Radiation Safety Information Computational Center

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No. 643 December 2018

"What lies behind us and what lies before us are tiny matters compared to what lies within us. --Henry Stanley Haskins

TABLE of CONTENTS

TABLE of CONTENTS 1
CHANGES TO THE RSICC CODE AND DATA COLLECTION 2
CCC-836/FISPACT-II 4.0 2
CCC-760/PARTISN 8.29 3
FEE CHANGES 4
SINGLE USER MULTI-ORGANIZATION LICENSE AGREEMENT 5
END USE STATEMENT 8
REGISTRATION REQUIREMENTS 8
SINGLE-USER LICENSE AGREEMENT REVISED 8
SCIENCE EDUCATION PROGRAMS AT OAK RIDGE NATIONAL LABORATORY 9
CONFERENCES, TRAINING COURSES, SYMPOSIA 9
CONFERENCES 10
The Nuclear Reactor Safety Hands-On-Training (NRSHOT) 10
27th Annual Meeting of the Council on Ionizing Radiation Measurements and Standards 11
ANIMMA 2019 12
Seminar on Uncertainty and Best Estimate Analysis Methods (SUNBEAM) 13
28th International Conference Nuclear Energy for New Europe 14

2019 NCI Radiation Epidemiology & Dosimetry Course 15
ICENES 2019 16
TRAINING COURSES 17
LANL MCNP6 Class Schedule 17
MCNP6 Training 19
Beginning/Advanced Visual Editor Training 20
NEA Training Courses / Workshops 22
SCALE Training Courses – Winter 2019 24
SYMPOSIA 25
2019 CALENDAR 25
2020 CALENDAR 25

CHANGES TO THE RSICC CODE AND DATA COLLECTION

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

CCC-836/FISPACT-II 4.0

United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, Oxfordshire, United Kingdom, through the OECD NEA Data Bank, Boulogne-Billancourt, France, contributed Fispact-II 4.0. Fispact-II 4.0 is an inventory code capable of performing modeling of activation, transmutations and depletion induced by neutron, proton, alpha, deuteron or gamma particles incident on matter.

FISPACT-II 4.0 is an enhanced multi-physics, inventory and source-term code system providing a wide variety of advanced, predictive, spectral and temporal simulation methods employing the most up-to-date and complete nuclear data forms for both neutron and charged-particle interactions. FISPACT-II 4.0 has improved algorithms for the ODE solver, pathways, uncertainty and sensitivity calculations. All these can be used in multi-pulse irradiation calculations, including those where the flux spectrum changes from pulse to pulse.

The present release (Release 4.0) includes TENDL-2017, TENDL-2015 and TENDL-2014, ENDFB-VIII.0, ENDFB-VII.1, JEFF-3.3, JEFF-3.2, CENDL-3.1, HEIR-0.1, HEAD-2009, GEFY-6.1, and EAF-2010 nuclear data libraries and the capability to read and process them. It can compress these to allow faster collapse calculations. There is a new interface module that allows inventories to computed for multiple flux spectra and returned to a calling program. There is also a separate Fispact MP program that allows inventory calculations to be performed for simultaneous irradiation by several different projectiles. Included with the Fispact-II Version 4.0 distribution are over five hundred test input files that exercise the code options and datasets. Fispact-II 4.0 has been compiled using Intel, Oracle, pgfortran, gfortran and g95 Fortran compilers and has been shown to give the same results (apart from roundoff errors) on Linux, Mac-OS and Windows machines.

The package is transmitted on 2 Dual-Layer (DL) DVD which includes documentation, executable files, source code, Makefiles, Installer, data files and test cases. Fortran 2003; IBM, Unix and Linux Workstations, Solaris, Mac (C00836MNYCP02).

CCC-760/PARTISN 8.29

Los Alamos National Laboratory, Los Alamos, New Mexico, contributed a version of this code system to solve the linear Boltzmann transport equation for neutral particles using the deterministic (SN) method. PARTISN (PARallel, TIme-Dependent SN) is the evolutionary successor to CCC-547/DANTSYS. PARTISN solves the linear Boltzmann transport equation for neutral particles using the deterministic (SN) method. Both the static (fixed source or eigenvalue) and time-dependent forms of the transport equation are solved in forward or adjoint mode. PARTISN also solves the static ("Probability of Initiation") and time-dependent stochastic neutron transport equations. Vacuum, reflective, periodic, white, rotational, or inhomogeneous boundary conditions are solved. General anisotropic scattering and inhomogeneous sources are permitted. PARTISN solves the transport equation on orthogonal (single level or block-structured AMR) grids in 1-D (slab, two-angle slab, cylindrical, or spherical), 2-D (X-Y, R-Z, or R-T) and 3-D (X-Y-Z or R-Z-T) geometries.

Some of the major features included in the PARTISN 8.29 code package are:

- a free-field format ASCII text input capability;
- the use of a diffusion or transport synthetic acceleration scheme to accelerate the iterative process in the Solver Module;
- direct (forward) or adjoint calculational capability;
- standard plane, two-angle plane, cylindrical or spherical geometry options for 1-d;
- x-y, r-z and r-θ geometries in 2-D;
- x-y-z and r-z-θ geometries in 3-D;
- arbitrary anisotropic scattering order;
- vacuum, reflective, periodic, white, or surface source boundary condition options;
- ihomogeneous (fixed) source or keff calculation options and time-absorption (alpha, α), nuclide concentration, or dimensional search options for time-independent calculations;
- time-dependent calculations with time-dependent sources and/or cross sections;
- a variety of spatial differencing methods;
- a ray trace first collision option to obtain a first collision source from an arbitrary source distribution;
- a strictly positive scattering source option;
- an automatic mesh coarsening option;
- user flexibility in using both ASCII text or sequential file input;
- user flexibility in controlling the execution of both modules and sub-modules;
- extensive, user-oriented error diagnostics.

The current release is designed for UNIX-like systems. The specific computers supported fall into two categories, long word and short word. The program has been implemented on the long word Cray J90 and T90 computers. It has also been implemented on Linux, SGI, IBM RS6000, HP9000, and Compaq Alpha short word workstations and Apple Macintosh and Windows PC's. The workstation and PC versions use double precision arithmetic. PARTISN has been implemented on parallel systems for most of the above architectures.

PARTISN is distributed on CD ROM and includes readme files, source files, documentation and sample problem input/output files. Fortran; Linux, MacOS and Windows (C842MNYCP00).

FEE CHANGES

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

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

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

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

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

The Nuclear Reactor Safety Hands-On-Training (NRSHOT)

The NRSHOT Platform provides a set of parallel Courses Hands-On-Training to transfer the experience and know-how of recognized code-user experts of Thermal-Hydraulics (System and Subchannel) Codes, Reactor Physics Codes (including coupling with Thermal-Hydraulics), Radiological Consequence Analysis and PSA Codes. The training will take place **March 18-22, 2019**, in Lucca, Italy.

In detail, the NRSHOT platform offers advanced courses (each one of 35 hours) on:

- RELAP (Advanced, Intermediate and Beginner levels)
- TRACE
- COBRA-TF
- PARCS & 3D NK-TH Coupling-Beginner
- PSA
- Radiological Consequence Analysis

The courses are open to universities, vendors, national laboratories and regulatory bodies. A certificate of attendance is released.

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

The registration deadline is January 11, 2019. Please note that a minimum of 10 participants is required to organize each course.

27th Annual Meeting of the Council on Ionizing Radiation Measurements and Standards

The 2019 meeting will be held **April 8-10, 2019,** in Gaithersburg, MD, and will focus on Strengthening the Economy and Homeland Security with Radiation Measurements and Standards. Please visit the www.cirms.org for more details. Registration and program details to follow.

For more than twenty-seven years, CIRMS has played an important role in serving as a public forum for discussion of radiation measurements and standards issues for industry, academia and government. The technical program will consist of oral and poster presentations and three parallel working group sessions that address measurement and standards needs in the following areas:

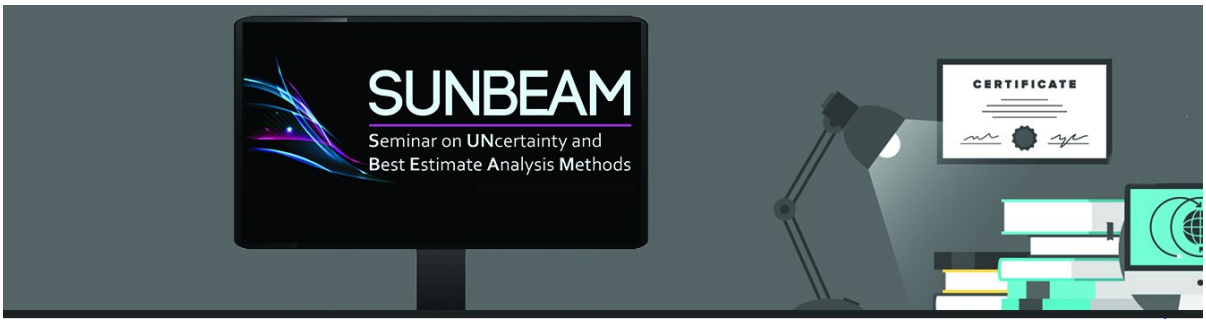
- Medical Applications [microdosimetry, image guided radiation therapy, radiation biology, 3D-printing, phantoms, nuclear medicine, big data and machine learning]
- Radiation Protection and Homeland Security [advances in detection instrumentation, emergency response, nuclear events, radiochemistry, waste analysis, personnel dosimetry, electronic dosimeters, bioassay and internal dosimetry environmental dosimetry, first responder needs]
- Industrial Applications and Materials Effects [radiation processing, material effects, space applications, food irradiation and sterilization, irradiators, low dose standards, safety at radiation facilities, ASTM standards]

Those interested are invited to submit abstracts for oral or poster presentations. Junior investigators (high school through within one year of graduation with a post-graduate degree) can submit essays for the 2019 Junior Investigator Award.

ANIMMA 2019

ANIMMA 2019 is the sixth of a series of conferences devoted to endorsing and promoting scientific and technical activities based on nuclear instrumentation and measurements. It will be held **June 17-21, 2019,** in Portoroz, Slovenia. The main objective of ANIMMA conference is to unite, consolidate and organize an international network of scientific researchers and experts from industry, research institutes, universities dealing with nuclear instrumentation and measurement methodology activities (R&D, Innovation and applications). Application fields: Fundamental physics, Fusion diagnostics and technology, Nuclear Power Reactors Monitoring and Control, Research reactors, Nuclear fuel cycle, Decommissioning, dismantling and remote handling, Safeguards, homeland security, Severe accident monitoring, Environmental and medical sciences, Education, training and outreach.

For more details on this conference, please visit website at http://www.animma.com/.



Seminar on Uncertainty and Best Estimate Analysis Methods (SUNBEAM)

The seminar will take place **July 1-12, 2019,** in Vienna, Austria. 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

The Registration Deadline is April 1, 2019 and you can register online at:
http://www.nineeng.com/courses/index.php?option=com_chronoforms5&chronoform=SUNBEAM_Registration

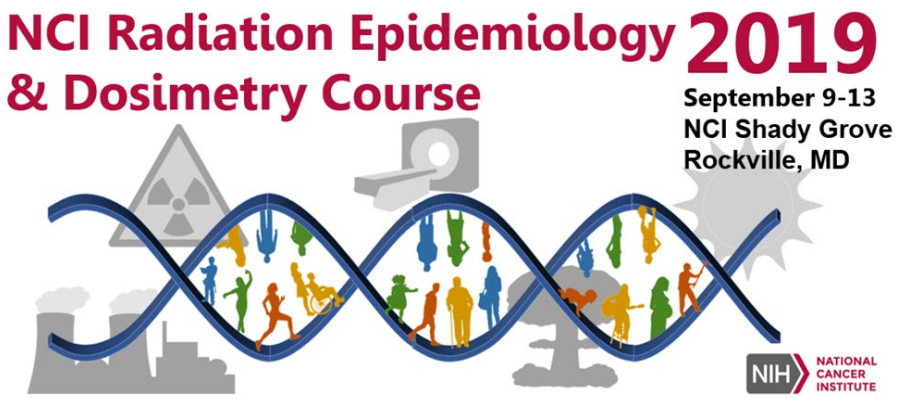
28th International Conference Nuclear Energy for New Europe

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.

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/.

TRAINING COURSES

LANL MCNP6 Class Schedule

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

March 4-8, 2019 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2018-12-07 | Mon 10:00 - Fri 12:00	$1800 or $1500*
March 11-15, 2019 Los Alamos, NM	Intermediate MCNP6 Non-US citizens must register by 2018-12-14 | Mon 10:00 - Fri 12:00	$1800 or $1500*
March 18-22, 2019 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2018-12-14 | Mon 10:00 - Fri 12:00	$1800 or $1500*
March 25-29, 2019 Los Alamos, NM	Variance Reduction with MCNP6 Non-US citizens must register by 2018-12-14 | Mon 10:00 - Fri 12:00	$1800 or $1500*
June 3-7, 2019 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2019-03-08 | Mon 10:00 - Fri 12:00	$1800 or $1500*
June 17-21, 2019 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2019-03-22 | Mon 10:00 - Fri 12:00	$1800 or $1500*
June 24-28, 2019 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2019-03-29 | Tues 12:30 - Fri 4:30	$1500 or $1200*
July 23-25, 2019 Los Alamos, NM	Using NJOY to Create MCNP ACE Files & Visualize Nuclear Data Non-US citizens must register by 2019-04-29 | Tues 10:00 - Thurs 5:00	$1200 or $900*
July 29 - Aug 2, 2019 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2019-05-03 | Mon 10:00 - Fri 12:00	$1800 or $1500*
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 22-26, 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 2008-00-026 for Vised classes and 2011-00-022 for MCNPX Team Workshops)	Level of Difficulty	Workshop Content	Location
January 7-11, 2019	**Beginning Visual Editor**		Detailed Description	**Las Vegas, NV**
January 14-18, 2019	**Intermediate Sources, Tallies, and Variance Reduction**		Detailed Description	**Las Vegas, NV**
January 28 - February 1, 2019	**Penelope/PenGUIn Workshop**			**Barcelona, Spain**
February 4-8, 2019	**Advanced Visual Editor with Applications in Mesh Tallies and Variance Reduction**		Detailed Description	**Prague, Czech Republic**
March 11-15, 2019	**Beginning Visual Editor**		Detailed Description	**London, England**
March 18-22, 2019	**Intermediate Sources, Tallies, and Variance Reduction**		Detailed Description	**London, England**
April 15-19, 2019	**Beginning Visual Editor**		Detailed Description	**Richland, WA**
April 22-26, 2019	**Intermediate Sources, Tallies, and Variance Reduction**		Detailed Description	**Richland, WA**

April 29-May 3, 2019	**Advanced Visual Editor with Applications in Mesh Tallies and Variance Reduction**		**Detailed Description**	**Richland, WA**
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**

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
28 January-1 February 2019	Electron-Photon Transport Modelling with PENELOPE Course description	Registration form	1000 EUR	Barcelona, Spain
4-8 March 2019	SCALE/Keno-Mavric Course description	Registration form	2000 EUR	Paris, France
11-15 March 2019	SCALE/ORIGEN Course description	Registration form	2000 EUR	Paris, France
April 2019	FLUKA course	Registration opening soon		ALBA Synchrotron, Barcelona, Spain
1-5 April 2019 (TBC)	MCNP6 Introduction	Registration opening soon	2200 EUR	Paris, France

8-12 April 2019 (TBC)	MCNP6 Intermediate	Registration opening soon	2200 EUR	Paris, France
19-21 June 2019	FISPACT-II, Inventory Simulation Platform for Nuclear Observables and Materials Science Course description	Registration opening soon	600 EUR	Paris, France
16-20 September 2019	PHITS, Monte-Carlo particle and heavy ion transport code system	Registration opening in Spring 2019	500 EUR	Paris, France
7-11 October 2019 (TBC)	MCNP6 Intermediate CLOUD	Registration opening in Spring 2019	2200 EUR	Paris, France
14-18 October 2019 (TBC)	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
January 28 – February 1, 2019	**Source Terms and Radiation Shielding for Spent Fuel Transportation and Storage Applications**	ORNL Oak Ridge, TN USA	$2000*
February 4-8, 2019	**SCALE/Polaris Lattice Physics, Depletion, and Uncertainty Analysis**	ORNL Oak Ridge, TN USA	$2000*
February 11-15, 2019	**VERA Workshop and Users' Group Training**	ORNL Oak Ridge, TN USA	$2000*
February 18-22, 2019	**SCALE Criticality Safety Calculations**	ORNL Oak Ridge, TN USA	$2000*
February 25-March 1, 2019	**Nuclear Data Fundamentals and AMPX Libraries Generation Course**	ORNL Oak Ridge, TN USA	$2000*

**Full-time university students can register at a reduced rate of $1000. Both professional and student registration fees are discounted $200 for each course over one.*

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

SYMPOSIA

2019 CALENDAR

June

2019 American Nuclear Society (ANS) Annual Meeting, June 9-13, 2019, Minneapolis, Minnesota. Website: Electronic Paper Submission and Review

August

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

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: not available yet.

2020 CALENDAR

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.