US Nuclear Data Program
WANDA 2026

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Keith Jankowski
Nuclear Physics

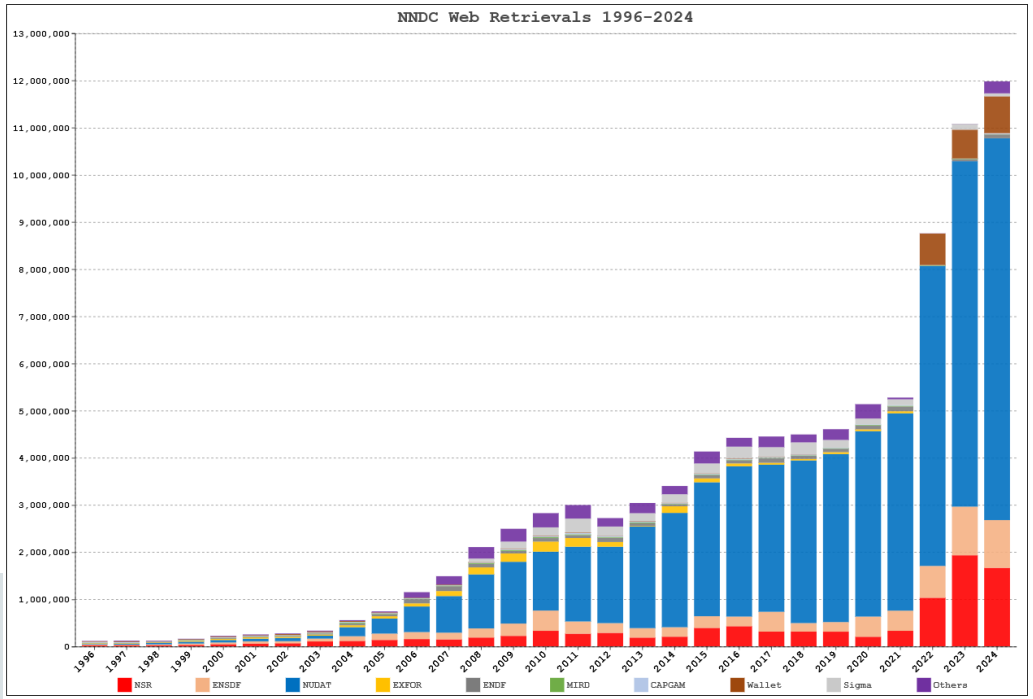
U.S. DEPARTMENT of ENERGY | Office of Science

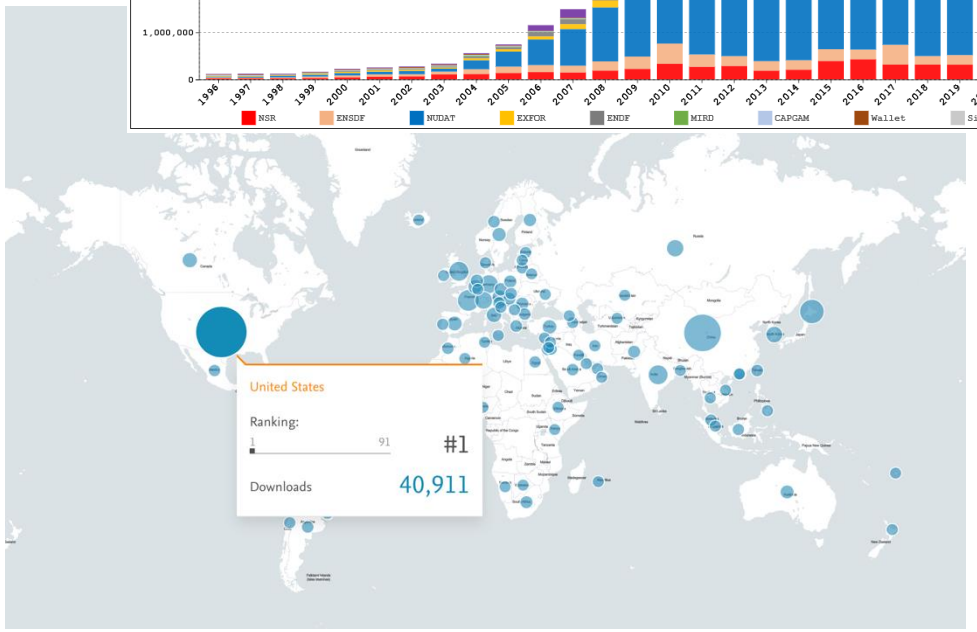
Topics

- USNDP and NDIAWG updates
- FY 2025 highlights
- Plans for FY26 and beyond

US Nuclear Data Program

- Stewarded by DOE/Office of Science/Nuclear Physics, the USNDP is responsible for the compilation, evaluation, and dissemination of nuclear data for use by those in nuclear science and applications
- Global demand for nuclear data continues to increase





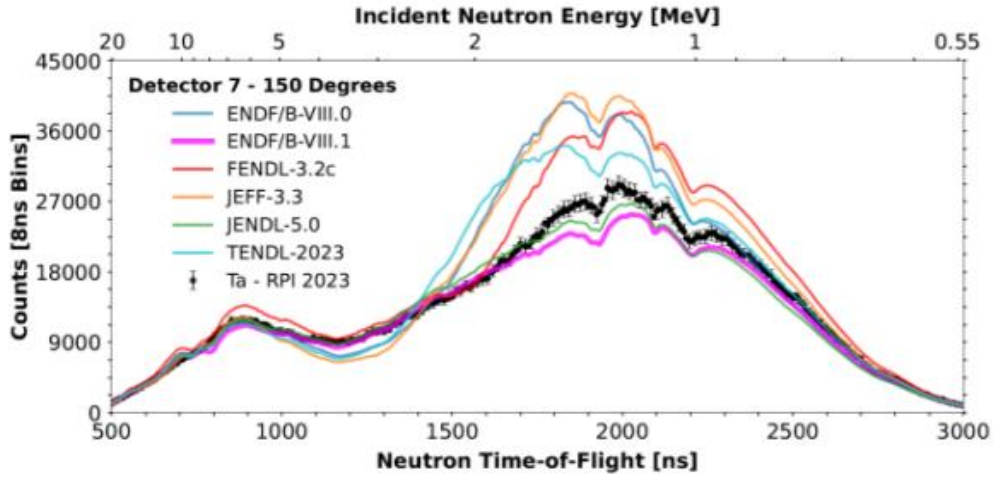
Nuclear Data InterAgency Working Group (NDIAWG)

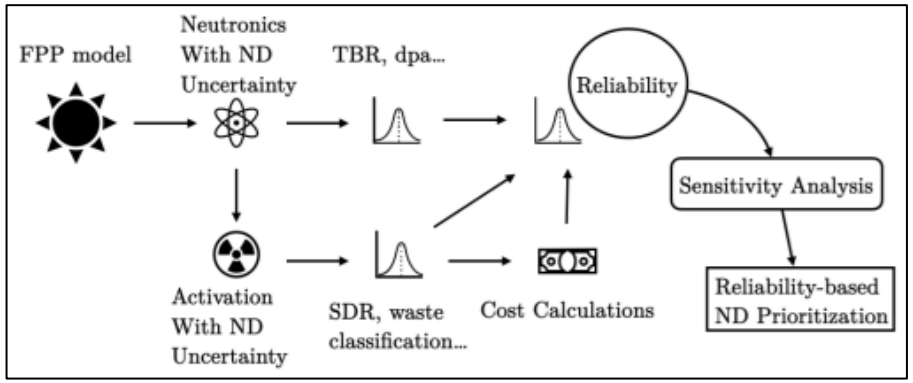
- The NDIAWG, led by NP, was formed jointly in 2016 with NNSA, DTRA, and DHS
- The NDIAWG enables coordination and collaboration at the federal program level.
- Representatives meet twice annually to discuss and provide updates.
- Membership has increased from 8 to 17 since 2020 from continued outreach and identification of nuclear data needs.

FY 2025 Highlights

- FY 2025 NOFO new starts on improving nuclear data for fusion energy, joint with FES
  - BNL - High Precision Gamma-ray Measurement and Evaluation of Radionuclides Relevant to Fusion Systems (PI: Andrea Mattera)
  - RPI - Quasi-Differential Experiments for Validation of Neutron Scattering Evaluations of Materials used In Fusion Systems (PI: Yaron Danon)
  - PPPL - Reliability-based Nuclear Data Prioritization for Fusion Reactors (PI: Michael Churchill)
- Continued participation in the DOE/Nuclear Energy and NRC collaboration on criticality safety support for commercial-scale HALEU Fuel Cycles

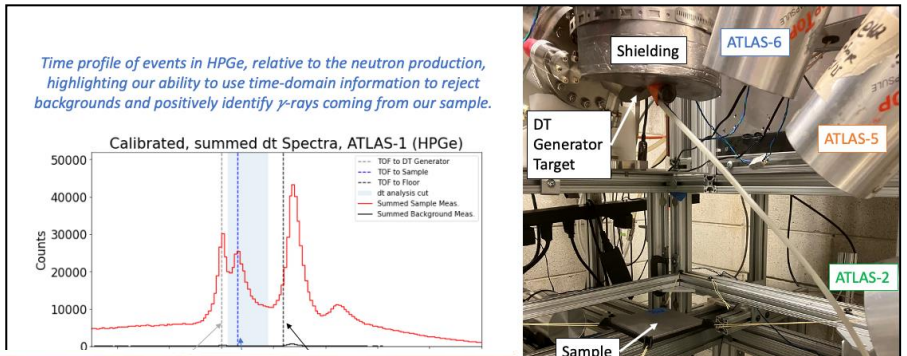
DNCSH
DOE/NRC Criticality Safety for Commercial-Scale HALEU for Fuel Cycle and Transportation





Nuclear Data Highlight

- JHUAPL (BNL, LBNL, UCB, SLB) "Berkeley Atlas"* project is improving data on isotopes relevant for surveying the surface of Saturn's moon Titan (launching mid-2028)
  - https://dragonfly.jhuapl.edu/
- An array of HPGe detectors with a storied history** were tested and collection started
- Team is finding proposed peaks and additional peaks that will help drive down uncertainties in nuclear data



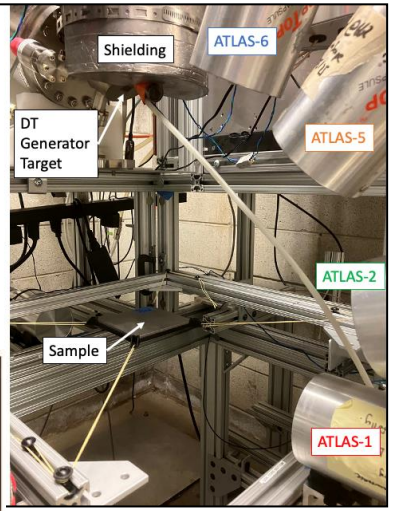
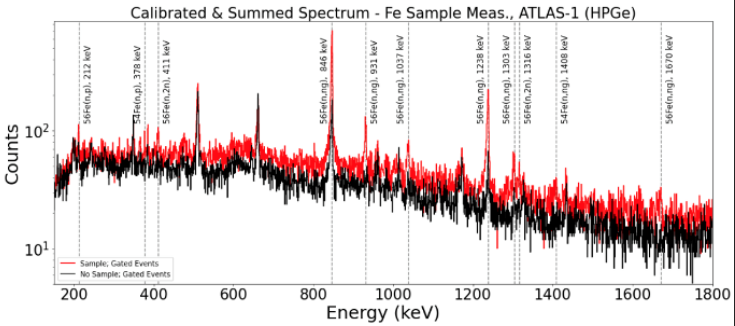


IMAGE CREDIT: NASA/Johns Hopkins APL/Steve Gribben

Iron Target Measurements

γ-ray peak (keV)	Process	Statistical Uncertainty*	Type
212	^{56}Fe(n,p)^{56}Mg	16%	Bonus
411	^{56}Fe(n,2n)^{55}Fe	13%	Bonus
846	**^{56}Fe(n,n'γ) ^{56}Fe**	**2%**	**Proposed**
931	^{56}Fe(n,n'γ) ^{56}Fe	7%	Bonus
1037	^{56}Fe(n,n'γ) ^{56}Fe	11%	Bonus
1238	**^{56}Fe(n,n'γ) ^{56}Fe**	**3%**	**Proposed**
1303	^{56}Fe(n,n'γ) ^{56}Fe	9%	Bonus
1408	**^{54}Fe(n,n'γ) ^{54}Fe**	**17%**	**Proposed**
1670	^{56}Fe(n,n'γ) ^{56}Fe	15%	Bonus



** In the "ATLAS-1" detector, one of four HPGe detectors in our array*

Type = "Proposed" means it was in our NDIAWG proposal, "Bonus means this is extra science, beyond the scope of the original proposal.

*Ode to the Baghdad Atlas, a 1970s compilation of inelastic neutron scattering data from the Nuclear Research Institute in Baghdad

**Detectors started their life as part of DOE emergency response assets → DHS R&D on urban radiological search → ND project on space exploration

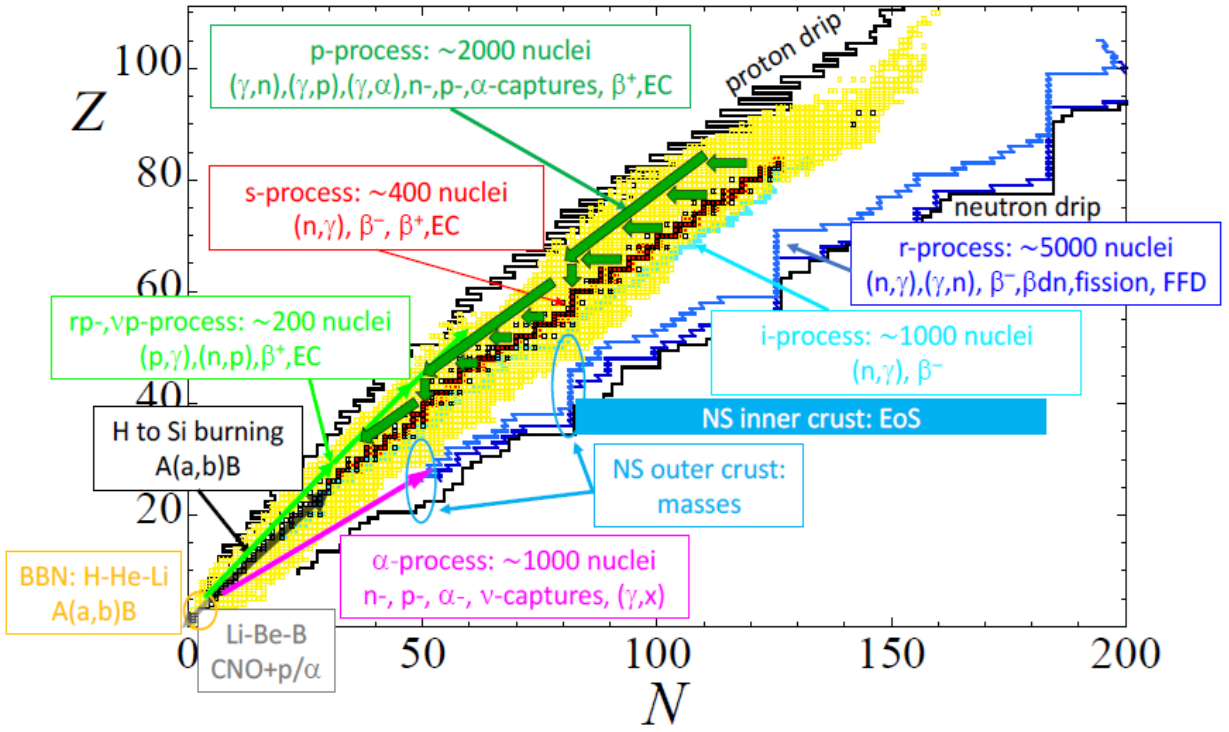
SC Nuclear Data Funding Opportunities

- Funding Opportunities
  - No NDIAWG NOFO for FY 2026, but SC Open Call is posted for non-lab applicants:
  - https://science.osti.gov/np/Funding-Opportunities
  - Labs can submit via PAMS invitation from a program manager.
  - Submissions are peer-reviewed and awards recommended in May
  - For all applications, a table in the budget justification section should specify the funding request by subprogram and, if relevant, AI/ML and microelectronics.
- Recent changes to how PAMS handles NOFO submissions:
  - Lab proposals submitted through by invitation to NOFOs are tracked in PAMS
  - As part of transparency initiatives, all awards now also submit PUBLIC abstracts and PUBLIC progress reports (and internal progress reports)

Artificial Intelligence in Nuclear Physics Supports the Genesis Mission

Ideas for future WANDA sessions

- Nuclear Astrophysics
- How can Nuclear Data benefit from QIS?
- Modernizing the Nuclear Data Pipeline through the Genesis Mission



Goriely et al., 10.48550/arxiv.2212.02156

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