Radiation Safety Information Computational Center

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

No. 621 February 2017

"Love is the only force capable of transforming an enemy into a friend" – Martin Luther King, Jr.

TABLE of CONTENTS

CHANGES TO THE RSICC CODE AND DATA COLLECTION

There are no updates to the RSICC catalog for those individuals that may be interested.

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 employment changes 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

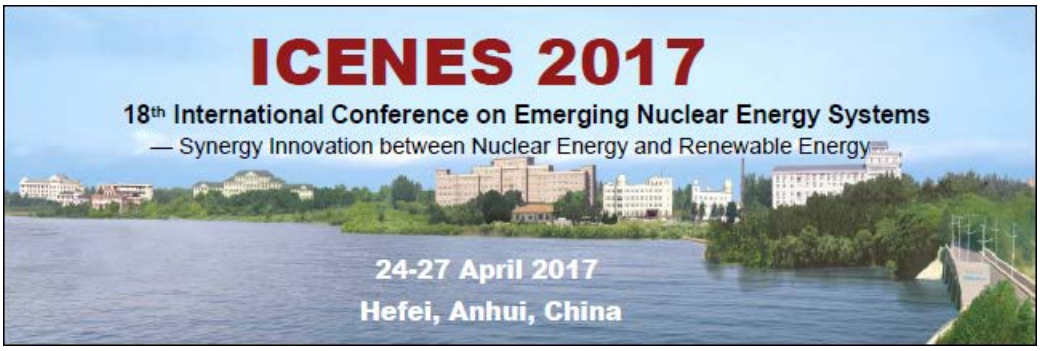
RSICC attempts to keep its customers and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email walkersy@ornl.gov with "conferences" in the subject line by the 20th 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 ANS M&C 2017 meeting will take place **April 16-20, 2017** in Jeju, Korea, which is a beautiful semi-tropical island providing a relaxing and friendly environment. The reactor physics and computational science division (RPCSD) of the Korean Nuclear Society (KNS) will host the conference with the support of the strong nuclear industry of Korea in which 24 power reactors are operating to supply about 35% of the national electricity production.

For more information, please see the website at http://www.mc2017.org/.



ICENES 2017

The 18th International Conference on Emerging Nuclear Energy Systems (ICENES 2017) will be held **April 24-27, 2017** in Hefei, Anhui, China. It is the outstanding international conference as an intellectual exchange platform on most recent advancements in emerging nuclear energy systems, and on possible synergy innovation with renewable energy. This conference will be hosted by Institute of Nuclear Energy Safety Technology (INEST·FDS), CAS, and held in Hefei, China. Papers are welcome on the strategies, innovative concepts, emerging materials and technologies related to innovative nuclear systems, and the synergy with renewable energy.

Please see the website for more information at http://icenes2017.org/dct/page/1.

IEEE Computing Conference

The Computing Conference (formerly called Science and Information (SAI) Conference) is a research conference that will be **July 18-20, 2017**, London, U.K. The goal of the conference is to be a premier venue for researchers and industry practitioners to share new ideas, research results and development experiences in the areas of Computer Science, Electronics and Communication. Accepted papers will be published in IEEE Xplore and indexed in various databases. Please see their website for more information at http://www.saiconference.com/Computing2017.

TRAINING COURSES

Safety Analysis Report for Packaging (SARP)
Developed and Conducted by Oak Ridge National Laboratory

SARP Shielding/Criticality Safety Generalist and Analyst Courses

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 and analysts.

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 SARP Generalist Course will be held at Oak Ridge National Laboratory in Oak Ridge, TN, at the National Transportation Research Center, **June 5-9, 2017**.

The Analysts Course will provide detailed training on the radioactive material package shielding analyses and NCS evaluation fundamentals needed by analysts/practitioners (i.e., safety analysts and/or technical reviewers) to prepare and/or review technical analyses for the SARP documentation. The Analyst Course also provides an overview of regulations and guidelines in addition to detailed in-class exercises associated with the package shielding and NCS analyses. Regarding the in-class exercises, analysis teams will be faced with "staged" SARP examples in which several important decision processes in the generation of a SARP will be demonstrated and discussed. The SARP Analyst Course will be held at Oak Ridge National Laboratory in Oak Ridge, TN, at the National Transportation Research Center, **September 18-22, 2017**.

Course registration information is available at the following website link:
https://public.ornl.gov/conferences/sarp/index.shtml .

Contact Douglas G. Bowen by email (bowendg@ornl.gov) or phone (865) 576-0315.

Practical MCNP® for the Health Physicist, Rad Engineer, and Medical Physicist

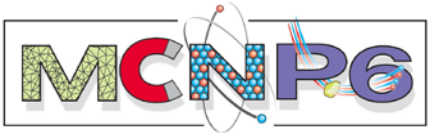
DATES: **June 26-30, 2017**
FEE: $1,800 per person
PLACE: Los Alamos National Lab, TA00-0767-149, Los Alamos, NM, 87545

Monte Carlo type calculations are ideally suited to solving a variety of problems in radiation protection and dosimetry. The Los Alamos MCNP® code is a general and powerful Monte Carlo

transport code for photons, neutrons, electrons and many other particles, and can be safely described as the "industry standard." This course is aimed at the HP, medical physicist, and rad engineer with no prior experience with Monte Carlo techniques. The focus is almost entirely on the application of MCNP® to solve a variety of practical problems in radiation shielding and dosimetry. The intent is to "jump start" the student toward using MCNP® productively. With a little practice and study of the examples, many will find they are able to solve problems that have, in the past, been out of reach.

Course content: Extensive interactive practice sessions are conducted on desktop computers. Topics will include an overview of the MCNP® code and the Monte Carlo method, input file preparation, geometry, source definition, standard MCNP® tallies, interpretation of the output file, exposure and dose rate calculations, radiation shielding, photon skyshine, detector simulation and dosimetry. Students will be provided with a comprehensive class manual and a CD containing all of the practice problems. This course has been granted 32 Continuing Education Credits by the AAHP. The course is offered by the RP2 Radiation Services Group at Los Alamos National Laboratory and is co-sponsored by RSICC. Participants must be vetted by LANL's Export Control Office (a two-sided form will be sent upon registration to complete and submit to the EC Office) before allowed to attend. Possessing a recent copy of the MCNP® code will expedite this process. Contact RSICC directly (https://rsicc.ornl.gov/) if a copy of the code (and license) is desired. Note that class computers will be provided.

Registration is available online at http://www.lanl.gov/orgs/rp/mcnp.shtml. Non-US citizens need to register 60 days in advance to allow for necessary visitor approvals.
Inquiries regarding registration, class space availability and payment options should be made to David Seagraves, 505-667-4959, e-mail: dseagraves@lanl.gov. Technical questions may also be directed to Tom McLean, 505-665-9944, email: tmclean@lanl.gov.



LANL MCNP6 Class Schedule

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

March 7-9, 2017 Los Alamos, NM	Using NJOY to Create MCNP® ACE Files & Visualize Nuclear Data Non-US citizens must register by 2016-12-12 | Tues 10:00 - Thur 5:00	$1200 or $900*
Apr 3-7, 2017 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2017-01-09 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Apr 10-14, 2017 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2017-01-16 | Mon 10:30 - Fri 12:00	$1800 or $1500*
May 16-19, 2017 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2017-02-20 | Tues 12:30 - Fri 4:30	$1500 or $1200*
June 5-9, 2017	Introduction to MCNP6	$1800 or

Los Alamos, NM	Non-US citizens must register by 2017-03-13 | Mon 10:30 - Fri 12:00	$1500*
July 31 - Aug 4, 2017 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2017-05-08 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Aug 7-11, 2017 Los Alamos, NM	Variance Reduction with MCNP6 Non-US citizens must register by 2017-05-15 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Aug 14-18, 2017 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2017-05-22 | Mon 10:30 - Fri 12:00	$1800 or $1500*

MCNP6 Training

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

Current Classes (tuition for all US classes is $2300 with an early payment discount of $300)			
Date (Click Date for Info)	**Class**	**Course Content**	**Location**
March 6-10, 2017	**MCNP6 Advanced Workshop**	**To see an outline for the course, Click Here.**	**Daejeon, South Korea**
April 3-7, 2017	**MCNP6 Intermediate Workshop**	**To see an outline for the course, Click Here.**	**Paris, France**
June 26-30, 2017	**MCNP6® Intermediate Workshop**	**To see an outline for the course, Click Here.**	**Prague, Czech Republic**
August 21-25, 2017	**MCNP6® Intermediate Workshop**	**To see an outline for the course, Click Here.**	**Anaheim, CA**
October 9-13, 2017	**MCNP6 Intermediate Workshop**	**To see an outline for the course, Click Here.**	**Paris, France**

MCNP6 Visual Editor Training

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

January 30-February 3, 2017	**Intermediate Visual MCNP6 for Shielding Calculations**		**Detailed Description**	**Richland, WA**
February 6-10, 2017	**Intermediate Visual MCNP6 for Criticality Calculations**		**Detailed Description**	**Richland, WA**
February 13-17, 2017	**Intermediate Visual MCNP6 for Medical Physics Calculations**		**Detailed Description**	**Richland, WA**
March 27-31, 2017	**Beginning Visual MCNP6. The NEA handles registration for this course.**		**Detailed Description**	**Paris, France**
May 15-19, 2017	**Beginning Visual MCNP6**		**Detailed Description**	**Las Vegas, NV**
May 22-26, 2017	**Advanced Visual MCNP6 with Applications in Mesh Tallies and Variance Reduction.**		**Detailed Description**	**Las Vegas, NV**
September 11-15, 2017	**Beginning Visual MCNP6**		**Detailed Description**	**Las Vegas, NV**
September 18-22, 2017	**Advanced Visual MCNP6 with Applications in Mesh Tallies and Variance Reduction.**		**Detailed Description**	**Las Vegas, NV**
October 2-6, 2017	**Beginning Visual MCNP6. The NEA handles registration for this course.**		**Detailed Description**	**Paris, France**

SCALE Training Courses

Training is provided by developers and expert users from the SCALE 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 MUST be licensed SCALE 6.2.1 users. SCALE 6.2.1 is available from ORNL/RSICC in the USA, the OECD/NEA Data Bank in France, and the RIST/NUCIS in Japan. All currently scheduled SCALE Courses are described below.

Date	Course Name and Description	Location	Cost
February 13-17, 2017	**SCALE Lattice Physics and Depletion Course** 2D lattice physics calculations using TRITON and Polaris to generate few group constants for nodal core simulators; cross section processing and resonance self-shielding techniques; generation and use of ORIGEN reactor libraries for spent fuel characterization. Additional topics include statistical uncertainty analysis with Sampler, 3D continuous-energy Monte Carlo depletion calculations, and Monte Carlo Dancoff factors for non-uniform lattices. This class has been confirmed.	ORNL Oak Ridge, TN USA	$2000*
February 20-24, 2017	**SCALE ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis Course** Isotopic depletion, activation analysis, and source term characterization using ORIGEN and the new ORIGAMI tool for convenient characterization of used nuclear fuel with radially and axially varying burnup. This class has been confirmed.	ORNL Oak Ridge, TN USA	$2000*
February 27-March 3, 2017	**SCALE Criticality Safety and Radiation Shielding Course** Basic criticality calculations with KENO-VI; shielding analysis with automated variance reduction using MAVRIC; and criticality accident alarm system analysis. Calculations will be performed using multigroup and CE cross sections, including resonance self-shielding of multigroup data, optimized CE capabilities in KENO, and new coupled CE neutron and photon transport in Monaco. This class has been confirmed.	ORNL Oak Ridge, TN USA	$2000*
March 13-17, 2017	**SCALE Sensitivity/Uncertainty Analysis and Uncertainty Quantification in Reactor Physics Calculations** In this updated class, participants will learn to apply the sensitivity/uncertainty analysis (SA) and uncertainty quantification (UQ) capabilities in SCALE,	OECD NEA Paris, France	2000 Euro

	focusing on two approaches: 1) perturbation theory-based TSUNAMI sequences to perform nuclear data SA and UQ for eigenvalue and reaction rates using 1D, 2D and 3D tools, including multigroup and new CE Monte Carlo capabilities; and 2) stochastic sampling-based UQ analysis using the new Sampler super-sequence to perform UQ for any computed parameter with respect to uncertainties in many input quantities including nuclear data, dimensions, densities, temperatures, etc. Training will include workshop problems analyzing a variety of different systems including LWR (both UO2 and MOX fuel), HTGR, and fast systems.		
March 20-24, 2017	**SCALE Criticality Safety Calculations Course** This course provides instruction on the use of the KENO Monte Carlo codes for criticality safety calculations and is appropriate for beginning through advanced users. KENO V.a is a fast and easy-to-use code that allows users to build complex geometry models using basic geometrical bodies such as cuboids, spheres, cylinders, hemispheres, and hemicylinders. KENO-VI is a 3-D generalized geometry Monte Carlo code that allows for versatile modeling of complex geometries. Both versions of KENO provide convenient, efficient methods for modeling repeated and nested geometry configurations such as lattices. Both versions of KENO use the ENDF/B-VII cross-section data distributed with SCALE to perform either continuous energy (CE) or multigroup (MG) calculations.	OECD NEA Paris, France	2000 Euro

***Full-time university students can register at a reduced rate. 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 these classes, visit their website at
http://scale.ornl.gov/training_2017_feb-mar.shtml

NEA Nuclear Energy Agency

We are pleased to inform you that the NEA Data Bank is co-organising the following workshops / training courses:

Date	Course	Location	Information
March 13-17, 2017	**SCALE/TSUNAMI** Sensitivity/Uncertainty Analysis and Uncertainty Quantification in Reactor Physics Calculations	NEA headquarters, Paris, France	http://www.oecd-nea.org/dbprog/courses/S26-Summary.pdf
March 20-24, 2017	**SCALE/KENO** Criticality Safety Calculations Course	NEA headquarters, Paris, France	http://www.oecd-nea.org/dbprog/courses/S27-Summary.pdf
March 27-31, 2017	Beginning **Visual MCNP6** Workshop	NEA headquarters, Paris, France	http://www.mcnpvised.com/visedtraining/course_outline.html
April 3-7, 2017	**MCNP6** intermediate Workshop	NEA headquarters, Paris, France	http://www.mcnpvised.com/train_mcnp.html
June 13-15, 2017	**FISPACT-II**, Inventory Simulation Platform for Nuclear Observables and Materials Science	NEA headquarters, Paris, France	http://www.oecd-nea.org/dbprog/courses/fispact-c2-summary.pdf
July 3-7, 2017	Electron-Photon Transport Modelling with **PENELOPE-2014** Physics, Code Structure and Operation	University of Barcelona, Barcelona, Spain	http://www.oecd-nea.org/dbprog/courses/nsc-doc2015-3.pdf

These workshops combine teaching by the authors on program physics, along with instructions on how to use the software. The courses include a large number of practical exercises.

A course may be cancelled if a minimum enrolment is not reached one month prior to the start of the course.

Course fees are refundable up to one month before the start of the course.

Should you be interested in attending, information is available at:

http://www.oecd-nea.org/dbprog/trainingcourses.htm or contact: programs@oecd-nea.org

SYMPOSIA

2017 CALENDAR

May

2017 International Symposium on Reactor Dosimetry, ISRD-16. May 7-12, 2017, Santa Fe, New Mexico. See website for more information http://reactordosimetry.org.

June

2017 American Nuclear Society (ANS) Annual Meeting. June 11-15, 2017, San Francisco, California.

July

62nd Annual Health Physics Society (HPS) Meeting July 9-13, 2017, Raleigh, NC. http://hps.org/meetings/meeting43.html

October

2017 American Nuclear Society (ANS) Winter Meeting and Nuclear Technology Expo. October 29-November 2, 2017, Washington, DC.

2018 CALENDAR

June

2018 American Nuclear Society (ANS) Annual Meeting, June 17-21, 2018, Philadelphia PA.

July

HPS 63rd Annual Meeting, July 15-19, 2018, Cleveland. Ohio.

November

2018 American Nuclear Society (ANS) Winter Meeting, November 11-15, 2018, Orlando, FL.