Radiation Safety Information Computational Center

No. 580   September 2013

What a man believes may be ascertained not from his creed, but from the
assumptions on which he habitually acts. –George Bernard Shaw

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MESSAGE FROM THE DIRECTOR

The month of August was an extremely busy time for RSICC with the release of the first production version of MCNP6. RSICC received nearly 800 requests for MCNP6.1 and has sent out 640 packages to our customers. Many of the requests came from individuals that are not supported by RSICC's sponsors and normally would have been required to pay the cost recovery fee associated with our operations. However, Los Alamos National Laboratory provided RSICC with some additional funding that covered nearly 40% of the requests that would have been required to pay the cost recovery fee. RSICC was also able to utilize some of its existing funding to offset the cost of the other 60% of the requests that would have been required to pay the cost recovery fee. In particular, we at RSICC wanted to ensure that many individuals from member countries of the Data Bank of the Organization for Economic Cooperation and Development – Nuclear Energy Agency (OECD-NEA) would receive MCNP6.1 at no cost. RSICC received over 300 requests from individuals from OECD-NEA Data Bank countries and processed these

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requests at no cost. RSICC has had a long history of cooperation with the OECD-NEA and values it partnership with the OECD-NEA. Both organizations have similar goals in providing the tools and data needed by the nuclear industry and benefit by sharing codes and data with our respective customer bases. We also look forward to many more years of cooperation with the OECD-NEA and look for ways to strengthen our relationship with the OECD-NEA. Regrettably, due to funding restrictions, RSICC could not continue to provide the code at no cost indefinitely. However, those individuals that are supported by RSICC's sponsors will continue to receive the codes at no cost including the approved nuclear engineering programs at U.S. Universities.

The requests are being filled and deliveries are being made as the approvals are obtained. As a reminder, RSICC has no control over the time that it takes for our regulators to review the requests, but rest assured that if approval is obtained we will deliver the package in short order.

We thank you for doing business with RSICC.

Timothy E. Valentine, Ph.D.
Director, Radiation Safety Information Computational Center

CHANGES TO THE RSICC CODE AND DATA COLLECTION

CCC-806/TRIPOLI-4 8.1
The Commissariat à l'énergie atomique, CEA/SACLAY, Cedex, France, through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France contributed the latest release of TRIPOLI-4 8.1. TRIPOLI-4 solves the linear Boltzmann equation for neutrons and photons, with the Monte Carlo method, in any 3D geometry. The code uses ENDF format continuous energy cross-sections, from various international evaluations including JEFF-3.1.1, ENDF/B-VII.0, JENDL4 and FENDL2.1. Its official nuclear data library for applications, named CEAV5.1.1, is mainly based on the European evaluation JEFF-3.1.1 and is the only one distributed in this package. TRIPOLI-4 solves fixed source as well as eigenvalue problems. It has advanced variance reduction methods to address deep penetration issues. Thanks to its robust and efficient parallelism capability, calculations are easily performed on multi-core single units, heterogeneous networks of workstations and massively parallel machines. Additional productivity tools, graphical as well as algorithmic, allow the user to efficiently set its input decks. With its large V&V data base, TRIPOLI-4 is used as a reference code for industrial purposes (fission/fusion), as well as a R&D and teaching tool, for radiation protection and shielding, core physics (without depletion in this package), nuclear criticality-safety and nuclear instrumentation.

The package is transmitted on three DVDs with installation procedure, data library, documentation, and binary files. There are no source files included with this package. Fortran, C; Linux, Unix (C00806MNYCP00).

PSR-590/ACTIV

ACTIV was contributed by the Centro di Studi Nucleari della Casaccia, Roma, Italy through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France. ACTIV calculates the activities of a sandwich detector, to be used for in-pile measurements in slowing-down spectra below a few keV. The effect of scattering with energy degradation in the filter and in the detectors has been included to a first approximation. An iterative procedure is used: the calculation starts with a flux guess in which one assumes that each measured reactivity difference depends on the principal resonance only. The secondary resonance contribution is computed through the iterative process.

The package is transmitted on CD and includes the source code, JCL, documentation, and test cases. Fortran IV, IBM 360/IBM 370 Series (P00590I037000).

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 users 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 to arwoodjw@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
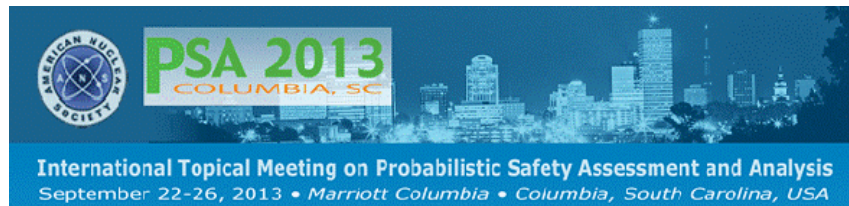
2013 International Topical Meeting on Probabilistic Safety Assessment and Analysis

PSA 2013, the International Topical Meeting on Probabilistic Safety Assessment and Analysis, the thirteenth meeting in the technical series sponsored by the American Nuclear Society (ANS) and its Nuclear Installations Safety Division (NISD) will take place September 22-27, 2013, in Columbia, South Carolina, USA. This edition of the PSA conference is dedicated in the memory of Professor David Okrent (1922-2012), a nuclear safety/design pioneer, and major contributor to PRA and probabilistic safety methods and analysis. PSA 2013 will be of interest to traditional applications including nuclear reactor facilities, nonreactor installations, processing, decontamination & decommissioning, and storage, as well as other non-traditional areas where probabilistic safety approaches are applied. The meeting will continue to follow lessons learned and impacts to PRA from the Fukushima Dai-ichi, explore progress on risk-informing regulation and fire PRA, provide status on the development of PRA standards, as well as many other topics during four days of planned paper and panel sessions. More information on PSA 2013 can be found at the conference website, http://psa2013.org

GLOBAL 2013: International Nuclear Fuel Cycle Conference

The GLOBAL 2013 International Nuclear Fuel Cycle Conference will be held September 29-October 3, 2013 in Salt Lake City, UT.   The conference is a forum for the discussion of the scientific, technical, social and regulatory aspects of the nuclear fuel cycle. Relevant topics include global utilization of nuclear energy, current fuel cycle technologies, advanced reactors, advance fuel cycles, nuclear nonproliferation and public acceptance.

For up-to-date information about this conference, visit their website at http://www.new.ans.org/meetings/m_158 .

Nuclear Criticality Safety Division 2013 Conference

The Nuclear Criticality Safety Division 2013 Conference will be held September 29-October 3, 2013 in Wilmington, NC. NCSD 2013 will focus on key program/technical improvement areas involving state-of-the-art methods, analysis, procedures, training, risk assessment operating experience and lessons learned, and post-Fukushima impacts on nuclear criticality safety (NCS) programs for existing / planned new facilities.

For up-to-date information about this conference, visit their website at ncsd2013.org.

Joint International Conference on Supercomputing in Nuclear Applications & Monte Carlo

The Joint International Conference on Supercomputing in Nuclear Applications & Monte Carlo will be held on October 27-31, 2013, at the Cité des Sciences et de L'Industrie de la Villette in Paris, France.

The conference aims to highlight renewed strategy and simulation paradigms, and to identify future conceptual and technological breakthroughs. The objective is to increase the predictive capacity of the calculation tools designed and developed by teams of engineers and researchers all over the globe. The idea is to improve the performances accordingly in terms of calculation time, usability and maintainability. All these factors are indeed crucial for the central question of the role of a global nuclear application economy, including safety, optimizations, and costs.

For up-to-date information about this conference, visit their website at https://www.sfen.fr/SNA-and-MC-2013.

2013 IEEE Nuclear Science Symposium and Medical Imaging Conference

"Beyond Imagination of Future Science" will be held in Seoul, South Korea from October 27 - November 2, 2013 at the COEX Convention Center. In addition to the presentation of original work, the conference will provide extensive educational opportunities via short courses and special emphasis seminars before and during the conference. This meeting has always been a great place to exchange ideas and share knowledge and experience in the nuclear science, medical imaging, and room-temperature semiconductor X-Ray and Gamma-Ray detector fields. For up-to-date information about this conference, visit their website at http://www.nss-mic.org/2013/NSSMain.asp .

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.

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/# .

TRAINING COURSES

2013-2014 MCNP6 CLASS SCHEDULE

Date	Course Name and Description	Location	Cost
October 7-11, 2013	**Introduction to MCNP6** Registration is open to all. Non-U.S. citizens must register by 8/5/13. Minimum of 8 students-Maximum of 15, Monday 12:30 p.m. - Friday 12:00 p.m.	Los Alamos, NM	$1,900 or $1,600*
2014	Class schedule for 2014 is being planned now.		

*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.

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.

MCNPX 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 2013		
September 3-6, 2013	**Advanced MCNPX Visual Editor** with emphasis on solving user problems.	Myrtle Beach, SC
September 9-13, 2013	**MCNP6 Intermediate Workshop**	Myrtle Beach, SC
September 16-20, 2013	**Introduction to MCNP/MCNPX** using the MCNPX Visual Editor.	Myrtle Beach, SC
September 23-27, 2013	**Intermediate MCNPX Visual Editor** with a special emphasis on tallies and variance reduction.	Myrtle Beach, SC

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.

MCNPX Classes 2013		
September 9-13, 2013	**MCNP6 Intermediate Workshop**	Myrtle Beach, SC
October 7-11, 2013	**MCNP6 Intermediate Workshop**	Taejon, South Korea
November 11-15,2013	**MCNP6 Intermediate Workshop**	Barcelona, Spain

The MCNPX team at Los Alamos National Laboratory offers interactive workshops for training users in the capabilities of MCNPX at the intermediate level.

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

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

DATES: October 21-25, 2013
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, and electrons, 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.

For more information, including course description and registration information, please visit their website 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.

Note that this course is separate from and independent of the courses being offered by the MCNP and MCNPX Teams at LANL.

OECD Nuclear Energy Agency-Data Bank Training Courses

October 16-18, 2013	**EASY, the European Activation System**	NEA, Paris, France
November 4-8, 2013	**TRIPOLI 4**	NEA, Paris, France

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. Note that the number of participants to the courses is limited. Priority is given to nationals from NEA Data Bank member countries.   Class sizes are limited and courses may be cancelled if minimum enrollment is not obtained one month prior to course. Course fees are refundable up to one month before each class. After one

month, course fees will not be refunded. Note that all attendees must be registered users. Registration information is available at: http://www.oecd-nea.org/dbprog/trainingcourses.htm.

Fall 2013 Training Courses

Date	Title	Location	Cost
October 7-11, 2013	**Criticality Safety Calculations Course** *Introductory through advanced criticality calculations using KENO V.a and KENO-VI; resonance self-shielding techniques*	ORNL Oak Ridge, TN, USA	$2000*
October 14-18, 2013	**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*	ORNL Oak Ridge, TN, USA	$2000*
October 21-23, 2013	**SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis Course** *Isotopic depletion, activation analysis, and source term characterization using ORIGEN/ORIGEN-ARP*	ORNL Oak Ridge, TN, USA	$1500*
October 28-November 1, 2013	**SCALE Criticality and Shielding Course** *Basic criticality calculations with KENO-VI; shielding analysis with automated variance reduction using MAVRIC; criticality accident alarm system analysis*	ORNL Oak Ridge, TN, USA	$2000*

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

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

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, including course descriptions, discounts, registration deadlines, and online registration, please visit http://scale.ornl.gov/training.shtml.

RESRAD Training Courses

Argonne National Laboratory will conduct a series of training courses on the use of RESRAD (onsite) And RESRAD-OFFSITE risk assessment codes from September 23-27, 2013. A total of 37 CECs has been approved by the AAHP for these training courses. The latest version of RESRAD codes will be used.

For additional information and registration, please go online at http://web.ead.anl.gov/resrad/training/. Any questions please send email to: RESRAD@anl.gov.

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).

The Announcement and Call for Papers can be viewed at http://reactordosimetry.org/Announcements/ISRD15_1st-announcement-A4.pdf. For up-to-date information about this conference, visit their website at http://reactordosimetry.org/index.html.

2013 CALENDAR

September

2013 LWR Fuel Performance Meeting/Top Fuel, September 15-19, 2013, Charlotte, NC. For up-to-date information about this conference, visit their website at http://www.new.ans.org/meetings/m_142.

International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2013), September 22-26, 2013, Columbia, SC. For up-to-date information about this conference, visit their website at http://psa2013.org/.

Global 2013: International Nuclear Fuel Cycle Conference, September 29-October 3, 2013, Salt Lake City, UT. For up-to-date information about this conference, visit their website at http://www.new.ans.org/meetings/m_158 .

The Nuclear Criticality Safety Division 2013 Conference, September 29-October 3, 2013, Wilmington, NC. For up-to-date information about this conference, visit their website at http://ncsd2013.org/ .

October

Joint International Conference on Supercomputing in Nuclear Applications & Monte Carlo, October 27-31, 2013, Paris, France. For up-to-date information about this conference, visit their website at https://www.sfen.fr/SNA-and-MC-2013.

November

ANS Winter Meeting, November 10-14, 2013, Washington, D.C. For up-to-date information about this conference, visit their website at http://www.ans.org/meetings/m_81.

2014 CALENDAR

May

International Symposium on Reactor Dosimetry (ISRD-15), May 18-23, 2014, Aix-en-Provence, France. For up-to-date information about this conference, visit their website at http://reactordosimetry.org/index.html.

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.

October

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