Radiation Safety Information Computational Center

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

No. 610 March 2016

"The only place success comes before work is in the dictionary."
-Vidal Sassoon

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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-735/EASY-2010

EURATOM/CCFE Fusion Association, Culham Science Centre, Abingdon, Oxfordshire, United Kingdom through the OECD NEA Data Bank, Issy-les-Moulineaux, France, contributed the European Activation System - EASY-2010. EASY-2010 consists of a wide range of codes, data and documentation all aimed at satisfying the objective of calculating the response of materials irradiated in a neutron flux.

The complete EASY package contains the FISPACT-2007 inventory code, the EAF-2003, EAF-2005, EAF-2007 and EAF-2010 libraries, and the EASY User Interface for the Windows version. FISPACT is an inventory code that has been developed for neutron, proton and deuteron-induced activation calculations for materials in fusion devices. FISPACT-2007 uses external libraries of nuclear data for all relevant nuclides to calculate the number of atoms of each species at a specified time during the irradiation or after a decay time following shutdown. The various species are formed either by a direct reaction on a starting material, by a series of reactions some of which can be on radioactive targets or by a decay or series of decays.

Executables created by the developers are included for IBM AIX, Oracle Sparc & Intel, Ubuntu LINUX, Dec ALPHA and MacIntosh. The package is transmitted on one DVD which includes documentation, executable files, source codes, Makefiles, Installer, data files and test cases. Fortran and C; IBM, Unix and Linux Workstations, Solaris, Mac (C00735MNYCP04).

DLC-237/SINBAD 2016.02

OECD Nuclear Energy Agency Data Bank, Issy les-Moulineaux, France and ORNL Radiation Safety Information Computational Center (RSICC), Oak Ridge, Tennessee, USA, contributed an updated version of this electronic database, which was developed to store a variety of radiation shielding benchmark data so that users can easily retrieve and incorporate the data into their calculations. SINBAD began in 1992-93, prompted by the continued closure of experimental facilities worldwide. The loss of benchmark experimental facilities jeopardizes the future of new shielding data. Further, the loss of lab notes and/or logbook records from poor document storage and/or aging, together with the loss of guidance from retirements of key experimental staff, complete benchmark data becomes a premium under today's strict quality assurance needs. The decision was made to collect, recompile, and distribute benchmark information in formats acceptable to the international community in an attempt to preserve and disseminate the information. The data integrity was checked and reference sources examined for self-consistency. At times, full benchmark information was gathered from multiple sources including personal contacts and laboratory logbooks.

The guidelines developed by the Benchmark Problems Group of the American Nuclear Society Standards Committee (ANS-6) on formats for benchmark problem description have been followed. SINBAD data include benchmark information on (1) the experimental facility and the source; (2) the benchmark geometry and composition; and (3) the detection system, measured data, and an error

analysis. A reference section is included with the data. Relevant graphical information, such as experimental geometry or spectral data, is included. All information that is compiled for inclusion with SINBAD has been verified for accuracy and reviewed by two scientists.

The data in the RSICC SINBAD-2013.12 package were received through the NEADB and corresponds to NEA Data Bank packages:

- NEA-1517 SINBAD REACTOR (Abstract last modified 05-FEB-2016)
- NEA-1552 SINBAD ACCELERATOR (Abstract last modified 14-MAR-2012)
- NEA-1553 SINBAD FUSION (Abstract last modified 01-MAR-2012);

This release includes consistency changes and an update for package NEA1517/93, Winfrith Water/Iron Benchmark Experiment (ASPIS-PCA REPLICA).

SINBAD is an electronic database developed to store a variety of radiation shielding benchmark data so that users can easily retrieve and incorporate the data into their calculations. The high accuracy of benchmark experimental data allows checks for quality assurance in user's computations or with new experimental results. The user may find a lack of experimental data in some energy regions which could become a focus for future computations and experiments. New data libraries containing revised cross sections may be verified and validated, drawing comparisons to previous cross-section data releases. New information on benchmark results, i.e. new computations, revised data results, errors in data generation, will be provided as updates to this library, so users will find up to date applications in computational ready formats.

The experimental results are distributed in tabular ASCII format that can easily be exported to different computer environments for further use. The package is transmitted on one DVD. PC, UNIX Workstations, MAC (D00237MNYCP04).

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

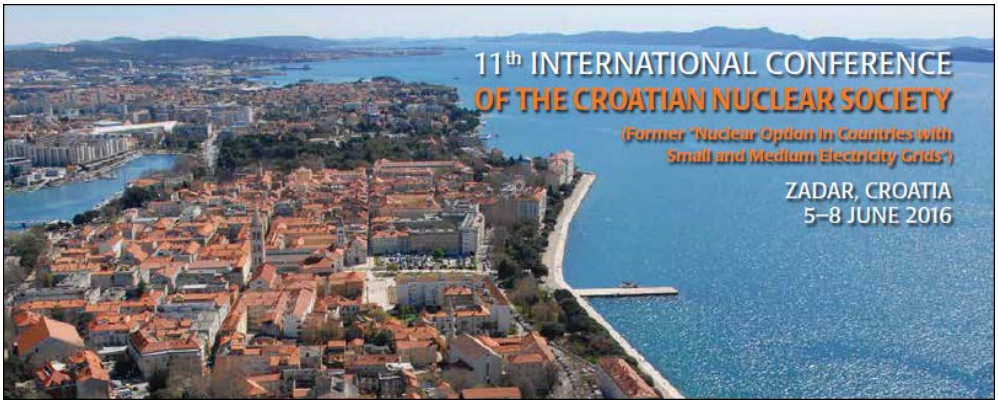
RSICC attempts to keep its customers and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements 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

PHYSOR 2016

The next Reactor Physics Division biannual topical on the Physics of Reactors, PHYSOR 2016 will be held in Sun Valley, Idaho, **May 1-5, 2016**. Based on more than 460 summaries submitted, this is likely to be a well-attended meeting and an opportunity to engage in an international review of current reactor physics research, developments, and applications. More information on the meeting may be found at www.physor2016.org.



HND2016

The next biennial conference organized by the Croatian Nuclear Society will be organized in Zadar, Croatia, **June 5-8, 2016**. With about 200 participants this conference is covering broad range of nuclear energy related topics from science, engineering, environment to economy. Extended deadline for submitting abstracts is January 15, 2016. All other details are available at http://www.nuclear-option.org/ and https://www.conftool.net/HND2016/.

ANS Fusion Energy Division

The ANS 2016 TOFE conference will be held in Philadelphia PA, and hosted by the Princeton Plasma Physics laboratory from **August 22-25, 2016**. The theme is "Advancing the Globalization of Fusion Energy Technology." Please refer to this specific web page for information and instructions to submit your abstract: http://tofe2016.ans.org/call-for-abstracts-2/.

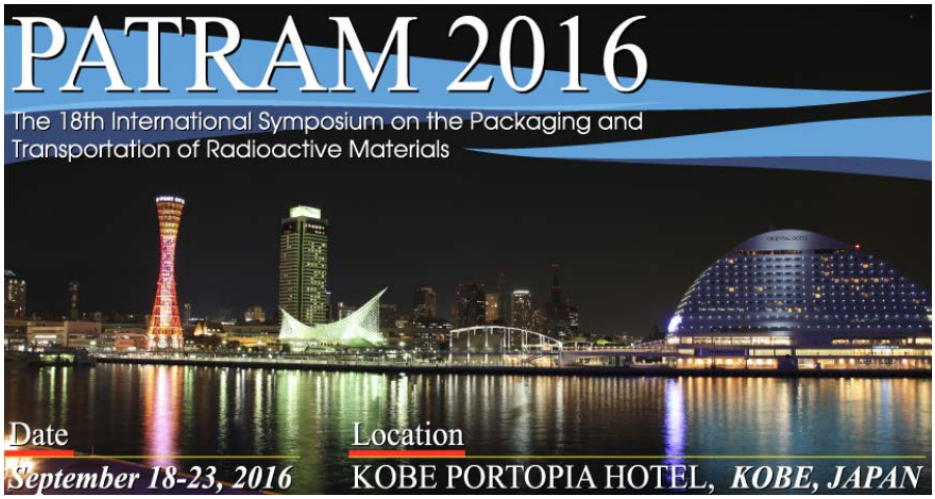
More information about the conference can be found at: http://tofe2016.ans.org/.

NENE 2016

Nuclear Society of Slovenia invites you to attend the traditional already 25th meeting of professionals from nuclear research organizations, educational institutions, nuclear utilities, industrial companies and regulatory bodies, held in the sea resort of Portorož, **September 5-8, 2016**. Special attention will be paid to 50 years of the Slovenian TRIGA reactor and role of research reactors to support nuclear energy. The deadline for submitting abstract is April 30, 2016. More information is available at www.nss.si/nene2016/ and nene2016@ijs.si.

ND2016

The next International Conference on Nuclear Data for Science and Technology will be held in Bruges, Belgium, **September 11-16, 2016**. ND2016 is the primary conference for the advancement of nuclear data in the interest of both science and technology. It addresses all important active fields of investigation: fundamental nuclear physics, astrophysics, nuclear energy, nuclear medicine, nuclear non-proliferation, safeguards and arms control. Please see their website for more details: http://www.nd2016.eu/.



PATRAM 2016

The 18th International Symposium on Packaging and Transportation of Radioactive Materials (PATRAM) will be held **September 18-23, 2016**, in Kobe, Japan. PATRAM brings together experts from governments, industries and research organizations worldwide to exchange information on all aspects of packaging and transport of radioactive materials around the globe. Please see their website for more details: http://www.patram2016.org/.

ICRS 13 RPSD 2016

Paris is honored to host the joint conference 13th International Conference on Radiation Shielding (ICRS-13) & 19th Topical Meeting of the Radiation Protection & Shielding Division of the American Nuclear Society -2016 (RPSD-2016), from **October 3-6, 2016.** This conference explores the scientific, technological and engineering issues associated with particle and ionizing radiation shielding in its broadest context, including nuclear energy systems, accelerator facilities, lasers, space, medical area and other radiation environments. It is one of the premier international events dedicated to this multidisciplinary radiation shielding field, regularly attracting hundreds of the world's top scientists and engineers. **PLEASE NOTE:** The Extended Deadline for Call for Papers is February 15, 2016. For more information, please visit their website: https://fr.amiando.com/icrs13-rpsd2016.html.

Nuclear Knowledge Management

The Third International Conference on Nuclear Knowledge Management, Challenges and Approaches will be held **November 7-11, 2016** in Vienna, Austria. Detailed information on can be found on their website http://www-pub.iaea.org/iaeameetings/50805/Third-International-Conference-on-Nuclear-Knowledge-Management-Challenges-and-Approaches. Please include reference number IAEA-CN-241 in all communications.

TRAINING COURSES

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

DATES: May 16-20, 2016

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, electrons and many other particles, 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.

Course content: Extensive interactive practice sessions are conducted on desktop computers. Topics will include an overview of the MCNP® code and the Monte Carlo method, input file preparation, geometry, source definition, standard MCNP® tallies, interpretation of the output file, exposure and dose rate calculations, radiation shielding, photon skyshine, detector simulation and dosimetry. Students will be provided with a comprehensive class manual and a CD containing all of the practice problems. This course has been granted 32 Continuing Education Credits by the AAHP. The course is offered by the RP2 Radiation Services Team at Los Alamos National Laboratory and is co-sponsored by RSICC. Participants must be vetted by LANL's Export Control Office (a two-sided form will be sent upon registration to complete and submit to the EC Office) before allowed to

attend. Possessing a recent copy of the MCNP® code will expedite this process. Contact RSICC directly (https://rsicc.ornl.gov/) if a copy of the code (and license) is desired. Note that class computers will be provided.

Registration is available online 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.

Inquiries regarding registration, class space availability and payment options should be made to David Seagraves, 505-667-4959, fax: 505-665-7686, e-mail: dseagraves@lanl.gov. Technical questions may also be directed to Tom McLean, 505-665-9944 email:tmclean@lanl.gov. Note that this course is separate from and independent of the courses being offered by the MCNP® Team at LANL.

Safety Analysis Report for Packaging (SARP)
Shielding/Criticality Safety Generalist and Analyst Courses
Developed and Conducted by Oak Ridge National Laboratory

Radioactive Material Package Shielding Evaluation and Nuclear Criticality Safety Evaluation Training

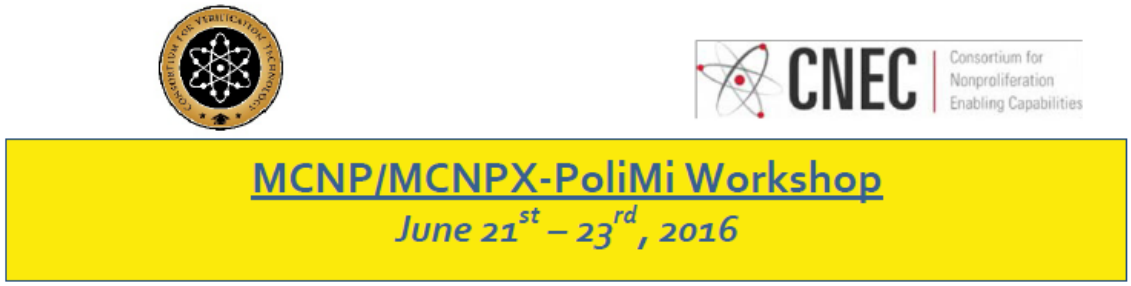
The U.S. Department of Energy (DOE) Packaging Certification Program (PCP), Office of Packaging and Transportation, is offering Safety Analysis Report for Packaging (SARP) shielding and nuclear criticality safety (NCS) courses for SARP generalists and analysts.

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 SARP Generalist Course will be held at the National Transportation Research Center, Oak Ridge National Laboratory, Oak Ridge, TN, **June 6-10, 2016**. The registration cost for all students is $2000. Those interested can register for the course at the following website: https://public.ornl.gov/conferences/sarp2016/index.shtml.

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. The SARP Analyst Course is scheduled for **September 12-16, 2016** at Oak Ridge National Laboratory, Oak Ridge, TN. The registration cost for all students is $2000. Information regarding the course is available at the following website: https://public.ornl.gov/conferences/sarp2016/index.shtml and a registration link will be available by March 15, 2016.

Please contact the ORNL SARP Course Point-of-Contact if you have questions about the courses. Douglas G. Bowen, Oak Ridge National Laboratory, bowendg@ornl.gov,(865) 576-0315.



MCNPX-PoliMi Workshop

The Consortium for Verification Technology (CVT) and the Consortia for Nonproliferation Enabling Capabilities (CNEC) are hosting the Seventh MCNPX-PoliMi Training Workshop at the University of Michigan campus Johnson Rooms on **June 21st – 23rd, 2016**. For more information, please see the website.

Seating is Limited. Registration will be accepted on first-come-first serve basis. Lunch will be provided on all days.

LANL MCNP6® Class Schedule for 2016

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

Date	Course Name and Description	Cost
Mar 28 - Apr 1, 2016 Los Alamos, NM	Introduction to MCNP6® Non-US citizens must register by 2016-01-04 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Apr 4-8, 2016 Los Alamos, NM	Variance Reduction with MCNP6® Non-US citizens must register by 2016-01-11 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Apr 11-13, 2016 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2016-01-15 | Mon 12:30 - Wed 4:30	$1000 or $800*
Apr 18-22, 2016 Los Alamos, NM	Criticality Calculations with MCNP6® Non-US citizens must register by 2016-01-25 | Mon 10:30 - Fri 12:00	$1800 or $1500*
June 2-3, 2016 Los Alamos, NM	Using NJOY to Create MCNP® ACE Files & Visualize Nuclear Data Non-US citizens must register by 2016-03-10 | Thursday 10:00 - Fri 5:00	$800 or $600*
June 6-10, 2016 Los Alamos, NM	Introduction to MCNP6® Non-US citizens must register by 2016-03-14 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Aug 1-5, 2016 Los Alamos, NM	Introduction to MCNP6® Non-US citizens must register by 2016-05-09 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Aug 8-10, 2016 Los Alamos, NM	Unstructured Mesh with Attila4MC Non-US citizens must register by 2016-05-16 | Mon 12:30 - Wed 4:30	$1000 or $800*
Aug 15-19, 2016 Los Alamos, NM	Criticality Calculations with MCNP6® Non-US citizens must register by 2016-05-20 | Mon 10:30 - Fri 12:00	$1800 or $1500*
Oct 31 - Nov 4, 2016 Los Alamos, NM	Introduction to MCNP6® Non-US citizens must register by 2016-08-08 | Mon 10:30 - Fri 12:00	$1800 or $1500*

*** 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.**
*** If a class is marked as FULL, CANCELLED, or COMPLETED, then you cannot register for it.**

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 2016		
April 25-29, 2016	MCNP6® Intermediate Workshop	Paris, France
July 4-8, 2016	MCNP6®Intermediate Workshop	Prague, Czech Republic
August 22-26, 2016	MCNP6® Intermediate Workshop	Livermore, CA
October 17-21, 2016	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.

Visual Editor Classes 2016		
March 7-11, 2016	Intermediate Visual MCNP6® for Shielding Calculations	Richland, WA
March 14-18, 2016	Beginning Visual MCNP6®	Las Vegas, NV
March 21-25, 2016	Advanced Visual MCNP6® with Applications in Mesh Tallies and Variance Reduction.	Richland, WA
April 4-8, 2016	Intermediate Visual MCNP6® for Medical Physics Calculations	Barcelona, Spain
April 18-22, 2016	Beginning Visual MCNP6® The NEA handles registration for this class. Click here to register.	Paris, France
May 16-23, 2016	Intermediate Visual MCNP6® for Shielding Calculations	Barcelona, Spain
May 23-27, 2016	Intermediate Visual MCNP6® for Shielding Calculations	Barcelona, Spain
May 30-June 3, 2016	Intermediate Visual MCNP6® for Criticality Calculations	Barcelona, Spain
June 27-July 1, 2016	Beginning Visual MCNP6®	Prague, Czech Republic
July 11-15, 2016	Advanced Visual MCNP6® with Applications in Mesh Tallies and Variance Reduction.	Prague, Czech Republic
September 12-16, 2016	Beginning Visual MCNP6®	Las Vegas, NV
September 19-23, 2016	Advanced Visual MCNP6® with Applications in Mesh Tallies and Variance Reduction.	Las Vegas, NV
October 10-14, 2016	Beginning Visual MCNP6®	Paris, France
November 7-11, 2016	Penelope	Las Vegas, NV

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

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.

Should you be interested in attending, information is available at:

http://www.oecd-nea.org/dbprog/trainingcourses.htm or contact: programs@oecd-nea.org.

The courses scheduled for 2016 will take place at the new address (provided in registration forms). Please note that all attendees must be registered users.

Date	Class	Course Content	Price	Location
7-11 March 2016	SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis	Course description To register, click here	2000 Euros	Paris, France
18-22 April 2016	Beginning Visual MCNP6®	Course description To register, click here	2200 Euros	Paris, France
25-29 April 2016	MCNP6® Intermediate	Course description To register, click here	2200 Euros	Paris, France
23-27 May 2016	PHITS Monte-Carlo Particle and Heavy Ion Transport Code System	Course description	500 Euros	Paris, France

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

Contact: programs@oecd-nea.org

SYMPOSIA

2016 CALENDAR

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.

2016 American Nuclear Society (ANS) Annual Meeting. June 12-16, 2016. New Orleans, LA.

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.

November

2015 American Nuclear Society (ANS) Winter Meeting and Nuclear Technology Expo. November 6-10, 2016, Las Vegas, NV.

2017 CALENDAR

May

2017 International Symposium on Reactor Dosimetry, ISRD-16. May 7-12, 2017, Santa Fe, New Mexico. See website for more information http://reactordosimetry.org.

June

2017 American Nuclear Society (ANS) Annual Meeting. June 11-15, 2017, San Francisco, CA.

July

62nd Annual Health Physics Society (HPS) Meeting. July 9-13, 2017, Raleigh, NC.

October

2017 American Nuclear Society (ANS) Winter Meeting and Nuclear Technology Expo. October 29-November 2, 2017, Washington, DC.