Radiation Safety Information Computational Center

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"One cannot step twice in the same river." – Heraclitus

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CHANGES TO THE RSICC CODE AND DATA COLLECTION

There are two updates to the RSICC catalog for those individuals that may be interested.

CCC-846/AARE V1.0

Los Alamos National Laboratory, Oak Ridge National Laboratory, Argonne National Laboratory, and Paul Scherrer Institute of Switzerland have contributed an updated version of AARE. AARE_ACTIVATION is distributed in the AARE code package and also includes CINDER2008.

CINDER2008 is the latest release in the CINDER data and code development effort. Built upon the original work of Tal England at Bettis Atomic Power Laboratory (BAPL) in the early 1960s, it is used to calculate the inventory of nuclides in an irradiated material. Utilizing a self-contained nuclear data library, CINDER2008 calculates the atom density (atoms per unit volume) and activity density (Curies per unit volume) of all nuclides present at a specified time. While always providing a nuclide inventory, its functional identity depends upon the application. In nuclear reactor applications, such a code is commonly referred as a burnup code because it follows the temporal burnup of fissionable material and the associated production of fission products. It may also be called an activation code because it describes activation - the conversion of stable nuclides to radioactive nuclides by particle bombardment. In keeping with more recent vernacular, the code is identified as a transmutation code, since the code

follows all paths of nuclide transmutation - the conversion of a nuclide to a different nuclide by particle absorption and/or radioactive decay.

All CINDER versions use Markovian chains to determine temporal densities of nuclides in a radiation environment, solving for independent contributions to atom densities in each of a number of linear nuclide chains.

CINDER2008 is a modern implementation of the CINDER'90 software package. The most notable improvements include

(1) modern programming language and methods;
(2) new algorithms to more accurately solve the underlying differential equations;
(3) new extended data libraries developed using fission, fusion and constant weighting functions;
(4) a new data library development tool;
(5) automatic post-processing capabilities;
(6) accident analysis tools;
(7) the NAMELIST input option;
(8) a constant power approximation;
(9) high-fidelity β-delayed gamma spectra;
(10) a strictly positive scattering source option;
(11) an automatic mesh coarsening option;
(12) user flexibility in using both ASCII text or sequential file input;
(13) user flexibility in controlling the execution of both modules and sub-modules; and
(14) extensive, user-oriented error diagnostics.

In addition to compilers, program building requires Linux and MacOS systems and an up-to-date version of make. All systems require PERL and NUMDIFF to successfully run the included sample problems, although NUMDIFF can be replaced with the conventional DIFF with reduced functionality. A modern Fortran compiler is required to compile the from source.

AARE V1.0 is distributed on CD ROM and includes readme files, source files, documentation and data files. Fortran; Linux, MacOS (C846MNYCP00).

CCC-831/ADVANTG 3.2.0

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed ADVANTG 3.2.0, (AutomateD VAriaNce reducTion Generator).

ADVANTG implements the Consistent Adjoint Driven Importance Sampling (CADIS) method and the Forward-Weighted CADIS (FW-CADIS) method for generating variance reduction parameters. The CADIS and FW-CADIS methods provide a prescription for generating space- and energy-dependent weight-window targets and a consistent biased source distribution. The CADIS method was developed for accelerating individual tallies, whereas FW-CADIS can be applied to multiple tallies and mesh tallies. The CADIS method has been demonstrated to provide speed-ups in the tally FOM of O(10^1)-O(10^4) across a broad range of radiation detection and shielding problems. The FW-CADIS method has been shown to produce relatively uniform statistical uncertainties across multiple cell tallies and large space- and energy-dependent mesh tallies in real-world applications.

Denovo implements a structured, Cartesian-grid discrete ordinates solver based on the Koch-Baker-Alcouffe algorithm for parallel sweeps across x-y domain blocks. Multiple discretization schemes are available: step characteristics, linear-discontinuous, tri-linear discontinuous and diamond difference (optionally theta-weighted or with negative-flux fixup). Multiple quadrature sets are available: QR product, QR triangular, Gauss-Legendre product, linear-discontinuous finite element, level-symmetric, as well as user-defined quadratures. Denovo contains an embedded first-collision source treatment based on an analytic kernel. The Trilinos parallel solvers package is used to apply GMRES to accelerate the within-group iterations, resulting in a computationally efficient and robust transport solver.

This version does not contain the updated version of MCNP5, called ORNL_TN. The DVD contains source code and executables and for 64-bit Linux, documentation, multigroup cross section libraries in ANISN format, and ORIGEN data. (C00831MNYCP05)

FEE CHANGES

(*Last updated October 1, 2018*)

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 $950 while the cost recovery fee for those individuals that do not require the extensive reviews will be $450. For those individuals that are only approved for access to RSICC software on RSICC's secure cloud server the fee will be $1,150. These rates will be effective on October 1, 2018.

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. As an example, students that work at a location other than their university are required to update their registration with RSICC and submit a new request for any software that they intend to use after they have begun work at the new location.

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. The Talent and Opportunity System allows you to create a profile, and then answer only 5 or 6 questions for each program or job posting for which you apply. All levels of participants from undergraduates to faculty are encouraged to publish research papers with their mentors. Please browse through the Research Profiles on the different participants and their research experiences at the right-hand side of the bottom of 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.

CONFERENCES

28th 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 28th International Conference Nuclear Energy for New Europe. The conference will be held in Portorož, **September 9 - 12, 2019**.

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/nene2019/.

2019 NCI Radiation Epidemiology & Dosimetry Course

The Radiation Epidemiology and Dosimetry Course is a *FREE* course conducted periodically by the Radiation Epidemiology Branch of the National Cancer Institute's Division of Cancer Epidemiology and Genetics (DCEG). The course is intended for people interested in learning about the health effects of radiation exposure (environmental, occupational, and medical)—particularly the relationship between ionizing radiation and cancer. It will cover the principles of radiation epidemiology, dosimetry, and statistics as well as cutting-edge research. The course will be held on **September 9-13, 2019** in Rockville, MD. Those interested can email NCIREBCourse@mail.nih.gov to be added to the course listserv. Course details and registration will follow.

International Conference on Nuclear Criticality safety 2019 (ICNC 2019)

The 11th edition of the International Conference on Nuclear Criticality safety (ICNC), organized by the French Institute for Radiological Protection and Nuclear Safety (IRSN) under the auspices of the Nuclear Energy Agency of OECD, will be held **September 15-20, 2019**, at the Cité des sciences et de l'industrie in Paris, France. Every four years, the ICNC is a major *rendez-vous* for professionals and students with activities related to Nuclear Criticality Safety. Even if experience in nuclear criticality safety is important, the scientific community is still facing new challenges and is improving its skills continuously in order to achieve the highest degree of safety for practitioners dealing with fissile material. The ICNC creates a unique occasion to share the state of the art, new knowledge, new techniques and so on with experts, managers, colleagues and peers. To this purpose, the technical presentations and posters will be organized into 11 technical tracks, covering most aspects of Nuclear Criticality Safety, followed by technical workshops and technical tours.

For more details on this conference, please visit website at www.icnc2019.com.

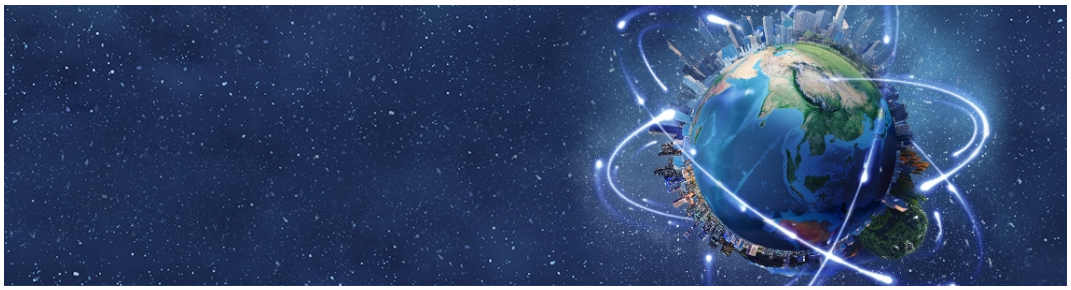
Global/Top Fuel 2019

Global is the leading international meeting on nuclear fuel cycle held every other year, alternating between Asia, Europe and the U.S. Bringing these two meetings together will give managers, scientists and engineers an opportunity to share ideas and enter into mutually beneficial collaborations. TopFuel is the preeminent international meeting on new developments in LWR fuel performance held every year, alternating between Asia, Europe and the US. The course will be held on **September 22-26, 2019** in Seattle, Washington.

Those interested can find additional details at http://globaltopfuel.ans.org.

ICENES 2019

19th International Conference on Emerging Nuclear Energy Systems, will be held **October 6-9, 2019** in Bali, Indonesia. ICENES 2019 is recognized as one of the major international conference on scientific, engineering, and other technical aspects of innovative nuclear reactor design, advanced nuclear technology, etc. In the conference, we are looking at "bold" and "unthinkable" ideas on a sound scientific-technical basis. Papers on strategy, concept, technique and method related to innovative nuclear system are welcome. ICENES has been held in 14 countries as a venue for sharing ideas and research results on emerging nuclear energy technologies and applications. Please see the conference website for more information at http://portal.fmipa.itb.ac.id/icenes2019/.



International Conference on Climate Change and the Role of Nuclear Power

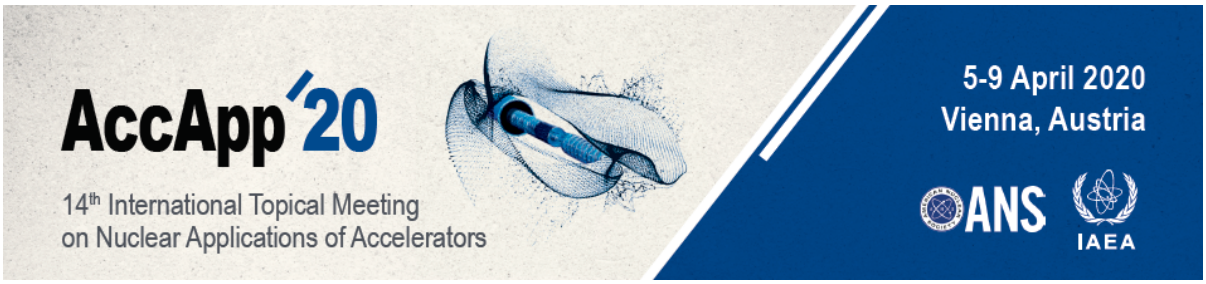
The International Atomic Energy Agency (IAEA) is organizing the 2019 International Conference on Climate Change and the Role of Nuclear Power in Vienna, Austria from the 7th to 11th of October 2019. The conference is intended to provide a venue for objective discussions on the scientific and technical aspects of the role of nuclear power in combating climate change. The major thematic areas of the conference will comprise the mitigation challenge and implications for the power sector, including the role of nuclear power, stimulated by the engagement of Member States and various international organizations to improve the understanding of the relationship between nuclear and climate. The conference hopes to provide an opportunity to discuss mainstreaming nuclear power as a low carbon energy source and its role in combating climate change.

Those interested can find additional details at: https://www.iaea.org/atoms4climate

2019 IEEE Nuclear Science Symposium and Medical Imaging Conference

The 2019 Nuclear Science Symposium (NSS) and Medical Imaging Conference (MICE), and the International Symposium on Room Temperature Semiconductor Detectors (RTSD) will be held at the Manchester Convention Center, in Manchester, United Kingdom, from the 26th of October until the 2nd of November. The IEEE NSS-MIC is the leading annual international meeting for all scientists, engineers, researchers, medical physicists, and students with an interest in radiation detectors, related technologies and their application. This year's meeting also hosts the 26th International Symposium on Room-Temperature X-Ray and Gamma-Ray Detectors.

Those interested can find additional details at: https://nssmic.ieee.org/2019/



14th International Topical Meeting on Nuclear Applications of Accelerators

The 14th International Topical Meeting on Nuclear Applications of Accelerators will be held 5-9 April 2020 at the Vienna International Center, of the International Atomic Energy Agency in Vienna, Austria. The meeting is being organized by the Accelerator Applications Division of the American Nuclear Society (ANS) in cooperation with the IAEA.

The purpose of the meeting is to provide an international forum for discussing the various applications of particle accelerators. Meetings are focused on the production and utilization of accelerator-produced neutrons, photons, electrons and other particles for scientific and industrial purposes; production or destruction of radionuclides significant for energy, medicine, defense, or other endeavors; safety and security applications; forensic science; and medical imaging, diagnostics, and therapeutic treatments.

The conference provides an opportunity for nuclear physicists, accelerator physicists, nuclear engineers and other experts in the international community to meet and discuss their research face-to-face. Those interested can find additional details at: http://accapp20.org

17th International Symposium on Reactor Dosimetry 2020

The Seventeenth International Symposium on Reactor Dosimetry will be held 10-15 May 2020 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.

This Symposium is held approximately every three years to provide a forum for the interchange of state-of-the-art techniques, databases and standardization of radiation metrology. The Symposium will

be of value to those involved in reactor dosimetry including researchers, manufacturers, and representatives from industry, utilities, and regulatory agencies.

The Symposium theme is dosimetry for the assessment of irradiated reactor materials and reactor experiments, featuring radiation metrology techniques, databases and standardization. The broad topic areas for the Symposium include the following:

- Experimental techniques, measurements and monitoring
- Calculational methods
- Reactor surveillance, plant life management and decommissioning
- Nuclear data, uncertainties and adjustments
- Benchmarks and inter-comparisons
- Dosimetry in test and research reactors, including accelerators and fusion

Those interested can find additional details at: www.reactordosimetry.org

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 May 17-22, 2020.

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

Supercomputing in Nuclear Applications

Monte Carlo

SNA+MC 2020, Japan

Joint International Conference on

Supercomputing in Nuclear Applications + Monte Carlo 2020

Tokyo Metropolitan Area (Chiba), Japan, 18-22 May 2020

Joint International Conference on Supercomputing in Nuclear Applications and Monte Carlo 2020

SNA+MC2020 will be held 18-22 May 2020 in Makuhari Messe, Chiba, Japan. The main topics of the conference are computational nuclear applications, high performance computing and visualization, and Monte Carlo simulation for radiation transport. Several special topics will also be a part of the conference including those related to the Fukushima recovery and decommissioning issues, virtual reactor technology, artificial intelligence technology for the nuclear field, and Monte Carlo simulation for medical and life sciences.

Those interested can find additional details at: http://snamc2020.jpn.org.

TRAINING COURSES

MCNP6

LANL MCNP6 Class Schedule

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

Aug 5-9, 2019 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2019-05-10 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Aug 12-16, 2019 Los Alamos, NM	Variance Reduction with MCNP6 Non-US citizens must register by 2019-05-17 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Oct 21-25, 2019 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2019-07-26 | Mon 10:00 - Fri 12:00	$1800 or $1500*

Oct 28 - Nov 1, 2019 Los Alamos, NM	Intermediate MCNP6 Non-US citizens must register by 2019-08-02 | Mon 10:00 - Fri 12:00	$1800 or $1500*
Nov 4-8, 2019 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2019-08-09 | Tues 12:30 - Fri 4:30	$1500 or $1200*

See the website for more information.

MCNP6 Training

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

Current Classes			
Date (Click Date for Info)	**Class**	**Course Content**	**Location**
July 29-August 2, 2019	**MCNP6® Intermediate Workshop**	**To see an outline for the course, Click Here.**	**Richland, WA**

Beginning/Advanced Visual Editor Training

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

Date (Click Date for Info)	**Workshop** (40 Cont. Ed. credits through American Academy of Health Physics. **Click here for AAHP Site**. Class number is 2008-00-	**Level of Difficulty**	**Workshop Content**	**Location**

	026 for Vised classes and 2011-00-022 for MCNPX Team Workshops)			
August 12-16, 2019	**Beginning Visual Editor**		**Detailed Description**	**Richland, WA**
August 19-23, 2019	**Intermediate Sources, Tallies, and Variance Reduction**		**Detailed Description**	**Richland, WA**
August 26-30, 2019	**Advanced Visual Editor with Applications in Mesh Tallies and Variance Reduction**		**Detailed Description**	**Richland, WA**
October 7-11, 2019	**Beginning MCNP® using the Visual Editor**		**Detailed Description**	**London, England**
October 14-18, 2019	**Intermdiate MCNP® using the Visual Editor**		**Detailed Description**	**London, England**
November 18-22, 2019	**Beginning MCNP® using the Visual Editor**		**Detailed Description**	**Rio de Janeiro, Brazil**
December 9-13, 2019	**Beginning MCNP® using the Visual Editor**		**Detailed Description**	**Mactan Island, Philippines**

NEA Training Courses / Workshops

https://www.oecd-nea.org/databank/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
14 September 2019	Thermochemical Database (TDB) Project course – 3rd edition: Thermodynamic data collection and assessment	Registration open	50 EUR (early bird, before 15 June 2019), 75 EUR (after)	Kyoto, Japan
16-20 September 2019	PHITS, Monte-Carlo particle and heavy ion transport code system	Registration open	500 EUR	Paris, France
7-11 October 2019	MCNP6 Intermediate CLOUD	Registration open	2200 EUR	Paris, France
14-18 October 2019	MCNP6 Advanced Variance and Reduction	Registration opening in Spring 2019	2200 EUR	Paris, France
18-22 November 2019	FLUKA Advanced Course and Workshop	Registration opening in Spring 2019	550 EUR	Paris, France

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

SCALE Training Courses – Winter 2019

Training is provided by developers and expert users from the ORNL team. Courses provide a review of theory, description of capabilities and limitations of the software, and hands-on experience running problems of varying levels of complexity.

All attendees for the SCALE training courses must be licensed users of SCALE 6.2, which is available from ORNL/RSICC, the OECD/NEA Data Bank in France, and the RIST/NUCIS in Japan. All attendees for the VERA training course must be licensed users of VERA. All currently scheduled training courses are described below.

Date	Course Name and Description	Location	Cost
October 7 – 11, 2019	**SCALE Criticality Safety and Radiation Shielding**	ORNL, Oak Ridge, TN, USA	$2500*
October 14 – 18, 2019	**SCALE Sensitivity and Uncertainty Analysis for Criticality Safety Assessment and Validation**	ORNL, Oak Ridge, TN, USA	$2500*
October 21 – 25, 2019	**SCALE/TRITON Lattice Physics and Depletion**	ORNL, Oak Ridge, TN, USA	$2500*
October 28 – November 1, 2019	**SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis**	ORNL, Oak Ridge, TN, USA	$2500*

**Full-time university students can register at a reduced rate of $1250. For each course over one, professional registration fees are discounted $250 and student registration fees are discounted $125.*

FOREIGN NATIONAL VISITORS TO ORNL - *Payment MUST be received at least one week prior to attending the training course. All foreign national visitors must register 40 days before the start date of the training course they plan to attend.*

For more information regarding this class, visit their website at https://www.ornl.gov/scale/scale-training

SARP Analysis Report for Packaging (SARP)

Shielding/Criticality Safety Analyst Course

Developed and Conducted by Oak Ridge National Laboratory (ORNL)
Radioactive Material Package Shielding Evaluation and Nuclear Criticality Safety Evaluation Training

The U.S. Department of Energy (DOE) Packaging Certification Program (PCP), Office of Packaging and Transportation, is offering Safety Analysis Report for Packaging (SARP) shielding and nuclear criticality safety (NCS) courses for SARP generalists.

The **SARP Generalist Course** is designed for project managers, supervisors, NCS/shielding subject matter experts (SME), or SMEs in non-NCS/shielding technical areas (e.g., structural, thermal, package design, etc.) who need to better understand how the NCS/shielding analyses fit in the broader SARP documentation. Specifically, the Generalist Course provides an overview of the regulations and guidelines for the criticality and shielding analysis for a SARP, and the course shows how the NCS/shielding chapters integrate with the other parts of the SARP. Students in the Generalist Course will review an actual SARP document after the course material is presented to emphasize the key elements of the shielding and criticality analyses.

The next SARP Generalist course is scheduled for September 24 – 26, 2019 at ORNL in Oak Ridge, TN. The registration fee for all students is $1200. Those interested in the course can register at the following website, https://utconferences.eventsair.com/2019-sarp-generalist-course/register/Site/Register

Please contact the ORNL SARP course point-of-contact, Douglas G. Bowen, bowendg@ornl.gov, 865-576-0315 if you have any questions about the course.

Models and Methods for Advanced Reactor Safety Analysis (MMARS)

http://www.nineeng.com/courses/index.php/mmars

Next Event: NINE Headquarters, LUCCA (Italy), **04-08 November 2019**
Registration Deadline: September 02, 2019

History and Experience
MMARS started in 2015 and the first editions were held at NINE headquarters in Italy with a total participation of about 70 participants. The courses' programs are provided by several lecturers coming from different organizations and who are experts in developing and applying models and methods for carrying out advanced safety analysis.

Objective
The MMARS Platform provides a set of parallel Courses to transfer the experience and know-how of recognized experts in applying computational tools for carrying out safety analysis. Best practice and advanced methods for building, assessing and finally exploiting the Evaluation Models constitute the main subjects of the MMARS courses. The courses cover several aspects of the safety analysis with the goal to demonstrate how the computational tools/evaluation models can simulate phenomena expected in thermal-hydraulics (system and core), fuel performance and severe accident. In addition, MMARS platform offers advanced course on "Scaling Analysis", "Best Estimate Plus Uncertainty", "Risk Quantification and PSA", "Preparation and Review of Safety Related Documentation" and "Radiological Consequence Analysis". Each course consists of 35 hours.

Expected Products
The Training Courses provide a transfer of experience and know-how from recognized experts in the respective fields. It thus contributes to maintaining and increasing technical competence and to ensuring the sustainable development of nuclear technology. All Lectures and Exercises are distributed to the participants. A certificate of attendance is released.

Available Courses:

- System Thermal-hydraulics Analysis: Phenomenology and Computational Evaluation Model
- Thermal-Hydraulics Core Analysis: Phenomenology and Computational Tools
- Fuel Behavior Analysis: Phenomenology and Computational Tools
- Severe Accident Analysis: Phenomenology and Computational Tools
- Scaling Analysis

- Best Estimate Plus Uncertainty
- Advanced Course on Key Elements of Risk Quantification and PSA
- Preparation and Review of Licensing Documentation (FSAR)
- Radiological Consequence Analysis
- Decommissioning, Waste Management and Environmental Site Remediation
- Regulatory Fundamentals and Best Regulatory Practices
- Digital I&C Training

SYMPOSIA

2019 CALENDAR

August

Utility Working Conference and Vendor Technology Expo, August 4-7, 2019, Amelia Island**,** Florida. Website: http://uwc.ans.org

18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, August 18-22, 2019, Portland, Oregon. Website: http://www.ans.org/meetings/c_1.

M&C 2019 International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, August 25-29, 2019, Portland**,** Oregon. Website https://www.mc2019.org

September

11th International Conference on Inertial Fusion Sciences and Applications, September 22-27, 2019, Osaka, Japan. Website: https://confit.atlas.jp/guide/event/ifsa19/top?lang=en

Global/Top Fuel 2019, September 22-26, 2019, Seattle, Washington. Website http://globaltopfuel.ans.org

October

2019 - 19th International Conference on Emerging Nuclear Energy Systems Meeting, October 6-9, 2019, Bali, Indonesia. Website: http://portal.fmipa.itb.ac.id/icenes2019

2019 – Materials in Nuclear Energy Systems (MiNES), October 6-10, 2019, Baltimore, Maryland. Website: http://mines.ans.org/

November

2019 – ANS Winter Meeting and Nuclear Technology Expo, November 17-21, 2019, Washington D.C. Website: http://answinter.org

2020 CALENDAR

April

14th International Topical Meeting on Nuclear Applications of Accelerators (AccApp '20), April 5-9, 2020, Vienna, Austria. Website: http://accapp20.org

Technology of Fusion Energy (2020), April 20-23, 2020, Phoenix, Arizona. Website: http://tofe.ans.org

May

2020 Best Estimate Plus Uncertainty (BEPU) International Conference, May 17-22, 2020, Sicily, Italy. Website: http://www.nineeng.com/bepu2020/index.php.

June

2020 American Nuclear Society (ANS) Annual Meeting, June 7-11, 2020, Phoenix, Arizona. Website: not yet available.

November

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