Radiation Safety Information Computational Center

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Fairness is not an attitude. It's a professional skill that must be developed and exercised."

~ Brit Hume

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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-778/PHITS-2.76

PHITS-2.76 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, Tokyo Institute of Technology, Tokyo, Japan, and Technische Universität Wien, Austria 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. PHITS-2.76 includes electron and photon transport algorithm based on EGS5. Models for describing photo-nuclear reaction above 140 MeV and muon-nuclear reaction were implemented. Event-generator mode version 2 was developed. Relativistic theory can be considered in the JQMD model.

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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 (C778MNYCP02 NEADB ID: NEA-1857/04).

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.

MCNP Team Receives the Feynman Innovation Prize

This year's honorees for the Richard P. Feynman Innovation Prize at Los Alamos National Laboratory are the Monte Carlo Radiation Transport Team members, current and past, who have successfully brought an idea to the marketplace through a partnership, resulting in a measurable return on investment in the Laboratory's mission performance, positive effect on the US economy, and broader public awareness of the Laboratory's impact.

MCNP [Monte Carlo N-Particle code] is the principle simulation tool of choice when the best answers are mandatory," said the nominating group leader, Avneet Sood. "Along with its associated nuclear data libraries, MCNP has a long, rich history and well-deserved reputation. It is used by nearly everyone at universities, laboratories, and industries for radiation particle transport as it embodies the collective best available knowledge," he said.

Approximately 8000 copies of MCNP6 have been distributed to users in US government institutions, academia, and private industries worldwide.

(Excerpts were taken from the LANL website. To read more about this: http://www.lanl.gov/discover/news-release-archive/2015/July/07.22-feynman-innovation-prize.php)

Winners of the 2015 Richard P. Feynman Innovation Prize at Los Alamos National Laboratory, from left, are Larry J. Cox, Forrest B. Brown, Avneet Sood, Gregg W. McKinney, Jeffrey S. Bull and H. Grady Hughes. Also on the winning team but not pictured are Laura Casswell, Michael L. Fensin, John T. Goorley, Michael R. James, Brian C. Kiedrowski, Roger L. Martz, Stepan G. Mashnik, Garrett E. McMath, Richard E. Prael and Trevor Wilcox.

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

ICNC 2015

The Nuclear Criticality Safety Division of the American Nuclear Society (ANS) will host the International Conference on Nuclear Criticality (ICNC): 35 Years of International Cooperation. The international conference is co-sponsored by the NEA and will be held at the Omni Hotel in Charlotte, North Carolina from **September 13-17, 2015**.

For up-to-date information about this conference, visit their website at http://ncsd.ans.org/site/icnc2015.htm.

The Pennsylvania State University 14th Annual Radiation Safety Roundtable and 2015 Research Reactor Safety Roundtable

The Pennsylvania State University will be hosting two roundtables this year - the 14th Annual Radiation Safety Roundtable will be held **September 14, 15 and 16, 2015** and the 2015 Research Reactor Safety Roundtable will be held **September 17 and 18, 2015**. Both will be at the PSU State College campus. These roundtables bring together reactor and radiation safety professionals from the academic, medical, government lab, corporate, and (occasionally) regulatory sectors for an informal but in-depth discussion on current issues and creative solutions to shared problems.

For conference information please go to:
Radiation Safety Roundtable – http://ehs.psu.edu/radiation-protection/radiation-safety-roundtable

Research Reactor Roundtable – http://ehs.psu.edu/radiation-protection/research-reactor-safety-roundtable

Or contact Jeff Leavey at JAL62@psu.edu.

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.

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.

TRAINING COURSES

LANL MCNP6 Class Schedule

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

Date	Course Name and Description	Cost
Aug 10-14, 2015 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2015-06-05 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Aug 17-21, 2015 Los Alamos, NM	Variance Reduction with MCNP6 Non-US citizens must register by 2015-06-12 | Mon 10:30 - Fri 12:00	$1800 or $1500*
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		
August 31-September 4, 2015	MCNP6 Intermediate Workshop	Orlando, FL
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		
August 17-21, 2015	Beginning Visual MCNP6	Orlando, FL
August 24-28, 2015	Intermediate Visual MCNP6	Orlando, FL
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.

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

The next "Practical MCNP for the Health Physicist, Medical Physicist, and Radiological Engineer" class presented by the Radiation Measurements Group at Los Alamos National Laboratory has been scheduled for **August 24-28, 2015**. The course, to be held in Los Alamos, has recently been updated to reflect the release of MCNP6. Further details can be found on RSICC's homepage under the "Workshops MCNP-Health Physicist" link (http://www.lanl.gov/orgs/rp/mcnp.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
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

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 6.1 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 17-21, 2015	**SCALE Sensitivity and Uncertainty Calculations Course** TSUNAMI: 1D, 2D, and 3D $\mathbf{k_{eff}}$ 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; $\mathbf{k_{eff}}$ burnup credit validation	ORNL Oak Ridge, TN USA	$2000*
August 24-28, 2015	**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. Enrollment for this class has reached the maximum capacity. US citizens interested in being added to a wait list can email walkersy@ornl.gov. Foreign nationals cannot be accommodated on the wait list due to the limited time remaining before class begins. Final wait list notifications will be made on August 14.	ORNL Oak Ridge, TN USA	$2000*
August 31 - September 4, 2015	**SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis Course** Isotopic depletion, activation analysis, and source term characterization using ORIGEN/OrigenArp	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.*

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_2015.shtml

SYMPOSIA

2015 CALENDAR

August

16th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-16), August 30-September 4, 2015, Chicago IL. For up-to-date information about this conference, visit their website at http://nureth16.anl.gov/.

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.