Radiation Safety Information Computational Center

No. 589   June 2014

The first responsibility of a leader is to define reality. The last is to say thank you. In between, the leader is a servant.

Max de Pree

TABLE OF CONTENTS

CHANGES TO THE RSICC CODE AND DATA COLLECTION

The following packages have been added to the RSICC catalog for those individuals that may be interested.

CCC-778/PHITS-2.52

PHITS-2.52 was contributed by the Research Organization for Information Science and Technology, Tokai, Ibaraki, Japan, Japan Atomic Energy Agency, Tokai, Ibaraki, Japan, High Energy Accelerator Research Organization (KEK), Tsukuba, Ibaraki, Japan, RIKEN, Wako, Saitama, Japan, Tokyo Institute of Technology, Tokyo, Japan, and Chalmers University of Technology, Gothenburg, Sweden through the OECD NEA Data Bank, Issy-les-Moulineaux, France.

PHITS can deal with the transport of almost all particles (nucleons, nuclei, mesons, photons, and electrons) over wide energy ranges, using several nuclear reaction models and nuclear data libraries. Geometrical configuration of the simulation can be set with GG (General Geometry) or CG (Combinatorial Geometry). Various quantities such as heat deposition, track length and production yields can be deduced from the simulation, using implemented estimator functions called "tally". The code also has a function to draw 2D and 3D figures of the calculated results as well as the setup geometries, using a code ANGEL.

The package is transmitted on CD which includes the referenced documents, example problems, source code, and precompiled executables for Mac and Windows. Fortran 77; Mac, Windows, Linux, UNIX Workstations (C778MNYCP01).

CCC-825/XSUN-201

Jozef Stefan Institute, Ljubljana, Slovenia, through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, has contributed a BETA version of XSUN-2013. The Cross-section Transport Sensitivity and Uncertainty (XSUN) package is a Windows interface for running deterministic transport computer code sequence. At present, the system integrates the codes for the nuclear cross-section preparation (TRANSX-2.15), the code PARTISN for 1-, 2-, and 3-dimensional neutron and gamma transport calculations and the SUSD3D code for the nuclear data sensitivity and uncertainty analysis. XSUN was developed to help users in preparation of input cards, rapid modification and execution of these codes. User-friendly plotting codes are also available to produce 2D color schemes of PARTISN geometries (e.g. x-y, r-Theta, ...) and for 3-dimensional visualization of neutron fluxes and spectra.

Included in this package are the referenced documents and a precompiled Windows executable transmitted on CD ROM in a self-extracting executable format. Xbase++ Alaska, Windows (C00825PCX8600 NEADB ID: NEA-1882/01).

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

9th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications

The International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications (IRRMA) will be held **July 6-11, 2014** at the Universidad Politécnica de Valencia, Valencia, Spain. This triennial event is organized with the purpose of bringing together scientists and engineers from around the world who share an interest in radiation and radioisotope measurement applications.

For update-to-date information about this conference, visit their website at
 http://irrma-9.webs.upv.es/index.html.

2014 IEEE Nuclear and Space Radiation Effects Conference

The 2014 IEEE Nuclear and Space Radiation Effects Conference will be **July 14-18, 2014** at the Marriott Rive Gauche, Paris, France. The conference features a technical program consisting of eight to ten technical sessions of contributed papers describing the latest observations in radiation effects, a Short Course on radiation effects offered on July 14, a Radiation Effects Data Workshop, and an Industrial Exhibit.

For update-to-date information about this conference, visit their website at http://www.nsrec.com/.

19th Pacific Basin Nuclear Conference

The 19th Pacific Basin Nuclear Conference will be held **August 24-28, 2014** at the Hyatt Regency Hotel, Vancouver, British Columbia, Canada. The conference will showcase the advancement of nuclear technology in power generation, health science, and environmental stewardship. Challenges facing nuclear technology will be discussed as well as future development. The conference features ten Technical Tracks, covering all aspects of nuclear technology.

For up-to-date information about this conference, visit their website at www.pbnc2014.org.

8th International Conference on High Levels of Natural Radiation and Radon Areas

The 8th International Conference on High Levels of Natural Radiation and Radon Areas (8 ICHLNRRA) will be held in Prague, Czech Republic from **September 1-5, 2014**. It will be organized by the International Committee on High levels of Natural Radiation and Radon Areas (ICHLNRRA) in cooperation with the Czech Technical University through the Department of Dosimetry and Applications of Ionizing Radiation. High level natural background radiation and radon areas in many parts of the world provide ample opportunities to researchers to measure low dose chronic environmental radiation exposure indoors and outdoors and investigate their effects on human population as well as non-human species. In this context, some International Conferences on High Levels of Natural Radiation and Radon Areas have been held in the past in Brazil (1977), India (1981), Iran (1990), China (1996), Germany (2000), Japan (2004) and India (2010). In extending our invitation, we request all the scientists and researchers as well as graduate students involved in the field of high background radiation areas and related fields of

dosimetry and public dose and health assessment to actively participate in this conference and share their wealth of information/findings and put forth their suggestions to tackle the unresolved issues.

For up-to-date information about this conference, visit their website at http://www.ichlnrra2014prague.cz/

23rd International Conference Nuclear Energy for New Europe

In 2014, the Nuclear Society of Slovenia will organize the 23rd International Conference Nuclear Energy for New Europe. The conference will be held in the attractive maritime resort of Portorož, Slovenia, during **September 8-11, 2014**.

The conference is a traditional annual meeting of professionals from nuclear research and educational institutions, nuclear vendors, utilities and regulatory bodies. It attracts around 200 participants from more than 20 countries. The topics discussed are general and include reactor physics, thermal hydraulics, probabilistic safety assessment, severe accidents, nuclear fusion, nuclear power plant operation, nuclear materials, waste management and new reactor designs.

For up-to-date information about this conference, visit their website at www.nss.si/nene2014/.

18th Topical Meeting of the ANS Radiation Protection & Shielding Division

The 18th Topical Meeting of the Radiation Protection & Shielding Division of ANS will be held **September 14-18, 2014** at the Hilton Downtown, Knoxville, Tennessee USA. The conference explores the scientific, technological and engineering issues associated with particle and ionizing radiation shielding in its broadest context, including nuclear energy systems, accelerator facilities, space and other radiation environments.

For up-to-date information about this conference and the Call for Papers, visit their website at www.rpsd2014.org .

PHYSOR 2014 International Conference

The ANS Reactor Physics Topical Meeting will be held at The Westin Miyako, Kyoto, Japan **September 28 – October 3, 2014.** The technical program will include timely and relevant special topics. Students will be actively involved in all technical events and activities. Exciting workshops and technical tours will be also offered.

For up-to-date information about this conference, visit their website at http://physor2014.org/#.

4th International Conference on Nuclear & Renewable Energy Resources (NURER2014)

This event will consist of a knowledge-based and comprehensive scientific program, featuring oral and poster presentations with possible commercial exhibitions from energy and publishing sectors. Thus, it will provide a good opportunity to become familiar with the most recent R&D tools in innovative nuclear and renewable energy systems, as well as looking at cutting-edge ideas on a sound scientific-technical basis. The aim is to combine the intellectual debates on the leading practical applications on nuclear and non-nuclear technologies, such as hydrogen energy, wind energy, solar concentrating systems, PVs, power systems, alternative energy tools, deep space exploration, etc. This conference will take place **October 26-29, 2014** in Antalya, Turkey.

For up-to-date information about this conference, visit their website at www.nurer2014.org.

3rd International Technical Meeting on Small Reactors "Applications of Research Reactors and Small Modular Reactors" (ITMSR-3)

The 3rd International Technical Meeting on Small Reactors (ITMSR-3) will be held in Ottawa, Ontario, Canada, **November 5-7, 2014** at the Ottawa Marriott Hotel. This technical meeting will focus on the applications of research reactors and small modular reactors. Detailed information is available at www.cns-snc.ca/events/3tm/. A Call for Papers for the ITMSR-3 is attached for your information and distribution. The technical meeting will provide a great opportunity for you to interact and exchange ideas with researchers and designers of other domestics and international organizations, publish advancements and expertise in the subject areas.

For up-to-date information about this conference, visit their website at www.cns-snc.ca/events/3tm/..

The 17th International Conference on Emerging Nuclear Energy Systems (ICENES2015)

This conference will consist of an informative and comprehensive scientific program, featuring oral and poster presentations and a commercial exhibition. This will provide a unique opportunity to become familiar with the most recent advancements in innovative nuclear energy systems, as well as looking at "bold" and "unthinkable" ideas on a sound scientific-technical basis. The forum will also be open to intellectual debate leading to practical applications around innovative non-nuclear technologies, such as hydrogen energy, solar energy, deep space exploration and others. This conference will take place **May 10-14, 2015** inclusive, in Antalya, Turkey.

For up-to-date information about this conference, visit their website at http://www.icenes2015.org.

TRAINING COURSES

LANL MCNP6 Class Schedule

Date	Course Name and Description	Location	Cost
June 2-6, 2014 FULL	Introduction to MCNP6 Non-US citizens must register 2014-03-31 Min 8 students – Max 15 Mon 12:30 – Fri 12:00	Los Alamos, NM	$1,900 or $1,600*
August 4-8, 2014	Criticality Calculations with MCNP6 Non-US citizens must register 2014-06-02 Min 8 students – Max 15 Mon 12:30 – Fri 12:00	Los Alamos, NM	$1,900 or $1,600*
August 11-15, 2014	Variance Reduction with MCNP6 Non-US citizens must register 2014-06-09 Min 8 students – Max 15 Mon 12:30 – Fri 12:00	Los Alamos, NM	$1,900 or $1,600*
August 18-22, 2014	Introduction to MCNP6 Non-US citizens must register 2014-06-16 Min 8 students – Max 15 Mon 12:30 – Fri 12:00	Los Alamos, NM	$1,900 or $1,600*
October 20-24, 2014	Introduction to MCNP6 Non-US citizens must register 2014-08-18 Min 8 students – Max 15 Mon 12:30 – Fri 12:00	Los Alamos, NM	$1,900 or $1,600*
October 27-29, 2014	Unstructured Mesh with AttilaMCNP Non-US citizens must register 2014-08-25 Min 8 students – Max 15 Mon 12:30 – Wed 4:30	Los Alamos, NM	$1,000 or $800*

*Early payment discount: A discount of $300 per student is given when the registration payment is received in full at least 4 weeks prior to the start of class.

Introductory classes are for those who have little or no experience with MCNP. This class surveys the features of MCNP so the beginning user will be introduced to the capabilities of the program, and will have hands-on experience at running the code to solve simple problems. Course topics include Basic Geometry, Source Definitions, Output (Tallies), Advanced Geometry (repeated structures specifications), Variance Reduction Techniques, Statistical Analysis, Criticality, Plotting of Geometry and Tallies, and Neutron / Photon / Electron Physics.

Intermediate workshops cover the entire spectrum of MCNP/MCNPX, but proceed at a much faster pace and are more in-depth than the introductory classes. These workshops are open to new users; the first day of class is a review of basics. However, the intermediate workshops are targeted toward more experienced users and are more problem solving than lecture classes. Intermediate workshops feature

flexible course content, skip topics of least interest to the participants, and provide significantly more depth than introductory classes.

Intermediate class Unstructured Mesh with Attila4MCNP is an introduction to the new unstructured mesh capability in MCNP6 and the Attila4MCNP problem-setup Graphical User Interface (GUI) from Transpire, Inc (www.transpireinc.com). Attendees should have prior experience with MCNP; no experience with the other codes is required. In this class, the participant will learn how to develop 3-D geometries in SpaceClaim (www.spaceclaim.com), import these CAD geometries into Attila4MCNP, mesh the geometry, setup the entire MCNP6 input file with the GUI, and run the calculation using the MCNP6 unstructured mesh capability. Part of the CAD instruction will involve CAD cleanup and defeaturing of existing CAD files. The participant will also learn how to run the Attila solver to generate weight windows with the CADIS methodology. The MCNP6 pre- and post-processor programs will be taught. The material is organized with group exercises.

Advanced classes- Variance Reduction and Criticality are for people with MCNP experience who want to extend their knowledge and gain depth of understanding. Most areas of MCNP operation will be discussed in detail, with emphasis on Advanced Geometry, Advanced Variance Reduction Techniques, and other advanced features of the program. Time will be available to discuss approaches to specific problems of interest to participants. Classes on specific topics are offered when there is sufficient interest.

Note: While MCNP supports a number of platforms, LANL class computers are Windows based.

More information about the MCNP courses at LANL is available on their website at https://laws.lanl.gov/vhosts/mcnp.lanl.gov/classes/classinformation.shtml.

MCNP6, Penelope, and Visual Editor Training

Classes are taught using the most recent (beta) version of the Visual Editor Code. All class attendees must have a valid MCNP/MCNPX RSICC license. Bring proof of receipt (letter or email) to the class.

Visual Editor Classes 2014 & 2015		
June 30-July 4, 2014	Intermediate Visual MCNP	Barcelona, Spain
July 14-18, 2014	Beginning Visual MCNP	Buenos Aires, Argentina
August 11-15, 2014	Beginning Visual MCNP	Orlando, FL
August 18-22, 2014	Intermediate Visual MCNP	Orlando, FL
September 2-5, 2014	Beginning Visual MCNP (Four day format for Holiday)	Montreal, Canada
September 8-12, 2014	Intermediate Visual MCNP	Montreal, Canada
September 22-26, 2014	Beginning Visual MCNP	Myrtle Beach, SC
September 29-October 3, 2014	Intermediate Visual MCNP	Myrtle Beach, SC

October 20-24, 2014	Beginning Visual MCNP	Barcelona, Spain
October 27-31, 2014	Intermediate Visual MCNP	Barcelona, Spain
December 1-5, 2014	Beginning Visual MCNP	London, UK
December 8-12, 2014	Intermediate Visual MCNP	London, UK
March 16-20, 2015	Beginning Visual MCNP	Paris, France
June 15-19, 2015	Beginning Visual MCNP	Prague, Czech Republic
October 5-9, 2015	Beginning Visual MCNP	Paris, France

The introductory workshops combine teaching on MCNP basics and how to create MCNP input files using the Visual Editor. The intermediate Visual Editor workshops focus on more advanced topics such as tallies and variance reduction using the Visual Editor.

Exercises will focus on creating input files and visualizing output data with the Visual Editor. Attendees are encouraged to bring their own input files for viewing and modifying in the Visual Editor; this is particularly important for the intermediate workshop.

The course description and registration information can be found at
http://www.mcnpvised.com/index.html.

MCNP6 Workshops 2014		
June 23-27, 2014	MCNP6 Intermediate Workshop	Barcelona, Spain
July 21-25, 2014	MCNP6 Intermediate Workshop	Buenos Aires, Argentina
August 25-29, 2014	MCNP6 Intermediate Workshop	Washington, DC
November 24-28, 2014	MCNP6 Intermediate Workshop	Paris, France

MCNP6 experts from Los Alamos will lead in the teaching of these workshops on the capabilities of MCNP6.

Intermediate Workshops cover the entire spectrum of MCNP6 but proceed at a much faster pace and are more in-depth than Introductory Classes. These workshops are open to new users; the first day is a review of basics. However, the intermediate workshops are targeted toward more experienced users and are more problem solving than lecture classes. Intermediate workshops feature flexible course content, skip topics of least interest to the participants, and provide significantly more depth than introductory classes.
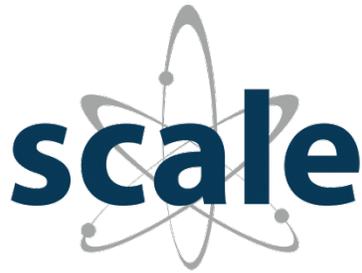
The list of workshops is tentative, as workshops may be added, removed, or modified throughout the year, depending on user interests. Workshops with fewer than 12 registrants on the early registration date are subject to cancellation or rescheduling.

In order to process non-U.S. citizens by the class date, non-U.S. citizens must register at least 6 weeks prior to the start of the training class. All non-U.S. citizens who reside in countries listed in the U.S. Code of Federal Regulations, Title 10, Part 810.8, are required to register at least 8 weeks prior to the start of

the training class. These participants must be processed by the DOE and should not make travel arrangements until approval from DOE has been obtained.

Additional information about the courses can be found at the website, http://www.mcnpvised.com/train.html.

To register send an email to Randy Schwarz at randyschwarz@mcnpvised.com, indicating the workshop of interest to you.

SCALE Training Courses – Summer 2014

All attendees MUST be licensed SCALE 6.1 users. SCALE 6.1 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
August 4-8, 2014	**SCALE Criticality Safety Calculations Course Introductory through advanced criticality calculations using KENO V.a and KENO-VI; resonance self-shielding techniques.**	Oak Ridge, TN	$2000*
August 11-15, 2014	**SCALE Sensitivity and Uncertainty Calculations Course TSUNAMI: 1D, 2D, and 3D keff sensitivity/uncertainty analysis; 2D generalized sensitivity analysis for lattice physics; reactivity sensitivity analysis; advanced S/U methods for code and data validation using trending analysis and data assimilation (data adjustment) techniques; keff burnup credit validation.**	Oak Ridge, TN	$2000*
August 18-22, 2014	**SCALE Lattice Physics and Depletion Course 2D lattice physics calculations; 1D, 2D, and 3D depletion calculations; resonance self-shielding techniques including Monte Carlo Dancoff factors for non-uniform lattices; generation of libraries for ORIGEN-ARP**	Oak Ridge, TN	$2000*
August 25-28, 2014	**SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis Course Isotopic depletion, activation analysis, and source term characterization using ORIGEN/OrigenArp**	Oak Ridge, TN	$1800*

13

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 this class, visit their website at
http://scale.ornl.gov/training_2014_summer.shtml

NEA Nuclear Energy Agency

Class sizes are limited and courses may be cancelled if minimum enrollment is not obtained one month prior to course. Course fees paid are refundable up to one month before each class.

Please note that all attendees must be registered users.

Date	Class	Course Content	Price	Location
1-4 July 2014	Electron-Photon Transport Modeling with PENELOPE-2014 Physics, Code Structure and Operation	Course description To register, click here	600 Euros	Barcelona, Spain
24-28 November 2014	MCNP6 intermediate	Course description To register, click here	2000 Euros	Paris, France

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

Contact: programs@oecd-nea.org

SYMPOSIA

The 15th International Symposium on Reactor Dosimetry (ISRD-15)

The 15th International Symposium on Reactor Dosimetry (ISRD-15) will take place from May 18-23, 2014 at the Hotel Aquabella in Aix-en-Provence, France. The aim of the symposium is to bring together the communities involved in research, development and applications related to reactor dosimetry.

The symposium is jointly organized by the European Working Group on Reactor Dosimetry (EWGRD) and the Committee E10 on Nuclear Technology and Applications of the American Society for Testing and Materials (ASTM).

For more information regarding this meeting, visit their website at http://reactordosimetry.org/index.html.

2014 CALENDAR

June

2014 ANS Annual Meeting, Nuclear Challenges: Technologies and Analysis, June 15-19, 2014, Reno, Nevada. For up-to-date information about this conference, visit their website at: http://www.ans.org/meetings/c_1.

July

9th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications, July 6-11, 2014, Valencia, Spain. For up-to-date information about this conference, visit their website at http://irrma-9.webs.upv.es/index.html.

INMM 55th Annual Meeting, July 20-24, 2014, Atlanta, Georgia. For up-to-date information about this conference, visit their website at http://www.inmm.org//AM/Template.cfm?Section=Home.

2014 IEEE Nuclear and Space Radiation Effects Conference, July 14-18, 2014, Paris France. For up-to-date information about this conference, visit their website at http://www.nsrec.com/.

August

19th Pacific Basin Nuclear Conference, August 24-28, 2014, Vancouver, British Columbia, Canada. For up-to-date information about this conference, visit their website at www.pbnc2014.org.

September

Topical Meeting of the ANS Radiation Protection and Shielding Division (RPSD 2014), September 14-18, 2014, Knoxville, TN. For up-to-date information about this conference and the Call for Papers, visit their website at www.rpsd2014.org.

<u>*October*</u>

PHYSOR 2014, September 28 – October 3, 2014, Kyoto, Japan**.** For up-to-date information about this conference, visit their website at http://physor2014.org/#.

<u>*November*</u>

2014 ANS Winter Meeting and Nuclear Technology Expo, Nuclear – The Foundation of Clean Energy, November 9-13, 2014, Anaheim, CA. For up-to-date information about this conference, visit their website at http://www.ans.org/meetings/c_1.

<u>*December*</u>

WINS 2014 Workshop on Elastic and Inelastic Neutron Scattering, December 3-5, 2014, Dresden, Germany.   For up-to-date information about this conference, visit their website at http://www.hzdr.de/db/Cms?pNid=3221.