Radiation Safety Information Computational Center



Oak Ridge National Laboratory POST OFFICE BOX 2008 OAK RIDGE, TENNESSEE 37831-6171

Managed by UT-Battelle, LLC for the U.S. Department of Energy under contract DE-AC05-00OR22725

phone 865-574-6176 fax 865-241-4046 email <u>PDC@ORNL.GOV</u> www <u>http://rsicc.ornl.gov/</u>

No. 559

October 2011

Earth is here so kind, that just tickle her with a hoe and she laughs with a harvest.—A Land of Plenty [Australia]. Douglas Jerrold

NRC Near-Term Report on Fukushima Released	. 1
CHANGES TO THE RSICC CODE AND DATA COLLECTION	. 1
ANS News	.4
CONFERENCES, COURSES, SYMPOSIA	.4
TRAINING	. 5
CONFERENCES	. 7
CALENDAR	. 9

NRC Near-Term Report on Fukushima Released

After the tragic events in Japan early in March, the U.S. Nuclear Regulatory Commission established two groups to study the event—a Near-Term Task Force and a Long-Term Task Force. On July 12 the Near-Term Task Force released its report titled *Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident*. The task force was charged with looking at what was clearly understood about the initiating events and the effect of those events on Fukushima Dai-Ichi. The report can be downloaded from the U.S. NRC website, http://www.nrc.gov/. Webcasts of the July 19 meeting of the task force and NRC Commissioners and a July 28 presentation of the task force to the public are also available at http://video.nrc.gov/.

CHANGES TO THE RSICC CODE AND DATA COLLECTION

CCC-714/SWAT

The Japan Research Institute, Ltd. Energy Technology Department, Tokyo, Japan, and the Japan Atomic Energy Research Institute, Tokaimura, Nakagun, Ibaraki-ken, Japan, contributed a new version of SWAT which includes several function updates and bug-fixes, as well as a new installer. SWAT, a stepwise burnup analysis code system to combine SRAC-95 cell calculation code and ORIGEN2, solves the general criticality problems, especially for burnup credit issues by driving codes CCC-716/SRAC95 and

ORIGEN2.1 or ORIGEN2. A modified version of ORIGEN2 is included in this package, but SRAC is not included. SWAT is an automated driver code system on which development began in 1992. At that time, SWAT was constructed by combining the source programs of SRAC and ORIGEN2. To overcome the problem associated with code updates, SWAT chose to use an operating system to execute SRAC95 and ORIGEN2 so that SWAT will be independent of development and modification of SRAC95 and ORIGEN2. ORIGEN2(82) or ORIGEN2.1 are used for burnup calculations using the matrix exponential method. A decay library and updated photon library of activation products are included in this distribution. SWAT uses SRAC95 for neutron spectrum calculation in 107 groups using the collision probability method for the given geometry and isotopic composition. One- or two-dimensional cell geometries are supported in SRAC95. Several data libraries are included in the SRAC-95 package. This is an updated version of the earlier code.

The SWAT package does not contain SRAC; it can be obtained through NEA Data Bank (NEA 0842/03) or RSICC (CCC-716). SRAC should be installed and tested on your system before installing SWAT. Restriction on the complexity of the problem in SRAC: 20 regions for a continuous energy resonance absorption calculation and 16 steps for cell burnup.

SWAT can be run on several Unix operating systems. A Fortran 77 compiler is required. The developers also tested it on a PC running Linux and FreeBSD with g77. RSICC tested SWAT on a Linux-PC computer. No executables are included. The CD includes the referenced documents, the source, scripts, modified ORIGEN2 source code, and SWAT test cases. Fortran 77 and C; Sun, HP, Fujitsu, Hitachi, & Linux PC (RSICC ID: C714MNYCP01).

CCC-775/REFIT-2009

The National Physical Laboratory, Middlesex, United Kingdom, and Serco, Dorset, United Kingdom, contributed REFIT, Multilevel Resonance Parameter Least Square Fit of Neutron Transmission, Capture, Fission & Self Indication Data, through the NEA Data Bank, Issy-les-Moulineaux, France. REFIT carries out fits to measured neutron cross-section data, by adjusting the nuclear parameters used in the multi-level R-matrix formalism as well as experimental parameters. The adjustment of the parameters is continued until the calculated transmission and/or reaction yields from neutron time of flight (TOF) measurements agree with the observed data within the limits of the measured uncertainties. In its present form REFIT-2009 can perform simultaneous fits on up to 30 sets of measured data. The data sets can be of different types, refer to different target sample thickness and refer to different sample isotopic composition. The types of measurement include transmission and the reaction types: capture, fission, scattering and self-indication. The output gives details of the analysis and all the fitted parameters with their uncertainties. The code also outputs a new list of resonance parameters in ENDF6 format suitable for putting in an evaluation file.

The code package includes the Fortran source, PC executables, sample case input and output, and the referenced document. (RSICC ID: C775PCX8600).

PSR-294/SCAT-2

Modifications to SCAT-2, part of the Code System for Calculating Total and Elastic Scattering Cross Sections Based on an Optical Model of the Spherical Nucleus (Versions SCAT-2 and SCAT-2B), was contributed by Centre d'Etudes de Bruyeres-le-Chatel, France, and Bucharest University, Faculty of Physics, Bucharest Magurele, Romania, through the NEA Data Bank, Issy-les-Moulineaux, France. SCAT-2 is designed as a fast, easy-to-use program to calculate total cross sections, elastic scattering cross sections and their angular distributions, and transmission coefficients from the optical model of a spherical nucleus. SCAT-2B extends the incident particles to include heavy ions.

The modifications in SCAT-2 (2010 version) include:

• The optical potential was extended to include an imaginary spin-orbit component and the Koning-Delaroche optical model parameterization was incorporated.

• The maximum number of input energies was increased from 50 to 150.

The code is distributed on one CD in self-extracting compressed Windows files which include the Fortran source, PC executables, sample case input and output, and the referenced documents. References: CEA-N-2227 (October 1981) and NEANDC-152'A', INDC(NEA)4 (October 3, 1983). The SCAT distribution CD includes both SCAT-2B (RSICC ID: P00294MNYCP02) and SCAT-2 (RSICC ID: P00294MNYCP03).

PSR-564/GEF

GEF, A GEneral description of the Fission process, was contributed by Le Centre d'Etudes Nucléaires de Bordeaux Gradignan (CENBG), CNRS/IN2P3, Chemin du Solarium B.P. 120, 33175 Gradignan, France. Structural effects in fission-product yields and neutron data for a large number of fissioning nuclei between 220Th and 262Rf from spontaneous fission to 14-MeV-neutron-induced fission have been used to deduce information on the properties of the fissioning systems. Macroscopic properties are attributed to the compound nucleus, while fission channels are ascribed to shells in the nascent fragments. Using a recent general empirical description of the nuclear level density and assuming different characteristic time scales for the collective degrees of freedom of the fissioning system, a new fission model has been developed. The code is packaged in a single zip file containing source code, precompiled executables for Windows systems and documentation. BASIC (RSICC ID: P00564PCX8600).

MIS-012/PMK2-VVER440-REPORTS

MTA KFKI Atomic Energy Research Institute, Budapest, Hungary, and Akademiai Kiado Budapest Hungary, has released PMK2-VVER440-REPORTS, Results of the Experiments Performed in the PMK-2 Facility for VVER Safety Studies available through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France. The PMK-2 facility is located at the KFKI Atomic Energy Research Institute (AEKI), Budapest, Hungary. It is a full-pressure thermohydraulic model of the primary and partly the secondary circuit of the Paks nuclear power plant of VVER-440/213 type. At the start-up time in 1985 PMK-2 was the first and the only integral-type facility for VVERs. It was designed and constructed to aid in the understanding of system behaviour and to provide databases for computer code validation. The PMK-2 was followed by the PACTEL facility for VVER-440 in Finland (1990) and the ISB and PSB facilities for VVER-1000 in Russia (1992 and 1998, respectively). Since the start-up of the PMK-2 facility in 1985, 55 experiments have been performed, primarily with the participation of several international experts from European and other countries, to study one- and two-phase natural circulation, loss-of-coolant accidents (LOCA), special plant transients and accident management (AM) procedures. The results have been used for the validation of thermohydraulic system codes like ATHLET, CATHARE and RELAP5 for VVER applications. A large number of integral-type tests have been performed in the past 30 years all over the world in different test facilities. In the last decade the OECD CSNI recognized that there is a tremendous danger of losing these test results due the closing of many of these facilities, the retirement of experts and changes in data storage. A huge effort was initiated in the 90s to collect the most important data included in the CSNI Integral Test Facility Validation Matrix at the NEA Data Bank—with limited success. In order to avoid this problem with respect to the PMK-2 data, the present books summarize the results and major findings of experiments.

The package is transmitted on a CD containing the reports, data and documentation. PDF format; many computers (RSICC ID: M00012MNYCP00).

ANS News

TRANSPORT AND REMOVAL OF AEROSOLS IN NUCLEAR POWER PLANTS FOLLOWING SEVERE ACCIDENTS

This monograph by R. Sher and R. R. Hobbins is an important reference work for nuclear engineers in general and is of particular value to nuclear professionals involved with nuclear plant design and safety as well as to those involved with preparation of submissions to, or evaluations by, regulatory bodies. It is available at http://www.ans.org/goto/nad.cgi?id=1317963600-6

FIRST-TIME MEETING ATTENDEE ORIENTATION

If this is the first ANS meeting you'll be attending, drop by this orientation session to learn what goes on at national meetings, how the national organization works and how to get involved at the national and local levels. This session will be held from 1:00–1:30 on Sunday, October 30, in the Forum Room of the Omni Shoreham Hotel as part of the ANS Winter Meeting.

ANS MENTOR PROGRAM

The ANS Mentor Program is a unique opportunity for experienced members to invest in the future by connecting with the next stars of the nuclear profession. It's a chance for those new to the profession to connect with "those in the know" experienced professionals with real-world knowledge to share. The ANS Mentor program meeting will be held from 5:00–6:00 p.m. Sunday, October 30, in the Embassy Room of the Omni Shoreham Hotel as part of the ANS Winter Meeting.

DON'T FORGET HILL DAY, November 3

The ANS Public Information Committee and Young Professionals Congress Hill Day Activity is scheduled for Thursday, November 3 in Washington, DC. Join your colleagues and visit Capitol Hill to share your perspective on nuclear science and technology. All pre-registered meeting attendees are welcome to participate. Go to the Preliminary Program for information about registering. A Public Information Committee Workshop and orientation session is scheduled for Wednesday evening for everyone who is registered for Hill Day.

GREEN BAG LUNCH SCHEDULED IN WASHINGTON, DC

The Public Information Committee will host a Green Bag Lunch on Monday, October 31. Bring your lunch and join colleagues to learn about the grassroots initiative in Vermont. To read about the project, go to the February 2011 issue of *Nuclear News* for the special interview: <u>http://www.ans.org/goto/nad.cgi?id=1317963600-12</u>.

CONFERENCES, COURSES, SYMPOSIA

RSICC attempts to keep its users and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email to <u>riceaf@ornl.gov</u> 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. If the meeting is on a website, please include the url.

Every attempt is made to ensure that the links provided in the Conference and Calendar sections of this newsletter are correct and live. However, the very nature of the web creates the possibility that the links may become unavailable. In that case, please call or mail the contact provided.

TRAINING

MCNPX and Visual Editor Training

Classes are taught using the most recent (beta) version of the Visual Editor Code. All class attendees must have a valid MCNP/MCNPX RSICC license. Bring proof of receipt (letter or email) to the class.

	2011 Classes for Visual Editor	
November 14–18	Introduction to MCNP using the MCNPX Visual Editor	London, U.K.
	2012 Classes for Visual Editor	
January 9–13	MCNP/MCNPX Intermediate Workshop	Las Vegas, NV
January 16–20	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Las Vegas, NV
January 23–27	Intermediate MCNPX Visual Editor with a special emphasis on tallies and variance reduction	Las Vegas, NV
February 20–24	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Paris, France
February 27–March 2	MCNPX Intermediate Workshop	Paris, France
April 16–20	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Las Vegas, NV
April 23–27	Intermediate MCNPX Visual Editor with a special emphasis on tallies and variance reduction	Las Vegas, NV
May 14–18	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Honolulu, HI
May 21–25	MCNPX/MCNPX Intermediate Workshop	Honolulu, HI
July 16–20	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Livermore, CA
July 23–29	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Anaheim, CA
July 29–August 3	Intermediate MCNPX Visual Editor with a special emphasis on tallies and variance reduction	Anaheim, CA
August 6–10	Intermediate MCNPX Visual Editor with a special emphasis on tallies and variance reduction	Livermore, CA
September 10–14	MCNP/MCNPX Intermediate Workshop	Washington DC
September 17–21	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Myrtle Beach, SC
September 24–28	Intermediate MCNPX Visual Editor with a special emphasis on tallies and variance reduction	Myrtle Beach, SC

The introductory workshops combine teaching on MCNP basics and how to create MCNP input files using the Visual Editor. The intermediate Visual Editor workshops focus on more advanced topics such as tallies and variance reduction using the Visual Editor.

Exercises will focus on creating input files and visualizing output data with the Visual Editor. Attendees are encouraged to bring their own input files for viewing and modifying in the Visual Editor; this is particularly important for the intermediate workshop.

2011 Classes for MCNPX				
November 7–11	MCNPX Intermediate Workshop	London, U.K.		
2012 Classes				
January 9–13	MCNPX Intermediate Workshop	Las Vegas, NV		
February 27–March 2	MCNPX Intermediate Workshop	Paris, France		
May 21–25	MCNPX Intermediate Workshop	Honolulu, HI		

The course description and registration information can be found at <u>http://www.mcnpvised.com/index.html</u>.

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

The list of workshops is tentative, as workshops may be added, removed, or modified throughout the year, depending on user interests. Workshops with fewer than 12 registrants on the early registration date are subject to cancellation or rescheduling.

In order to process non-U.S. citizens by the class date, non-U.S. citizens must register at least 6 weeks prior to the start of the training class. All non-U.S. citizens who reside in countries listed in the U.S. Code of Federal Regulations, Title 10, Part 810.8, are required to register at least 8 weeks prior to the start of the training class. These participants must be processed by the DOE and should not make travel arrangements until approval from DOE has been obtained.

Additional information about the courses can be found at the website, <u>http://mcnpx.lanl.gov/</u>. To register send an email to Randy Schwarz at <u>randyschwarz@mcnpvised.com</u>, indicating the workshop of interest to you.

Analytical Benchmarks: Case Studies in Neutron Transport Theory

A training course on "Analytical Benchmarks: Case Studies in Neutron Transport Theory," sponsored by the Nuclear Energy Agency Data Bank, will be held March 5–9, 2012, at the NEA, Issy-les-Moulineaux, France. Using the Handbook (including computer codes) published on "Analytical Benchmarks for Nuclear Engineering Applications (Case Studies in Neutron Transport Theory)" the course is intended for transport methods developers and those who teach reactor physics and transport theory. In addition, the course would be appropriate for anyone with an analytical interest in solving equations and the application of numerical methods to obtain extreme accuracy. Prof. Barry D. Ganapol will instruct the class.

CONFERENCES



MARC IX (Methods and Applications of Radioanalytical Chemistry) will be held March 25–30, 2012, in Kailua-Kona, Hawaii. The MARC conferences promote a broad exchange of information on radioanalytical chemistry among scientists from participating countries. The MARC VIII conference attracted participants from more than 35 countries. The central geographic location of Hawaii encourages participation and attendance of scientists from Pacific Rim countries as well as providing European scientists with easy accessibility via major US airports. The scope of the conference includes, but is not limited to, techniques such as instrumental and radiochemical activation analysis; nuclear track analysis; radionuclide production; radiochemical separation methods; alpha, beta, gamma, x-ray and other nuclear spectrometries; *in situ* and remote sensing; radiochemical tracer methods, and mass spectrometry methods for the measurement of radionuclides. The conference will include both oral and poster sessions grouped around specific topics. Poster sessions will be organized around specific themes, similar, or in addition, to those included in the oral sessions. Papers presented at the conference will be peer reviewed and published in *The Journal of Radioanalytical and Nuclear Chemistry*. Abstracts on the following topics are due by **December 1, 2011**:

- Applications of Nuclear Techniques to National Security and Treaty Monitoring
- Ultra-sensitive Mass Spectrometric and Other Methods Applied to Environmental Problems
- Reference Materials for Nuclear Mass Spectrometry
- Quality Assurance Topics in Radioanalytical Chemistry
- Advances in Actinide Analytical and Radionuclear Chemistry
- Analytical Chemistry in Support of the Fuel Cycle
- Actinide Mass Spectrometry Techniques and Applications
- Speciation Studies of Radionuclides in the Environment
- Activation Analysis for Nuclear Materials
- Environmental Radioactivity
- The National Nuclear Forensics Expertise Development Program: Graduate, Post-Doctoral, and University Research and Education Efforts
- Nuclear Forensics
- Instrumental, Preconcentration, Radiochemical and Speciation Activation Analysis
- Instrumentation and Software for Nuclear Spectrometry

Questions concerning the scope and organization of the conference should be addressed to the General Chair, Stephen P. LaMont, LANL (phone 505-667-1008, email <u>lamont@lanl.gov</u>). The conference web site address is <u>http://altmine.mie.uc.edu/nuclear/marc/</u>, where most information about the conference will be updated.

Progress in Nuclear Energy and Education

The Progress in Nuclear Energy and Education Conference will be held March 20–22, 2012, in London, UK. The conference provides a forum for nuclear scientists to discuss the cutting edge science and engineering aspects of nuclear energy together with increasingly more important safety, policy, resource and educational requirements of the industry.

The main areas of interest for this conference are advanced and evolutionary reactor designs, the safety of such plants, policy, engineering and resources, and educational challenges such as the shortfall of experience and skills in the sector.

The conference is organized by Elsevier in association with the Dalton Nuclear Institute, and endorsed by the Nuclear Industry Association. The supporting journal is *Progress in Nuclear Energy*. Visit <u>www.progressnuclearenergy.com</u> for more information, to submit your abstract and to register.

PHYSOR 2012

PHYSOR 2012, hosted by the ANS Oak Ridge/Knoxville Local Section, will be held April 15–20, 2012, in Knoxville, Tennessee. The technical program will meet the high standards of recent PHYSOR meetings, including timely and relevant special topics. Students will be included in all events and activities. Exciting workshops and technical tours will be offered. For further news, information, and instructions, please visit http://physor2012.org.

Monte Carlo Treatment Planning (MCTP2012)

The Third European Workshop on Monte Carlo Treatment Planning (MCTP2012) will be take place May 15–18, 2012, in Seville, Spain. The European Workgroup on MCTP is hosting the workshop. Since the first meeting in Ghent, Belgium (2006), and after the last workshop in Cardiff in 2009, the role of Monte Carlo in radiotherapy planning has continued to grow and become more relevant as more sophisticated and ambitious techniques are introduced. IGRT and 4-D planning are facing new cumulative uncertainties which require accurate calculations to justify the additional workload involved. This Workshop on MCTP of the European Workgroup (EWG-MCTP) will stimulate information exchange and generate international collaborations. Abstract or posters on the following program topics may submitted:

- Photon and electron
- Braquitherapy
- Nuclear Medicine
- Code development
- Hadrontherapy
- Linac modeling
- Dosimetry
- IGRT

Contributions accepted for the workshop will be published as a book of extended abstracts. An agreement is also in place with *Physics in Medicine and Biology*. Papers from MCTP2012 will be considered for publication in PMB and published as a "special feature" of the journal. See the "Submissions" page of the workshop website, <u>http://www.mctp2012.com/index.php</u>. The technical contact for the workshop is Rafael Moreno, Adriano Spain DMC, Adriano St., 26-28, 41001 Sevilla, Spain (phone +34 954 215 900, fax +34 954 216 211, email sevilla@mctp2012.com).

ICRS-12 and RPSD-2012



The 12th International Conference on Radiation Shielding (ICRS-12) and the 17th Topical Meeting of the Radiation Protection and Shielding Division of the American Nuclear Society (RPSD-2012) will be held in Nara, Japan, September 2–7, 2012. The first ICRS conference was held in 1958 at Cambridge, United Kingdom. Since then, ICRS has been held in Europe, Japan,

and the United States. The ICRS series occurs every four or five years.

This conference, organized by the Atomic Energy Society of Japan, will explore the scientific, technological and engineering issues associated with particle and ionizing radiation shielding in its

broadest context, including nuclear energy systems, accelerator facilities, space and other radiation environments. It is one of the premier international radiation shielding events, regularly drawing hundreds of the world's top scientists and engineers.

The conference will open with a special session summarizing the facts and circumstances surrounding the Fukushima accident and consequent environmental assessment and recovery. The special session will complement the conference topics. Abstracts may be submitted electronically beginning December 1, 2011, on the following topics:

Fission Reactor Facilities Fusion Reactor Facilities Fuel Cycle Facilities Transportation & Storage Issues Waste Management Facilities Accelerator Facilities **Medical Facilities** Aircraft Dosimetry & Space Technology **Medical Applications Industrial Applications** Shielding Experiments & Benchmarks Source Term Measurement & Evaluation Activation Measurement & Analysis Standardization of Radiation Field &

Monte Carlo Methods & Applications **Deterministic Methods & Applications Empirical Methods & Applications** Visualization & User Interface Nuclear Data Advanced Phantoms Shielding Materials **Radiation Detections & Measurements Radiation Protections Radiation Dosimetry** Decommissioning Clearance **Environmental Assessment** International Collaboration

Measurement

The deadline for submitting abstracts is February 29, 2012. Check the website http://www.icrs12.org or contact ICRS-12 & RPSD-2012 Local Organizing Committee secretariat (office@icrs12.org) for further information.

CALENDAR

November 2011

- IPET 2011, 2nd International Conference on Clinical PET and Molecular Nuclear Medicine, Nov. 8–11, 2011, Vienna, Austria. Contact: D. Umgeher, IAEA (phone +43-1-260021324, email d.umgeher@iaea.org) url www.iaea.org.
- International Conference on Research Reactors, Nov. 14–18, 2011, Rabat, Morocco. Contact: M. Neuhold, IAEA (phone +43-1-260021314, fax +43-1-26007, email m.neuhold@iaea.org) url www.iaea.org.
- Technology Meeting on Fast Reactor Physics and Technology, Nov. 14-18, 2011, Kalpakkum, India. Contact: Rozanna Bojdo, IAEA (phone +43-1-260021754, email r. bojdo@iaea.org) url www.iaea.org.
- HST '11, 11th Annual IEEE Conference on Technologies for Homeland Security, Nov. 15-17, 2011, Boston, Massachusetts, USA. Contact: IEEE (email information@iccc-hst.org) url www.ieee-hst.org.

December 2011

- 9th International Conference on CANDU Maintenance, Dec. 4–6, 2011, Toronto, Ontario, Canada. Contact: CNS (phone 416-977-7620, fax 416-663-3504, email cns-snc@on.aibn.com) url cmc2011.ca/cmc2011html/cmc2011_home.html.
- Global 2011, Dec. 11–15, 2011, Chiba, Japan. Contact: JAEA (email global2011@jaea.go.jp) url http://global2011.org.

Nuclear Power International 2011, Dec. 13–15, 2011, Las Vegas, Nevada, USA. Contact: Libby Smith, PennWell (phone 918-831-9560, fax 918-831-9161, email <u>nuclearconference@pennwell.com</u> or <u>registration@pennwell.com</u>) url <u>www.nuclearpowerinternational.com</u>.

March 2012

- Progress in Nuclear Energy and Education Conference, March 20–22, 2012, London, UK. For details visit: <u>http://www.progressnuclearenergy.com</u>.
- MARC IX, "Methods and Applications of Radioanalytical Chemistry," March 25–30, 2012, Kailua-Kona, Hawaii. Contact: Stephen P. LaMont, LANL (phone 505-667-1008, email <u>lamont@lanl.gov</u>) url <u>http://altmine.mie.uc.edu/nuclear/marc/</u>.

April 2012

• PHYSOR 2012, April 15–20, 2012, Knoxville, Tennessee. Contact: <u>http://physor2012.org</u>.

May 2012

MCTP2012, 3rd European Workshop on Monte Carlo Treatment Planning, May 15–18, 2012, Seville, Spain. Contact: Rafael Moreno, Adriano Spain DMC, Adriano St., 26-28, 41001 Sevilla, Spain (phone +34 954 215 900, fax +34 954 216 211, email <u>sevilla@mctp2012.com</u>) url <u>http://www.mctp2012.com/index.php</u>.

June 2012

2012 ANS Annual Meeting, June 24–28, 2012, Chicago, Illinois, USA. Follow the website for up-to-date information, <u>http://www.new.ans.org/meetings/c_1</u>.

- ICAPP '12, June 24–28, 2012, Chicago, Illinois. Contact: Lynne Schreiber, Administrator (email icapp@ans.org) url http://www.icapp.ans.org/icapp12/.
- NFSM 2012 "Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors," June 24–28, 2012, Chicago, Illinois. Follow the website for up-to-date information, http://www.new.ans.org/meetings/c_1.
- Decommissioning, Decontamination and Reutilization and Technology Expo, June 24–28, 2012, Chicago, Illinois. Contact: Sue Aggarwal, Technical Program Chair (phone 303-984-5788, email saggarwal@nmnuclear.com) url http://ddrd.ans.org.

September 2012

ICRS-12 (12th International Conference on Radiation Shielding) and RPSD-2012 (17th Topical Meeting of the Radiation Protection and Shielding Division of the American Nuclear Society), Sept. 2–7, 2012, Nara, Japan. Contact: ICRS-12 & RPSD-2012 Local Organizing Committee secretariat (<u>office@icrs12.org</u>) url <u>http://www.icrs12.org/</u>.

November 2012

2012 ANS Winter Meeting and Nuclear Technology Expo, Nov. 11–15, 2012, San Diego, California, USA. Follow the website for up-to-date information, <u>http://www.new.ans.org/meetings/c_1</u>.