FY23 LLNL NCSP Overview and Accomplishments

Presented at the FY23 NCSP Technical Program Review

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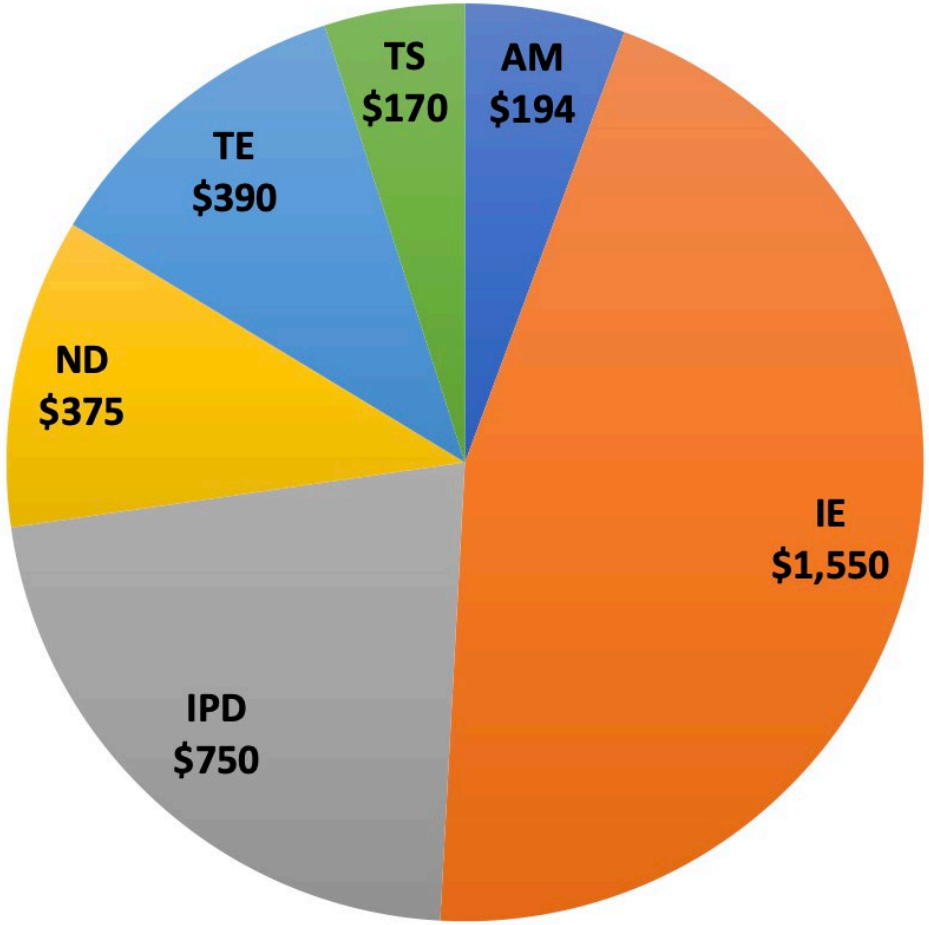
Lawrence Livermore National Laboratory

FY23 LLNL Budget Information- $3.429M

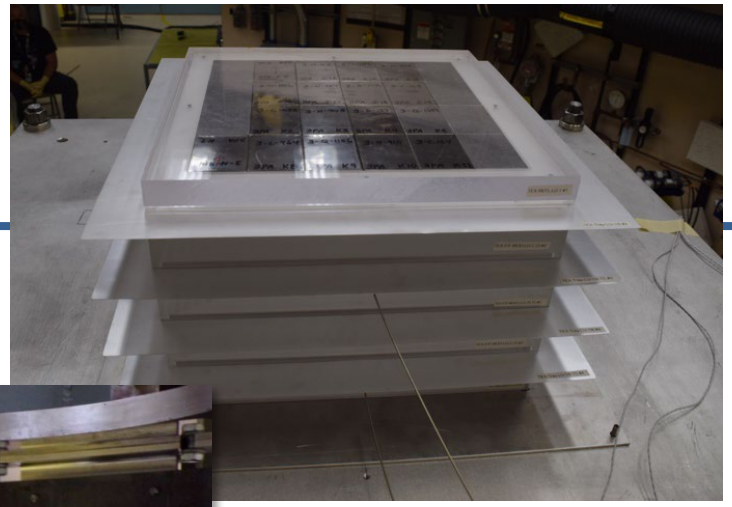


LLNL Budget by Element, $K

Year	Carryover ($K)
FY22	$719
FY23	$405

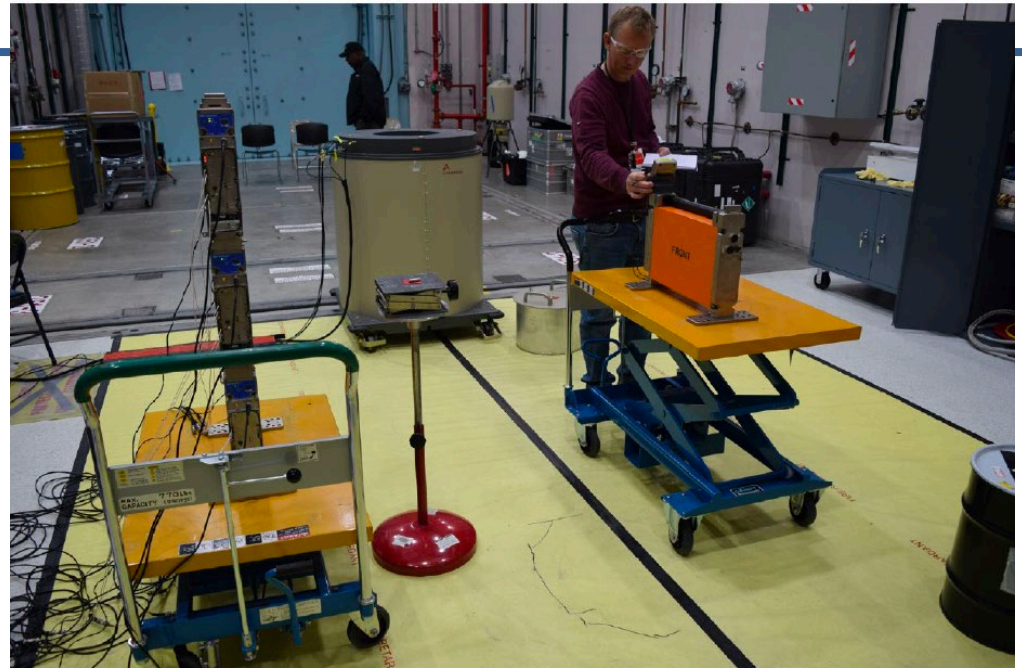
2023 Major IE Accomplishments
Thermal-Epithermal eXperiments (TEX)

- **MIHL-** Submitted fourth TEX benchmark to ICSBEP (TEX-Pu for Thermal Scattering Law), closing out the IER (C. Percher presentation)
- **MIHL-** Completed final three TEX-HEU experiments at NCERC incorporating hafnium, high priority for Naval Reactors partners
- **MIHL-** Began testing with vacuum chamber and chiller set-up for Low Temperature TEX experiments and published results (E. Aboud/J. Glesmann presentation)
- Completed Final Design for IER 499 (TEX-HEU with Chlorine) incorporating containerized and compacted NaCl as the chlorine-bearing material of choice (A. Aboud Presentation)



2023 Major IE Accomplishments (continued)

- **MIHL-** Resumed 5 Year Measurement Campaign of Nuclear Materials with the Atomic Weapons Establishment at DAF- two measurement campaigns (S. Varghese presentation)
- Completed Experimental Execution Report for IER 518: High Multiplication Subcritical Measurements at SNL (J. Norris presentation)
- Completed Armed Forces Radiobiology Research Institute (AFRRI) reactor field characterization in advance of 2024 international dose intercomparison exercise (A. Tamashiro presentation)

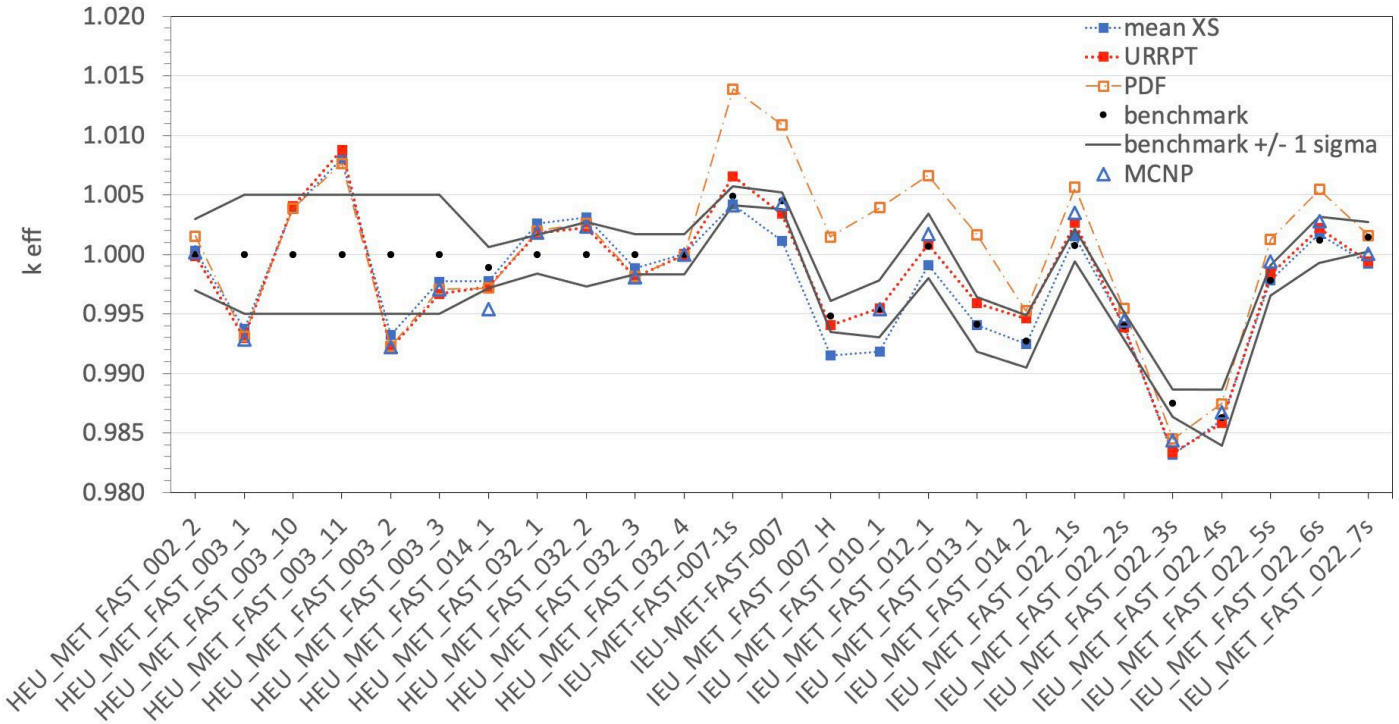


2023 Analytical Methods Accomplishments

- Extensively tested the ENDF-VIII.1 beta-2 release, including processing the full library with FUDGE at several temperatures for use in both continuous energy and multigroup transport applications

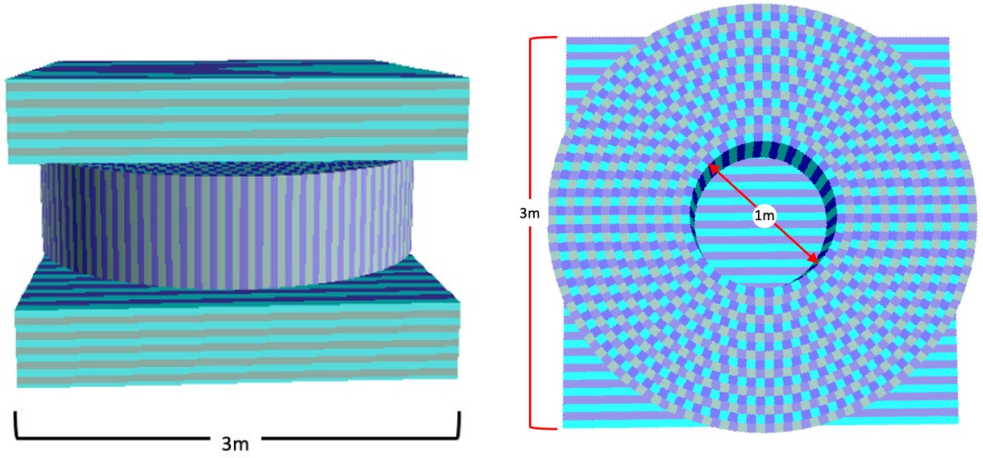
- Released Fudge-6.4 on Github
  - https://github.com/LLNL/fudge

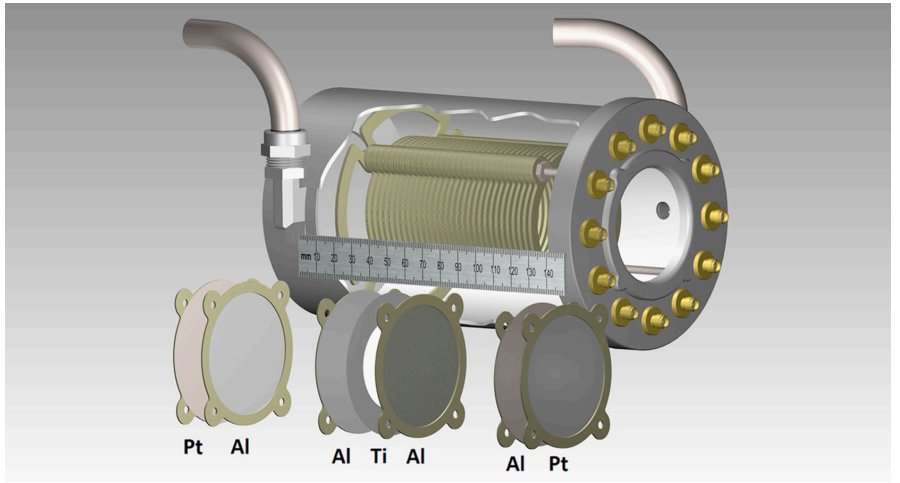
- Completed additional COG benchmarks for international intercomparison
  - PU: 766 U233: 193 MIX: 356 HEU: 1054
    IEU: 206 LEU: 807 SPEC: 10 β-eff: 32



2023 Nuclear Data Accomplishments

- Completed scoping study to evaluate 6Li Doped Scintillator Array for Fission Correlation Studies
  - Capitalizes on PROSPECT detector design used for simultaneous measurements of gammas and neutrons
  - Investigated the effects of increasing the ^{6}Li loading in the EJ-309 scintillator by three times
  - T. Classen presentation
- Completed early procurements for Parallel Plate Avalanche Counter (PPAC) assembly for ^{233}U measurement at LANSCE





2023 Training and Education Accomplishments

- Provided lecture and experimental instruction for 2-week NCSP Hands-on Courses and 1-week Manager's course
- Collaborated with UC Berkeley Nuclear Engineering Department to teach a Nuclear Criticality Safety semester course as part of an NCS pipeline
  - Criticality evaluation term project
  - Hands-on approach to critical experiments using the LLNL Inherently Safe Subcritical Assembly
- S. Coleman won Best Poster at ICNC 2023 for work describing the criticality evaluation term project for the UC Berkeley course

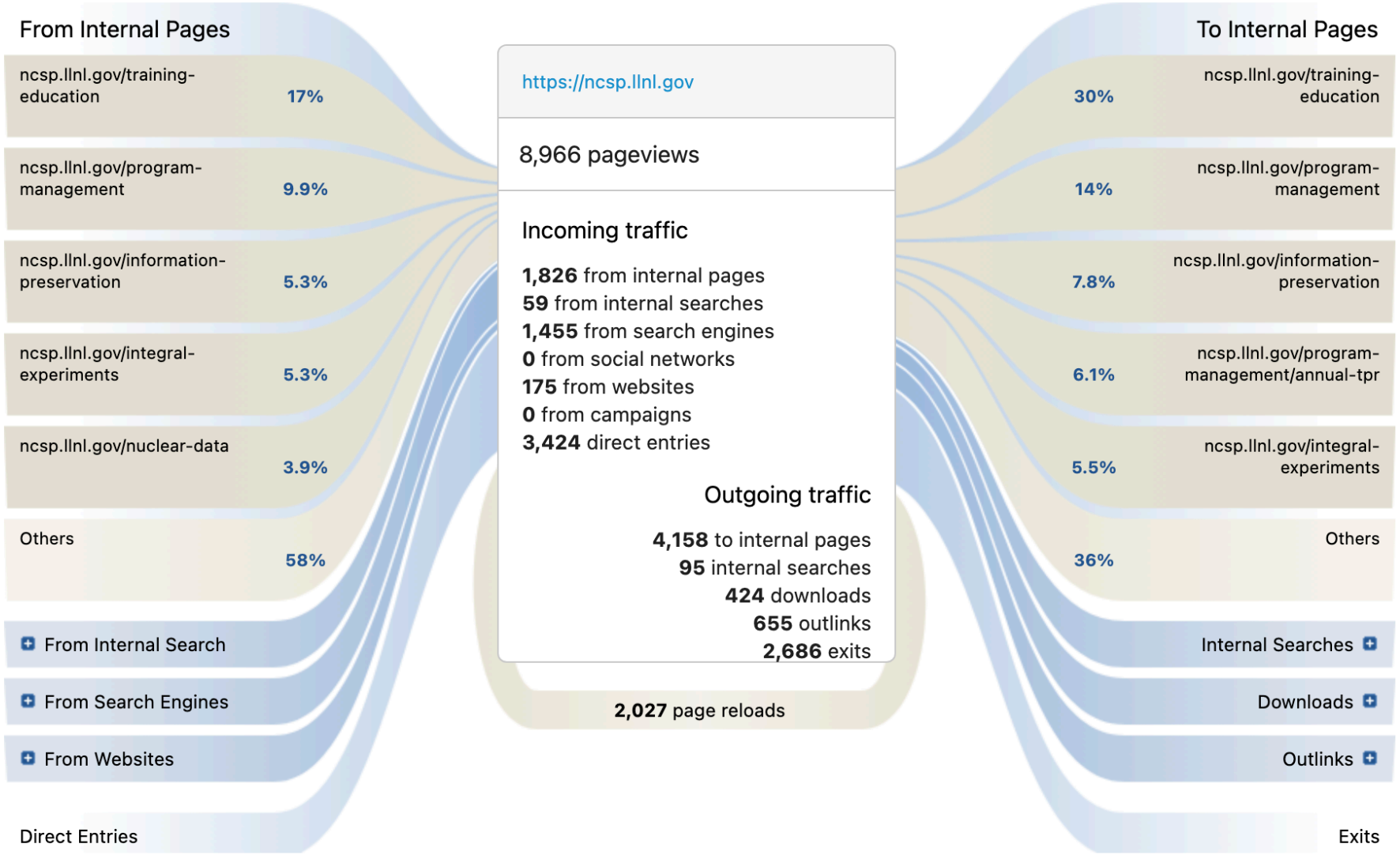
2023 IPD Accomplishments

- Maintained NCSP Website, generated registration pages for meetings through CVENT, collaborated on Learning From Experience Database

- ICSBEP Activities (C. Percher presentation)
  - C. Percher is the ICSBEP Chair
  - Coordinated NCSP-relevant ICSBEP evaluation reviews, including independent review by LLNL of two evaluations
  - Provided editing and publication support for the 2022/2023 version of the ICSBEP handbook

- Pulsed Spheres Benchmark: Added additional physics details and experimental details based on unpublished reports (A. Tamashiro presentation)

FY23 NCSP Website Statistics- Up 20% Over FY22



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