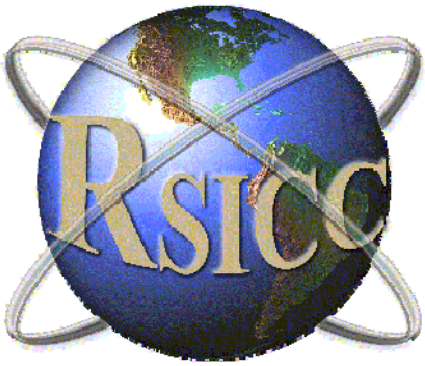
Radiation Safety Information Computational Center



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Get the facts, or the facts will get you. And when you get 'em, get 'em right, or they will get you wrong.—Fuller

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CHANGES TO THE RSICC CODE AND DATA COLLECTION

CCC-740/MCNP5/MCNPX

Los Alamos National Laboratory, Los Alamos, New Mexico, contributed a corrected version of their Monte Carlo N–particle transport code system. The package includes MCNP5 1.51, MCNPX 2.6.0, and MCNPDATA. Neither MCNPX nor MCNPDATA were modified in this release. The only change is to MCNP5 1.51, which corrects a significant error in the MCNP5 1.50 photon Doppler broadening routine that can lead to incorrect results.

RSICC will contact recipients of MCNP5 1.50 about sending replacement DVDs. Upon receipt of the new DVD, please delete all copies of MCNP5 1.50 and shred the original DVD.

MCNP5 is a general purpose Monte Carlo N–Particle code that can be used for neutron, photon, electron, or coupled neutron/photon/electron transport, including the capability to calculate eigenvalues for critical systems. Additional information will be posted on the developers' home page: http://mcnp-green.lanl.gov/. Some of the new features include:

- Variance reduction with pulse height tallies,
- New VAR input card added to control variance reduction methods,
- Annihilation gamma tracking,
- Doppler broadening added to the makxsf utility code,
- Improved S(α,β) thermal scattering,
- Large lattice enhancements,
- Direct RSSA file reading for distributed multiprocessing,
- Improved Compton scattering PSC calculation for detectors & DXTRAN, and
- Web-based documentation.

MCNPX 2.6.0 is a Fortran90 (F90) Monte Carlo radiation transport computer code that transports many particles over a broad range of energies. Capabilities and enhancements of MCNPX 2.6.0 beyond MCNPX 2.5.0 are listed below. For details, see LA-UR-08-2216.pdf posted on the MCNPX website http://mcnpx.lanl.gov/.

- Depletion/burnup;
- Heavy-ion (Z>2) transport;
- LAQGSM physics model;
- CEM03 physics;
- Long file names;
- Delayed-particle emission;
- Criticality source convergence acceleration;
- Energy-time weight windows;
- Spherical mesh weight windows;
- Charged ions from neutron capture in table range;
- Tallies terminated at desired precision: STOP card;
- Numerous corrections/enhancements/extensions; and
- Muon capture physics.

The MCNPDATA cross-section libraries are released by the Data Team in X-Division at Los Alamos National Laboratory for use with the MCNP/MCNPX Monte Carlo code packages. This package includes all of the X-Division distributed neutron and proton data libraries, the photoatomic libraries, photonuclear data library LA150U, the electron libraries EL1 and EL03, an updated XSDIR file, and a SPECS file for use with MAKXSF to convert the ascii data libraries into binary form. More information on data libraries contained in this release is available in Appendix G of the MCNP5 manual or from the data team's web site at http://www-xdiv.lanl.gov/PROJECTS/DATA/nuclear/.

The package is distributed on a single DVD for Windows or UNIX. The executable-only package C00740MNYCP03 includes executables for PC Windows, PC Linux, some Unix/Mac systems (see abstracts for details); MCNPDATA; test problems and the referenced documentation. The C00740MNYCP02 package includes the items listed above plus source codes, makefiles, build scripts, and some additional documentation and utilities for use with MCNP5. Export control regulations restrict the distribution of Fortran source code. If restrictions apply, RSICC will send the executable-only version. Please order the package you prefer, and we will honor your preference if possible. References: LA-UR-08-2300 (April 2008); LA UR 03 1987 (Revised 2/1/2008), LA CP 03 0245 (Revised 2/1/2008), LA-CP-07-1473 (April 2008), LA-UR-08-2216 (April 2008), VISED report (February, 2008), and other LANL reports. Fortran 90 and C; Windows PCs, Linux PC, Mac for MCNP5, and Sun for MCNPX [RSICC ID: C00740MNYCP02 (full package) and C00740MNYCP03 (executable-only package)].

CCC-747/TRIPOLI-4.4

The Commissariat à l'énergie atomique, CEA/SACLAY, Cedex, France, through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed this Monte Carlo code system. TRIPOLI-4 Version 4 solves the transport equation for neutral particles in general three-dimensional geometrical configurations. The main areas of application include but are not restricted to: radiation protection and shielding, nuclear criticality safety, fission and fusion reactor design, and nuclear instrumentation. In addition, it can simulate electron-photon cascade showers. It computes particle fluxes and currents and several related physical quantities such as reaction rates, dose rates, heating, energy deposition, effective multiplication factor, perturbation effects due to density, concentration or partial cross-section variations.

TRIPOLI-4 can use four different types of cross-sections representation:

- full pointwise representation of cross-sections produced by the NJOY processing code system (cross-section files are converted into the XDR portable binary format),
- full self-shielded, homogenized multigroup cross-sections produced by the CEA lattice code APOLLO-2,
- multigroup cross-sections with probability-tables representation, and
- ENDL cross sections.

The distribution includes GALILEE 0.2 processed libraries in a TRIPOLI-4 specific format based on JEFF-3.1, ENDF/B-VII.0, JENDL-3.3, and FENDL-2.1. Additional data libraries distributed with TRIPOLI-4 include:

- ENDFB6R4: neutron, gamma data library,
- ENDL: gamma data library,
- JEF2: neutron, gamma data library,
- Mott-Rutherford: electron, positron cross-section library, and
- Qfission: energy release during fission library.

TRIPOLI 4.4 runs under Linux or Unix workstations; this release does not run under Windows. No source files are included. Executables created by the author for each of the following systems are included in the package.

- Solaris-sparc (5.7, 5.8 and 5.9),
- linux-intel (2.4.xx, 2.6.xx),
- osf1 (V5.1), and
- aix (5.1 and 5.3).

Distribution is restricted; RSICC is authorized to distribute TRIPOLI 4.4 to OECD member countries for research and education purposes only.

The package is transmitted on two DVD discs which contain documentation, scripts, executable files, cross section data libraries and test cases. References: CEA-R-6169 (In English) (January 2008), CEA-R-6170 (In French) (January 2008), and CEA-R-6125 (November 2006) Fortran 77 and C; SUN, IBM, Digital, Compaq and Linux based PCs; (RSICC ID: C00747MNYWS00). (NEADB identifier is NEA-1716/06).

CCC-756/PENELOPE2008

The Facultat de Fisica (ECM) at the Universitat de Barcelona and Universitat Politècnica de Catalunya de Barcelona, Spain, through the Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed PENELOPE2008. This code system performs Monte Carlo simulation of coupled electron-photon transport in arbitrary materials for a wide energy range, from a few hundred eV to about 1GeV. Photon transport is simulated by means of the standard, detailed simulation scheme. Electron and positron histories are generated on the basis of a mixed procedure, which combines detailed simulation of hard events with condensed simulation of soft interactions. A geometry package called PENGEOM permits the generation of random electron-photon showers in material systems consisting of homogeneous bodies limited by quadric surfaces, i.e. planes, spheres, cylinders, etc. Many new features and enhancements are included in this version which replaces PENELOPE2006 in the RSICC code collection.

PENELOPE 2008 runs on Pentium personal computers under either Windows XP or Linux and is expected to run on most Unix systems. A Fortran compiler is required on all computers as the user must supply the main program for his particular problem. Editing the included PENMAIN generally allows users to define their source characteristics without writing a single line of source code. The authors recommend GNU Fortran (gfortran). Some other compilers which have been used include Compaq Visual Fortran 6.6 and Intel. To plot the results, a plotting program is needed. GNUPLOT is recommended. Some graphic tools that run under MS-Windows 9x/NT/2000/XP/VISTA are included. GVIEW2D, GVIEW3D and GVIEWC are geometry viewers/debuggers that display 2- or 3-dimensional images of the geometry. SHOWER displays showers produced by primary particles of a given kind and energy in a slab. Windows executables are included for these viewers, but source codes are not provided.

The package is transmitted on a CD which includes the documents in PDF files, PENELOPE source codes, graphic tools, data files and example problems. The code system is distributed in a self-extracting Windows file. Reference: Workshop Proceedings Barcelona, Spain, OECD ISBN 978-92-64-966099-1 (June/July 2009). Fortran; PC under Windows or Linux (RSICC ID: C00756PC58600).

DLC-237/SINBAD 2009.02

OECD Nuclear Energy Agency Data Bank, Issy les-Moulineaux, France, 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. This release of SINBAD includes a large set of 44 fission shielding benchmarks, 29 fusion neutronics shielding benchmarks, and 23 accelerator shielding benchmarks. The experimental results are distributed in tabular ASCII form that can easily be exported to different computer environments for further use.

An international effort between the OECD Nuclear Energy Agency (NEA) and ORNL Radiation Safety Information Computational Center (RSICC) and invaluable contributions from many international nuclear data experts to the compilation, validation and review of the data combined to create this database. SINBAD is an excellent data source for users who require the quality assurance necessary in developing cross-section libraries or radiation transport codes. The future needs of the scientific community are best served by the electronic database format of SINBAD and its user-friendly interface, combined with its data accuracy and integrity. It includes data from nuclear reactor shielding, fusion blankets, and accelerator shielding experiments.

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 by SINBAD. Benchmark information is included for (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 each benchmark. 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 experimental results are distributed in tabular ASCII form that can easily be exported to different computer environments for further use. Reference: SINBADIS.htm. HTML, PDF and ASCII text files; PC, UNIX Workstations, MAC (RSICC ID: D00237MNYCP00).

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

Introductory and Advanced MCNP Visual Editor Training

Date 2009	Class	Location
July 20–24	Advanced Visual Editor	Albuquerque, NM
August 10–14	Introduction to MCNP using the MCNP/MCNPX Visual Editor	Anaheim, CA
October 26–30	Introduction to MCNP using the MCNP/MCNPX Visual Editor	Reno, 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 classes combine teaching on MCNP physics, along with instructions on how to use the Visual Editor. The advanced class assumes the user has experience using MCNP or MCNPX and focuses on Visual Editor topics. Computer demonstrations and exercises will focus on creating and interrogating input files with the Visual Editor. Advanced visualization work using MCNP will also be demonstrated. Both the introductory and advanced classes will be taught on Pentium computers running Windows 2000. Attendees are encouraged to bring their own input files for viewing and modifying in the visual editor. The course description and registration information can be found at http://www.mcnpvised.com/index.html.

SCALE Training Courses at ORNL

Date	Title	Description
October 19-23, 2009	**KENO-VI/MAVRIC**	KENO-VI: Criticality safety using the generalized geometry version of KENO MAVRIC: 3-D automated variance reduction for deep-penetration and complex shielding problems
October 26-30, 2009	**SCALE Lattice Physics and Depletion Course (ORIGEN-ARP/TRITON)**	ORIGEN-ARP: Isotopic depletion/decay and source terms using latest version of ORIGEN TRITON: 2-D reactor physics analysis using NEWT
November 3-6, 2009	**TSUNAMI Sensitivity/ Uncertainty Tools Course** (Experienced KENO users only)	1-D and 3-D sensitivity/uncertainty analysis using XSDRNPM and KENO V.a
November 9-13, 2009	**KENO V.a**	Criticality safety with the most widely used version of KENO

The registration fee is $2300 for each course. A discount of $200 per each additional week will be applied for registration to multiple courses. Class size is limited and course 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 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://www.ornl.gov/sci/scale/course_description.htm.

Electron-Photon Transport Modeling with PENELOPE-2008—Physics, Code Structure and Operation

An advanced training course/workshop entitled "Electron-Photon Transport Modeling with PENELOPE-2008 - Physics, Code Structure and Operation," is scheduled for July 6–9, 2009, at the Facultat de Fisica (ECM), Universitat de Barcelona, Diagonal 647, 08028 Barcelona, Spain.

You can find links to the syllabus of the course at http://www.nea.fr/html/dbprog/PENELOPE-syllabus2009.html. The specific form for course registration can be found at http://www.nea.fr/html/dbprog/penelope2008-reg.html. The deadline for registration is May 31, 2009. The official reference to PENELOPE-2008 is: http://www.nea.fr/html/dbprog/peneloperef.html.

Radiation Shielding for Medical Installations

The Training Course on Radiation Shielding for Medical Installations (RSMI 2009) will be held July 19–21, 2009, in Ericeira, Portugal. This education and training initiative on shielding methodologies for medical imaging and therapy facilities will provide you with:

- The latest information on medical radiation shielding design from a rare assembly of shielding experts and professionals who will be available to provide their special insights into this field, including practical design tips which cannot be found in any formal reports, and observed common shielding mistakes (some very serious) to be avoided. Included will be diagnostic x-ray imaging (conventional, interventional, CT, digital, etc.), nuclear medicine (including PET/CT), and the latest in radiotherapy shielding design (including IMRT, Cyberknife, Tomotherapy, neutrons, and unique solutions to space limitations). These experts include the authors of the latest NCRP shielding design recommendations from the USA (NCRP reports #147 and #151 on Medical X-ray Imaging and Radiation Therapy Shielding Design), as well as the authors of current European shielding guideline documents as described in the list of speakers on this site, http://www.rsmi2009.itn.pt/index.html.
- Assess trends and needs in view of the rapid technological evolution in CT, PET, radiation therapy (IMRT, IGRT, and other emerging and advanced techniques) as well as in other medical applications of ionizing radiation.

A set of satellite meetings on specific radiation protection, radiation dosimetry and radiation shielding topics, as well as tutorials on topics of interest to the participants, will be organized around the meeting.

If you are a shielding designer (expert or otherwise), or an aspiring designer, this conference is one "not to be missed." Even the shielding experts on the program are looking forward to this rare opportunity to exchange ideas and shielding philosophies with each other, as well as with the attendees. Information about the meeting may be obtained from the website, http://www.rsmi2009.itn.pt/index.html, or by contacting rsmi2009@itn.pt (phone (+351) 21-994 6292 or fax (+351) 21-994 1995).

Bob Dixon and Pedro Vaz
on behalf of the organizers and lecturers

Short Courses on Monte Carlo Analysis and Nuclear Criticality Safety

The Department of Nuclear Engineering at the University of Tennessee-Knoxville is offering short courses for radiation transport and criticality safety specialists during Tennessee Industries Week (TIW-44), August 10–14, 2009.

Radiological Assessment—This three-day course is based on selected topics from University of Tennessee courses on Radiological Assessment, Internal Dosimetry, and Uncertainty Analysis, and is intended for personnel working in areas associated with radiological assessment or internal dosimetry. Individuals professionally established in a particular area would benefit from exposure to a number of important topics, and those who are new to this area of science would benefit from the integration of a variety of important and relevant topics.

Fundamentals of nuclear physics, health physics, and internal dosimetry will be presented for review and to establish a common framework for subsequent presentations. Information presented on radionuclide transport and pathways analysis will include basic theory and solutions to several tutorial examples. Descriptions of several computer programs used for internal dosimetry and for radiological assessment will be presented, and details from several studies will be used as examples.

Information on external dosimetry generally follows material in the cited text. Materials presented on internal dosimetry will go beyond the reference text and will involve computational methods as well as practical examples. Methods for analyzing bioassay program data will be carefully reviewed and case studies will be discussed.

Nuclear Criticality Safety—Engineers, scientists, and technical managers who wish to increase their knowledge and understanding of nuclear criticality safety will be interested in this intensive one-week short course. The topics covered in the course are based primarily on the experience of the five instructors which totals over 120 years of nuclear criticality safety related experience. Such a wealth of experience needs to be shared with the criticality safety community including both new professionals in the field as well as experienced professionals.

The course topics include illustrative applications using the SCALE system developed at Oak Ridge National Laboratory with emphasis on the Monte Carlo code KENO, standards, regulations, review of accidents, hand calculation methods, subcritical limits, code validation techniques, accident response planning and management, and transient excursion modeling.

Monte Carlo Analysis—Monte Carlo is often the method of choice to solve complex problems in nuclear criticality safety and radiation shielding. To use Monte Carlo effectively, the analyst must understand the theoretical and computational fundamentals of the method, as well as the computational options available in particular computer tools. Also, it is sometimes advantageous to create new special-purpose Monte Carlo programs to solve particular problems rather than use an existing program. The Monte Carlo course runs for 5 days and has the following objectives:

1. To familiarize the student with the basic concepts of the Monte Carlo method in a general (non-transport) context to add to the students' ability to apply method to a variety of problems in mathematics, physics, and engineering.
2. To familiarize the student with the particular mathematical techniques and probability distributions that are used in analog Monte Carlo solutions of neutral-particle radiation transport problems. This is reinforced through an in-class exercise that develops an analog Monte Carlo code solution to a simple slab transport problem.

3. To familiarize the student with the mathematical basis for variance reduction techniques: non-analog mathematical methods that increase the efficiency of the calculation without biasing the solution. This is reinforced with a continuation of the in-class exercise to incorporate variance reduction techniques.

4. To apply the lessons learned to the most commonly used Monte Carlo code, MCNP. In a series of hands-on exercises with the PC version of MCNP, the novice user will learn to set up simple problems, and all levels of users will gain experience in using the variance reduction techniques offered by the MCNP code.

Special attention will be given to the understanding of the use of adjoint calculations in transport analyses, both as an alternate means of obtaining system responses and as importance functions for accelerating Monte Carlo forward solutions. Advantages and disadvantages of the adjoint mode versus the forward mode of analysis will be described. In addition, the relationship of Monte Carlo methods to deterministic methods will be described, including strategies involving the hybrid use of both methods to more efficiently solve certain transport problems.

Case Studies in Neutron Transport Theory—The study of the neutron transport equation is a delicate blend of theoretical mathematics, numerical methods and computational strategies describing the interaction of neutrons and nuclei. Not only do we gain physical insight from the solution to the transport equation, but we also create new mathematics and numerical methods for the solution of equations. This short course is offered to those individuals who want to experience the elegance of analytical transport theory and how this theory can impact the development of transport methods for application.

This course will concentrate on transforming theoretical solution representations of the neutron transport equation into numerically useable forms. The course will study reactor physics from neutron slowing down to multidimensional multigroup theory and criticality. Though the backdrop is reactor physics, our emphasis will be on analytical manipulations of the transport equation and the numerical realization of its solutions.

The deadline for registration is **July 24, 2009**. Classes are limited in size and will be filled on a first-come, first-serve basis. For additional information on these and other courses offered during TIW-44, contact Kristin England at the University of Tennessee, phone (865) 974-5048, email kengland@utk.edu, url http://www.engr.utk.edu/nuclear/TIW.html.

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

DATES: August 17-21, 2009
FEE: $1,800 per person
PLACE: The MESA Complex, Room 130, University of New Mexico-Los Alamos Campus

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, and electrons, 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 a personal computer. 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 (2005-00-003), and 4.5 CM points by the American Board of Industrial Hygiene. The course is offered by the Health Physics Measurements Group at the Los Alamos National Laboratory and is co-sponsored by RSICC.

Registration is available online at: http://drambuie.lanl.gov/~esh4/mcnp.htm. Non-US citizens need to register 60 days in advance to allow for necessary visitor approvals. Make checks payable to the University of California (checks must be in U.S. dollars on a U.S. bank) and mail together with name, address, and phone number to:

David Seagraves, Mail Stop J573, Los Alamos National Laboratory, Group RP-2, MCNP Class, Los Alamos, NM 87545.

Inquiries regarding registration and class space availability 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 Dick Olsher, 505-667-3364; e-mail: dick@lanl.gov.

Note that this course is separate from and independent of the courses being offered by the MCNP and MCNPX Teams at LANL

OECD-NEA Workshop on Future Criticality Safety Research Needs

The Organisation for Economic Cooperation and Development (OECD) Nuclear Energy Agency (NEA), U.S. DOE Nuclear Criticality Safety Program (NCSP), Idaho National Laboratory (INL), and Idaho State University (ISU) are joining in the sponsorship and organization of the OECD-NEA Workshop on Future Criticality Safety Research Needs which will be held September 21–22, 2009, at Idaho State University, Pocatello, Idaho. The primary purpose of the workshop is to help the international nuclear criticality safety community identify future criticality safety research needs so it will be better prepared to respond to those needs as future nuclear energy systems are developed. All sessions will be conducted by leading international nuclear experts. You may contact Lori Braase, 208-526-7763, lori.braase@inl.gov, for details and visit the website at https://secure.inl.gov/oecdneaws09.

NUCLEAR FUEL CYCLE 2009

An international training event on the nuclear fuel cycle in France will be held October 12–23, 2009, in Saclay, France. Comprehensive information and in-depth knowledge on the industrial operations related to the nuclear fuel cycle in France, from the extraction of the uranium ore to the reprocessing of spent fuel, as well as the management of waste produced during the different stages of the fuel cycle, will be presented through lectures and technical visits. The registration deadline is September 7. For further information or to obtain a registration form, please contact the organizer, Nadia Nowacki at nadia.nowacki@cea.fr. The Technical Officer is Lionel Bion, ENEN – INSTN, CEA/Saclay, F-91191 Gif-sur-Yvette Cedex, FRANCE (email lionel.bion@cea.fr, phone +33 1 69 08 30 92, fax +33 1 69 08 77 82). The url is http://www.enen-assoc.org.

3D S.UN.COP 2009

The University of Pisa (UNIPI), the Royal Institute of Technology (KTH), the University of Zagreb (FER), and the School of Industrial Engineering of Barcelona (ETSEIB) are jointly organizing the Seminar and Training to transfer competence, knowledge and experience in the area of **S**caling, **Un**certainty and 3D **Co**u**p**led Code Calculations (3D S.UN.COP 2009).

The Seminar will take place from October 12–30, 2009, Royal Institute of Technology (KTH) in Stockholm, Sweden. The deadline for registration is June 5, 2009. The seminar is divided into three parts and participants may choose to attend a one-, two- or three-week course depending on their interest in the following topics:

1) Fundamental Theoretical Aspects of the Methodologies;

2) Industrial Applications (e.g. AECL, AREVA, Westinghouse, GE) Coupling Methodologies and Code Hands-on Training (e.g. RELAP, CATHARE, PARCS, TRACE, Star-CD) and Special Sessions devoted to Computational Fluid Dymanics and Severe Accident Analysis; BWR Safety Analysis and, WWER, and CANDU Technologies;

3) Code Hands-on Training for Transient Analysis in ITF.

Further details are provided will be available soon at: http://dimnp.ing.unipi.it/3dsuncop.

MCTP2009 Second European Workshop on Monte Carlo Treatment Planning

The MCTP2009 Second European Workshop on Monte Carlo Treatment Planning will be held in Cardiff (UK) from October 19–21, 2009. The introduction into clinical practice of more accurate algorithms for patient dose calculation is of paramount importance and algorithms based on the Monte Carlo method are widely regarded as the most accurate available in radiotherapy. MC techniques are also ideal research and development tools increasingly used in emerging areas including, among others, functional imaging, and molecular targeted radiotherapy. The number of publications reporting the use of MC in radiotherapy treatment planning (MCTP) has indeed increased exponentially in the last 25 years. The workshop is supported by the European Work Group on Monte Carlo Treatment Planning, Velindre NHS Trust, Cardiff University, and Cancer Research Wales.

The aim of MCTP2009 is to create a synergistic environment to maximize the integration of research, development and clinical implementation of MC technology in medical radiation physics devoted to the diagnosis and treatment of cancer. Check the workshop website, http://www.mctp2009.org/, often for current information. For information that may not be available on the website contact Campus Services Division, Cardiff University, Southgate House, PO Box 533, Cardiff CF14 3XZ (phone + 44 (0)29 2087 5508, fax + 44 (0)29 2087 4990, email workshop@mctp2009.org).

CONFERENCES

ICENES-2009

The 14th International Conference on Emerging Nuclear Energy Systems (ICENES-2009) will be held June 29–July 3, 2009, in Ericeira, Portugal. The main objective of the ICENES series is to provide an international forum for scientists, engineers, industry leaders, policy makers, decision makers and young professionals to present and discuss various advanced, innovative and non-conventional nuclear energy production systems. A new dimension of ICENES2009 will extend the forum to include innovative non-nuclear technologies, such as hydrogen energy, solar energy, deep space exploration, etc. A special new field in ICENES 2009 will be the discussion and proposals of new tools for a more efficient way to organize R&D in nuclear energy and related fields, and to boost international cooperation. ICENES2009 takes place in a special moment, at the dawn of a new era for nuclear energy, marked by the nuclear energy "renaissance" and following a major step forward towards the development and implementation of nuclear fusion energy, with the recent decision to build ITER. For more information contact the Conference Secretariat at icenes2009@itn.pt or fax: 351 21 994 1995. Check the website, http://www.itn.pt/icenes2009/, frequently for new and updated information.

50th INMM Annual Meeting

The Institute of Nuclear Materials Management (INMM) will hold its 50th Annual Meeting July 12–16, 2009, in Tucson, Arizona. The Institute is a professional membership organization that promotes research and development in new concepts, approaches, techniques and equipment in the field of nuclear materials management (i.e., international safeguards, materials control and accountability, physical protection, nonproliferation and arms control, packaging and transportation, and waste management). Information regarding the conference can be found at http://www.inmm.org/meetings/index.cfm. You may also contact INMM, 111 Deer Lake Road, Suite 100, Deerfield, IL 60015 (email inmm@inmm.org, phone 847-480-9573, fax: 847-480-9282).

6th International Symposium on Release of Radioactive Materials from Regulatory Requirements

The 6th International Symposium on Release of Radioactive Materials from Regulatory Requirements will be held September 1–23, 2009, in Wiesbaden (near Frankfurt) Germany. It will focus on provisions for exemption and clearance. Both exemption and clearance have in common very low concentrations and very low total amounts of radioactivity associated with materials and equipment. These very low levels of radioactivity pose very small risks. As a consequence, regulators are faced with difficult decisions on how to make defensible regulations on how much radioactivity can be released to the general commerce and to the environment and still provide an adequate level of protection.

The scope of this symposium includes nearly all aspects of regulation of very low levels of radioactivity in seven topical sessions:

* Concepts
* Regulatory Framework
* Technical Aspects (including Standardization)
* Administrative Procedures
* Naturally Occurring Radioactive Materials (NORM)
* Public Acceptance
* Exemption and Orphan Radioactive Materials

Participants will present multi-national experiences, approaches and regulations as posters and oral presentations. The language of the Symposium is English. The conference organizer is TÜV NORD SysTec, Germany with support from the European Commission, OECD/NEA, IAEA, and the German Swiss Radiation Protection Association. Current information is posted at the website, http://www.tuev-nord.com/english/clearance.asp.

GLOBAL 2009

GLOBAL 2009 will be held in Paris, September 6–11, 2009. It will be the 9th in the series of world meetings held bi-annually on the nuclear fuel cycle (NFC) that began in 1993 in Seattle. The series has since been established as an international forum for experts to provide an overall review of the status and new trends of research applications and policies related to the nuclear fuel cycle (NFC). GLOBAL 2009 will highlight the technical challenges and successes involved in closing the NFC and recycling long lived nuclear waste. It will also be an excellent occasion to review and discuss social and regulatory aspects as well as national plans and international policies affecting the future of nuclear energy. This meeting will provide a forum for the exchange of the newest ideas and developments related to the initiatives establishing an acceptable, reliable and universal international non proliferation regime.

The technical program will consist of invited plenary and focused in-depth technical sessions organized along specific areas of technical interests listed below.

- Front end of the fuel cycle
- Current spent nuclear fuel recycling
- Waste management technologies and strategies
- Concepts for transportation and interim storage of spent fuels and conditioned waste
- Nuclear waste repository developments
- Advanced technologies for fuel recycling including partitioning of specific radionuclides
- Advances in reactor cores design and in-core fuel management
- Transmutation systems for long lived radionuclides
- Developments in nuclear non proliferation technology, policy and implementation
- Sustainable fuel cycle options and nuclear material management
- Dismantling, decommissioning and material management
- Crosscutting issues, policies and programs

The contact for the conference is Sylvie Delaplace, SFEN, 5 rue des Morillons, F75015 PARIS (phone +33-(0)1-53-58-32-16, fax +33-(0)1-53-58-32-11, email global2009@sfen.fr). Current news will be posted at https://www.sfen.fr/index.php/plain_site/global_2009/general_scope_overview.

NCSD 2009

NCSD 2009, the topical meeting of the ANS Nuclear Criticality Safety Division, will be held September 13–17, 2009, in Richland, Washington. The theme for the meeting is *Realism, Robustness, and the Nuclear Renaissance*. The program will include work that falls within the following topics:

- Realism and Criticality Safety—Input data, Cross sections, Modeling, Accident scenarios
- Applications and Realism—Benchmark selection, Tsunami and other methods, Sub-critical Measurements, Burn-up credit applications
- Robustness in controls—Development of criticality controls, Requirements documents (DOE, NRC), Standards role, Implementation of criticality controls, Examples, International experience
- Ready for the Renaissance—Status and scope of GNEP, Criticality safety needs for the fuel cycle (enrichment, fabrication, transportation, storage and disposal), Harvesting existing benchmark data (fuel cycle and nuclear data), In-situ measurements, Criticality safety and engineering design, Use of computers in operations controls, People needs, training and education

The meeting website is http://www.ncsd2009.com/.

Nuclear Energy for New Europe 2009

Nuclear Energy for New Europe 2009 will be held September 14–17, 2009, in Bled, Slovenia. The theme of the conference is "Research and Education for Sustainable Nuclear Power." The primary objective of the meeting is to foster international cooperation amongst professionals active in nuclear research and educational institutions, nuclear vendors, utilities and regulatory bodies. Relevant information can be found at the conference website, http://www.nss.si/bled2009/. The conference contact is BLED2009, Nuclear Society of Slovenia, Jamova cesta 39, SI-1000 Ljubljana, Slovenia (email bled2009@ijs.si, phone +386 1 588 53 31, fax +386 1 588 53 77) url www.nss.si/bled2009.

16th Meeting on Reactor Physics and Thermal Hydraulics (XVI ENFIR)

The 16th Meeting on Nuclear Reactor Physics and Thermal Hydraulics (XVI ENFIR), which will meet in Rio de Janeiro, Brazil, September 27–October 2, 2009, will provide an international forum to present and discuss recent research and development in the issues related to innovations in nuclear technology for a sustainable future.

The scientific program will consist of oral and poster technical sessions and round table discussions on nuclear renaissance born of environmental urgency. Topics include:

- Nuclear Reactor Physics
- Nuclear Reactor Thermal Hydraulics
- Deterministic Reactor Safety Analysis
- Probabilistic Reactor Safety Analysis
- Radiation Shielding
- Fuel Cycle Management and Services
- Nuclear Reactor Materials
- Nuclear Reactor Fuel Fabrication and Design
- Nuclear Reactor Instrumentation and Control
- Nuclear Reactor Licensing and Regulation
- Nuclear Power Plant Viability, Design, Construction and Operation
- Advanced Nuclear Reactors
- Structural Mechanics
- System and Equipment Design
- Computational Fluid Dynamics
- Applied Mathematics and Computation
- Artificial Intelligence
- Man Machine Interface
- Long-lived Radioactive Waste Management
- Optimization Methods

Further details are available by contacting Professor Ricardo Barros, Polytechnic Institut (IPRJ), University of State of Rio de Janeiro (UERJ), Nova Friburgo, RJ 28630-050 BRAZIL, (email inac@inac2009.com.br, phone + 55 21 99969271 and 22 99774643, fax +55 22 25288536), The conference website is http://www.inac2009.com.br/enfir.php.

Nuclear Reactions on Nucleons and Nuclei

The International Conference on Nuclear Reactions on Nucleons and Nuclei will be held October 5–9, 2009, in Messina, Italy. The Conference will focus on the new projects and new lines of research in the field of the nuclear reactions that will be developed in the main laboratories and research centers during the next 10–15 years. Therefore, the conference is open to contributions on various kinds of nuclear reactions (also of astrophysical interest) between nuclei, and between particles and nucleons.

The conference program will consist of invited talks, oral and poster presentations of contributed papers with the main emphasis on the discussion (from experimental and theoretical points of view) of processes leading to heavy- and light-reaction products (with or without compound nucleus formation), synthesis of superheavy nuclei, investigations of baryonic resonances by hadronic or electromagnetic interactions and their decay with the production of scalar and vector mesons. The conference language will be English. Participants are encouraged to present their recent work with a one-page abstract in A4 format submitted before **May 31, 2009**. Submit the abstracts electronically by e-mail, sending a postscript file for the text to conf2009@nucleo.unime.it. Participants will receive information on the acceptance of their contribution for oral or poster presentation before July 10, 2009.

Young researchers (up to about 40 years old) are strongly encouraged to participate with scientific contributions. Invited talks and oral presentation of all participants will be published in the Conference Proceedings. All correspondence concerning the Conference should be sent to conf2009@nucleo.unime.it. Information related to the conference will be posted to http://nucleo.unime.it/conf2009/committ.html.

NEUDOS-11

The 11th Neutron and Ion Dosimetry Symposium (NEUDOS-11), hosted by the Laboratory for Accelerator-Based Sciences (iThemba LABS), will be held October 12–16, 2009, in Capetown, South Africa. The Symposium is being held under the auspices of the European Dosimetry Group (EURADOS). All previous Symposia in the series, which began in 1972, have been held in Western Europe.

A full and diverse scientific program will be offered which will encompass the complete range of neutron and ion dosimetry topics. In addition, both oral and poster "young investigators" sessions will be held. At these sessions presentations on any topic related to the dosimetry of any radiation modality (i.e., not limited to neutron or ion dosimetry) can be presented.

Check the website, http://www.neudos11.tlabs.ac.za, frequently for new information. You may also contact Dr. D. Jones / Ms. N. Haasbroek, iThemba LABS, P O Box 722, Somerset West 7129, South Africa (phone +27 21 843 1259 / 1032, fax +27 21 843 3525, email Neudos11@tlabs.ac.za).

Specific Applications of Research Reactors: Provision of Nuclear Data

The IAEA in collaboration with NEA/OECD is sponsoring a Technical Meeting on Specific Applications of Research Reactors: Provision of Nuclear Data, October 12–16, 2009, in Vienna. Research reactors (RRs) play a key role in the development of the peaceful uses of atomic energy. The main applications of most RRs continue to be radioisotope production, neutron beam applications, silicon doping and material irradiation for nuclear systems, as well as teaching and training for human resource development. On the other hand, the last International Conference on Nuclear Data for Science and Technology, held in Nice (France), April 22–27, 2007, placed special emphasis on atomic and nuclear data needs for basic nuclear physics research, innovative power reactors and fuel cycles (e.g. dedicated reactors for nuclear waste transmutation, accelerator driven systems, Th-U fuel cycle, etc.), as well as efforts to realize fusion reactors (e.g. ITER) and to test materials needed for such facilities, medical applications including radioisotope production, computer simulations of radiation doses to patients and advanced cancer therapies, and analytical techniques adopted for cultural heritage diagnostics and materials composition analysis. RRs occupy an important place in these areas of study and application, along with dedicated accelerator-based neutron sources. For example, some installations like Lohengrin Fission Fragment Separator at Institut Laue-Langevin (ILL) in Grenoble, France, remains a unique place to study fission fragments and their properties from thermal neutron induced fission. Equally, one has to mention the importance of integral measurements performed at RRs to validate evaluated nuclear data libraries used by neutron transport and material evolution codes. In this respect, a new initiative of the NEA Working Party on Evaluation Cooperation has been launched in order to develop methods that combine integral experimental data from RRs and various differential data to examine targeted accuracies for different reactions, isotopes and energy ranges as long as they might affect the integral neutronic parameters used for the design of new nuclear reactors. Finally, some cross-section measurements for short-lived and on-line produced radioactive target nuclei are possible only at RRs because of the high neutron fluxes available. The TM website, http://www-naweb.iaea.org/napc/physics/meetings/TM38228.html, is the optimal source for information on all aspects of the meeting. You may also contact the Secretariat, Ms. Cecilia Devia Torres, NAPC Physics Section, International Atomic Energy Agency,

Office A2307, Wagramer Strasse 5, P.O. Box 100, A1400 Vienna, Austria (email c.devia-torres@iaea.org, phone +43 1 2600-6393, fax +43 1 26007-21754).

2010 Topical in Radiation Protection and Shielding (RPSD), Isotopes & Radiation (IRD), and Biology and Medicine (BMD)

The Radiation Protection and Shielding Division, the Isotopes and Radiation Division, and the Biology and Medicine Division of ANS are joining to organize the 2010 Topical in Radiation Protection and Shielding (RPSD), Isotopes & Radiation (IRD), and Biology and Medicine (BMD), April 19–23, 2010, in Las Vegas, Nevada. Extended abstracts may be submitted to the technical program chair at Robert.Hayes@WIPP.ws by October 10, 2009, for topics which fall under the following session tracks:

- Medical Physics Track
- Radiation Detection and Measurement Track
- Radiation Shielding Track
- Radiation Protection Track
- Radiation Transport Calculations Track

Check the conference website, http://local.ans.org/nv/jtm2010.html, often for up-to-date information.

ND2010

The 2010 International Conference on Nuclear Data for Science and Technology will be held April 26–30, 2010, at Jeju Island, South Korea. The meeting is organized by the Korean Nuclear Society and Korea Atomic Energy Research Institute under the auspices of the OECD Nuclear Energy Agency. The conference is the 11th in a series held every three years.

The purpose of these conferences is to bring together scientists and engineers involved in the production or use of nuclear data for various applications. The ND2010 conference will cover measurements, theoretical model developments, evaluation, processing, validation and dissemination activities. The scope of the conference includes the following fields of application: fission and fusion energy, accelerator technology, dosimetry and shielding, astrophysics and cosmology, safeguards and security, space, medicine, environment. The corresponding needs for improved nuclear data will be addressed.

A call for papers has been announced for abstracts on the following topics:

- Nuclear structure and decay data
- Experimental facilities and detection techniques
- Nuclear data measurements and analysis
- Nuclear theories, models and data evaluation
- Standards
- Evaluated nuclear data libraries and processing
- Validation, benchmarking of evaluated data
- Integral experiments
- Uncertainty quantification and covariance matrix
- Data dissemination and international collaboration
- Fission energy applications
- Accelerator-related applications
- Fusion technology applications
- Dosimetry and shielding applications
- Safeguards and security
- Space, cosmic-ray applications, radiation effects on electronics
- Astrophysics and cosmology applications
- Medical and environmental applications

The deadline for submitting an abstract is **September 30, 2009**. Additional information about the conference may be obtained from Jonghwa Chang, jhchang@kaeri.re.kr or Young-Ouk Lee, yolee@kaeri.re.kr. The website is http://www.nd2010.org/.

PHYSOR 2010

The PHYSOR 2010 Topical Meeting will be held May 9–14, 2010, in Pittsburgh, Pennsylvania. The conference is sponsored by the American Nuclear Society (ANS) Reactor Physics Division and co-sponsored by the ANS Mathematics and Computation Division and the American Society of Mechanical Engineers (ASME). The conference theme, *Advances in Reactor Physics to Power the Nuclear Renaissance*, will provide a platform for international experts to exchange ideas and the latest developments in reactor physics, mechanical and material engineering and related nuclear technologies in light of the nuclear renaissance.

Full papers are to be submitted by **October 31, 2009,** for one of the following tracks:

- Nuclear Data
- Deterministic Transport Theory
- Monte Carlo Methods
- Reactor Analysis and Optimization
- Reactor Design and Operation
- Nuclear Fuel Cycle
- Nuclear Criticality Safety
- Transient and Safety Analysis
- Research Reactors and Spallation Sources
- Integral Experiments and Facilities for Safety Research
- Verification, Validation and Uncertainty Analysis
- Fuel, Materials and Mechanical Analysis
- Radiation Applications and Nuclear Safeguards
- Nuclear Power and Sustainable Development

Bookmark the website, www.physor2010.org, and check it periodically for news and updates. You may also contact the PHYSOR 2010 Technical Program Chair, Mohamed Ouisloumen, Westinghouse Electric Company, 4350 Northern Pike, Monroeville, PA 15146 (phone +1-412-374-2148, fax +1-412-374-4500, email info@physor2010.org).

2010 Joint Symposium on Supercomputing in Nuclear Applications + Monte-Carlo

Planning has begun for the combined Supercomputing in Nuclear Applications (SNA) and Monte-Carlo (MC) 2010 meeting. The Japan Atomic Energy Agency Center for Computational Science and e-systems and Nuclear Science and Engineering Directorate will host the meeting October 18–21, 2010, at the Hitotsubashi Memorial Hall in Tokyo.

Extended abstracts of 1500 words may be submitted by **September 2009** on the following topics:

- Computational Applications (Nuclear Reactor Analysis, Nuclear Safety, Thermal Hydraulics, Biomedicine, Nano-Science, Nuclear Fuel Cycle / Repository Performance, Materials, Fluid Dynamics, Plasma Physics/Fusion, Earthquake Proof, Structural Analysis, Shielding, Dosimetry, Radiation Effect, Space and Aviation, etc.)

- Computational Science (Applications, Methodology, Modeling, Code Development, Verification, Basic Data, etc.)
- Computer Science (Visualization, Tools, Hardware, Middleware, etc.)
- Information Technology and its Applications (CAE, Communications, etc.)
- Computational Methods using High Performance Computers (Parallel Computing, Grid Computing, Custom Computing, etc.)
- Theory for Monte Carlo Simulation
- Physics Modeling in Monte Carlo Simulation

Bookmark the website, http://sna2010.jaea.go.jp/, to keep abreast of developments for the meeting. You may also contact sna2010@ml.jaea.go.jp.

CALENDAR

June 2009

ICENES-2009, June 29–July 3, 2009, Ericeira, Portugal. Contact: Conference Secretariat at icenes2009@itn.pt (fax: 351 21 994 1995) url http://www.itn.pt/icenes2009/.

July 2009

50th INMM Annual Meeting, July 12–16, 2009, Tucson, Arizona. Contact: INMM, 111 Deer Lake Road, Suite 100, Deerfield, IL 60015 (email inmm@inmm.org, phone 847-480-9573, fax: 847-480-9282) url http://www.inmm.org.

Radiation Shielding in Medical Installations 2009 (RSM2009), July 19–21, 2009, Ericeira, Portugal. Contact: rsmi2009@itn.pt (phone (+351) 21-994 6292, fax (+351) 21-994 1995) url http://www.rsmi2009.itn.pt/contact.html.

September 2009

6th International Symposium on Release of Radioactive Materials from Regulatory Requirements, Sept. 1–23, 2009, Wiesbaden (near Frankfurt) Germany. Current information is posted at the website, http://www.tuev-nord.com/english/clearance.asp.

GLOBAL 2009, Sept. 6–11, 2009, Paris. Contact: Sylvie Delaplace, SFEN, 5 rue des Morillons, F75015 Paris (phone +33-(0)1-53-58-32-16, fax +33-(0)1-53-58-32-11, email global2009@sfen.fr) url https://www.sfen.fr/index.php/plain_site/global_2009/general_scope_overview.

NCSD 2009, Sept. 13–17, 2009, Richland, Washington. Contact: Technical Program Chairman, David Erickson at David_G_Erickson@rl.gov, url http://www.ncsd2009.com/.

Nuclear Energy for New Europe 2009, Sept. 14–17, 2009, Bled, Slovenia. Contact: BLED2009, Nuclear Society of Slovenia, Jamova cesta 39, SI-1000 Ljubljana, Slovenia (email bled2009@ijs.si, phone +386 1 588 53 31, fax +386 1 588 53 77) url www.nss.si/bled2009.

Release of Radioactive Materials from Regulatory Requirements: Provisions for Exemption and Clearance, 6th International Symposium, Sept. 21–23, 2009, Wiesbaden, Germany. Contact: TÜV NORD SysTec, Dr. J. Feinhals, Chairman of Executive Committee, Große Bahnstr. 31, D-22525 Hamburg, Germany (phone +49 40 8557-2253, fax +49 40 8557-2429, email jfeinhals@tuev-nord) url http://www.tuev-nord.com/english/clearance.asp.

16th Meeting on Nuclear Reactor Physics and Thermal Hydraulics (XVI ENFIR), Sept. 27–Oct. 2, 2009, Rio de Janeiro. Contact: Professor Ricardo Barros, Polythecnic Institut (IPRJ), University of State of Rio de Janeiro (UERJ), Nova Friburgo, RJ 28630-050 BRAZIL, (email inac@inac2009.com.br, phone + 55 21 99969271 and 22 99774643, fax +55 22 25288536), The conference website is http://www.inac2009.com.br/enfir.php.

October 2009

International Conference on Nuclear Reactions on Nucleons and Nuclei, Oct. 5–9, 2009, Messina, Italy. Contact: conf2009@nucleo.unime.it, url, http://nucleo.unime.it/conf2009/committ.html.

Computational Medical Physics Working Group (CMPWG III), Oct 7–9, 2009, Atlanta, GA. Contact: General Chair, Dr. Farzad Rahnema (Naz Consulting LLC) or Program Chair, Prof. Wayne Newhauser (University of Texas, MD Anderson Cancer Center).

NEUDOS-11, October 12–16, 2009, Capetown, South Africa. Contact: Dr. D. Jones / Ms. N. Haasbroek, iThemba LABS, P O Box 722, Somerset West 7129, South Africa (phone +27 21 843 1259 / 1032, fax +27 21 843 3525, email Neudos11@tlabs.ac.za) url http://www.neudos11.tlabs.ac.za.

Technical Meeting on Specific Applications of Research Reactors: Provision of Nuclear Data, October 12–16, 2009, in Vienna. Contact: Secretariat, Ms Cecilia Devia Torres, NAPC Physics Section, International Atomic Energy Agency, Office A2307, Wagramer Strasse 5, P.O. Box 100, A1400 Vienna, Austria (email c.devia-torres@iaea.org, phone +43 1 2600-6393, fax +43 1 26007-21754) url http://www-naweb.iaea.org/napc/physics/meetings/TM38228.html.

November 2009

2009 ANS Winter Meeting, Nov. 15–19, 2009, Washington, DC. Contact:

April 2010

2010 International Conference on Nuclear Data for Science and Technology, April 26–30, 2010, Jeju Island, South Korea. Contact: Jonghwa Chang, jhchang@kaeri.re.kr or Young-Ouk Lee, yolee@kaeri.re.kr. The website is http://www.nd2010.org/.

May 2010

PHYSOR 2010, May 9–14, 2010, Pittsburgh, PA. Contact: Mohamed Ouisloumen, Westinghouse Electric Company, 4350 Northern Pike, Monroeville, PA 15146 (phone +1-412-374-2148, fax +1-412-374-4500, email info@physor2010.org) url: www.physor2010.org.

October 2010

SNA2010 and MC2010, Oct. 18–21, 2010, Tokyo. Contact: sna2010@ml.jaea.go.jp, url http://sna2010.jaea.go.jp/.