Radiation Safety Information Computational Center

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No. 604 September 2015

Hard work spotlights the character of people: some turn up their sleeves, some turn up their noses, and some don't turn up at all.

~ Sam Ewing

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CHANGES TO THE RSICC CODE AND DATA COLLECTION

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

CCC-831/ADVANTG 3.0.1

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed ADVANTG 3.0.1, AutomateD VAriaNce reducTion Generator. ADVANTG is an automated tool for generating variance reduction parameters for fixed-source continuous-energy Monte Carlo simulations with MCNP5-V1.60 (CCC-810, not included in this distribution) based on approximate 3-D multigroup discrete ordinates transport solutions generated by Denovo (included in this distribution). The variance reduction parameters generated by ADVANTG consist of space and energy-dependent weight-window bounds and biased source distributions, which are output in formats that can be directly used with unmodified versions of MCNP5. ADVANTG has been applied to neutron, photon, and coupled neutron-photon simulations of real-world radiation detection and shielding scenarios.

ADVANTG implements the Consistent Adjoint Driven Importance Sampling (CADIS) method and the Forward-Weighted CADIS (FW-CADIS) method for generating variance reduction parameters. The CADIS and FW-CADIS methods provide a prescription for generating space- and energy-dependent weight-window targets and a consistent biased source distribution. The CADIS method was developed for accelerating individual tallies, whereas FW-CADIS can be applied to multiple tallies and mesh tallies.

The CD contains ADVANTG and Denovo executables and source code for Linux, Mac OS X, and Windows systems, documentation, and BUGLE-96, DABL69, SCALE 27n19g, and SCALE 200n47g multigroup cross section libraries in ANISN format. C, C++, Fortran 90, and Python; Linux, Mac OS X, and Windows. (C00831MNYCP00).

PSR-610/GADRAS-DRF-18.5.7

The Gamma Detector Response and Analysis Software‑Detector Response Function (GADRAS‑DRF-18.5.7) update was contributed by Sandia National Laboratories, Albuquerque, NM and Livermore, California. GADRAS‑DRF-18.5.7 contains a suite of capabilities related to radiation detection. Its primary function is the simulation of gamma‑ray and neutron detector signals to radiation sources. It also contains limited analysis functionality. GADRAS‑DRF-18.5.7 is the public version of the full version of GADRAS with capabilities such as radiation transport and

advanced analyses removed. Features in a gamma‐ray detector spectrum; such as photo-peaks and the Compton continuum are derived from first‐principles calculations based on interaction cross sections. Neutron detector response is computed by interpolating on a pre‐computed database of thermal (3He) detector responses. For both gamma‐ray and neutron detectors, the response to radiation that scatters into the detector from the surrounding environment is determined by a combination of first‐principle calculations and empirical modeling. For new detectors, known detector parameters such as size and resolution are all that is necessary to compute an initial response function. This response function may be refined by measuring calibration sources and fitting the detector's parameters to match the data.

The package contains setup executable, user manual, runtime libraries, and data files and is transmitted on a single CD. Windows (P00610PCX8601).

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

Please note the conference DATE AND LOCATION have been changed to the following:

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 **October 4-8, 2015** inclusive, in Istanbul, Turkey.

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

5th International Serpent User Group Meeting

The 5th International Serpent User Group Meeting will be hosted by University of Tennessee in Knoxville, Tennessee, USA, on **October 13-16, 2015**. The purpose of these meetings is to gather Serpent users together and share their experience and results of recent work, and to discuss the future development of the code. Examples of topics presented at previous meetings can be found at website: http://montecarlo.vtt.fi/users.htm under "International Serpent community".

This year we have reserved three full days (Wed-Fri) for presentations and discussion, plus Tuesday afternoon for registration and a welcome get-together. On Thursday afternoon there will be a technical visit to the X-10 reactor at Oak Ridge National Laboratory.

The expected number of participants is around 30-50. The registration fee is $60, which covers the costs for the hosting organization. In addition, there is an option to attend a conference dinner on Wednesday evening for extra $20.

On-line registration is open at: http://www.eventbrite.com/e/2015-serpent-user-group-meeting-in-knoxville-tn-registration-16757501137

There is also information on location and accommodation at a special rate. Note that the program is very preliminary. We hope to keep the schedule relaxed and have plenty of time for open discussion. If you wish to present your work, sending an abstract is optional, but it helps us organize the program (a few short paragraphs describing the content of your presentation is sufficient).

2015 ANS Winter Meeting and Nuclear Technology Expo

This meeting will be held **November 8-12, 2015**, in Washington, DC at the Marriott Wardman Park. Please visit the ANS website for more information at www.ans.org.

Geant4 Advanced-Level Tutorial Course

The SLAC Geant4 team will conduct a three-day advanced-level hands-on tutorial course, **October 19-21, 2015,** at Massachusetts Institute of Technology (MIT)**.** This course is arranged for those who are already familiar with the Geant4 simulation toolkit and who have detailed questions / difficulties about their simulation applications. This event is hosted by MIT's Laboratory for Nuclear Security and Policy (LNSP) in collaboration with SLAC National Accelerator Laboratory. The tutorial starts in the morning of October 19th (Monday) and runs through the noon of October 21st (Wednesday) with additional discussion time for selected topics in the afternoon of 21st if needed.

Lectures and hands-on exercises will cover topics picked up from questions and difficulties provided by the course participants. The course will cover all the application domains including high energy and nuclear physics, astrophysics and space engineering, medical applications and newly arising material science. Lectures also include some updates in recent releases, so that this course should be of interest to the users of older versions of Geant4, in particular who want to convert their applications to Geant4 version 10 series.

This course is not suitable for those who are new to, or have little experience in Geant4. A regular Geant4 tutorial course for beginners will be scheduled at another time.

The capacity is limited to 30. Please follow this URL for the application form.

http://www-public.slac.stanford.edu/geant4/Tutorial_MIT2015_Adv.asp.

Once your application is accepted, you will receive an invitation email with detailed information about the registration / payment method. At the bottom of this application form, there is a text field where we ask you to describe the topic you would like to have discussed. Please be as specific and detailed as possible. The lecturers will select discussion topics and prepare appropriate hands-on exercises based on the requests provided.

TRAINING COURSES

Radioactive Material Package Shielding Evaluation and Nuclear Criticality Safety Evaluation Training

The U.S. Department of Energy (DOE) Packaging Certification Program (PCP), Office of Packaging and Transportation, is offering Safety Analysis Report for Packaging (SARP) shielding and nuclear criticality safety (NCS) courses for SARP generalists 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 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. With regard to the in-class exercises, analysis teams will be faced with “staged” SARP examples in which a number of important decision processes in the generation of a SARP will be demonstrated and discussed.

Both the SARP Generalist and SARP Analyst Courses will be offered in Fiscal Year 2016.

The SARP Generalist Course will be held at Oak Ridge National Laboratory in Oak Ridge, Tennessee. The SARP Generalist Course is tentatively scheduled for the second or third quarter in FY16, and the training dates will be announced once the course logistics are finalized.

The SARP Analyst Course will be scheduled in FY16 after the SARP Generalist Course. The training location and dates for the SARP Analyst Course will be announced once the course logistics are finalized.

Further information will be posted as soon as it is available. Contact Douglas G. Bowen at bowendg@ornl.gov or (865) 576-0315.

LANL MCNP6 Class Schedule

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

Date	Course Name and Description	Cost
Oct 19-23, 2015 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2015-08-14 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Oct 26-28, 2015 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2015-08-21 | Mon 12:30 - Wed 4:30	$1000 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 before the start of class.

*** Classes may be cancelled or postponed if fewer than 8 students register.**
*** Maximum of 15 students per 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 specification), 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 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 & 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 usually 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 and Visual Editor Training

Website: http://www.mcnpvised.com/index.html

MCNP6 Intermediate Workshops 2015 & 2016		
October 12-16, 2015	MCNP6 Intermediate Workshop	Paris, France
January 11-15, 2016	MCNP6 Intermediate Workshop	Las Vega, NV

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.

Visual Editor Classes 2015 & 2016		
September 14-18, 2015	Beginning Visual MCNP6	Las Vegas, NV
September 21-25, 2015	Intermediate Visual MCNP6	Las Vegas, NV
October 5-9, 2015	Beginning Visual MCNP6	Paris, France
October 12-16, 2015	Intermediate MCNP6 Workshop	Paris, France

October 19-23, 2015	Advanced Visual MCNP6 with Applications in Mesh Tallies and Variance Reduction.	Prague, Czech Republic
November 2-6, 2015	Advanced Visual MCNP6 with Applications in Mesh Tallies and Variance Reduction.	South Korea
November 30-Dec. 4, 2015	Beginning Visual MCNP6	Richland, WA
December 7-11, 2015	Advanced Visual MCNP6 with Applications in Mesh Tallies and Variance Reduction.	Richland, WA
January 4-8, 2016	Beginning Visual MCNP6	Las Vegas, NV
January 11-15, 2016	Intermediate MCNP6 Workshop	Las Vegas, NV
February 15-19, 2016	Beginning Visual MCNP6	Paris, France
February 22-26, 2016	Intermediate MCNP6 Workshop	Paris, France
October 3-7, 2016	Beginning Visual MCNP6	Paris, France
October 10-14, 2016	Intermediate MCNP6 Workshop	Paris, France

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.

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.

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
5-9 October 2015	Beginning Visual MCNP6 Workshop	Course description To register, click here	2200 Euros	Paris, France
12-16 October 2015	MCNP6 Intermediate Workshop	Course description To register, click here	2200 Euros	Paris, France

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

Contact: programs@oecd-nea.org

SYMPOSIA

2015 CALENDAR

September

International Conference on Nuclear Criticality Safety, ICNC2015, September 13-17, 2015, Charlotte, NC. For up-to-date information about this conference, visit their website at http://ncsd.ans.org/site/icnc2015.htm.

Global 2015 International Nuclear Fuel Cycle Conference, September 20-24, 2015, Paris, France. For up-to-date information about this conference, visit their website at https://www.sfen.fr/GLOBAL.

October

17th International Conference on Emerging Nuclear Energy Systems (ICENES2015), October 4-8, 2015, Istanbul, Turkey. For up-to-date information about this conference, visit their website at http://icenes2015.org/index.php.

International Conference on Clinical PET-CT and Molecular Imaging (IPET2015): PET-CT in the era of multimodality imaging and image-guided therapy, October 5-9, 2015, Vienna, Austria. For up-to-date information about this conference, visit their website.

November

2015 American Nuclear Society (ANS) Winter Meeting and Nuclear Technology Expo, November 8-12, 2015, Washington D.C. For up-to-date information, visit their website.

International Conference on Research Reactors: Safe Management and Effective Utilization, November 16-20, 2015, Vienna, Austria. For up-to-date information, visit their website.

2016 CALENDAR

January

Institute of Nuclear Materials Management (INMM) 31st Spent Fuel Management Seminar, January 11-13, 2016, Washington, D.C. See website for more information http://www.inmm.org/31st_Spent_Fuel_Seminar.htm.

February

Nuclear and Emerging Technologies for Space (NETS) 2016, February 22-25, 2016, Huntsville, AL. See website for more information http://www.ans.org/meetings/c_3.

May

47th Annual Meeting on Nuclear Technology (AMNT 2016), May 10-12, 2016, Hamburg, Germany. See website for more information http://www.nucleartech-meeting.com/welcome.html.

June

2016 Society of Nuclear Medicine and Molecular Imaging (SNMMI) Annual Meeting, June 11-15, 2016, San Diego, CA. More information to follow.

July

61st Annual Health Physics Society (HPS) Meeting, July 17-21, 2016, Spokane, WA. See website for more information http://hps.org/meetings/meeting39.html.