



National Science Foundation – Nuclear Physics

Outline:

- General comments
- Announcements
 - DEI
- Budget
- Funding opportunities
- NSF & EIC

Allena K. Oppen
MPS/PHY
July 2021

EICUG

August 2021

NOVA

PBS



The Mission (of the Non-Mission Agency)

- Established by Congress in 1950
- Supports all fields of fundamental science and engineering (medical science)
- Responds to proposals

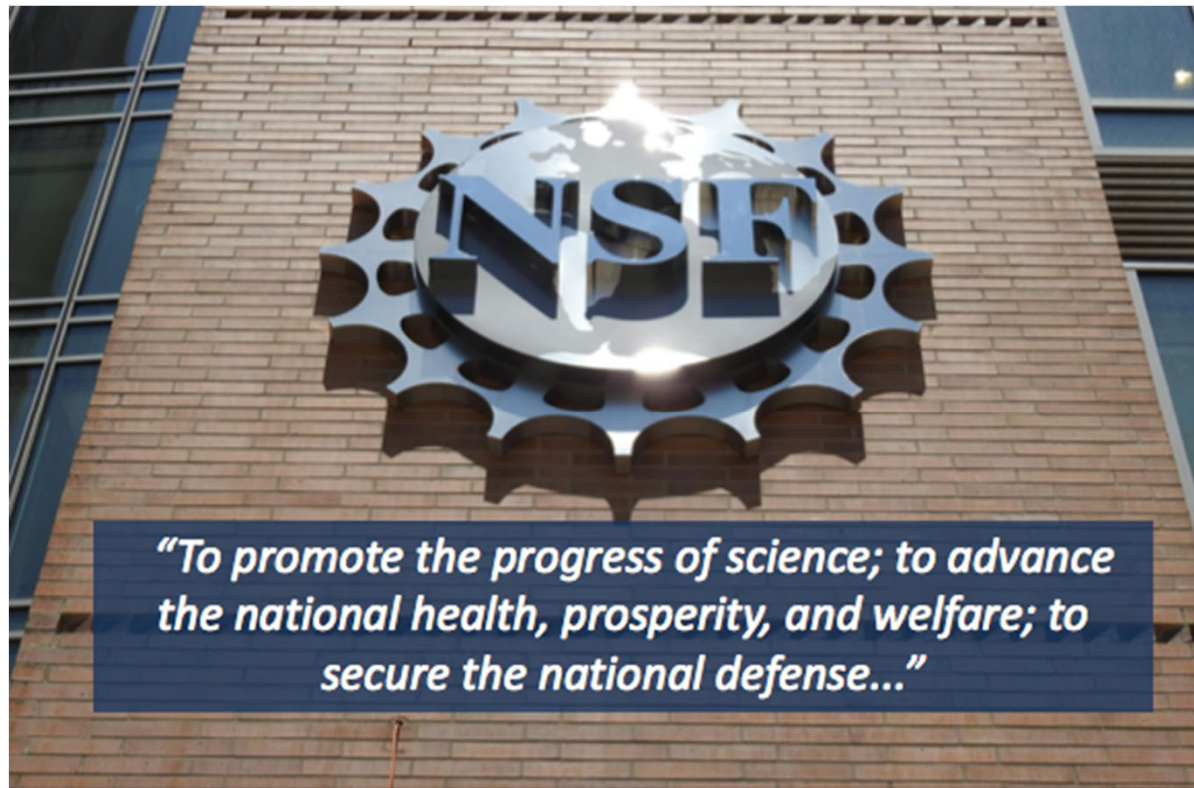


Photo Credit: Maria Barnes, NSF



EICUG

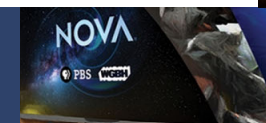
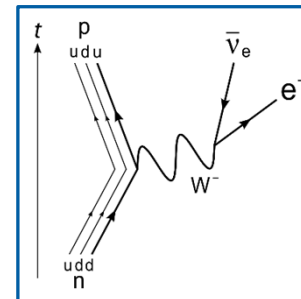
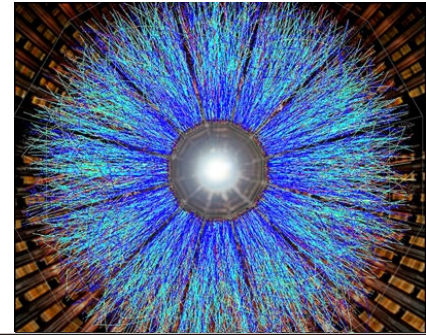
August 2021



NSF Nuclear Physics

Supports the study of nuclear constituents, reactions, and structure within nuclei and nucleons – and in stars, *as understood through the strong and electroweak interactions*.

- Nuclear and hadron QCD
- Nuclear astrophysics, reactions, and structure
- Nuclear precision measurements of fundamental symmetries and constants
- National Superconducting Cyclotron Laboratory
- University labs (FSU & UND)
- Nuclear Theory & Theory Hubs
- Co-review and co-funding with other NSF programs





Announcements

PHY Investigator Initiated Research NSF 21-593

All proposals submitted to the Division of Physics programs must go through this solicitation.

- **Deadlines:** First Tuesday in December for *Experimental & Theoretical Nuclear Physics*
→ **December 7, 2021 5 pm in your home institution's time zone**
- Collaborators and Other Affiliations Template: list those people with whom you have actively collaborated in last 48 months – not everyone in the collaboration. Do not use collaboration url. **Questions – contact cognizant program director.**
- Follow instructions that are specific to this solicitation; **non-compliant proposals may be returned without review**
- Must conform to the NSF Proposal & Award Policies & Procedures Guide (PAPPG)
https://www.nsf.gov/pubs/policydocs/pappg22_1/index.jsp
 - **Updated instructions regarding Current and Pending Support of senior personnel**



PHY DCL: Growing a Strong, Diverse Workforce NSF 21-065

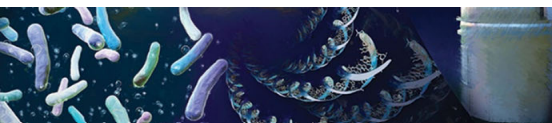


PHY-GR Supplements – emphasis on URGs in STEM fields

- Graduate Student Eligibility
 - Not currently supported by federal government (NSF, DOE, NIH, ...)
 - US Citizen, US National, or US Permanent Resident
- Stipend, tuition, benefits, and IDC (~\$60k)
- Renewable up to two times, no deadline for submission however, early submission suggested

REU Supplements – emphasis on URGs in STEM fields

- US Citizen, US National, or US Permanent Resident





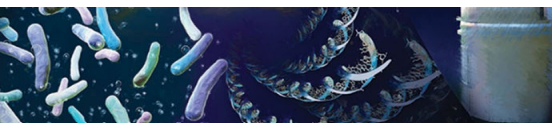
LEAPS and ASCEND MPS intends to renew these in FY22

LEAPS: Launching Early-Career Academic Pathways in MPS

- Designed to launch careers of pre-tenure faculty in MPS fields *at minority-serving institutions (MSIs), predominantly undergraduate institutions (PUIs), and Carnegie Research 2 (R2) universities* with the goal of achieving excellence through diversity
- **Due date = 14-jun-2021** Awards = 24 months, up to \$250k

ASCEND - Postdoctoral Research Fellowships

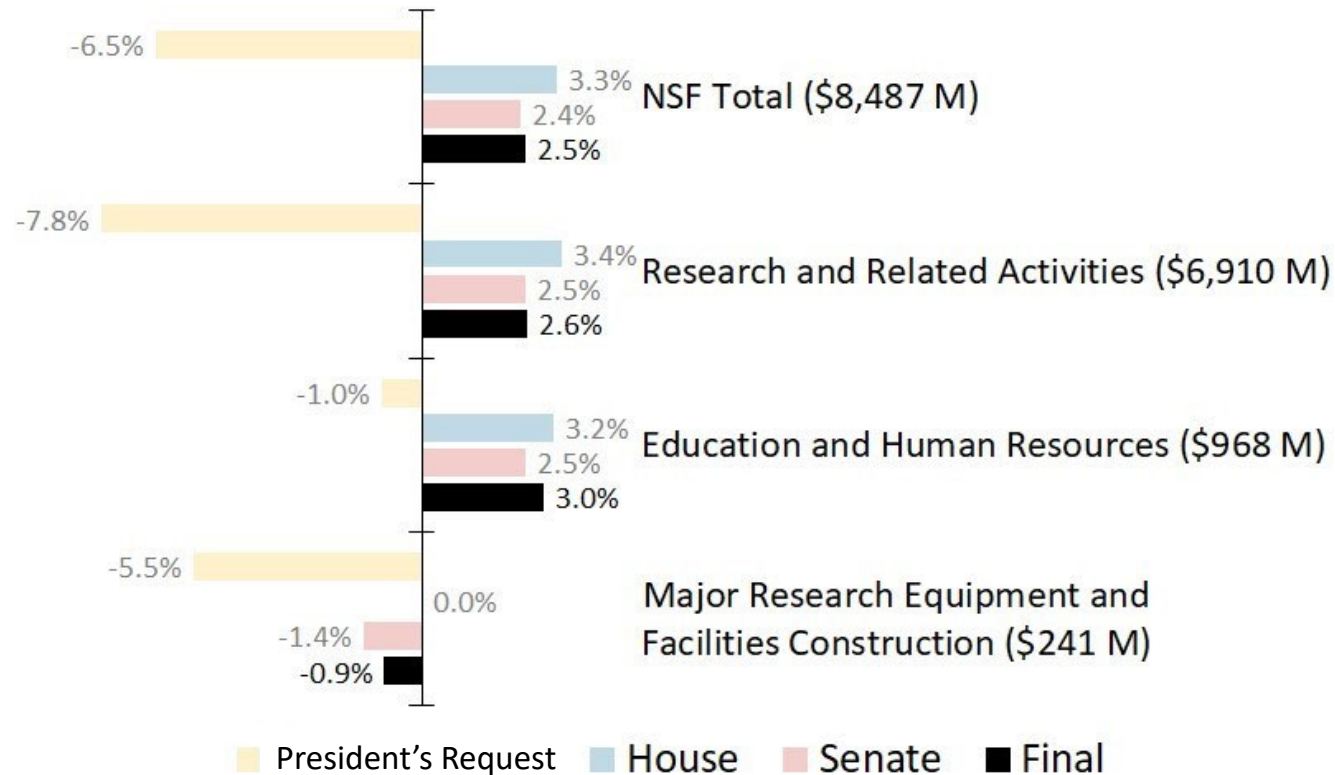
- Goal: to support Postdoctoral Fellows who will broaden the participation of groups that are underrepresented in Mathematical and Physical Sciences (MPS) fields in the U.S.
- And to prepare PD Fellows to transition from a postdoctoral position into the first few years of an academic faculty position
- Fellowships are **awards to individuals**, not institutions, and are administered by the Fellows
- **Due date = 15-jun-2021** \$100k/year for up to 3 years





NSF FY21 Budget Appropriations

\$ in () = FY21 amounts



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American Rescue Plan (COVID Relief Bill)

- \$600 million for the National Science Foundation to “fund or extend new and existing research grants, cooperative agreements, scholarships, fellowships, and apprenticeships, and related administrative expenses to prevent, prepare for, and respond to coronavirus.”
- PHY set aside funding for supplements to existing PHY awards to help address the needs of those PIs, postdocs, and students disproportionately impacted by the pandemic with the goal of maintaining a robust scientific workforce.
 - Approximately \$1.5M in supplements to Nuclear Physics awards





- Enhance fundamental research and development;
- Address racial equity in science and engineering;
- Address climate science and sustainability research;
- Strengthen U.S. leadership in emerging technologies; and
- Construct additional major research facilities.

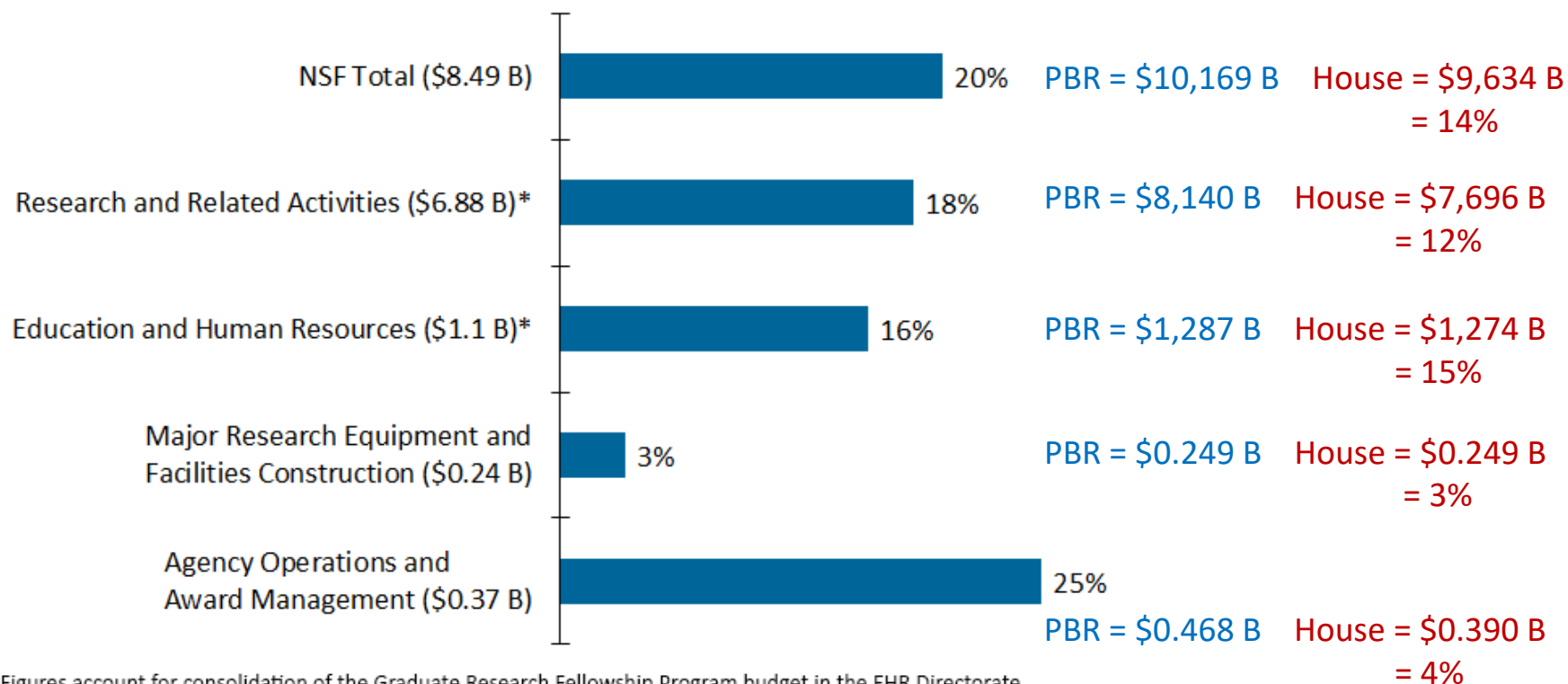
FY 2022

BUDGET REQUEST TO CONGRESS



FY22 President's Budget Request – NSF

\$ in () = FY21 estimates



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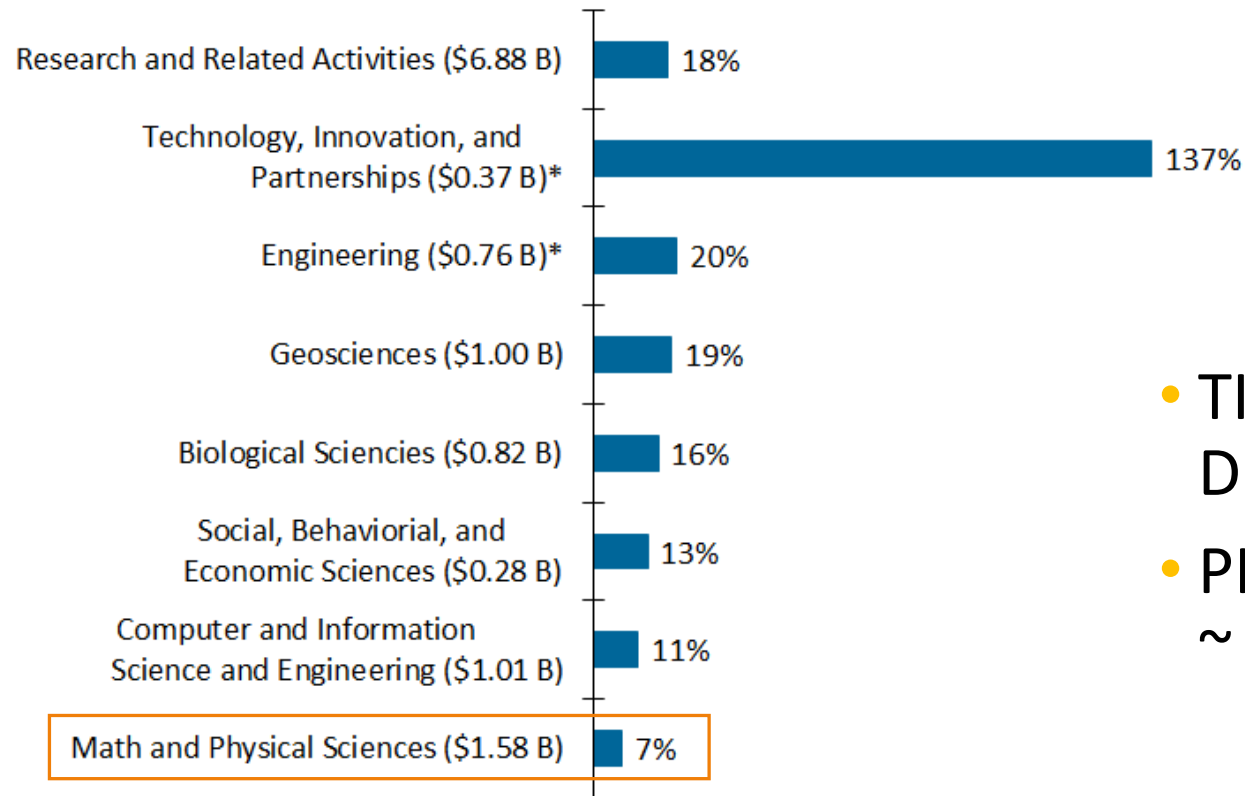
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FY22 President's Budget Request – Directorates

\$ in () = FY21 estimates



- TIP Directorate
- PHY increase ~ 4%

* The Engineering Directorate topline excludes programs that NSF proposes to transfer to the Technology Directorate.



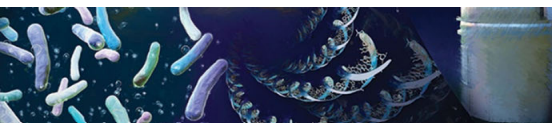


Funding Opportunities:

Major Research Instrumentation (MRI)

- Two tracks:
 - Track 1 \$100 k < \$ from NSF < \$1 M; max of 2/university
 - Track 2 \$1 M < \$ from NSF < \$4 M; max of 1/university
- Two types: development and acquisition; “shovel ready”
- Deadlines & details
 - January 1 – January 19, annually (a window of opportunity)
 - <https://www.nsf.gov/od/oia/programs/mri/>
 - <https://www.nsf.gov/pubs/2018/nsf18513/nsf18513.htm>
 - Contact your program directors well ahead of time to discuss & avoid pitfalls*
 - 30% cost share req'd for PhD granting institutions
 - **Awards above \$1M compete across the entire Foundation**

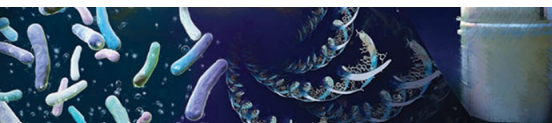
* *Cheat sheet*





Funding Opportunities (cont): PHY Mid-scale Instrumentation

- Design and Construction *or* Acquisition of Instrumentation
 - “shovel ready”
 - R & early D, operations *funded by research programs*
- $\sim \$4\text{M} < \text{TPC} < \sim \20M ; over multiple years
- Selection based on
 - merit review
 - exceptional opportunity
 - research community priorities.
- Currently 3 ENP Midscale projects (nEDM, LEGEND-200, MOLLER)
- For more info, see PHY Solicitation and contact NSF program directors





Funding Opportunities (cont): Mid-scale Research Infrastructure

- Mid-scale Research Infrastructure-1 (MsRI-1) [NSF 21-505](#)
 - Implementation = “shovel ready”; $\$6\text{M} < \text{total request} < \20M
 - *Design/development = to prepare MsRI implementation proposal;*
 $\$600,000 < \text{total request} < \20M
- Mid-scale Research Infrastructure-2 (MsRI-2) [NSF 21-537](#)
 - Total request: $\$20\text{M} - \100M
 - “Shovel ready”
- Solicitations published in alternate years; next publication in FY23
- Solicitation scope: NSF-wide

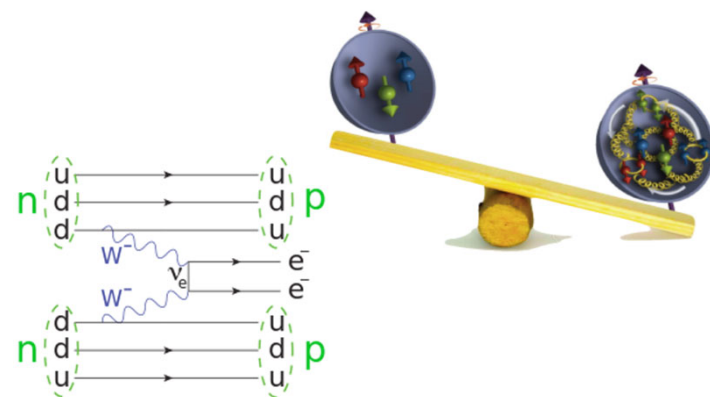
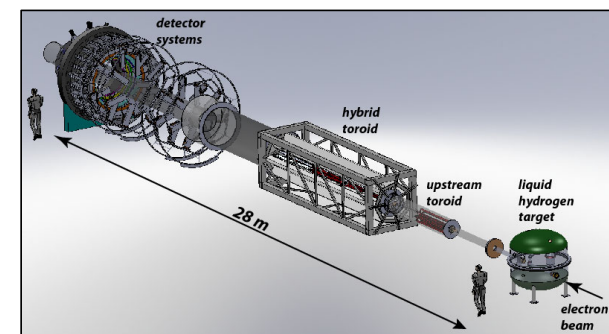




NSF and DOE Coordination in Nuclear Physics



- MOLLER – parity violating Moller (elastic $\vec{e} e$) scattering
 - DOE CD-1 Dec 2020
 - NSF PHY Mid-scale award for specific scope
- EIC – the Electron Ion Collider
 - DOE CD-1 in Jul 2021
 - Project includes EIC + 1 detector
- Next Generation $0\nu\beta\beta$
 - Demonstrators: CUOREcino, CUORE, MJD, 200, KamLAND-Zen, NEMO, ...
 - DOE $0\nu\beta\beta$ portfolio review



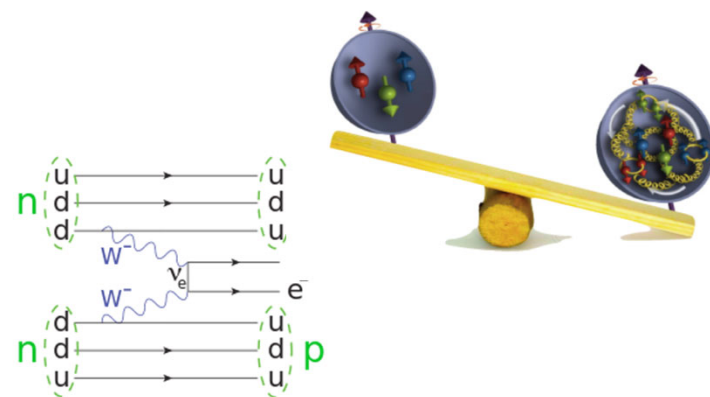
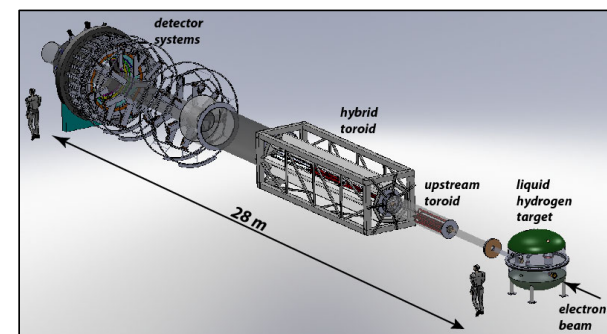


NSF and DOE Coordination in Nuclear Physics



NSF responds to proposals

- No guarantee of NSF participation in a future mission-driven project
- NSF will not get out ahead of DOE
- Successful proposals will have clearly defined scope with high impact
- All NSF proposals have at least two merit review criteria:
 - Intellectual Merit
 - Broader Impacts



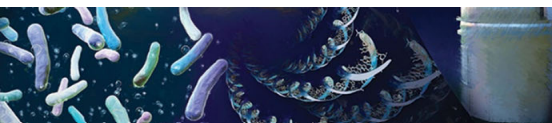


NSF/MPS/PHY Personnel

- 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
- ★ Jim Thomas – Expt'l Nuclear Physics Program Director
- Allena Oppen – Expt'l Nuclear Physics Program Director



www.nsf.gov/pubs/2019/phy19001/phy19001.jsp
www.nsf.gov/careers/rotator



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

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or call (703)292-8958



The screenshot shows the NSF Directorate for Mathematical & Physical Sciences (MPS) website. The top navigation bar includes links for HOME, FUNDING, AWARDS, DISCOVERIES, NEWS, PUBLICATIONS, STATISTICS, ABOUT NSF, and FASTLANE. The main header features the NSF logo and the text "National Science Foundation Directorate for Mathematical & Physical Sciences (MPS)". A search bar is located on the right. Below the header, a secondary navigation bar lists MPS HOME, MPS FUNDING, MPS AWARDS, MPS DISCOVERIES, MPS NEWS, and ABOUT MPS. The main content area is titled "Physics (PHY)" and includes a sidebar with links to 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. The main content area features a section titled "Physics (PHY)" with a sub-header "PHY Replaces DCL with Solicitation NSF 14-576". The text describes a solicitation issued for FY2015 that replaces the prior annual Dear Colleague Letter. It also mentions a "PHY Int'l Activities - Potential Co-Review" section, which includes a Dear Colleague Letter (NSF 14-009) announcing guidelines for "International Activities within the Physics Division - Potential International Co-Review". A "Special Announcements" section at the bottom lists "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)".

