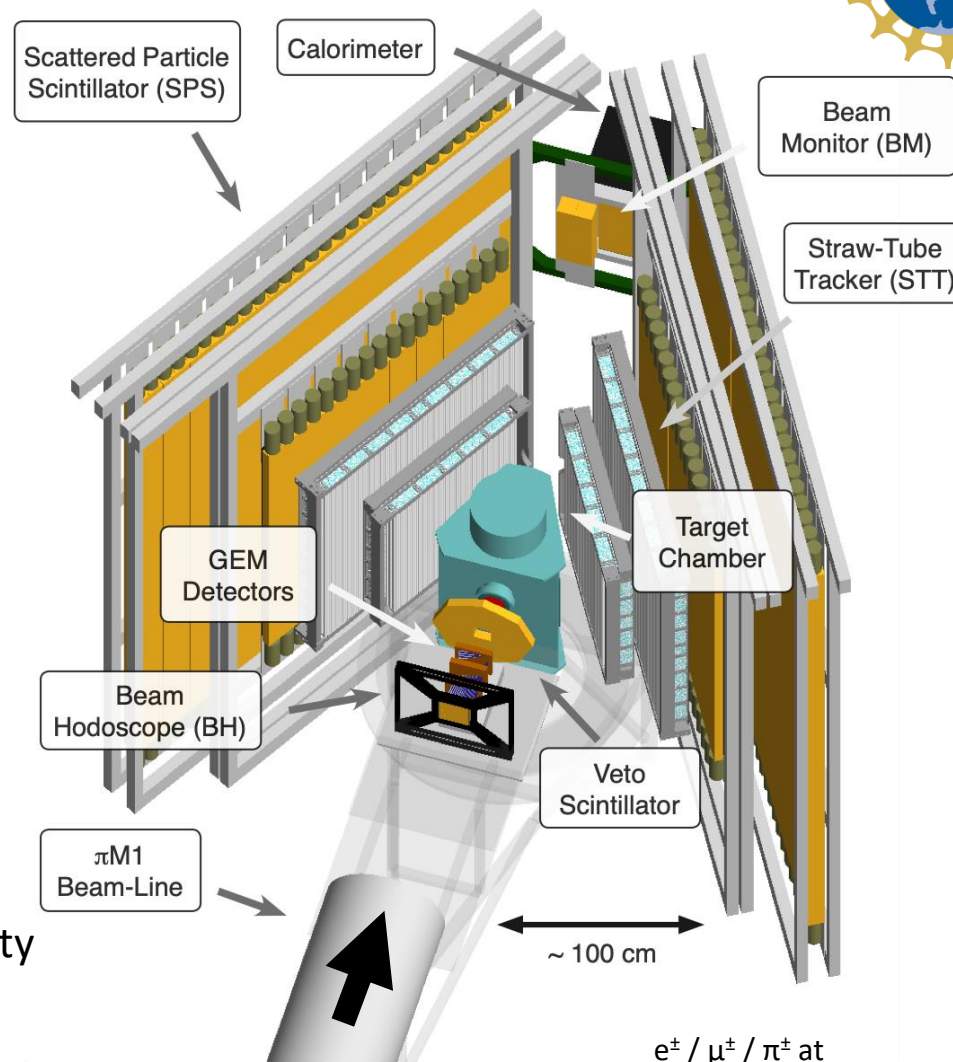
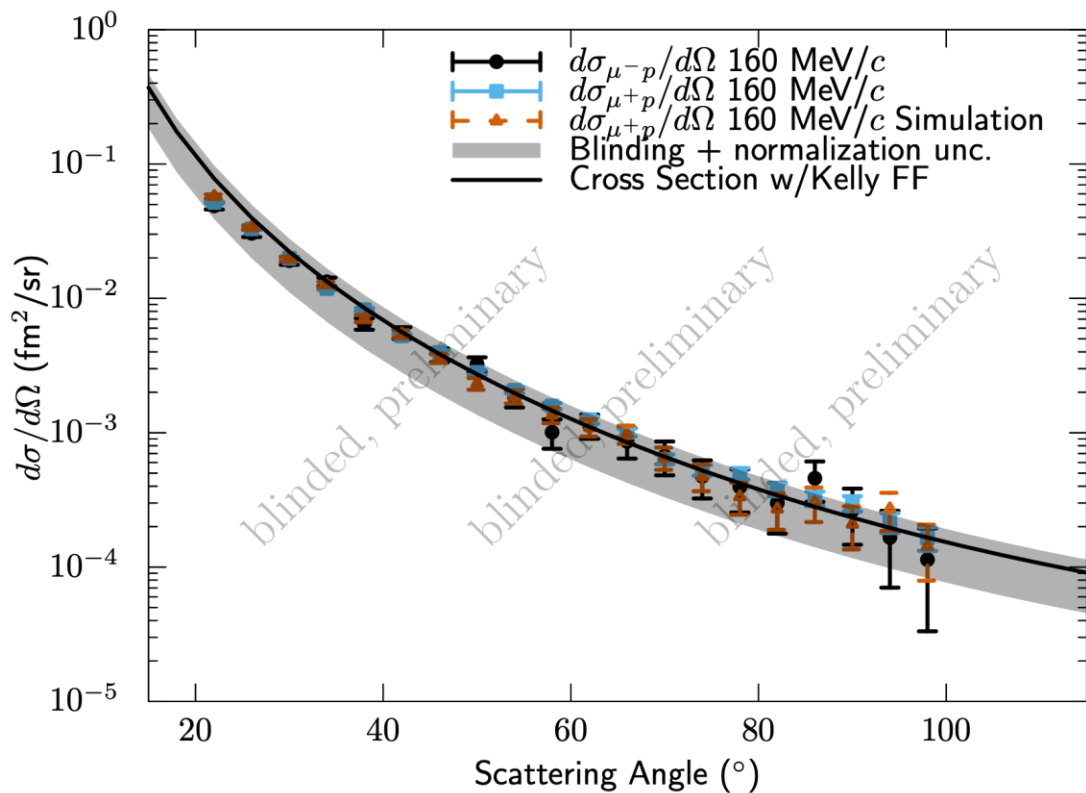


By combining astronomical observations and laboratory experiments, FRIB scientists extract nuclear matter equation of state over a wide range of densities shedding light on the neutron star properties. Incorporating nuclear physics data significantly reduces the uncertainties of the derived equation of state.

RUI: Studies of Relativistic Heavy Ions Collisions in ALICE at the LHC



MUSE Highlights



- Proton form factor, charge radius, two-photon exchange, lepton universality @ PSI elastic scattering of 115 – 210 MeV/c e^\pm, μ^\pm from hydrogen
- 2024: 5 months beam time awarded and scheduled
- 2025: similar beam time expected

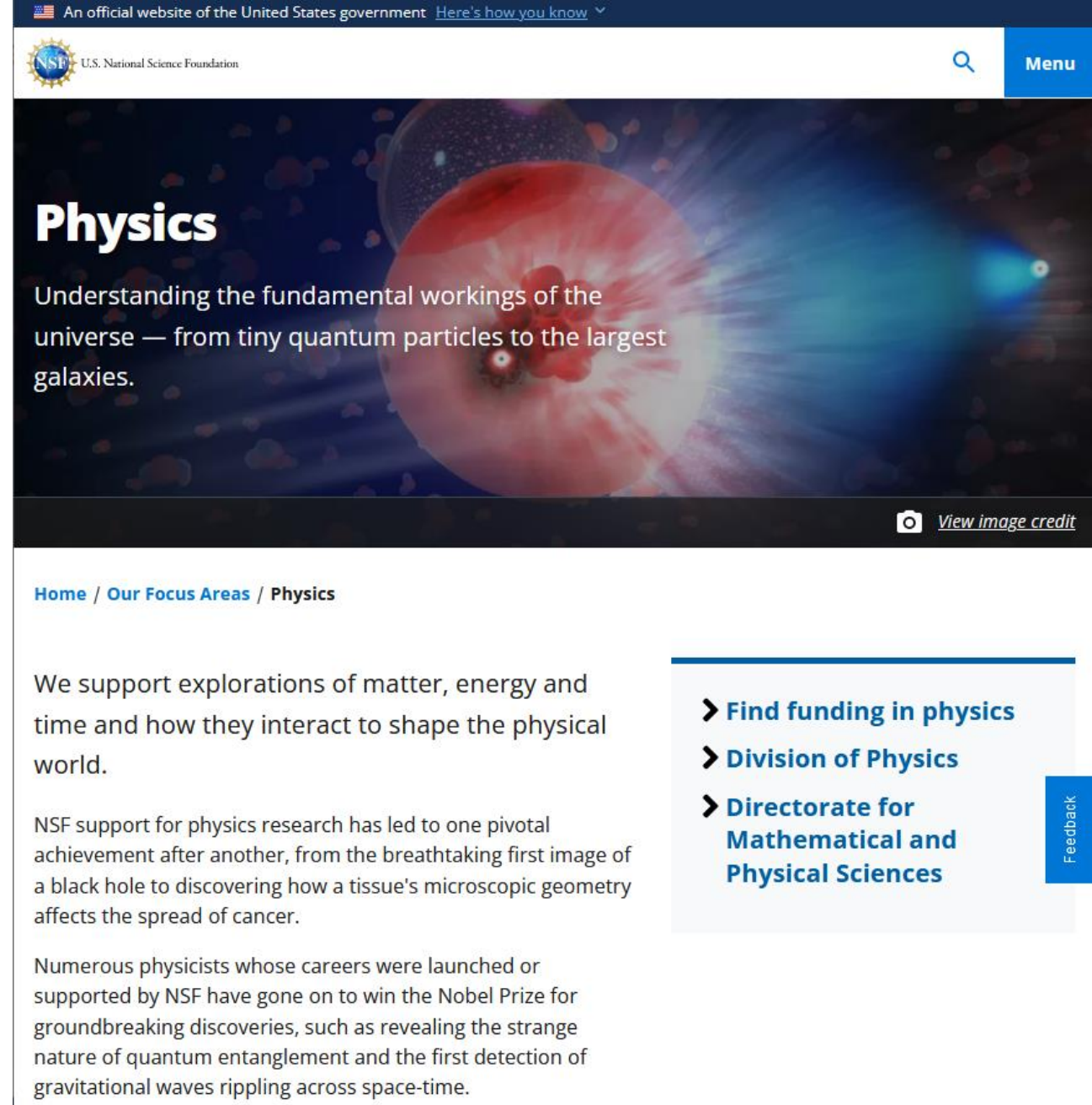
$e^\pm / \mu^\pm / \pi^\pm$ at
 $p = 115 - 210 \text{ MeV}/c$

For the latest updates:

<https://www.nsf.gov/physics>

Contact us at:

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bmihaila@nsf.gov or
call (703)292-8235
- Vicki Greene
segreene@nsf.gov
or call (703)292-5183
- Allena Opper
aopper@nsf.gov or
call (703)292-8958



The screenshot shows the NSF Physics website. At the top, there is a navigation bar with the NSF logo, the text "U.S. National Science Foundation", a search icon, and a "Menu" button. Below the navigation bar is a large hero image of a red and white particle collision. The word "Physics" is written in large white letters over the image. Below the image, the text reads: "Understanding the fundamental workings of the universe — from tiny quantum particles to the largest galaxies." In the bottom right corner of the hero image, there is a camera icon and the text "View image credit". Below the hero image is a breadcrumb trail: "Home / Our Focus Areas / Physics". The main content area contains three paragraphs of text. The first paragraph states: "We support explorations of matter, energy and time and how they interact to shape the physical world." The second paragraph states: "NSF support for physics research has led to one pivotal achievement after another, from the breathtaking first image of a black hole to discovering how a tissue's microscopic geometry affects the spread of cancer." The third paragraph states: "Numerous physicists whose careers were launched or supported by NSF have gone on to win the Nobel Prize for groundbreaking discoveries, such as revealing the strange nature of quantum entanglement and the first detection of gravitational waves rippling across space-time." On the right side of the page, there is a vertical sidebar with three blue arrows pointing to the right, each followed by text: "Find funding in physics", "Division of Physics", and "Directorate for Mathematical and Physical Sciences". At the bottom right of the sidebar, there is a vertical blue button with the word "Feedback" written vertically.



Thank You!