



DATA BANK NEWSLETTER

ISSUE 1, OCTOBER 2022

Survey for the 2023 training courses

The NEA Data Bank offers training courses in several computer programs used in nuclear energy applications. Since 2020 these include both in-person and virtual training events that use an e-Learning platform to deliver course materials and hands-on tutorials. We are expanding the options for 2023 and would be grateful for your input on which courses should be prioritised and which topics covered. If you or any of your colleagues would be willing to participate, please complete the online survey [here](#).

Upcoming events

The NEA Data Bank will organise four courses this autumn. Following the success of the first OpenMC training earlier this year, an online OpenMC course will take place on 24-27 October. Participants will gain expertise in this open source Monte Carlo neutron and photon transport simulation code.

A new edition of SCALE KENO-MAVRIC criticality safety and radiation shielding training will follow on 14-18 November at the NEA offices in Boulogne-Billancourt, France. A course on PHITS, a Japanese general-purpose Monte Carlo particle transport simulation code, will take place on 21-25 November in Paris. Please note that registration periods for these courses close in October 2022. You can find more information about these courses online [here](#).

Course	Dates	Venue	Cost (EUR)
OpenMC	24-27 Oct	Virtual	450
SCALE-NCS/RS	14-18 Nov	NEA	2 300
PHITS	21-25 Nov	NEA	650

New e-Learning system and credentials

Moving to virtual training for computer programs introduced several challenges which were common to millions of students around the world. In 2022, the Data Bank launched a Canvas Learning Management System (LMS) to support virtual training events and coupled this with an Accredible-based certification system that allows students to receive verifiable recognition for their completed work.

The systems were tested in the first of a kind OpenMC training in April 2022 and rolled out in subsequent events for FISPACT-II, PENELOPE and the NEA International Radiation Protection School.

Message from the Head of the NEA Data Bank

After more than 10 years, we are resuming the NEA Data Bank newsletter to provide you with updates on our services, recent and upcoming events, new packages that are available to our members and other news items of interest.

Following two years with lockdowns, restricted travel and never-ending virtual meetings, the Data Bank Secretariat have been delighted to welcome you back to the OECD Conference Centre and our Boulogne-Billancourt offices, whether as delegates to official bodies, experts in our technical groups or students in training workshops. The Joint Evaluated Fission and Fusion (JEFF) project has already hosted two physical full nuclear data weeks, we have resumed live training events and we welcomed our Management Board delegates to their first in-person meetings since 2019.

In the past months we have been working diligently to create improved and modern services that integrate our different work areas. We have implemented a new GitLab platform with custom on-site infrastructure, are moving to SharePoint Online for delegate and official body engagement and launched an e-Learning system. The team have been piloting these tools across our work areas and we are grateful to all our partners for their engagement and enthusiastic responses.

I sincerely hope to welcome you (again) to the NEA in the near future. If you have any questions, please reach out to us using the contact details provided below.

Michael Fleming



OECD Nuclear Energy Agency

The OECD Nuclear Energy Agency (NEA) is an intergovernmental agency that facilitates co-operation among countries with advanced nuclear technology infrastructures to seek excellence in nuclear safety, technology, science, environment and law.

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Alphabetically (A to Z)

FISPACT-II Training Course

Participants attended a 3-day training course on 21-23 June 2022, on FISPACT-II, inventory simulation platform for nuclear observables and materials science, delivered through the OECD Nuclear Energy Agency in collaboration with the United Kingdom Atomic Energy Authority.

International Radiological Protection School 2022

Participants attended a 5-day training course designed to provide them with a thorough understanding of the international radiological protection system, how it is intended to be interpreted for application in diverse and emerging circumstances and how it is evolving based on new scientific knowledge and lessons learned.

Introduction to OpenMC

Recipients participated in a 4-day training course on 25-28 April 2022 on the use of the OpenMC Monte-Carlo code (<https://docs.openmc.org/>) delivered through the OECD Nuclear Energy Agency.

[New NEA credentials](#) for online and in-person courses offered through the Data Bank with projects launched between April – July 2022.

Highlighted new distribution: SERPENT-2

The SERPENT version 1.1.7 package ([NEA-1840](#)) has been available at the Data Bank since 2010 and has been one of the most requested packages. Now SERPENT version 2.2 is available through the Data Bank as a new package ([NEA-1923](#)), representing a major refactor and improvement over the previous versions.

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4278 Serpent 2.2
4279 A Continuous-energy Monte Carlo Reactor Physics Burnup Calculation Code
4280 - Version 2.2.0 (May 5, 2022) -- Contact: serpent@vtt.fi
4281 - Reference: J. Leppanen, et al. "The Serpent Monte Carlo code: Status,
4282 development and applications in 2013." Ann. Nucl. Energy,
4283 82 (2015) 142-150.
4284 - Compiled Sep 21 2022 15:18:38
4285 - MPI Parallel calculation mode not available
4286 - OpenMP Parallel calculation mode available
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SERPENT-2.2.0 automatic testing with JEFF data on the NEA GitLab and within portable Docker images.

SERPENT-2 was one of the first packages whose deposition and testing at the Data Bank occurred through the new GitLab system, with reproducible verification checks on automatically built Docker images hosted at the Data Bank Harbor registries.

GitLab for version control, testing, containerisation and future services

With the launch of a new GitLab, Harbor and on-site GitLab runner series of virtual machines, the Data Bank team have been working to bring new software packages into the system for services across the Data Bank. The automated creation of Docker images with compiled software allows experts to provide fully reproducible tests and layer in other resources – such as nuclear data or models for benchmark experiments.

Already, staff are bringing over these resources from the JEFF project and benchmarks such as ICSBEP and IRPhE to provide combined products for users beyond the software package itself. Developers have direct access to the repositories and other features such as continuous integration pipelines, merges and issue boards, wikis and more. We are actively working to ensure access to users for these products through GitLab complies with all legal and procedural requirements and will update the Management Board in our December 2022 meeting.

JEFF-4 test libraries

In March 2022, the JEFF project released its “T1” test library, including new evaluations for structural materials, minor actinides, thermal scattering data, and more. A “T2” library is being prepared for the upcoming November 2022 Nuclear Data Week and will include several updates including new major actinide evaluations and fission yields. The T1 data in evaluated and processed forms, including ACE data for Monte-Carlo simulation, AMPX processed data for SCALE and Generalised Nuclear Data Structure (GNDS) formatted data, are available online [here](#).

JEFF nuclear data weeks

After the reform of the JEFF project in late 2021 to (re)establish 12 technical working groups with their own Chairs, the hybrid physical and virtual November 2021 and April 2022 meetings had

record participation. The Co-ordination Group launched technical workshops on a variety of topics that have been taking place monthly since early 2022, including “random” files for uncertainty quantification, activation/transmutation libraries, strategic planning for the “major actinides” isotopes, fission yields with covariances, the framework for data validation experiments and more. Experts interested in participating should contact data@oecd-nea.org.

The next JEFF meetings will take place in person at the NEA offices during the week of 21-25 November 2022. [Registration is open](#) and will close on 30 October. Please note that, following record presentation requests for the past two meetings, requests for presentations made after 10 October will only be accepted at the discretion of the Chairs and based on availability.

September 2022 hackathon and next steps

With the launch of the new NEA GitLab, the integration of nuclear data processing, verification, code testing and validation is moving to new continuous integration systems on the Data Bank data centre. Experts met at the first “hackathon” to design the processing, verification and validation steps that will be collaboratively defined and used for the JEFF-4 library testing and official release. Pipelines have been established to create data for codes such as SCALE, SERPENT and FISPACT-II, in a range of point-wise and multi-group formats. Experts interested in participating should contact data@oecd-nea.org.

New computer program and data additions and updates in the last year (dates indicate most recent update)

16-SEP-22	NEA-1927	ZZ-AMPXJEFF3.1.1UPM, AMPX-formatted Neutron Cross Section Library and Covariances based on JEFF-3.1.1 (Arrived)
16-SEP-22	NEA-1928	ZZ-AMPXJEFF3.3-UPM, AMPX-formatted Neutron Cross Section Library and Covariances based on JEFF-3.3 (Arrived)
08-SEP-22	NEA-1923	SERPENT V2.2.0 -R-, 3-D continuous-energy Monte Carlo reactor physics burnup calculation, lattice physics applications (Tested)
25-AUG-22	NEA-1916	FINPSA TRAINING 2.2.0.1 -R-, a PSA model in consisting of event trees, fault trees, and cut sets (Tested)
21-JUL-22	NEA-1849	ZZ PSBT, NUPEC PWR Sub-channel Bundle Tests Benchmark (Arrived)
06-JUL-22	DLC-0125	FIREDATA, Nuclear Power Plant Fire Database (Arrived)
28-JUN-22	NEA-0914	REFIT-2009, Multilevel Resonance Parameter Least Square Fit of N Transmission, Capture, Fission & Self Indication Data (Tested)
16-JUN-22	NEA-1926	N-THERMALISATION, Notes on the scattering of thermal neutrons (Arrived)
15-JUN-22	NEA-1925	TCOFF, Thermodynamic Char. of Fuel Debris and Fission Products based on Scenario Analysis of Severe Accident Progression (Arrived)
04-MAR-22	NEA-1907	FRENDY V2, Nuclear Data Processing System for Evaluated Nuclear Data File (Tested)
11-JAN-22	NEA-1890	FISPACT-II 5.0, Inventory Simulation Platform for Nuclear Observables and Materials Science (Tested)
14-OCT-21	IAEA1439	STACY, Very High Temp. Reactor V/HTR Safety Analyses for the Quantification of Fission Product Release from the Fuel (Tested)
12-OCT-21	IAEA1440	VSOP99-11, Neutron Spectra, 2-D Flux Synthesis, Fuel Management, Thermohydraulics Calculation (Tested)
23-SEP-21	NEA-1903	CRISTAL V2.0.3, Criticality calculation package (Tested)

The NEA Data Bank acts as an international centre of reference for its participating countries with respect to basic nuclear tools, such as computer codes and nuclear data, used for the analysis and prediction of phenomena in the nuclear field. It offers a direct service to its users by providing the means to develop, improve and validate these tools, distributing them in accordance with international rules, and organising training and education activities to support nuclear knowledge management.

Contact points and online resources

Website: <https://oecd-nea.org/databank>
Codes: programs@oecd-nea.org
Nuclear data: data@oecd-nea.org
GitLab: <https://git.oecd-nea.org>