Radiation Safety Information Computational Center

Oak Ridge National Laboratory
Post Office Box 2008
Oak Ridge, Tennessee 37831-6003
Managed by
UT-Battelle, LLC
for the U.S. Department of Energy
under contract DE-AC05-00OR22725

phone 865-574-6176 fax 865-241-4046
email PDC@ORNL.GOV
www http://rsicc.ornl.gov/

Timothy E. Valentine, Ph.D. - RSICC Director

No. 660 June 2020

"If there is no struggle there is no progress." – Fredrick Douglas

TABLE of CONTENTS

CHANGES TO THE RSICC CODE AND DATA COLLECTION

There are two updates to the RSICC catalog this month.

CCC-848/UNF-ST&DARDS 4.0

Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA, has contributed a new version of UNF-ST&DARDS 4.0. To understand the changing nuclear and mechanical characteristics of spent or used nuclear fuel (SNF or UNF) and the different storage, transportation, and disposal systems at various stages within the waste management system, different types of analyses are required. These types of analyses require the use of assorted tools and numerous types of data. Using the appropriate modeling and simulation (M&S) parameters and diversity of analytic tools needed to conduct SNF analyses can be a tedious, error-prone, and time-consuming undertaking for analysts and reviewers alike.

A new, integrated data and analysis system has been designed to simplify and automate the performance of accurate and efficient evaluations for characterizing the input to the overall waste management system —UNF-Storage, Transportation & Disposal Analysis Resource and Data System (UNF-ST&DARDS). A relational database has been assembled to provide a standard means by which UNF-ST&DARDS can succinctly store and retrieve M&S parameters for specific SNF analysis. Users can import SNF data into this database for user-specific analysis. A library of various analysis model templates provides the ability to communicate the various set of M&S parameters to the most appropriate M&S application. A process manager facilitates performance of actual, as-loaded, assembly-specific and cask-specific evaluations. Interactive visualization capabilities facilitate data analysis and results interpretation.

SCALE 6.2.2 or later and COBRA-SFS licenses are required for running any analysis using UNF-ST&DARDS. Users are required to import their data for assembly-specific and canister-specific analyses.

The package is distributed as a download, which contains the referenced document in PDF format and a compressed zip files Windows executable files, Sample problems, data and reference material. Java, Python; Windows (C00848PCX8600).

RESTRICTION: UNF-ST&DARDS 4.0 is restricted to individuals from federal government organizations responsible for managing or regulating used or spent nuclear fuel (SNF), their contractors, or the regulated commercial nuclear power industry. Organizations expected to benefit from the use of UNF-ST&DARDS include the U.S. Department of Energy and its contractors; the U.S. Nuclear Regulatory Commission (NRC) and its contractors; U.S. NRC Certificate of Compliance (CoC) holders for SNF storage or transportation packages; U.S. commercial nuclear power generating utilities; Independent Spent Fuel Storage Installations (ISFSIs); or equivalent foreign organizations engaged in cooperation with the United States Government and its national laboratories regarding the safe long-term management of SNF. Federal regulations may restrict the distribution of the UNF-ST&DARDS code and access to the code is provided only after authorization by the developer.

CCC-855/VERA 4.1

The Consortium for the Advanced Simulation of Light Water Reactors (CASL), Oak Ridge, TN, USA, has implemented a new process to provide access to a new version of VERA, VERA 4.1. Individuals that wish to access VERA or to develop components of VERA will be screened by RSICC before the individual can be provided access to the software or provided access to the repository for the VERA 4.1 source code. All requests for access to VERA are reviewed and approved by the VERA Users Group. Individuals that are not developers of VERA are encouraged to request access to the executable version of VERA that will be provided by the VERA Users Group. Individuals that intend to develop components of the VERA package must provide additional information as described in the restrictions below.

VERA can be utilized for reactor analyses for 2D lattices, 2D core and 3D core problems for pressurized water reactor geometries to calculate criticality and fission rate distributions by pin for input fuel compositions.

MPACT uses the Method of Characteristics (MOC) transport approach for 2D problems. For 3D problems, MPACT uses the 2D/1D method which uses 2D MOC in a radial plane and diffusion or Pn in the axial direction.

The ORIGEN (Oak Ridge Isotope GENeration) capability, from SCALE, is used in MPACT to model the depletion, decay, and transmutation of hundreds to thousands of isotopes. It is integrated within MPACT to provide a complete neutronics capability.

A thermal-hydraulics capability is provided with CTF (an updated version of COBRA-TF) that allows thermal-hydraulics analyses for single and multiple assemblies using the simplified VERA common input. This distribution also includes coupled neutronics/thermal-hydraulics capabilities to allow calculations using MPACT coupled with CTF.

Shift is a general-purpose radiation transport code that performs stochastic modeling of neutral particle physics using the Monte Carlo method. It can perform eigenvalue calculations as well as fixed source calculations in neutron, photon, or coupled neutron-photon mode. Shift is integrated into VERA for both in-core reactor analysis using eigenvalue mode and ex-core dosimetry using fixed-source mode. Shift is coupled to MPACT through VERA to enable source definitions for both fixed-source and eigenvalue problems.

The MAMBA code provides the ability for VERA to simulate the deposition of crud on the fuel rod surface. MAMBA solves the growth of the crud layer as well as the thermal solution, species transport,

and chemical precipitation throughout the crud layer. MAMBA is tightly integrated into MPACT and CTF to provide direct feedback into the coupled simulation. MAMBA also includes a detailed mass balance capability which includes the generation of corrosion products from the steam generator and primary system piping, the deposition on core components, and removal from the coolant cleanup system.

Input/output capabilities include the VERA Common Input (VERAIn) script which converts the ASCII common input file to the intermediate XML used to drive all of the physics codes in the VERA. VERA component codes either read the VERA XML format directly or provide a preprocessor that converts the XML into native input for the component code. VERAView is an interactive graphical interface for the visualization and engineering analyses of output data from VERA. The python-based software is easy to install and intuitive to use, and provides instantaneous 2D and 3D images, 1D plots, and alpha-numeric data from VERA multi-physics simulations.

Physics components included in VERA 4.1:

MPACT	Neutron transport and cross-section physics
CTF	Sub-channel resolved thermal-hydraulics with fuel rod fuel heat transfer model
ORIGEN	Isotopic depletion and decay from a beta version of SCALE-6.2.3
Shift	Monte Carlo neutron transport
DAKOTA Analysis	Software library for Optimization, Uncertainty Quantification, and Sensitivity

The package is distributed as a download, which includes instructions for source and executable access, sample inputs, documentation and reference material. C, C++, Fortran, Python; Linux (C00855PCX8600).

RESTRICTION: Individuals requesting access to the source version of VERA 4.1 must provide the specific code/module that they are developing, the computing systems upon which they are developing the code, and the manner in which they will control access to the VERA package in the end use statement of the request. The individual must provide the name of the person on the VERA development team with whom they are collaborating as well. If this information is not included with requests for access to the source version of VERA 4.1, then the request will be denied.

FEE CHANGES

(*Last updated October 1, 2019*)

RSICC does not charge for the packages that we deliver; however, we are required by the Federal government to recoup the cost associated with our operations. This fee is based on the cost for RSICC to maintain its archive, update its archive and support customer requests and registrations. This cost includes the effort required to perform the background and export control compliance checks that are mandated by the Federal government.

The cost recovery fee for those individuals that require more extensive export control and nonproliferation reviews will be $1,250 while the cost recovery fee for those individuals that do not require the extensive reviews will be $1,000. For those individuals that are only approved for access to RSICC software on RSICC's secure cloud server the fee will be $1,823. These rates will be effective on October 1, 2019.

An invoice will be sent to you via email if you are required to pay the cost recovery fee. The cost recovery fee is payable via check written on a U.S. bank, postal money order, PayPal account or any method that PayPal provides including debit and credit card. **RSICC does not accept purchase orders or wire transfers.** If payment is received via wire/bank transfer, RSICC will deny future services to both you and your organization.

SINGLE USER MULTI-ORGANIZATION LICENSE AGREEMENT

(*Last updated July 1, 2018*)

In order to support the use of RSICC software by multi-national organizations and international collaborations, RSICC now offers our customers the option to request a Single User Multi-Organization Software License Agreement. The Single User Multi-Organization Software License Agreement addresses issues regarding the "re-export" of software and data packages obtained from RSICC because under Federal export control regulations our customers cannot "re-export" the code to another person in another country.

This agreement is intended to allow our customers to specify additional foreign locations for which they may be approved to utilize RSICC software. In general, the default option will be the standard single user license agreement for the country in which the customer resides and is employed. The following defines the requirements for use of this license agreement.

This SUMO software license agreement is only available for individuals that receive software directly from RSICC. In addition, the point of contact (host or system administrator) at the additional foreign location(s), must be licensed directly from RSICC and must agree to abide by the policies associated with host/server/cluster systems that are summarized following this announcement.

To apply for this license the customer must first register with RSICC and provide full and complete information. When submitting their request, the customer must provide the following information in the COMMENTS section of the request form for each applicable package:

- full name and email address of the point of contact (POC),
- the full name of the organization at which the software will be used, and
- the complete address (no post office boxes) of the organization under which additional access is being requested.

Individuals that would like to utilize this service must have a valid reason for needing this access and provide such justification to RSICC in the END USE statement as well. If this information is not included in the END USE statement, then the customer's request will only be considered for the standard single user license agreement.

When processing the request, RSICC staff will verify that the designated POC(s) has a valid license for the same version of software that is being requested by the applicant and verify that the POC obtained the package directly from RSICC. If the POC, did not obtain the package directly from RSICC, the POC will need to register with RSICC, apply and be approved for the package before the applicant's request can be processed.

The requests will be reviewed for each designated location and a decision will be rendered as to whether or not a license is granted. If an organization or location is denied, then the customer will be notified and may be limited to the standard single user license agreement for their own organization.

Exceptions:

Persons that have any citizenship of or are located in countries that are not listed in Appendix A of 10 CFR 810 are not permitted to utilize the Single User Multi-Organization License Agreement.

Fees:

The customer making the request for the single user multi-organization software license will be required to pay the cost recovery fee for each location at which they are approved. In addition, the POCs at the other foreign locations that have not obtained the software directly from RSICC will have to obtain the software from RSICC and pay the applicable fee.

Host/Server/Cluster Guidance

Software obtained from RSICC is export controlled under the jurisdiction of the U.S. Department of Energy, 10 CFR 810, or the U.S. Department of Commerce, 15 CFR 730-744. Additionally, RSICC distributes this software under guidance issued by the U.S. Department of Energy's Office of Nonproliferation and Arms Control. The distribution and use of RSICC software is restricted and controlled under these regulations and guidelines. Individuals that request the software must be cleared through both an export control and a nonproliferation review process prior to the individual being granted a license to receive software for a specific end use.

The software distributed by RSICC is licensed to individual requestors (Licensee) under a single-user license agreement while employed at the organization listed on the license forms and cannot be transferred to any other individual or entity. The Licensee is responsible for the control, management and protection of the software. The Licensee is responsible for compliance with U.S. export control requirements (laws and regulations) and the terms of the license agreement. This includes preventing access to the software by any individual or entity (including IT staff) as such access may be deemed an export control violation. Individual Licensees should protect the software, documentation, and installation accordingly. Neither the software nor manuals should be posted to the Internet or otherwise be made publicly available. Any and all system administrators that are assisting with the installation and maintenance of a licensed code(s) or that would otherwise have access to a licensed code(s) that is placed on a stand-alone system and/or server/cluster must also be licensed for the exact version of the software that is placed on these systems. Individuals whose duties are only that of a System Administrator are not authorized to be users of the licensed codes(s).

System administrators and/or hosts should implement standard and customary account access and/or file permissions such that only the licensed individuals may access the program. This should include identity and access management, such as multi-factor authentication, to ensure software is kept secure from unauthorized access. Please note that the single-user license agreement is code and version specific. The Licensee must be licensed for the specific version to which they are granted access. For example, an individual with a license only for MCNP5 should not be permitted access to MCNP6.1. Additionally, some individuals are only licensed for the executable versions of the code(s), and the system administrator(s) must ensure that such individuals do not have access to the source code. Therefore, it is recommended that the source code be removed after installation of the program(s) and furthermore procedures must be implemented such that control software is not lost via decommissioned storage media.

Network, server, parallel, cluster, or similar installations outside of the United States may not be within a country NOT listed in Appendix A of 10 CFR 810 nor occur at facility identified as an entity under 15 CFR 744.

RSICC software may be hosted on a server, cluster or high-performance computing system with the following conditions:

1) Each server/cluster operator must designate one individual responsible for oversight of the use of RSICC software on the server/cluster. This individual will be responsible for communicating and reporting to RSICC on an annual basis regarding the users of the cluster/server.

2) Each and every system administrator that would have access to any form (source or executable) must register, request, **and** be approved for the software with RSICC for the version to which they would have access.

3) An authorized and approved system administrator may install and maintain the software and must ensure that the software is not distributed or shared with those who do not have a specific license for the version to which they would have access. System administrators are required to utilize protocols that limit access to the software. Users should only be granted access and use of software to which they have a specific license, e.g. users that have a license for SCALE 6.1 should NOT be granted access to SCALE 6.0 or SCALE 6.2.

4) System administrators are not permitted to provide access to RSICC software to individuals **NOT** located within the same country as the server/cluster unless the Licensee has an approved Single User Multi-Organization License Agreement from RSICC.

5) Individuals with citizenship or multiple citizenships that include a country not listed in Appendix A of 10 CFR 810 **may be granted** access to RSICC software on a server/cluster, if the individual **has been approved** for access to the software by the U. S. Department of Energy's Office of Nonproliferation and Arms Control.

6) Under no circumstances should an individual with citizenship or multiple citizenships that include a country **NOT** listed in Appendix A of 10 CFR 810 be granted access to RSICC software on the server/cluster, if that individual has **NOT** been approved by the U.S. Department of Energy's Office of Nonproliferation and Arms Control. Additionally, under no circumstances should an individual located at an entity identified under 15 CFR 744 be granted access to RSICC software on the server/cluster.

7) Individuals that have been only granted access to RSICC's secure cloud server **MAY NOT** be granted access to any other server/cluster.

8) When a Licensee requests access to RSICC software on a server/cluster, the system administrator must follow the following process:

(a) The system administrator will require that the Licensee provide proof of a license by requiring that the Licensee provided an electronic copy of either the Single User License Agreement or the Single User Multi-Organization License Agreement. System administrators cannot provide access to anyone located in another country unless that individual has an approved Single User Multi-Organization License Agreement from RSICC and the organization of the system administrator is listed on the SUMO License Agreement.

(b) As of February 1, 2015, RSICC's single user and export control agreements were restricted to the specific end use provided in the request and to the Licensee's installation (employer, organization, or university) when making the request. The system administrator must ensure that the Licensee's current installation is the same as that on the license agreements.

(c) If the Licensee's current installation is NOT the same as that on license agreements, then access should be denied until the Licensee has updated license agreements with RSICC. This will require the Licensee to update their registration with RSICC and submit a new request with RSICC. The Licensee should not be granted access to the software until they have been authorized. Please note that some approvals are location and organization specific.

9) The system administrator will maintain records of the Licensees that are utilizing the server/cluster and send a record to RSICC (rsic@ornl.gov) that include the Licensee's full name, RSICC customer identification number, installation, and the codes to which the Licensee has access on the system. This information must be provided when the system administrator makes the first request to RSICC to provide such services and must be updated annually by sending updated information to RSICC no later than November 30 of each calendar year. The record should include the customer's full name, RSICC customer number, customer installation as well as request numbers and software package name and identifier for which they are accessing on the cluster.

Server/cluster operators that agree to comply with these conditions may install RSICC software on the server/cluster that are within their corporate/institutional ownership, physical control, and the individual country identified.

END USE STATEMENT

(*Last updated July 1, 2017*)

Customers are strongly encouraged to provide full and complete information regarding the intended end use of the software being requested. End use statements that specify that the code is for research, training or educational activities are not sufficient. RSICC's regulators need to know explicitly for what purpose you intend to use the codes and detail needs to be provided. Requests that lack sufficient detail will be rejected.

REGISTRATION REQUIREMENTS

(*Last updated January 1, 2015*)

RSICC does not permit individuals to "pre-register" or "pre-order" software for use at a temporary or alternate location. The single user license and export control agreements are specific to the individual's end use and the location at which the software will be used. During the registration process, individuals are required to provide the name of the institution at which they will use the software, an institutional mailing address and an institutional e-mail address.

SINGLE-USER LICENSE AGREEMENT REVISED

(*Last updated February 1, 2015*)

The single-user license agreement has been revised to address concerns regarding changes in end-use and/or employment of individuals that have received packages from RSICC. In some instances, individuals obtain approvals from our Federal regulators for use of software packages for very specific

purposes or while employed or associated with specific organizations. To address this concern, the single-user license agreement has been modified to indicate that the license is only valid for the end-use as stated in the Licensee's request and only while associated with the organization under which the request is being made. After February 1, 2015, the individual's single-user license would no longer be valid if they change their end-use or are no longer associated with the organization for which they obtained the original license. In these cases, the individual would need to submit a new request to RSICC for the package for the new end-use or the new affiliation.

SCIENCE EDUCATION PROGRAMS AT OAK RIDGE NATIONAL LABORATORY

Looking for an internship or post-graduate opportunity at Oak Ridge National Laboratory? The Science Education Programs at Oak Ridge National Laboratory provide paid opportunities for undergraduates, grad students, recent graduates, and faculty to participate in high-quality research alongside world-class scientists to solve real-world problems. Opportunities are available for internships and co-ops, research appointments, and sabbaticals. You can access all available opportunities through the website at http://www.orau.org/ornl. All levels of participants from undergraduates to faculty are encouraged to publish research papers with their mentors. Please browse through the profiles on the different participants and their research experiences on the web site listed above. Also, there is a video of research participants at ORNL sharing their thoughts on how access to world-class research facilities and staff has catapulted their careers in science and technology. You can find it on YouTube at http://ow.ly/2EQLz.

CONFERENCES, TRAINING COURSES, SYMPOSIA

RSICC attempts to keep its customers and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email pdc@ornl.gov with "**Conferences for RSICC Newsletter**" in the subject line by the 15th of each month. Please include the announcement in its native format as an attachment to the message. Please provide a website address for the event if one is available. Every attempt is made to ensure that the links provided in the Conference and Calendar sections of this newsletter are correct; however, if the links become unavailable, please call the point of contact for the event.

Due the coronavirus pandemic many conferences, training courses, and symposium are being cancelled or postponed. Please be sure to consult the event websites for more specific details.

CONFERENCES

29th International Conference Nuclear Energy for New Europe

The Nuclear Society of Slovenia in association with the Jožef Stefan Institute, cordially invites you to attend the 29th International Conference Nuclear Energy for New Europe. The conference will be held in Portorož, **September 7 - 10, 2020**.

The conference is an annual meeting of professionals dealing with different aspects of nuclear energy from all around Europe and worldwide. The primary objective of the meeting is to foster international cooperation amongst professionals active in nuclear research and educational institutions, nuclear vendors, utilities and regulatory bodies.

Portorož, literally "Port of Roses", is a coastal settlement in the southwestern Slovenia, and is one of the country's largest tourist areas. It belongs to the coastal municipality of Piran, located in the north of Adriatic Sea.

For more details on this conference, please visit website at www.nss.si/nene2020/.

15th Workshop on Shielding aspects of Accelerators, Targets and Irradiation Facilities (SATIF-15)

The 15th workshop on Shielding aspects of Accelerators, Targets, and Irradiation Facilities (SATIF-15) that was to be held in East Lansing, Michigan, USA, on September 8-11, 2020 has been postponed.

Please see the workshop website for more information: https://indico.frib.msu.edu/e/SATIF-15

Best Estimate Plus Uncertainty 2020 International Conference

BEPU is a leading international meeting on the use of best estimate and uncertainty analyses methodologies for nuclear reactor safety analyses. The last BEPU meeting was held in May 2018 in Lucca, Italy. The BEPU2018 conference demonstrated that:

- BEPU applications in licensing are limited and their increase is foreseen to be slow;
- there is a need for comprehensive guidelines for use of BEPU technologies, and the availability of mature tools was questioned;
- consistency in all steps of BEPU needs to be ensured, however it was identified that there is a need to reduce shortcuts in BEPU applications and to focus on exploitation of the full BEPU process;
- experimental data is central to the BEPU processes and methodologies; thus the use the available of experimental data in an efficient and consistent way is required; and
- BEPU is at first a methodology that increases the knowledge and understanding of

uncertainties and biases embedded in any deterministic safety analysis.

Given the outcomes of the BEPU2018 conference, the community recognized the need to address some of the identified shortcomings and initiated the planning for BEPU2020. **BEPU2020 will be held in Sicily, Italy from in October 11 – 17, 2020**.

Those interested can find additional details at http://www.nineeng.com/bepu2020/index.php.

7th International Conference on Nuclear and Renewable Energy Resources

The main objective of International Conference series on Nuclear and Renewable Energy Resources (NURER) is to provide an international scientific and technical forum for scientists, engineers, industry leaders, policy makers, decision makers and young scientists/professionals who will shape future energy supply and technology, for a broad review and discussion of various advanced, innovative and non-conventional nuclear energy and renewable energy systems with UNTHINKABLE IDEAS on sound scientific-technical basis. **NURER conferences have gained international importance, because of their unique character of bringing together the nuclear and renewable energy communities in the same forum for mutual understanding.** NURER emphasizes the fact that both are completing energies and not competing.

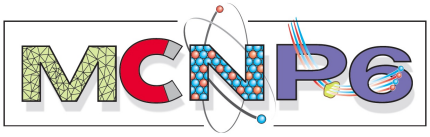
Earlier conferences were held in Ankara (Türkiye, 2009, 2010), İstanbul (Türkiye, 2012), Antalya (Türkiye, 2014), Hefei (China, 2016) and Jeju (Korea, 2018). For 2020, once more the capital city of modern Türkiye has been selected to host NURER2020 due to its central location. Due to the situation with the Coronavirus NURER2020 will be held in Ankara, Turkey from May 23 – 26, 2021.

For more details on this conference, please visit website at http://nurer2020.org/en.

17th International Symposium on Reactor Dosimetry 2021

The Seventeenth International Symposium on Reactor Dosimetry will be held 23-28 May 2021 at École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. The Symposium is being organized by EPFL and is jointly sponsored by the European Working Group on Reactor Dosimetry (EWGRD) and ASTM International Committee E10 on Nuclear Technology and Applications. Those interested can find additional details at: www.reactordosimetry.org

TRAINING COURSES



LANL MCNP6 Class Schedule

Individuals interested in attending or that have registered for these classes are encouraged to contact the organizers regarding any delays or cancellations.

Website: https://laws.lanl.gov/vhosts/mcnp.lanl.gov/classes/classinformation.shtml

Sept 28 - Oct 2, 2020 Los Alamos, NM	Intermediate MCNP6 Non-US citizens must register by 2020-07-06 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Oct 5-9, 2020 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2020-07-10 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Oct 26-30, 2020 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2020-07-31 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Nov 2-6, 2020 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2020-08-07 | Mon 10:00 - Fri 4:30	$1800 or $1500*

See the website for more information.

MCNP6 Training

Beginning/Advanced Visual Editor Training

For more information, see the website: http://mcnpvised.com/train.html

Date (Click Date for Info)	**Workshop**	**Level of Difficulty**	**Workshop Content**	**Location**

September 21-25, 2020	**Beginning MCNP® using the Visual Editor**		**Detailed Description**	**Richland, WA**
October 19-23, 2020	**Advanced MCNP® using the Visual Editor**		**Detailed Description**	**Richland, WA**
December 7-11, 2020	**Beginning MCNP® using the Visual Editor**		**Detailed Description**	**Mactan Island, Philippines**
December 14-18, 2020	**Advanced MCNP® using the Visual Editor**		**Detailed Description**	**Seoul, South Korea**

NEA Training Courses / Workshops

https://www.oecd-nea.org/dbcps/training-courses/

Class size is limited, and workshop may be cancelled if minimum enrollment is not obtained one month prior to the workshop. Workshop fees paid are refundable up to one month before each class.

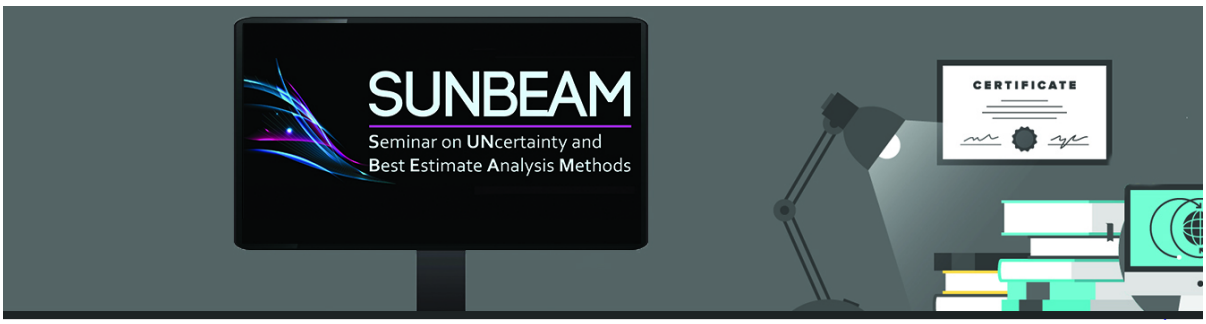
Please note that all attendees must be registered users.

Upcoming Workshops

Date	Class	Registration-Payment	Fees	Location
9-13 November 2020	MCNP6® Intermediate More information soon	Registration opening in Summer 2020	2200 EUR	Tokyo, Japan
12-13 November 2020	Thermodynamic data collection and assessment (TDB Project) Course description	Registration form	75 EUR	Paris, France

23-27 November 2020	FISPACT Inventory Simulation Platform for Nuclear Observables and Materials Science Course description	More information coming soon	600 EUR	Paris, France
01-05 February 2021	MCNP6® Introduction Course description	Registration closed	2000 EUR	Paris, France
08-12 February 2021	MCNP6® Intermediate Course description	Registration closed	2000 EUR	Paris, France
22-26 March 2021	SCALE TSUNAMI: Sensitivity and Uncertainty Analysis for Criticality Safety Assessment and Validation Course description	More information coming soon	2000 EUR	Paris, France
29 March – 2 April 2021	SCALE ORIGEN MAVRIC: Source Terms and Radiation Shielding for Spent Fuel Transportation and Storage Applications Course description	More information coming soon	2000 EUR	Paris, France

* The fee includes the training course, luncheons and coffee breaks.



Seminar on Uncertainty and Best Estimate Analysis Methods (SUNBEAM)

The seminar will take place online **July 6-24, 2020** with 5 hours of classes each day. The seminar course provides a transfer of experience and know-how from recognized experts from different organizations (industrial experts, regulators, researchers and university professors) in the fields of Best-Estimate Plus Uncertainty approach including uncertainty methodologies and application in licensing framework, Scaling Analysis, Validation Process of Evaluation Models, development and applications of Multi-physics & Multi-scale tools.

SUNBEAM will address the following subjects for a total of about 70 hours of lecturing:

- Licensing Framework and Best Estimate Plus Uncertainty
- Best Estimate System Thermal-Hydraulic Codes and V&V
- Scaling Issue and Scaling Analysis
- Sensitivity Analysis
- Uncertainty Analysis
- Procedures for a Consistent Application of a BEPU Method in Licensing
- BEPU Applications in Safety Analysis and Licensing Framework
- Reactor Physics and Fuel Performance Experiments and Uncertainty Analysis
- Multi-Physics Multi-Scale Simulations and BEPU

Finally, the seminar course contributes to maintaining and increasing technical competence and to ensuring the sustainable development of nuclear technology and is open to universities, vendors, national laboratories and regulatory bodies. At least two years' experience in the field of deterministic safety analysis is needed to participate in the course. A certificate of attendance is released.

The detailed program of the seminar course and the registration form as well as additional information about the venue, transportation and the hotels can be obtained from the Seminar's home page: http://www.nineeng.com/courses/index.php/sunbeam

SYMPOSIA

2020 CALENDAR

July

65th Annual Meeting of the Health Physics Society, July 5-9, 2020, National Harbor, Maryland. Website: http://hps.org/meetings/meeting51.html. Meeting has been cancelled.

August

Utility Working Conference and Vendor Technology Expo, Marco Island, Florida. Website: http://uwc.ans.org/.

September

ICRS 14/RPSD 2020, September 13-17, 2020, Seattle, Washington. Website: https://icrs14.ans.org.

October

2020 Best Estimate Plus Uncertainty (BEPU) International Conference, October 11-17, 2020, Sicily, Italy. Website: http://www.nineeng.com/bepu2020/index.php.

2020 IEEE Nuclear Science Symposium and Medical Imaging Conference, October 31 – November 7, 2020, Boston, Massachusetts. Website**:** https://nssmic.ieee.org/2020/.

November

2020 – ANS Winter Meeting and Nuclear Technology Expo, November 15-19, 2020, Chicago, Illinois. Website: not available yet.

December

Nuclear & Space Radiation Effects Conference, December 1-4, 2020, Santa Fe, New Mexico. Website: http://www.nsrec.com/.