
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 PDC@ORNL.GOV
www <http://rsicc.ornl.gov/>

No. 557

August 2011

Develop the winning edge; small differences in your performance can lead to large differences in your results.—Brian Tracy

VARSKIN 4 Workshop	1
Nuclear Science & Engineering Directorate Summer Interns Visit Washington	2
CHANGES TO THE RSICC CODE AND DATA COLLECTION	2
ANS News	4
CONFERENCES, COURSES, SYMPOSIA	4
TRAINING	4
CONFERENCES	6
CALENDAR	8

VARSKIN 4 Workshop

RSICC is hosting a VARSKIN 4 workshop **October 24–25, 2011**, which will be led by David Hamby. The two-day workshop will provide the participant with a fundamental overview of beta and gamma skin dosimetry and a detailed view of how VARSKIN 4 calculates shallow and deep dose for both radiation types. Dosimetric theory, point kernel methods, air gap models, charged particle buildup, angular dependencies, and source geometry dependencies will be discussed. The workshop will briefly examine database and GUI structures. Major attention will be focused on the new photon dosimetry model of VARSKIN 4.0 and the proposed changes to the beta dosimetry model for VARSKIN 4.1 to be released later next year. A comparison of VARSKIN 4 to Monte Carlo simulation will be provided so that the participant is knowledgeable of VARSKIN’s accuracy in different situations. Limitations and shortcomings of the VARSKIN models will also be discussed. Workshop participants will be exposed to a series of examples so that they become proficient with running VARSKIN.

The registration form is available at <http://www-rsicc.ornl.gov/Announcements.aspx?a=12>.

Nuclear Science & Engineering Directorate Summer Interns Visit Washington

A group of summer students from the Global Nuclear Security Technologies Division (GNSTD) and Reactor and Nuclear Systems Division (RNSD) visited the National Nuclear Security Administration (NNSA) on July 28, 2011, and gave presentations to the program sponsors. The students were funded by the Next Generation Safeguards Initiative (NGSI) Human Capital Development program. The majority represented the Nuclear Science and Engineering Directorate (NSE) Nuclear Science and Engineering Laboratory Synthesis (NESLS) internship program. In the afternoon, the group, together with ORNL staff members, visited Senator Lamar Alexander. Neena Imam, legislative fellow on loan from ORNL, helped facilitate the visit.



From left: Senator Alexander, Allison Toth (University of Tennessee) , Ben Farr (UT), Jeremy Townsend (UT), Dawn Eipeldauer (ORNL), Bernadette Kirk (ORNL), Michael Arwood (Vanderbilt), Patrick Migliorini (University of Virginia), Alice Rice (ORNL), Eric Ellis (Tennessee Technological University) , Jesse Fritz (TTU), Alice Begovich (UT), Shaheen Dewji (Georgia Institute of Technology), Ryan Kelly (Texas A&M) and Diana Tucker (ORNL).

CHANGES TO THE RSICC CODE AND DATA COLLECTION

[CCC-782/PENELOPE2011](#)

Facultat de Fisica (ECM), Universitat de Barcelona and Universitat Politècnica de Catalunya de Barcelona, Spain, through the Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed PENELOPE2011. PENELOPE performs Monte Carlo simulation of coupled electron-photon transport in arbitrary materials and complex quadric geometries. A mixed procedure is used for the simulation of electron and positron interactions (elastic scattering, inelastic scattering and bremsstrahlung emission), in which ‘hard’ events (i.e. those with deflection angle and/or energy loss larger than pre-selected cutoffs) are simulated in a detailed way, while ‘soft’ interactions are calculated from multiple scattering approaches.

The 2011 version contains improvements in the description of inelastic collisions of electrons and positrons. The geometry package has been reformulated to permit the description of nanometric

structures. Programs for the calculation of mass energy-absorption coefficients for photons, and linear energy transfers for charged particles have been included in the distribution package. The manual has also been revised, and a new chapter on radiation fields and dosimetry has been added.

The package is transmitted on a CD which includes the referenced document, Windows executables for GVIEW2D, GVIEW3D, GVIEWC and SHOWER, source and example files. Fortran; Windows or Linux (RSICC ID: C00782PCX8600).

[CCC-783/RASCAL](#)

Athey Consulting, Charles Town, West Virginia, and the U.S. Nuclear Regulatory Commission, Washington, DC, contributed a newly frozen version of the Radiological ASsessment for Consequence AnaLysis code system designated RASCAL Version 4.1. RASCAL can estimate reactor source terms, atmospheric transport and doses resulting from radiological emergencies and can be used to assist in making protective action decisions. It was developed for the U.S. Nuclear Regulatory Commission and is designed to be used in the independent assessment of dose projections during response to radiological emergencies. RASCAL runs under Windows operating systems. The software has been tested under Windows 7 64-bit and XP 32-bit systems. Microsoft Basic and Fortran compilers were used to create executables included in the package. No source files are distributed. The package is transmitted on a CD which includes executables, data, help files, and an install procedure. Fortran, Basic; Xeon running Windows (RSICC ID: C00783PCX8600).

[DLC-246/PIXE2010](#)

INFN, Sez. Genova, Italy; Max-Planck-Institut f. Extraterrestrische Physik and MPI, Halbleiterlabor, Germany; Creighton University, Illinois, USA; CNES, Toulouse, France; INFN, Laboratori Nazionali di Frascati, Italy; Berkeley University, USA; and Jožef Stefan Institute, Ljubljana, Slovenia, contributed this proton/alpha ionization (K, L, M shell), Tabulated Cross Section Library. The physics aspects associated with PIXE involve the creation of a vacancy in the shell occupancy due to ionization and the emission of x-rays from the following atomic deexcitation. The data can be useful to Monte Carlo simulation of PIXE or software systems for elemental analysis. Reference: *IEEE Trans.Nucl. Sci.*, 56 (6) 3614-3649 (December 2009) (RSICC ID: D00246MNYCP00).

[MIS-010/STEX II](#)

European Commission-Joint Research Centre, Institute for Systems, Informatics and Safety, Ispra, Italy; Korea Atomic Energy Research Institute, Yusong-Gu, Daejeon, Republic of Korea; Argonne National Laboratory, Argonne, IL, USA; University of Wisconsin-Madison, Madison, WI, USA; Sandia National Laboratories, Albuquerque, NM, USA; United Kingdom Atomic Energy Authority, Atomic Energy Establishment, Winfrith, Dorchester, Dorset, United Kingdom; Severe Accident Research Laboratory, JAEA, Tokai-mura, Ibaraki-ken 319-1195, Japan; Forschungszentrum Karlsruhe, Institut f. Neutronenphysik und Reaktortechnik, Karlsruhe, Germany; through OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed STEX. The STEX database is a compilation of the experimental work conducted to investigate the phenomenon of “STeam Explosion,” an extensively studied problem in the area of nuclear safety. Steam explosion (also known as vapor explosion) is a physical phenomenon in which the internal energy of a hot liquid is rapidly transferred to a colder and more volatile liquid, which as a result vaporizes at high pressure and expands against the inertial constraint of the surrounding structure as well as the mixture. In the context of nuclear safety, the hot liquid is the molten ‘fuel’ and the colder more volatile liquid is the ‘coolant.’ A steam explosion is therefore a class of fuel-coolant interactions in which the timescale for heat transfer between the liquids is smaller than the timescale for pressure wave propagation and expansion in a local region of the fuel-coolant mixture.

The experimental results are distributed in PDF format that can easily be exported to different computer environments for further use. HTML, PDF text files; PC, UNIX Workstations, MAC (RSICC ID: M00010MNYCP00).

ANS News

SPECIAL REPORT ON USED NUCLEAR FUEL AVAILABLE

ANS President Tom Sanders formed a special committee in 2010 to explore the options for managing used nuclear fuel (UNF). The committee's charge was to prepare a comprehensive report for citizens who want to understand the issue or participate in the discussion and for policy makers who must choose a path forward. The "Report of the ANS President's Special Committee on Used Nuclear Fuel Management Options" can now be accessed at the following link:

<http://www.ans.org/goto/nad.cgi?id=1313038800-2>.

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 riceaf@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. 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.

<u>2011 Classes for Visual Editor</u>		
September 12–16	Introduction to MCNP using the MCNPX Visual Editor	Myrtle Beach, SC
September 19–23	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	Myrtle Beach, SC
October 3–7	Introduction to MCNP using the MCNPX Visual Editor	Knoxville, TN
October 17–21	Introduction to MCNP using the MCNPX Visual Editor	Las Vegas, NV
October 24–28	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	Las Vegas, NV
November 14–18	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	London, U.K.

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>.

<u>2011 Classes for MCNPX</u>		
September 26–30	MCNPX Intermediate Workshop	Washington, DC
November 7–11	MCNPX Intermediate Workshop	London, U.K.
<u>2012 Classes</u>		
January 9–13	MCNPX Intermediate Workshop	Las Vegas, NV

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, <http://mcnpx.lanl.gov/>. To register send an email to Randy Schwarz at randyschwarz@mcnpvised.com, indicating the workshop of interest to you.

[Scale Training Courses](#)

Date	Title	Location	Registration Fee
Sept. 7–9	Scale/ORIGEN Activation and Decay Calculations; Includes ORIGEN-ARP <i>Isotopic depletion/decay and source term characterization using ORIGEN/ORIGEN-ARP</i>	ORNL Oak Ridge, TN, USA	\$1200
Sept. 12–16	Scale/TRITON Lattice Physics and Depletion Course <i>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</i>	ORNL Oak Ridge, TN, USA	\$2000
Sept. 26–30	Scale/TSUNAMI Sensitivity and Uncertainty Analysis Course <i>1D, 2D, and 3D eigenvalue sensitivity and uncertainty analysis; 1D and 2D generalized perturbation theory for reactor analysis; Reactivity sensitivity analysis</i>	ORNL Oak Ridge, TN, USA	\$2000
Oct. 3–5	TSUNAMI Validation Techniques <i>Advanced validation and bias assessment techniques using sensitivity and uncertainty analysis; Burnup credit validation</i>	ORNL Oak Ridge, TN, USA	\$1200

Oct. 10–14	Scale Criticality and Shielding Course <i>Basic criticality calculations with KENO-VI; Shielding analysis with automated variance reduction using MAVRIC; Criticality accident alarm system analysis</i>	ORNL Oak Ridge, TN, USA	\$2000
Oct. 17–21	Scale Criticality Safety Calculations Course <i>Introductory through advanced criticality calculations using KENO V.a and KENO-VI; Resonance self-shielding techniques</i>	ORNL Oak Ridge, TN, USA	\$2000
Oct. 17–21	Scale/TSUNAMI Sensitivity and Uncertainty Analysis Course <i>1D, 2D, and 3D eigenvalue sensitivity and uncertainty analysis; 1D and 2D generalized perturbation theory for reactor analysis; Reactivity sensitivity analysis</i>	NEA Data Bank, Paris, France	€2000

A discount of \$200 will be applied for registration of multiple courses, and additional discounts are available for students. Class size is limited and courses may be canceled if minimum enrollment is not obtained one month prior to the course. Course fees are refundable up to one month before each class. Note that all attendees must be registered Scale 6.1 users. All foreign national visitors must register a minimum of 40 days prior to the start date of the training course they plan to attend. Course descriptions may be found at http://scale.ornl.gov/training_course_descriptions.shtml.

IAEA Workshop Monte Carlo Radiation Transport and Associated Data Needs for Medical Applications

The International Atomic Energy Agency (IAEA) is offering a 2-week workshop on “Monte Carlo Radiation Transport and Associated Data Needs for Medical Applications,” October 17–28, 2011, in Trieste, Italy, at the Abdus Salam International Centre for Theoretical Physics. This workshop will revolve around the EGSnrc and BEAMnrc codes. There is no registration fee associated with attendance at the workshop. Priority will be given to participants from developing countries. The workshop director is Roberto Capote of the IAEA and the lecturers include Iwan Kawrakow, Ernesto Mainegra-Hing, Frederic Tessier, Blake Walters and David W. O. Rogers. Visit the workshop website at <http://www-nds.iaea.org/MC2011/MC2011.htmlx> for more information and to download the application form.

CONFERENCES

INAC 2011

The International Nuclear Atlantic Conference (INAC) will convene its 2011 conference October 24–28, 2011, in Belo Horizonte, the capital of the state of Minas Gerais, in the Brazilian Southeast. The theme of the event will be *Nuclear Energy: New Jobs for a Better Life*, which intends to discuss how to prepare young professionals for the opportunities that are surfacing with the renewed investment in the nuclear sector.



The conference will be organized around three independent but complementary technical meetings: the XVII Meeting on Nuclear Reactor Physics and Thermal Hydraulics (Enfir), the X Meeting on Nuclear Applications (Enan) and the II Meeting on Nuclear Industry (Enin).

Topics to be discussed at the event include nuclear power plant and research reactor operation, maintenance, troubleshooting, security and safety; research; irradiation activities; education; communications and public information; training programs; reactor siting, decontamination and decommissioning activities; current regulatory issues; radiopharmaceuticals; nuclear instrumentation; reactor physics; radioprotection; radioactive waste management; sustainability of energy sources; the uranium market; and social responsibility.

INAC 2011 will also promote the fourth edition of the Junior Poster Technical Sessions, where, under the supervision of nuclear researchers from Brazilian institutions, undergraduate students from a number of colleges and universities present relevant results achieved in their research work.

Completing the one-week program, ExpoInac, the event's traditional technical and commercial exhibition, showcases the contribution made by nuclear technology, products and services to the quality of life in our society.

The conference will also include a historical exhibition, open to the general public, to celebrate the 50th anniversary of the Triga IPR-R1, the first reactor of its type installed in the southern hemisphere, and the 59th anniversary of the Nuclear Technology Development Center (CDTN), the first nuclear energy research institute founded in Brazil, both located in Belo Horizonte.

Details about registration and paper submission can be found at the conference website: <http://www.inac2011.com.br/inac.php>.

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. Full Papers are solicited in the following 16 broad tracks:

1. **Core Analysis Methods**
2. **Deterministic Transport Theory**
3. **Monte Carlo Methods and Developments**
4. **Reactor Concepts and Designs**
5. **Education in Reactor Physics**
6. **Reactor Operation and Safety**
7. **Fuel Cycle and Actinide Management**
8. **Advanced Modeling and Simulation in Reactor Physics**
9. **Research Reactors and Spallation Sources**
10. **Nuclear Criticality Safety**
11. **Nuclear Data**
12. **Sensitivity and Uncertainty Analysis**
13. **Fuel, Material, Mechanical Analysis and Behavior**
14. **Reactor Transient and Safety Analysis**
15. **Experimental Facilities and Experiments**
16. **Radiation Applications and Nuclear Safeguards**

The deadline for submission of full papers is October 31, 2011. For further news, information, and instructions, please visit <http://physor2012.org>.

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	Monte Carlo Methods & Applications
Fusion Reactor Facilities	Deterministic Methods & Applications
Fuel Cycle Facilities	Empirical Methods & Applications
Transportation & Storage Issues	Visualization & User Interface
Waste Management Facilities	Nuclear Data
Accelerator Facilities	Advanced Phantoms
Medical Facilities	Shielding Materials
Aircraft Dosimetry & Space Technology	Radiation Detections & Measurements
Medical Applications	Radiation Protections
Industrial Applications	Radiation Dosimetry
Shielding Experiments & Benchmarks	Decommissioning
Source Term Measurement & Evaluation	Clearance
Activation Measurement & Analysis	Environmental Assessment
Standardization of Radiation Field & Measurement	International Collaboration

The deadline for submitting abstracts is February 29, 2012. Check the website <http://www.icsr12.org> or contact ICRS-12 & RPSD-2012 Local Organizing Committee secretariat (office@icsr12.org) for further information.

CALENDAR

September 2011

ICNC2011, International Conference on Nuclear Criticality, Sept. 19–22, 2011, Heriot-Watt University, Edinburgh, United Kingdom. Contact: Energy Customer Services, Informa UK Ltd, PO Box 406 West Byfleet KT14 6NN UK (phone +44 0 20 7017 5518, fax +44 0 20 7017 4745, email energycustserv@informa.com) url <http://www.informaglobalevents.com/event/icnc2011>.

RADECS 2011, 11th European Conference on Radiation Effects on Components and Systems, Sept. 19–23, 2011, Seville, Spain. Contact: Héctor Guerrero, INTA (email radecs2011@inta.es) url www.radecs2011.org.

ICEM 2011, 14th International Conference on Environmental Remediation and Radioactive Waste Management, Sept. 25–29, 2011, Reims, France. Contact: Sylvie Delaplace, SFEN (phone 33-0-1-53-58-32-16, fax 33-0-1-53-53-32-11, email icem11.france@sfen.fr) url www.sfen.fr/icem-11.

ASME 2011 Small Modular Reactors Symposium, Sept. 28–30, 2011, Washington, DC. Contact: Mary Jakubowski, ASME (phone 212-591-7637, email jakubowskim@asme.org) url www.asmeconferences.org/smr2011.

October 2011

International Conference on the Future of Heavy-Water Reactors, Oct. 2–5, 2011, Ottawa, Ontario, Canada. Contact : Laurence Leung (phone 613-584-8811 ext. 44813, email leungl@aecl.ca) url www.cns-snc.ca/events/cns-fhwr/.

(NUWCEM 2011) 1st International Symposium on Cement-Based Materials for Nuclear Wastes, Oct. 11–14, 2011, Avignon, France. Contact: Patricia Hamel-Bloch, SFEN (email phamel-bloch@sfen.fr) url www.sfen.fr/nuwcem-2011/.

- International Symposium on Nuclear Energy, Oct. 16–20, 2011, Bucharest, Romania. Contact: Mihaela Stiopol (phone 40-212038253, email mstiopol@nuclearelectrica.ro) url www.sien.ro.
- 15th International Conference on Fusion Reactor Materials, Oct. 16–22, 2011, Charleston, South Carolina, USA. Contact: Roger Stoller (phone 865-576-7886, fax 865-241-3650, email stoller@ornl.gov) url www.ornl.gov/icfrm15/.
- International Conference on the Safe and Secure Transport of Radioactive Material, Oct. 17–21, 2011, Vienna, Austria. Contact: K. Morrison (phone 43-1-260021317, email k.morrison@iaea.org or transport.meetings@iaes.org) url www.iaea.org.
- 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, Oct. 23–29, 2011, Valencia, Spain. Contact: David Townsend (phone +65-64788722, email david_townsend@sbic.a-star.edu.sg or nssmic2011@ciemat.es) url www.nss-mic.org/2011/.
- 2011 ICRP Symposium on the International System of Radiological Protection, Oct. 23–30, 2011, Bethesda, Maryland, USA. Contact: Lynn Lemaire (email admin@icrp.org) url www.icrp.org.
- 2011 Fall Meeting of the American Physical Society's Division of Nuclear Physics, Oct. 26–29, 2011, East Lansing, Michigan, USA. Contact: Jennifer Carducci (email dnp2011@nscl.msu.edu) url meetings.nscl.msu.edu/dnp2011.
- ANS Winter Meeting and Nuclear Technology Expo, Oct. 30–Nov. 3, 2011, Washington, D.C., USA. Contact: Joe Turnage (phone 410-470-4607) url www.new.ans.org/meetings/m_77.
- 1st Annual ANS Small Modular Reactor 2011 Conference, Oct. 30–Nov. 3, 2011, Washington, D.C., USA. Contact: Thomas Sanders (phone 505-281-5923, email formbj@aol.com) url www.new.ans.org/meetings/m_77.
 - Young Professional Congress, Oct. 30–Nov. 3, 2011, Washington, D.C., USA. Contact: Peter Caracappa (phone 518-421-6931, email caracp3@rpi.edu) url www.new.ans.org/meetings/m_77.

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@jao.go.jp) url www.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 nuclearconference@pennwell.com or registration@pennwell.com) url www.nuclearpowerinternational.com.

April 2012

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

June 2012

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

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 (office@icrs12.org) url <http://www.icrs12.org/>.

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, http://www.new.ans.org/meetings/c_1.