

UNITED STATES NUCLEAR DATA PROGRAM WORKPLAN

FISCAL YEAR 2027

BNL-230280-2026-FORE

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This document describes the activities including related metrics to be performed by the US Nuclear Data Program members during Fiscal Year 2027.

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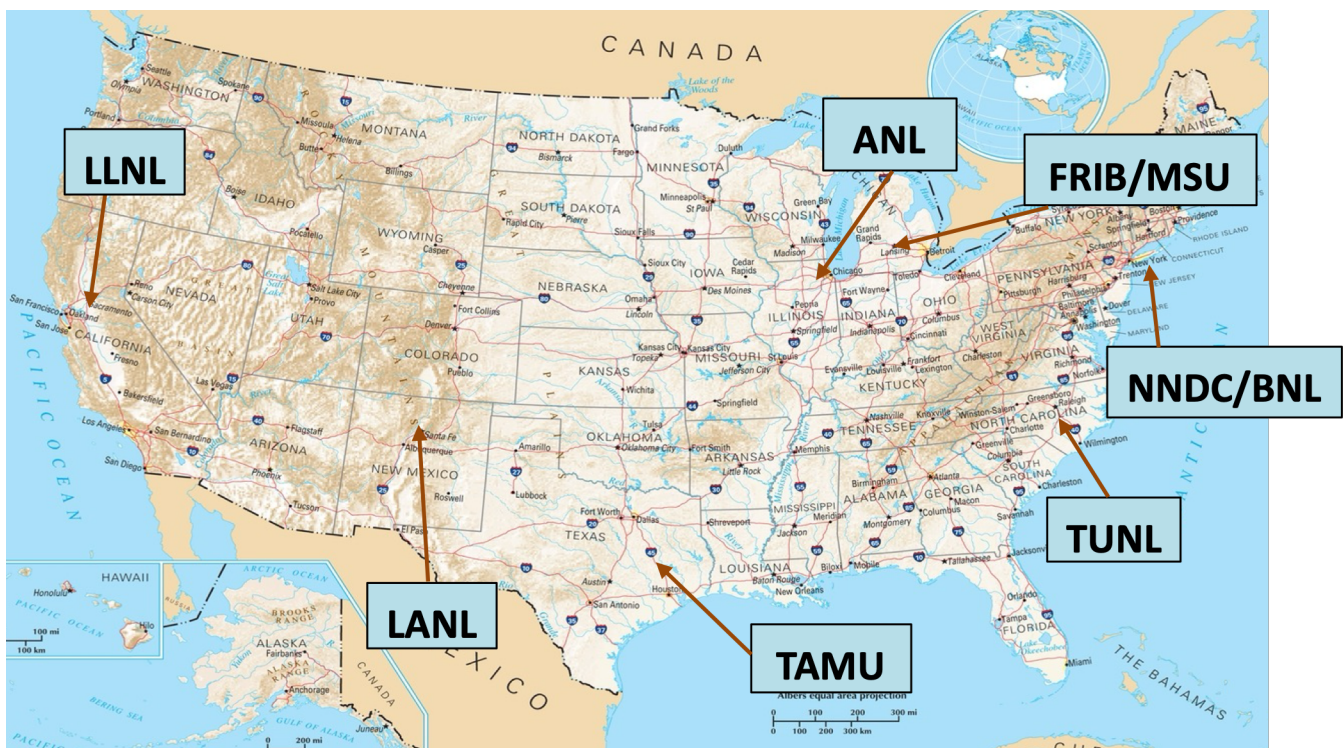
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USNDP Mission

The mission of the United States Nuclear Data Program (USNDP) is to provide current, accurate, authoritative data for workers in pure and applied areas of nuclear science and engineering. This is accomplished primarily through the compilation, evaluation, dissemination, and archiving of extensive nuclear datasets. USNDP also addresses gaps in the data, through targeted experimental studies and the use of theoretical models.

USNDP Vision

Our vision is a modern, adaptive nuclear data ecosystem that integrates experiment, theory, evaluation, and AI/ML techniques to deliver timely, reliable, and uncertainty-quantified nuclear data to a broad user community.



<https://www.usgs.gov/media/images/general-reference-printable-map>

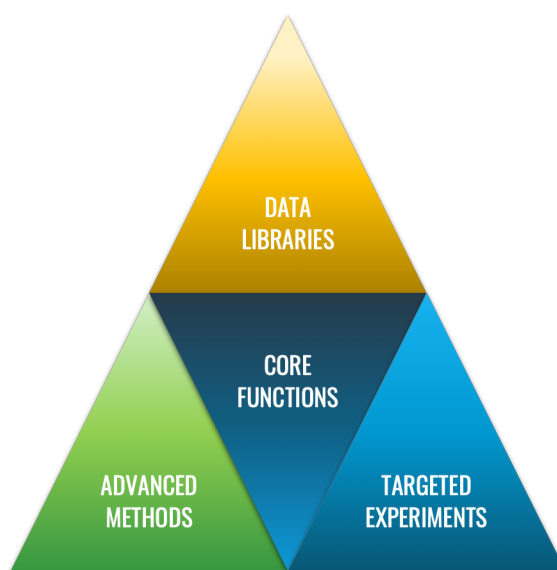
Introduction

The work plan described in this document has been developed to cover work to be performed by the United States Nuclear Data Program (USNDP) during Fiscal Year 2027 that begins on October 1, 2026. This plan has been prepared in consultation with the members of the Coordinating Committee who represent the organizations participating in the program. Each Coordinating Committee member prepared a draft plan for his/her organization. Each contribution was integrated into a unified work plan. The draft plan was then circulated to the Coordinating Committee for comments and corrections before the final document was submitted to the U.S. Department of Energy (DOE).

The plan is divided into four major components: Core Functions, Data Libraries, Targeted Experiments, and Advanced Methods. Due to their outsized impact, two of the Data Libraries are separated into their own work areas. In each case, specific tasks have been assigned to each work area. They are as follows:

- I. Core Functions
- II. Data Libraries
- III. ENSDF
- IV. ENDF
- V. Targeted Experiments
- VI. Advanced Methods

As was done in previous years, the tasks proposed by the various organizations were reviewed internally according to the following criteria, which were developed considering the mission and goals outlined in the USNDP Renewal Project Proposal and in consultation with the DOE program manager.



The USNDP Renewal Project Proposal outlines two strategic initiatives being undertaken by the USNDP. Task areas associated with Strategic Initiative I: AI and Workflows or Strategic Initiative II: Activation Library will be noted as such.

A task should be consistent with USNDP mission statement and meet one of the four program priorities:

- a) Compilation of experimental results and relevant information published in the literature.
- b) Evaluation of the nuclear structure and decay and nuclear reaction data, including improvements of the evaluation methodology.
- c) Archival and dissemination of nuclear data to the user community.
- d) Addressing specific data needs and gaps in nuclear data through targeted experiments.

- 2. A task should be useful to at least one major user community.
- 3. A task should not duplicate efforts within or outside the program.

The following section details the proposed work plan for FY2027, defining tasks, organizational responsibilities, and planned activities. The present work plan was prepared assuming the FY2027 of \$7,266.33k.

Detailed Work Plan for Fiscal Year 2027

I.USNDP Core Functions

A. National Coordination

The NNDC is the Secretariat for the U.S. Nuclear Data Program (USNDP). Members of the USNDP plan an active role coordinating national data evaluation and preservation activities

ANL Planned Activities
Participate in the Nuclear Data Working Group (NDWG).

BNL Planned Activities
Participate in the Nuclear Data Working Group (NDWG).

LANL Planned Activities
Participate in the Nuclear Data Working Group (NDWG).

MSU Planned Activities
Co-chair and organize a nuclear data session at the annual Low-Energy Community Meeting.

TUNL Planned Activities
Co-chair and organize a nuclear data session at the annual Low-Energy Community Meeting.

B. Management

This task includes planning, budgeting, personnel, interaction with management, and interaction with funding authorities.

ANL Planned Activities
Lead the nuclear data work at ANL and participate in USNDP coordination activities. Prepare and organize ANL contributions to the USNDP budget briefing, work plan and annual report.

BNL Planned Activities
Prepare and organize USNDP budget briefing.
Prepare USNDP reports and work plans.
Organize and chair USNDP meeting.
Develop Roles and Responsibilities documents for the USNDP and each of its major data product projects

LANL Planned Activities
Organize and chair the USNDP Nuclear Reaction Working Group.
Prepare and organize LANL contributions to the USNDP budget briefing, work plan, and annual report.

TUNL Planned Activities
Organize and chair the USNDP Nuclear Structure Committee.
Prepare and organize LANL contributions to the USNDP budget briefing, work plan, and annual report.

C. Library

NNDC maintains an archival collection of low- and intermediate-energy nuclear physics publications. This library supports the NNDC compilation activities, the U.S. nuclear reaction and nuclear structure data evaluation, and international nuclear structure evaluation effort.

BNL Planned Activities
Following the NNDC move to building 490, re-establish NNDC library in new area.

D. Customer Services

This task accounts for the non-electronic services which the USNDP renders to customers. At the scientific staff level, this means direct assistance to users needing advice from nuclear data experts or advice on solving complex queries via electronic access to the database. The NNDC staff allocation at the support level is for maintaining a "help desk" as well as for administrative/clerical support of its customer services.

BNL Planned Activities
Provide technical support to nuclear data end-users as necessary.

E. Computer Operation

The NNDC operates several Linux servers to support compilation, evaluation, database maintenance, and information dissemination functions. In addition, each staff member has a desktop computer that supports an interface to these Linux servers and supports administrative functions, such as word processing and email.

BNL Planned Activities
Provide technical computer support to NNDC staff, visitors, and external collaborators to enable them to effectively and securely use NNDC computing resources as well as procure computer hardware, software and support services to meet NNDC's computing requirements.
Manage the high performance NNDC/NX cluster.
Upgrade GitLab server software to provide more powerful and advanced functionalities in the NNDC collaboration services.
Manage the NNDC Gitlab instance to enable collaboration on various nuclear data computational projects.
In collaboration with ITD, ensure continuous availability of mission-critical Web services through full compliance of NNDC's computers with DOE cyber security requirements.
Maintain the NNDC Web Services availability on the 99.9% and higher level.
Strictly follow all BNL and DOE cybersecurity rules and regulations during the Web application design, development and implementation. Address issues that arise during BNL scans.

F. Nuclear Data Sheets

The USNDP provides some paper publications as well as electronic access to the nuclear physics databases that it maintains. This includes the Nuclear Data Sheets journal published by Elsevier and various versions of the Nuclear Wallet Cards.

BNL Planned Activities
Prepare issues of Nuclear Data Sheets for publication of ENSDF evaluations and other publications relevant to nuclear data.

MSU Planned Activities
Continue development of software for Nuclear Data Sheets publication.

G. Numerical Nuclear Data (NuDat)

The NNDC is responsible for NuDat, which consists of a database and a suite of codes that access it, allowing web users to search for level and γ -ray properties extracted from ENSDF, ground and metastable state properties (Wallet Cards), and atomic and nuclear radiations derived from ENSDF. Additionally, NuDat contains an interactive Chart of Nuclides and interactive level schemes.

BNL Planned Activities
Update NuDat database as necessary.

H. Web Site Maintenance

The NNDC provides electronic access to the nuclear physics databases that it maintains on behalf of the USNDP as well as access to other nuclear physics information through its website. Other USNDP members also offer nuclear physics information through their websites. These services require resources to maintain currency and improve performance.

ANL Planned Activities
Provide access to published and updated versions of the Atomic Mass Evaluation (AME) and the NUBASE library of nuclear physics properties.
Provide access to stand-alone (MacOS and Windows) and mobile (iOS, iPadOS and Android) applications of the AME and NUBASE libraries.
Provide access to Argonne Nuclear Data and Measurements Reports (ANL/NDM).

BNL Planned Activities
Solicit user suggestions on enhancements to the ENSDF, NSR, NuDat, and Sigma web interfaces and be responsive to those needs. Expand search and plotting capabilities for ENSDF data.
Continue developing new web interfaces for ENDF and EXFOR databases.
Maintain currency of the CSEWG, USNDP and the NNDC websites, proactively respond to users' requests.
Make progress with modernization of the website, enhancing capabilities and following industry best practices.
Continue development of mobile applications targeting highly used databases.
Develop and release APIs for major databases

TUNL Planned Activities
Provide access to present and past evaluations of Energy Levels of Light Nuclei for A=3-20 nuclides, including associated figures and energy-level diagrams and tables.
Provide access to compiled and evaluated data on light nuclei related to p-, alpha- and n-capture reactions, and ground-state decays.
Provide access for TUNL dissertations collection.

I. User Facility Data Support

USNDP members provide direct nuclear data expertise to users of DOE nuclear physics user facilities, supporting experimenters from proposal preparation through publication of results.

MSU Planned Activities
Provide data support to FRIB experimenters through the FRIB Integral Experimental Nuclear Data Services (FRIENDS), from proposal preparation through publication of results, as an integral part of FRIB experimental support.

II. Main Nuclear Physics Data Libraries

A. Nuclear Science References (NSR)

The NNDC is responsible for NSR, the bibliographic database for nuclear physics research. This task includes data compilation, quality control, file update and maintenance, and file distribution to collaborators. Updates are performed on a continuing basis. The preparation of NSR entries is given under Nuclear Structure Physics. The literature search and preparation of KEYWORD abstracts for publications included in NSR require scientific expertise. BNL continues to have the overall responsibility for this database. Similar contributions from other external collaborators are expected. These will be checked and edited by BNL as necessary before being added to the database.

BNL Planned Activities
Prepare entries for new references and keyword abstracts for 2/3 of them. Provide coverage for 80 major journals, including complete coverage of Physical Review C, Nuclear Physics A, and European Physical Journal A.
Distribute database to collaborators.
Perform database updates and maintenance.
Continue joint project with the NRDC network to transfer missing nuclear reaction references to NSR.

B. Experimental Nuclear Structure Data (XUNDL)

The NNDC is responsible for maintaining and providing access to the XUNDL database. This database contains compilations (in ENSDF format) of recently published or completed level-structure data for high-spin and low-spin physics. The NNDC coordinates this work and updates the database as new/revised data sets are received from collaborators.

BNL Planned Activities
Perform weekly updates of the database using input received from compilers.
Archive and distribute database yearly.
Review compiled datasets submitted by other data centers prior to inclusion in the XUNDL database.
Work with PRC and EPJA to check and compile data prior to publication.

Compile and review datasets for recently published experimental nuclear structure data for inclusion in the XUNDL database. Interact with the authors for requesting additional experimental data or for further clarification of the published results.
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Initiate pre-publication checking with Phys. Lett. B. and Appl. Rad. and Iso.

MSU Planned Activities

Compile and review datasets for recently published experimental nuclear structure data for inclusion in the XUNDL database. Interact with the authors for requesting additional experimental data or for further clarification of the published results.
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Work with PRC and EPJA to check and compile data prior to publication.
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Train two MSU undergraduate students in nuclear data activities

TUNL Planned Activities

Compile and review datasets for recently published experimental nuclear structure data for inclusion in the XUNDL database. Interact with the authors for requesting additional experimental data or for further clarification of the published results.
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C. Experimental Reaction Data File (EXFOR)

The NNDC is responsible for maintaining the EXFOR database for Area 1 (North America). This database contains experimental nuclear reaction data for incident energies below 1 GeV, including neutron-induced reactions and reactions with incident-charged particles of mass $A \leq 12$. Many groups worldwide compile experimental data and send it to the central database at the International Atomic Energy Agency in Vienna in the EXFOR format. Then, each center is responsible to update its own database. The effort described here includes quality control, file update, and data transfer activities. The NNDC database is updated as compilations are exchanged and checked from the compiling centers. The compilation activity is given under Nuclear Reaction Physics.

BNL Planned Activities

Compile experimental data for neutron, charged-particle, and photon-induced reactions from over one hundred publications.

Explore possibilities of recovering previously unobtainable reaction data and proactively respond to users' needs.
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Chair OECD/NEA Working Party on Evaluation Cooperation Subgroup 54 "Curated EXFOR - developing a machine-readable, comprehensive, and corrected by evaluators experimental nuclear reaction database"

D. Atomic Mass Evaluation (AME)

ANL Planned Activities

Publish and distribute the new AME2026 and NUBASE2026 libraries.
Maintain the AME and NUBASE databases, including continuous updating.
Review and update compiled datasets submitted by other collaboration groups.
Compile and review data for recently published experimental results for inclusion in AME and NUBASE. Interact with the authors for requesting additional experimental data or for further clarification of the published results.
Respond to user needs for evaluated nuclear masses and other related nuclear physics properties.

E. FRIB Nuclide Discovery Project

This activity maintains specialized databases and software for the discovery of new nuclides and nuclear isomers, in collaboration with M. Thoennessen. MSU's contribution is supported by DOE funds and includes database infrastructure, specialized software, and online searchable webpages.

MSU Planned Activities
Maintain database infrastructure, develop specialized software, and support online searchable webpages for the FRIB Nuclide Discovery project.
Maintain and update the Nuclear Isomer Discovery Database.

III. Evaluated Nuclear Structure Data File (ENSDF) Library

A. Hosting ENSDF

The NNDC is responsible for ENSDF, a database of evaluated experimental nuclear structure and decay data. The NNDC is responsible for the format and content checking, preparation of the manuscript, and quality control (review) of evaluations submitted for inclusion. The NNDC maintains the database, which includes database updates and distribution to collaborators. Corrections are implemented on a continuous basis.

BNL Planned Activities
Maintain ENSDF database, includes continuous updating.
Process evaluations received from ENSDF evaluators.
Archive and distribute ENSDF database on a monthly basis.

B. International Coordination

Members of the USNDP plan an active role coordinating international structure evaluation and data preservation activities

ANL Planned Activities

Technical coordinator of the continued IAEA-led project on "Evaluated Decay Data Library for Monitoring Applications". Contribute to the evaluation and review of nuclear decay data for selected radionuclides and oversee the review process.
Participate in the IAEA Technical Meeting on the Compilation and Evaluation of Nuclear Charge Radii. Contribute to the development of new evaluated nuclear charge radii database.
Participate in the IAEA Technical Meeting on X-ray, Gamma-ray and Alpha-particle Decay Data Standards for Detector Calibration and Other Applications. Contribute to evaluation of current standards for X-ray, gamma-ray and alpha-particle decay data for detector calibration and other applications.

BNL Planned Activities
Co-chair International Nuclear Structure and Decay Data (NSDD) meeting

MSU Planned Activities
Host the 2026 International Network of Nuclear Structure and Decay Data (NSDD) Evaluators Meeting at FRIB, October 19-23, 2026, bringing together the global evaluator community to strengthen collaboration and showcase U.S. leadership in nuclear data evaluation.
Serve as rapporteur for the technical meetings of the international Nuclear Structure and Decay Data (NSDD) evaluator network at the 2026 NSDD meeting hosted at FRIB.

TUNL Planned Activities
Participate as an observer, and give feedback, for the consultant meeting of the International Nuclear Data Evaluation Network for Light Elements (INDEN-LE)

C. Horizontal Evaluations

ANL Planned Activities
Compile B(E3) experimental data for inclusion into the new topical evaluation on B(E3) transition probabilities. This work is carried out in collaboration with a data scientist from the Australian National University.

BNL Planned Activities
Compile new B(E2) experimental data. Continue work on a B(E2) evaluation project.
Compile new double-beta decay experimental data.

D. A-Chains and Nuclides Evaluations for ENSDF

USNDP evaluates nuclear structure and decay data for inclusion in the ENSDF database. This effort includes the critical analysis of all available experimental nuclear structure and radioactive decay data for a nuclide

or a group of related nuclei to deduce recommended values from the measured data and prepare a file in ENSDF format that is the basis for publications in Nuclear Data Sheets and is used to update the contents of the USNDP nuclear structure and decay database, ENSDF.

ANL Planned Activities
Evaluate at least one mass chain, or their equivalent nuclides, from the ANL region of responsibility.
Review mass chain evaluations, or individual nuclides, as requested by the ENSDF coordinator.

BNL Planned Activities
Evaluate at least four mass chains or their equivalent nuclides.
Review at least four mass chains or their equivalent nuclides.
Update ENSDF for the identification of new nuclides and for the first publication on the findings of the excited states of nuclides.
Edit all evaluations submitted for publication, including checking their format and physics content.
Continue mentoring new ENSDF evaluators.

MSU Planned Activities
Produce 3-4 new comprehensive nuclear data mass-chain evaluations for the ENSDF database, with 1-2 shared with the junior ENSDF evaluator.
Review at least one mass-chain evaluation.
Continue training and mentoring the junior ENSDF evaluator hired at FRIB in FY25 to become fully independent.

TAMU Planned Activities
At least one mass chain, or their equivalent nuclides, will be evaluated.
Review mass-chain evaluations, as requested.
Address post review and editorial work on mass chains in preparation for publication.

TUNL Planned Activities
Evaluate about one A-chain per year for publication in Nuclear Data Sheets and inclusion in the ENSDF database. An objective is to produce two A-chain evaluations per year.
Evaluate and update ENSDF for $A=2-20$ near drip-line nuclides, especially for first observations or when ENSDF has no previous dataset.

E. Ground and Excited State Properties

TAMU Planned Activities
Developing a visualization of high-spin level schemes

IV. Evaluated Nuclear Data File (ENDF) Library

A. Hosting ENDF

The NNDC is responsible for ENDF, a database of evaluated nuclear data required for many nuclear applications. The work is organized under the CSEWG, coordinated by the NNDC. The ENDF file contains complete descriptions of nuclear reactions of neutrons with many nuclides and elements for energies up to 20 MeV and radiations from radioactive decay. A number of evaluations for energies up to 150 MeV and for incident-charged particles and photons are also included. The data are stored in the ENDF format developed at NNDC in the 1960s and adopted as an international standard. In addition to the U.S. library, ENDF/B, the database contains evaluated data libraries from the European Union, Japan, Russia, and China. This activity includes the processing and quality control of the U.S. ENDF/B library, the distribution of this database in the U.S. and the exchange of libraries internationally. New evaluations for the next release of the library, following ENDF/B-VIII.1, are assembled, tested and made available to users through NNDC's Web servers and GitLab collaboration server at git.nndc.bnl.gov.

BNL Planned Activities
Coordinate the maintenance and extension of ADVANCE, the ENDF continuous integration system that continually checks for modification to the ENDF database then runs all available tests on the changed data files.
Maintain the ENDF project area on NNDC's gitlab instance.
Coordinate the peer review of evaluations submitted to the ENDF project.
Prepare and release beta releases of the next ENDF library, as determined by CSEWG.

B. National Coordination

The NNDC is the Secretariat for the Cross Section Evaluation Working Group (CSEWG). Other members of the USNDP also have leadership roles within CSEWG.

BNL Planned Activities
Organize and chair CSEWG meeting at BNL.
Edit and publish summary reports and proceedings of the CSEWG meetings.
Chair the CSEWG Executive Committee.
Organize mini-CSEWG, Hackathon, and/or other meetings throughout the year, as mandated by the CSEWG Executive Committee.

LANL Planned Activities
Organize and chair CSEWG Fission Product Yield and Decay Data Evaluation Subcommittee.
Organize and chair CSEWG Covariance Subcommittee.
Organize and chair the USNDP Nuclear Reaction Working Group.

C. International Coordination

Members of the USNDP plan an active role coordinating international reaction evaluation and data preservation activities

BNL Planned Activities
Chair OECD/NEA Working Party on Evaluation Cooperation Subgroup 53 "Stable Zirconium Evaluations and Validation"

D. ENDF Manuals and Documentation

The NNDC is responsible for maintaining the format and procedures manual for the ENDF system as well as producing the documentation supporting the contents of the ENDF/B library.

BNL Planned Activities
Maintain the GitLab version of the ENDF-6 formats manual current with CSEWG-endorsed format changes. Issue official release of the manual.
Automate the generation and posting of the latest unofficial version of the ENDF-6 formats manual.
Collaborate in the development of the format specification for the GNDS (the successor format to ENDF-6) with the legacy ENDF-6 format during the transition to GNDS.

E. Activation Data

This area describes work that supports USNDP Strategic Initiative II - Activation Library.

LLNL Planned Activities
Participate in WPEC SG 55 "Unified approach to Inventory, Radiation source Terms, Material sciences nuclear data libraries".
Provide evaluations for the activation sublibrary in coordination with LANL and BNL efforts. Publish report on evaluations for Sc-Mn isotopes.

F. Decay Sublibrary

This area describes work that supports USNDP Strategic Initiative II - Activation Library.

BNL Planned Activities
Update the Decay Data Sub-library as new data for neutron-rich nuclides become available.

G. Nuclear Data Standards

LANL Planned Activities
Participate in IAEA standards meeting,
Provide updates to the Neutron Data Standards input database as necessary,
Review and revise existing evaluations as necessary.
Take part in developing advanced uncertainty quantification for the Standards evaluation.

LLNL Planned Activities
Participate in IAEA standards meetings and review impact of changes in standard cross sections for LLNL applications.

H. ENDF Evaluations

Evaluated nuclear reaction data, for applications and basic science needs, are stored in the ENDF database, which is maintained by BNL. New evaluations funded primarily from other sources are prepared for archival in the ENDF library. BNL, LANL, and LLNL provided neutron, proton, and photonuclear reaction data evaluations.

BNL Planned Activities
Respond to user needs for evaluated nuclear reaction data.
Collect and address users feedback related to the ENDF library.
Coordinate the evaluations for Zr isotopes to support new reactor fuel concepts.
Work with CSEWG on upgraded evaluations for future release of the ENDF/B library.
Improve methodology for providing covariance data in the resonance and fast neutron region to the next release of ENDF.
Improve methodology for generating unresolved resonance region cross section probability distributions.
Contribute to the Level Density and Fission Yield evaluation CRPs at the IAEA.

LANL Planned Activities
To initiate the effort of the activation library production, develop a new ENDF data production framework that produces a complete ENDF data file from model code inputs directly, and apply to nuclear data in intermediate mass region.
Upgrade the LANL ENDF evaluations for actinides as well as some other materials in the intermediate mass region, which perform well in criticality benchmarks, including new theoretical development of statistical models for deformed systems.
Provide updated evaluations of photon-induced reactions for major actinides.

LLNL Planned Activities
Perform new evaluations as per LLNL customer requests and submit these as well as other LLNL- generated evaluations into ENDF.
Verify R-matrix fits for standards reactions and upon request.

I. Verification and Validation

Quality Assurance (QA) of a nuclear data library requires that all files are checked for integral consistency and conformance with the adopted format. This part of the QA is called verification and is one of the fundamental functions of the NNDC. Furthermore, checking performance of the library against the integral experiments, known as validation, is also an important step to ensure the usefulness of the library for the end-users. The most extensive validation is performed by LANL and other CSEWG contributors funded with non-DOE-SC sources. The USNDP supports the ultimate validation effort carried out at BNL.

BNL Planned Activities
Maintain automatic, real-time verification and validation of new/modified ENDF evaluations submitted to the NNDC GitLab server.

V.Targeted Experiments

A. Nuclear Structure Data Measurements

ANL Planned Activities
Contribute to nuclear physics research activities at ANL (ATLAS and nuCARIBU), MSU (FRIB), and other nuclear physics user facilities. The main emphasis is on mass-spectrometry and decay studies of neutron-rich nuclei, spectroscopy of heavy actinide nuclei and nuclear isomers, and their intersection with the nuclear astrophysics and applied nuclear physics programs.

BNL Planned Activities
Precisely determine decay schemes relevant for applications using state-of-the-art gamma-ray spectroscopy.
Contribute to measurements at user facilities, such as Argonne's ATLAS and MSU's FRIB.

MSU Planned Activities
Contribute to gamma-ray spectroscopy and lifetime measurements with GRETINA and beta-delayed proton-decay measurements of astrophysically-important nuclei at FRIB

TAMU Planned Activities

Contribute to beta-gamma spectroscopy for precision measurements of half-lives and branching ratios for Standard Model at Cyclotron Institute.
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B. Nuclear Reaction Data Measurements

This area describes work that supports USNDP Strategic Initiative II - Activation Library.

LANL Planned Activities
Finalize reports on cross sections of $^{40}\text{K}(n,p)$ and $^{40}\text{K}(n,a)$ reactions for the neutron energy range of 0.1 - 6.0 MeV.
Perform new cross section data on $^{59}\text{Ni}(n,p)$ and $^{59}\text{Ni}(n,a)$ reactions at the Lujan Center for the neutron energy range of thermal to 1 MeV
Perform analyses of angular distributions and energy spectra for stable Cu and Zn using the neutron-induced charged particle emitting reaction data obtained using LENZ
Continue to develop Machine-Learning analysis tools to improve systematic uncertainties and restore imperfect signals in measurement data sets
Work on development of experimental capabilities for measuring nuclear reactions on radionuclides

VI. Advanced Methods

A. The Atlas of Neutron Resonances modernization

This area describes work that supports USNDP Strategic Initiative I - AI and Workflows.

BNL Planned Activities
Maintain the Atlas of Neutron Resonances electronic files and associated data model in preparation for a future update of the Atlas of Neutron Resonances.
Continue working on the use of ML techniques to better determine resonance properties.

B. Evaluated Nuclear Data File web interface

BNL Planned Activities
Maintain and improve the legacy Sigma database and web interface for users without specialized knowledge of ENDF-6 format.
Extend the ENDF-API to cover more ENDF data types and libraries. Update Sigma to use the new REST-API.

C. ENSDF Physics and Checking Codes

This area describes work that supports USNDP Strategic Initiative I - AI and Workflows.

BNL Planned Activities
Maintain and upgrade ENSDF checking and physics programs for format changes as required.
Develop applications that apply Machine Learning techniques to the new format.
Modernize ENSDF physics code to accomodate new ENSDF format.
Work on the development of a new editor for the ENSDF format.

MSU Planned Activities
Maintain and improve the ENSDF utility and analysis codes in Java developed at MSU, such as McMaster-MSU-Java-NDS, ConsistencyCheck, GLSC, Java-RULER, Excel2ENSDF, FormatCheck, AlphaHF, KeynumberCheck, AME-Nubase-viewer.
Continue to develop and improve the ENSDF-evaluation toolkit (EvaluationToolkit) that combines all ENSDF Java codes and provides a simple user-friendly interface to help facilitate, streamline and automate the ENSDF-evaluation process.
Continue to develop new Java codes to replace the remaining legacy ENSDF codes in Fortran that lack maintenance.
Continue to develop the new Java-NDS program and other utility and analysis Java codes to work with the new ENSDF JSON format.
Continue development, improvement, and maintenance of advanced software tools, with a focus on refining and integrating AI-enhanced workflows.
Expand ENSDF-Agent capabilities — the first AI Agent designed for ENSDF workflows, integrating Large Language Models into routine evaluation tasks (released on GitHub and the VS Code Plugin Marketplace).
Integrate Level-Matcher — the first physics-informed machine learning tool for reconciling nuclear level schemes across multiple datasets — into the existing evaluation tools.
Distribute all tools as open source via the MSU/FRIB Nuclear Data Group GitHub (https://github.com/FRIBNDC).

LLNL Planned Activities
Collaborate with BNL in the development of the next generation ENSDF format and develop applications that apply Machine Learning techniques to the new format.

D. Nuclear Model Development

This task covers activities, such as the development and validation of nuclear reaction models, used for prediction of nuclear reaction cross sections. The two major codes are CoH3 (LANL) and EMPIRE (BNL). Measurements made by LANL, along with other measurements made with DOE low-energy physics funds, will play a crucial role in the validation of the models in these computer codes. LANL participates in the IAEA Coordinated Research Project RIPL that improves the accuracy and reliability of input parameters used in nuclear reaction calculations. This area describes work that supports USNDP Strategic Initiative II - Activation Library.

LANL Planned Activities
Continue to develop a microscopic description of the fission process based on penetrability calculations through multi-dimensional potential energy surface. Implement the theory into the Hauser-Feshbach code to calculate all fission-related observables in a common framework.
Continue to develop the Hauser-Feshbach fission fragment decay code for evaluating major actinides, which has a unique capability to produce all the fission observables simultaneously.
Provide a new technique to calculate the probability table for the Monte Carlo transport simulations based on the Gaussian Orthogonal Ensemble to the data processing code such as NJOY.
Improve fission cross section calculations that maintain consistency across the actinide mass numbers.
Improve calculations for neutron-induced charged-particle reactions in collaboration with LENZ/LANSCE, and produce evaluated files based on these experimental data.

E. Nuclear Science References (NSR) modernization

This area describes work that supports USNDP Strategic Initiative I - AI and Workflows.

BNL Planned Activities
Develop keywording system using AI.
Complete modernizing the NSR workflow and data model.

F. Experimental Nuclear Structure Data (XUNDL) modernization

This area describes work that supports USNDP Strategic Initiative I - AI and Workflows.

BNL Planned Activities
Develop AI-assisted formatting tools for XUNDL compilation

MSU Planned Activities
Develop AI-assisted formatting tools for XUNDL compilation
Integrate AI-enhanced workflows (ENSDF-Agent) into XUNDL compilation and data review

G. Astrophysics Nuclear Data Needs

The objective of this activity is to support the nuclear data needs of the increasingly sophisticated simulations of astrophysical phenomena.

ANL Planned Activities

Collaborate with nuclear astrophysics groups in US and elsewhere on nuclear data needs for astrophysics modeling. Provide recently compiled and evaluated nuclear data in user-requested formats.

BNL Planned Activities

Evaluate nuclear astrophysics potential of EXFOR library.

LANL Planned Activities

Work on Monte Carlo simulation effort using Geant4, to implement radioactive nuclear reaction studies at Time of Flight facilities, in the interest of providing improved neutron reaction rates on radionuclides.
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Develop network calculations for nucleosynthesis of heavy elements by implementing newly updated experimental reaction rates in relevant astrophysical scenarios.

TUNL Planned Activities

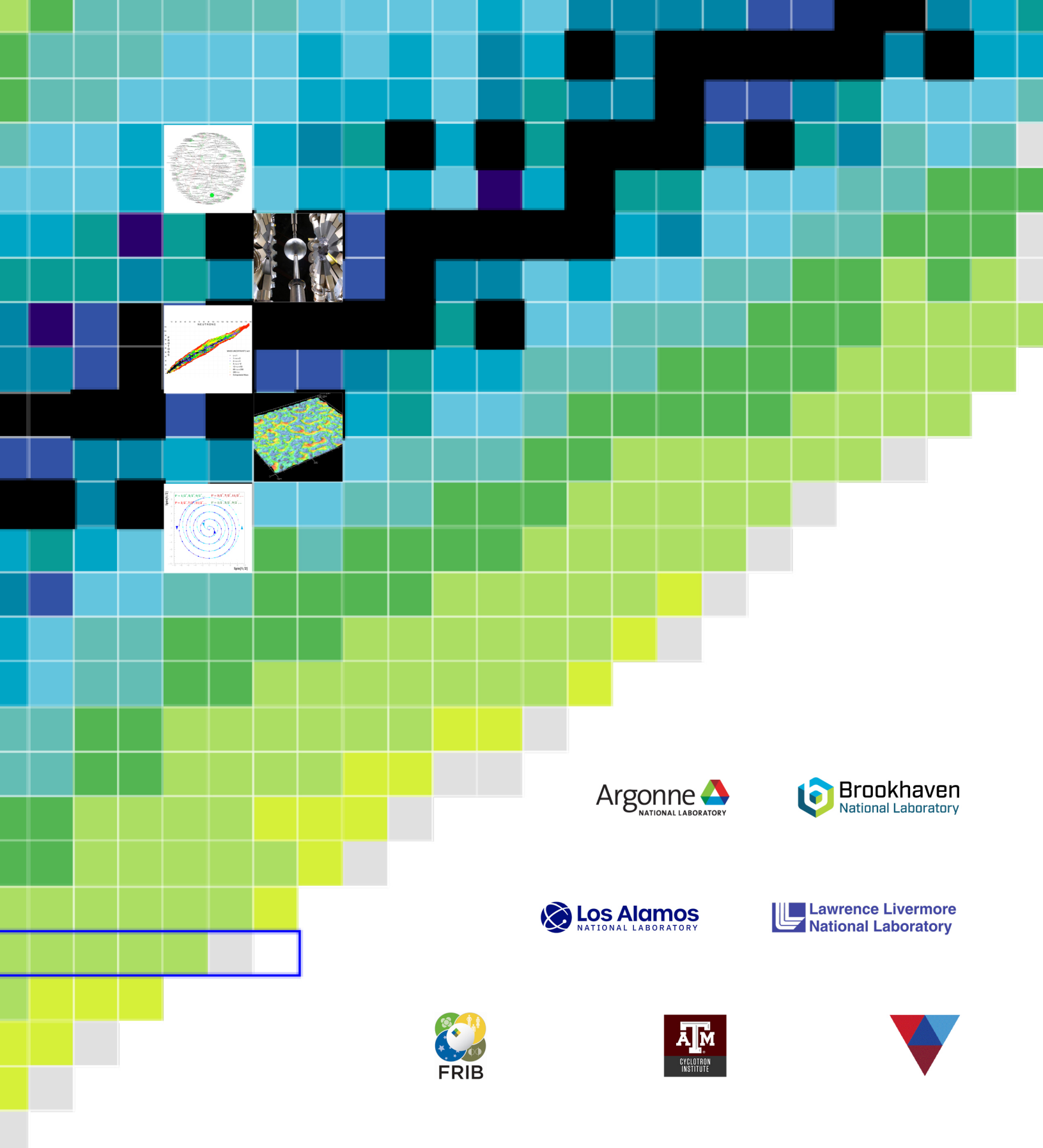
Contribute a small effort for the Experimental Thermonuclear Reaction Rates library by evaluating astrophysical reaction rates for some nuclei. The most recent rates library was published as ETR-2025.
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H. Reactor Antineutrino Spectra and Decay Heat Calculations

BNL Planned Activities

Improve our methods and databases to calculate anti-neutrino spectra for major actinides.

Perform decay-heat calculations in collaboration with experimental groups.
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