Radiation Safety Information Computational Center

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

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"I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel."

~Maya Angelou

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OUR 600th ISSUE: RSICC DEPLOYS A SECURE CLOUD COMPUTING SYSTEM

The May 2015 newsletter is the 600th issue for RSICC and is an opportune time to announce further improvements in RSICC's services. RSICC strives to provide the best service to our customers and routinely examines our operations and processes to provide these services as efficiently and cost effective as possible. We realize that due to Federal export control and nonproliferation regulations that not all of our customers have the same level of access to the state-of-the-art modeling and simulation tools and data. In an effort to further promote international cooperation and to allow broader use of some sensitive M&S tools, the Department of Energy's Office of Nuclear Energy and the National Nuclear Security Administration's Office of Nonproliferation and Arms Control supported the development and deployment of a secure cloud server at RSICC. The deployment of this 12-Teraflop system will allow RSICC to grant use of certain codes to some of our customers who otherwise would not be authorized.

Access to the secure cloud computing system will be made available to our customers that meet the following criteria:

1. The individual is from a country for which a specific export authorization would be required;
2. The individual would likely be denied or have restricted access to software; and
3. It is in the interest of the U.S. government to provide access to the software.

Individuals that meet the criteria listed above and are in one of the following categories will automatically be considered for access:

1. Individuals that indicate that they are collaborating with US organizations such as US national laboratories or US universities;
2. Individuals that indicate that they are teaching or conducting research at US universities; and
3. Students at US universities.

Other individuals may be granted access to the secure cloud as requested by RSICC's sponsors and approved by RSICC's regulators.

RSICC will screen all requests for MCNP6.1, SCALE6.1 and RELAP5/MOD3 to determine if an individual qualifies for access to RSICC's secure cloud computing system. The request will be submitted to our regulators. If approved, the customer will be required to provide specific information to RSICC and agree to certain terms and conditions before being granted access to the system. Individuals that are approved will not be permitted to utilize these codes except on RSICC's secure cloud computing system. If an individual is approved for access to RSICC's secure cloud computing system and does not consent to the terms and conditions, the individual's request will be denied.

Individuals with citizenship from countries that do not require a specific authorization would not be considered for access to the secure cloud computing system.

RSICC would like to thank its sponsors, the Department of Energy's Office of Nuclear Energy and the National Nuclear Security Administration's Office of Nonproliferation and Arms Control, for supporting the development and deployment of this system.

CHANGES TO THE RSICC CODE AND DATA COLLECTION

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

PSR-612/ECIS-12

ECIS-12, a Coupled Channel, Statistical Model, Schrodinger and Dirac Equation, Dispersion Relation code contributed by Service de Physique Theorique, Laboratoire de la Direction des Sciences de la Matiere du Commissariat a l'Energie Atomique, CE-Saclay, F-91190 Gif-sur-Yvette CEDEX, France through the Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France. ECIS uses a sequential iteration method for solving the coupled differential equations arising in nuclear model calculations. It also performs parameter searches to fit calculated results to experimental data. It can be used for a range of models, e.g. first or second order harmonic or aharmonic vibrational model, symmetric or asymmetric rotational model, with a similar range of interaction potentials. It includes spin-orbit deformation.

The ECIS method is designed to solve sets of coupled differential equations when the coupling terms are not too strong. The iteration technique searches for the one required solution among the many which are mathematically possible.

The method supposes some ordering of the channels: first the ground state, then the state most strongly coupled to it. All channels must be coupled to some preceding one. The result of each iteration depends on this chosen order. If there is more than one equation related to the ground state the whole calculation must be repeated. The efficiency of the method is proportional to the ratio of the total number of equations to the number of those related to the ground state.

The usual methods can also be used, but the iteration method is compulsory for spin-orbit deformation and Dirac formalism.

The package is transmitted on one CD with the references cited above, and a zip file containing the source code and test output for supported systems. FORTRAN; Linux, Unix, and Windows systems. (P612MNYCP00 NEADB ID: NEA-0850/19).

PSR-351/PREPRO2015 Updated Content

The Nuclear Data Center at the International Atomic Energy Agency, Vienna, Austria, contributed a newly frozen version of the pre-processing code system for data in ENDF/B format, PREPRO2015. PREPRO2015 is a modular set of computer codes, each of which reads and writes evaluated nuclear data in the ENDF format. The codes are named "the pre-processing" codes, because they are designed to preprocess ENDF/B data for use in applications. These codes are designed to operate on virtually any type of computer with the included capability of optimization on any given computer. They can process datasets in any ENDF/B format, ENDF/B-I through ENDF/B-VII.

The package is transmitted on a CD which contains the referenced documents in electronic form and compressed system files containing source files, executables for Linux, MacOS X, and Windows systems, sample input and output, and information files. Fortran and C; Linux, MacOS X, Unix, Windows (P00351MNYCP08).

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

Society of Nuclear Medicine and Molecular Imaging Annual Meeting

The SNMMI Annual Meeting will be held in Baltimore, Maryland, USA, **June 6-10, 2015**. Please visit their website for more details.

INMM 56th Annual Meeting

The INMM 56th Annual Meeting will be held **July 12-16, 2015** at the Esmeralda Renaissance in Indian Wells, California, USA. Please visit their website for more information: www.inmm.org.

HPS 60th Annual Meeting

60th Annual Meeting of the Health Physics Society will be held **July 12-16, 2015**, in Indianapolis, Indiana. Please visit their official website for more details, http://www.hpschapters.org/2015AM/.

2015 IEEE Nuclear and Space Radiation Effects Conference

The 2015 IEEE Nuclear and Space Radiation Effects Conference will be held **July 13-17, 2015,** at the Marriott Copley Place, Boston, Massachusetts. 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 13, a Radiation Effects Data Workshop, and an Industrial Exhibit. The technical program includes oral and poster sessions. Please visit their website for more information http://www.nsrec.com/.

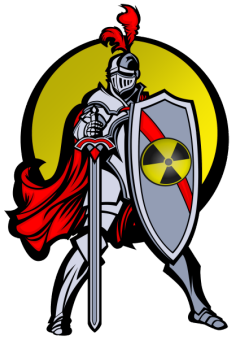
CP2015

The 5th International Workshop on Computational Human Phantoms will be held **July 20-22, 2015** in Seoul, Korea. For more information, please see the CP2015 website at: http://www.cp2015.org.

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 14-16, 2015** and the 2015 Research Reactor Safety Roundtable will be held **September 17-18, 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 see:

Radiation Safety Roundtable – http://ehs.vmhost.psu.edu/radiation-protection/radiation-safety-roundtable

Research Reactor Roundtable – http://ehs.vmhost.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

Date	Course Name and Description	Cost
June 1-5, 2015 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2015-03-27 | Mon 10:30 - Fri 12:00	$1800 or $1500*
June 8-12, 2015 Los Alamos, NM	Intermediate MCNP6 Workshop Click here for more information.	$1800 or $1600
July 27-29, 2015 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2015-05-22 | Mon 12:30 - Wed 4:30	$1000 or $800*
Aug 3-7, 2015 Los Alamos, NM	Introduction to MCNP6 Non-US citizens must register by 2015-05-29 | Mon 10:30 - Fri 12:00	$1800 or $1500*
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 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 2015		
June 15-19, 2015	Beginning Visual MCNP6	Prague, Czech Republic
June 29-July 3, 2015	Intermediate Visual MCNP6	Barcelona, Spain
July 13-17, 2015	Beginning Visual MCNP6	Anaheim, CA
July 20-24, 2015	Intermediate Visual MCNP6	Anaheim, CA
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

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 2015		
June 22-26, 2015	MCNP6 Intermediate Workshop	Prague, Czech Republic
August 31-September 4, 2015	MCNP6 Intermediate Workshop	Orlando, FL
October 12-16, 2015	MCNP6 Intermediate Workshop	Paris, France

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.

Sixth MCNPX-PoliMi Training Workshop

The Sixth MCNPX-PoliMi Training Workshop will be held **June 24-26, 2015**, at the University of Michigan, in Ann Arbor, Michigan.

The MCNPX-PoliMi code is a modified version of MCNPX v. 2.7.0 that provides unique capabilities for simulating correlated-particle measurements and detector response. This workshop will introduce new users to the capabilities of the MCNPX-PoliMi code and acquaint experienced users with new features.

For up-to-date information and registration, please visit their website at http://goo.gl/forms/jQW7Y58kAp. If you have any questions, please email clarkesd@umich.edu.

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).

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
June 29-July 3, 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	OECD/NEA Data Bank, Paris, France	2000 Euro
August 10-14, 2015	**SCALE 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*

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	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

May

2015 International Congress on Advances in Nuclear Power Plants (ICAPP '15), May 3-6, 2015, Nice, France. For up-to-date information about this conference, visit their website at https://www.sfen.fr/ICAPP.

Used Fuel Management Conference, May 5-7, 2015, Orlando Florida. Visit the website: http://www.nei.org/Conferences/Used-Fuel-Management-Conference.

International Symposium on Isotope Hydrology: Revisiting Foundations and Exploring Frontiers, May 11-15, 2015, Vienna, Austria. For up-to-date information, visit the website.

62nd Annual Industry Conference and Supplier Expo, May 12-14, 2015, Washington, DC. For more information, see their website.

North American Young Generation in Nuclear, May 12-14, 2015, Washington, DC. For up-to-date information, visit the website.

Emergency Preparedness Training Course, May 31-June 2, 2015, Denver, Colorado. For up-to-date information, visit the website.

June

International Conference on Computer Security in a Nuclear World: Expert Discussion and Exchange, June 1-5, 2015, Vienna, Austria. For up-to-date information, visit the website.

Emergency Preparedness Forum, June 3-4, 2015, Denver, Colorado. For up-to-date information about this conference, visit their website**.**

ANS Annual Meeting: Nuclear Technology: An Essential Part of the Solution, June 7-11, 2015, San Antonio, TX. For up-to-date information about this conference, visit their website at: http://www.ans.org/meetings/m_144.

International Conference on Management of Spent Fuel from Nuclear Power Reactors – An Integrated Approach to the Back-End of the Fuel Cycle, June 15-19, 2015, Vienna, Austria. For up-to-date information, visit the website.

International Conference on Operational Safety, June 23-26, 2015, Vienna, Austria. For more information, visit the website.

July

U.S. Women in Nuclear Conference, July 12-15, 2015, Austin, TX. For more information visit the website at: http://www.nei.org/Conferences/U-S-Women-in-Nuclear-Conference.

September

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.

November

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