Radiation Safety Information Computational Center

No. 564   **April 2012**

A man who dares to waste one hour of life has not discovered the value of life.—
Darwin

CHANGES TO THE RSICC CODE AND DATA COLLECTION

MIS-015/SULSA
Kossuth University, Debrecen, Hungary through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed the SULSA report. This report describes a new method for the neutron spectrum unfolding that has been developed, based on the improvement of the generalized least squares method. The new method allows an iterative treatment of the problem and the number of the independent statistical variables of the solution is less than the number of the measured reaction rates. The capabilities of the method are demonstrated by a numerical experiment and by the solution of a real problem.

> S. Sudar, "*A Solution for the Neutron Spectrum Unfolding Problem Without Using Input Spectrum,*" (INDC (HUN)-026/L (January 1989).

The package is transmitted in a PDF file which contains the report cited above. Reference: INDC (HUN)-026/L (January 1989). Many computers (M00015MNYCP00).

1

PSR-567/CADE

CADE was contributed by the Atomic Energy Research Establishment, Harwell, United Kingdom through the Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France. CADE calculates reaction cross sections for multi-particle emission. The total cross section for the emission of a particle at any particular stage is calculated together with the cross section as a function of energy.

The probability of leaving the final nucleus in a state of any particular energy is also obtained. The program performs compound nucleus calculations using the Weisskopf-Ewing formalism. Multi-particle emissions are treated as a series of stages in a cascade. The relevant compound nucleus absorption cross sections for particle channels are calculated with built-in optical model routines. The gamma-ray emission is described by the giant dipole resonance formalism.

The CADE package includes Fortran-IV source files, sample input and output files, and the referenced document. There are no executable files included in the package. FORTRAN-IV; IBM 3090; VAX 8810; Reference: AERE-R11515 (P00567MNYCP00).

CCC-729/SERA-1C1

Idaho National Laboratory, Idaho Falls, Idaho, contributed the Simulation Environment for Radiotherapy Applications (SERA) software. The program was developed for boron-neutron capture therapy (BNCT) patient treatment planning by researchers at the Idaho National Engineering and Environmental Laboratory (INEEL) and students and faculty at Montana State University (MSU) Computer Science Department.

SERA has a flexible, user-friendly GUI for all modules. It allows the use of CT, MRI, or PET image data. Unique neutron transport geometry provides rapid Monte Carlo solutions. Geometric modeling fidelity is equivalent to image resolution. Please note that all development of SERA has ceased; this update contains only source updates.   The patches included are:

- sera_dose_image.diff   Fixes bug in SeraDose involving image handling
- sera_dose_font_0.diff Fixes first problem with fonts in SeraDose
- struct_improve.diff   Improves code by removing some pointer indirection
- cfree_remove.diff   Removes uses of obsolete function cfree and using more standard header files
- rst_util.diff   Adds a very simple utility for dealing with rst files
- sera_dose_font.diff   Fixes second problem with fonts in SeraDose
- sera_mc_modern.diff Modernizes part of seraMC code
- random_number_mod.diff Makes it easier to switch seraMC random number generator (note that editing the source code is still required to switch the random number generator)

Either the patches can be applied, or the sera1src1c1.tar.gz can be used which has the patches and updated files already added.

SERA is a suite of command line or interactively launched software modules, including graphical, geometric reconstruction, and execution interface modules for developing BNCT treatment plans. The program allows the user to develop geometric models of the patient as derived from Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) images, perform dose computation for these geometric models, and display the computed doses on overlays of the original images as three

dimensional representations. A three-dimensional Monte Carlo radiation transport model, seraMC, developed at INL, is used to calculate the complex radiation fields present in BNCT treatment.

This release of SERA was developed to run under the RedHat Linux Operating System (version 7.2 or newer) or the Solaris™ Operating System (version 2.6 or newer) in the X Windows environment (X 11 R6), Motif 1.2 or equivalent, OpenGL. The packages required to install SERA are gcc and g77 compilers, OpenMotif development libraries, and OpenGL development libraries. Included in the distribution are the INL report in PDF format and Unix tar files which include source codes, source updates, scripts and test cases. Reference: INEEL/EXT-02-00698 (June 2002). C (70%) and Fortran (30%); PC running Linux and Sun running Solaris (C00729MNYCP01).

CCC-794/VIM_NC

Argonne National Laboratory contributed VIM_NC. These scripts enable the VIM color syntax for the nuclear codes: NJOY, DRAGON, PARTISN, TORT, MONK, and MCNP. The colors are optimized for white background terminal and no 'bold in different color' option in the ssh client.

The package includes the ASCII files: njoy.vim, dragon.vim, partisn.vim, tort.vim, monk.vim, mcnp.vim, filetype.vim, lexcol.vim, and vimrc. To use the files one has to copy the vimrc file into $HOME/.vimrc and then appropriately change the path into .vimrc and lexcol.vim files. PC, Linux, Mac (C00794PCX8600).

PSR-568/PICES

PICES was contributed by Oak Ridge National Laboratory through the Energy Science and Technology Software Center, Oak Ridge, Tennessee. PICES (Probabilistic Investigation of Capacity and Energy Shortages) was developed for estimating an electric utility's expected frequency and duration of capacity deficiencies on a daily on and off-peak basis. In addition to the system loss-of-load probability (LOLP) and loss-of-load expectation (LOLE) indices, PICES calculates the expected frequency and duration of system capacity deficiencies and the probability, expectation, and expected frequency and duration of a range of system reserve margin states. Based on the unit specific data supplied by the user, PICES utilizes recursive techniques to calculate exact-state probability and departure rates for the range of possible system capacity deficiency states.

The PICES package includes Fortran source, sample problem and the referenced document. There are no executable files included in the package. FORTRAN; IBM 3033; Reference: ORNL-5739(P00568I303300).

CCC-791/MCNPX-PoliMi

Polytechnic of Milan, Milano, Italy and the University of Michigan, Ann Arbor, MI, contributed a new version of MCNPX-PoliMi which is based on MCNPX 2.7.0 (distributed by RSICC as BCC-004 MCNP6_BETA2/MCNP5/MCNPX). The -PoliMi extension to MCNP and to MCNPX was developed to simulate fission events and the subsequent interactions as close as possible to the physical behavior. In particular, neutron and photon fission multiplicity distributions have been implemented, and neutron interaction and photon production are made correlated. At each collision, relevant information on neutron and gamma collisions is recorded, for example reaction type, target nucleus, energy deposited, time and position. A post-processing code, MPPost, has also been developed and can be tailored to model specific detector characteristics.

By taking advantage of the modifications in MCNPX-PoliMi, MPPost can provide an accurate simulation of the detector response for a wide variety of different detection scenarios.

These features make the -PoliMi extension to MCNP and to MCNPX a versatile tool to simulate particle interactions and detection processes.

New Capabilities in MCNPX-PoliMi ver. 2.0 (new compared to MCNP-PoliMi ver. 1.0)
- New built-in fission and other sources
  - New source 238Pu (spontaneous fission)
  - Improved photon emission in AmBe and AmLi (α,n) sources
  - Definition of D-T and D-D sources
  - Definition of PuO2 (α,n) sources
  - It is now possible to select a larger mix of sources present at the same time (both interrogating and self-sources) and multiple isotropic sources.
  - The user can define a neutron source with spectra depending on multiplicity.
- Improved modeling of the physics of fission
  - Physics of fission upgraded with nuclear models for fission neutron anisotropy; neutron energy spectra dependent on multiplicity.
  - The neutron direction of emission can be specified as both isotropic and anisotropic with respect to the direction of the light fission fragment.
- Physics of detection: write to file a detailed list of all collisions occurring in detector cells.
  - Collision output file has been expanded to include the energy of the incident particle. It is possible to write it as unformatted binary file.
  - Nucleus recoil can be accounted for.
- New output files are available; among them:
  - A file listing the T_0 of each history (TOF for distributed source)
  - A file listing the sampled fission multiplicities and generations.
- Photonuclear physics capability
  - Fission neutron and gamma multiplicity data are applied to photo fission.
  - Photonuclear reaction information can be written as a source file for subsequent use as the input source for future runs.
- The collision output file now supports repeated lattice structure cell numbers.
- Implemented the photon emission following neutron capture by cadmium
- All MCNPX 2.7.0 capabilities
- Available on request: radioactive isotope emission specification by a code

MCNPX-PoliMi is distributed on CD ROM and includes the referenced documents and Windows executables.   Patch files are also included with modifications to be made to the MCNPX 2.7 source code. Fortran and C compilers are required for Linux and MacOS users. There are no source files included with this package. Fortran 90, C Shell Scripts (C00791MNYCP00).

SCIENCE EDUCATION PROGRAMS AT OAK RIDGE NATIONAL LABORATORY

Looking for an internship or post graduate opportunity at Oak Ridge National Laboratory? The Science Education Programs at Oak Ridge National Laboratory provide paid opportunities for undergraduates, grad students, recent graduates, and faculty to participate in high-quality research alongside world-class scientists to solve real-world problems. Opportunities are available for internships and co-ops, research appointments, and sabbaticals.

You can access all available opportunities through the website at http://www.orau.org/ornl. The Talent and Opportunity System allows you to create a profile, and then answer only 5 or 6 questions for each program or job posting for which you apply.

All levels of participants from undergraduates to faculty are encouraged to publish research papers with their mentors. Please browse through the Research Profiles on the different participants and their research experiences at the right hand side of the bottom of the web site listed above. Also, there is a video of research participants at ORNL sharing their thoughts on how access to world-class research facilities and staff have catapulted their careers in science and technology. You can find it on YouTube at http://ow.ly/2EQLz.

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 bennas@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.

2012 Classes for Visual Editor		
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

2012 Classes for Visual Editor		
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 30–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	Introduction to MCNP/MCNPX using the MCNPX Visual Editor	Myrtle Beach, SC
September 17–21	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.

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

MCNPX Classes 2012		
May 21–25	MCNP/X Intermediate Workshop	Honolulu, HI
July 2–6	MCNP/X Intermediate Workshop	Barcelona, Spain
September 24–28	MCNP/X Intermediate Workshop	Washington, DC

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

Spring 2012 Training Courses

Date	Title	Location	Registration Fee
April 23–25	**SCALE/ORIGEN Activation and Decay Calculations Course** *Isotopic depletion/decay and source term characterization using ORIGEN/ORIGEN-ARP*	ORNL Oak Ridge, TN, USA	$1500
April 26–27	**SCALE Criticality Accident Slide Rule Course** *The Slide Rule for Nuclear Criticality Accident Response is intended for criticality safety and radiation protection engineers, health physicists, and emergency response personnel. The Slide Rule is available in working hand-held hard copy and as Windows PC software, and the workshop includes hands-on training with both versions. A hard copy of the working hand-held Slide Rule is available for an additional fee.*	ORNL Oak Ridge, TN, USA	$1200
April 30–May 4	**SCALE Criticality and Shielding Course** *Basic criticality calculations with KENO-VI; Shielding analysis with automated variance reduction using MAVRIC; Criticality accident alarm system analysis*	ORNL Oak Ridge, TN, USA	$2000
May 7–11	**SCALE Sensitivity and Uncertainty Analysis Course** *TSUNAMI: 1-D and 3-D sensitivity/uncertainty analysis using TSUNAMI with XSDRNPM and KENO. Advanced S/U methods for code and data validation.*	ORNL Oak Ridge, TN, USA	$2000
May 14–18	**SCALE Burnup Credit Calculations Course** *A new course in burnup credit analysis for transportation casks and fuel storage racks using ORIGEN-ARP, STARBUCS, and TRITON.*	ORNL Oak Ridge, TN, USA	$2000
May 21–25	**SCALE Lattice Physics and Depletion Course** *2D lattice physics calculations; 1D, 2D, and 3D depletion calculations; resonance self-shielding techniques including Monte Carlo; Dancoff factors for non-uniform lattices; generation of libraries for*	NEA Data Bank, Paris, France	€2000

Date	Title	Location	Registration Fee
	ORIGEN-ARP		

Foreign National Visitors: You **must** register **at least 40 days** in advance to obtain security clearance.

Payment must be received at least one week prior to training course.

For more information and online registration, please visit http://scale.ornl.gov/training.shtml

NRSHOT 2012

Nuclear Reactor Simulation Hands-On Training

The Nuclear Research Group of San Piero a Grado of the University of Pisa, the Atomic Energy Research Institute, and the Innovative Systems Software are jointly organizing Nuclear Reactor Simulation Hands-On Training (NRSHOT) courses in Budapest, Hungary on June 25, 29, 2012, at the Atomic Energy Research Institute.

The NRSHOT is directed toward beginner and intermediate users of System Thermal-Hydraulic Codes and 3D Neutron Kinetic Coupling.

 Further details are available at: http://www.grnspg.ing.unipi.it/nrshot/. **The deadline for registration is April 30, 2012.**

Further information may be requested from Alessandro Petruzzi at the following email address: a.petruzzi@ing.unipi.it or may be obtained from the seminar's homepage at http://www.grnspg.ing.unipi.it/nrshot/.

Information on accommodations and travel to the meeting venue will be provided at a later date.

Course on Practical MCNP for the Health Physicist, Medical Physicist, and Radiological Engineer

Los Alamos National Laboratory will present a course on "Practical MCNP for the Health Physicist, Medical Physicist, and Radiological Engineer" on July 9-13, 2012, at the University of New Mexico, Los Alamos, NM, MESA Complex, Room 130. This 4.5 day course introduces the basic concepts of Monte Carlo, demonstrates how to put together a MCNP input file, and illustrates some health and medical physics applications of the code. No prior knowledge of Monte Carlo is assumed. This course is ideally suited for professionals interested in performing radiation shielding and skyshine calculations, detector simulation studies, or dosimetry. For more information about this course, visit the website at http://www.lanl.gov/orgs/rp/mcnp.shtml.

MCNPX-PoliMi Training Workshop

The Detection for Nuclear Nonproliferation Group at the University of Michigan will present the MCNPX-PoliMi Training Workshop at the University's North Campus on July 25-26, 2012. The MCNPX-PoliMi code is an enhanced version of MCNPX v. 2.6.0 that provides unique capabilities for simulating correlated-particle measurements and detector response. This two-day workshop will introduce new users to the capabilities of the MCNP-PoliMi code and acquaint experienced users with new features.

- MCNPX-PoliMi source capabilities

- Detector-response calculations

- Simulations of time-of-flight and cross-correlations distributions

- Simulations of multiplicity distributions

Workshop attendees should have software licenses for both MCNPX and MCNP-PoliMi. There are two separate licenses that are available by registration and request at the Radiation Safety Information Computational Center (RSICC) at Oak Ridge National Laboratory. Requests for the required software licenses may be made at the RSICC website at www-rsicc.ornl.gov. It is recommended that requests for the software licenses be submitted as soon as possible as the licensing procedure can take upwards of several weeks to complete.

Registration available online at http://www-ners.engin.umich.edu/labs/dnng/polimi_workshop.html. Seating is limited; therefore, the registrations will be accepted on a first-come-first-serve-basis.

Professional Development Short Courses on Radiological Assessment, Nuclear Criticality Safety, and Monte Carlo Analysis

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-47), August 13–17, 2012.

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. Material 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 ability of the student to apply the Monte Carlo 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 23, 2012**. 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-47, 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.

CONFERENCES

Monte Carlo Treatment Planning (MCTP2012)

The Third European Workshop on Monte Carlo Treatment Planning (MCTP2012) will be take place May 15–18, 2012, in Sevilla, 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.

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, http://www.mctp2012.com/index.php. 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).

3rd International Conference on Nuclear & Renewable Energy Resources

The 3rd International Conference on Nuclear & Renewable Energy Resources will be held on May 20-23, 2012, in Istanbul, Turkey. The 3rd International Conference on Nuclear and Renewable Energy Resources will seek to provide a platform in which to discuss safe, carbon-free energy production technologies for nuclear and renewable energy resources. For more information about this conference, go to their website at http://www.nurer.org/index.php.

The Energy and Materials Research Conference - EMR2012

The EMR2012 conference will be held at the Torremolinos Congress Center in Torremolinos (Malaga), Spain, on June 20-22, 2012. The EMR2012 will bring together researchers and professionals from a broad set of science and engineering disciplines with the aim of sharing the latest developments and advances in materials, processes and systems involved in energy generation, transmission-distribution, and storage. More information about this conference is available at http://www.formatex.org/emr2012/index.html.
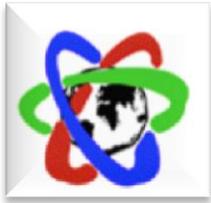
The International Youth Nuclear Congress 2012

The International Youth Nuclear Congress (IYNC) and the North American Young Generation in Nuclear (NA-YGN) invite you to attend the 7th IYNC in Charlotte, NC, August 5-11, 2012. The primary purpose of the Congress is to transfer knowledge from the current generation of leading scientists and engineers to the next generation. Scientific, political, public and corporate views regarding the development of different nuclear issues will be presented to provide comprehensive discussions on all sides of the subject. More information about this conference is available at http://www.iync.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.

The deadline for submitting abstracts was on 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.

ICFO-SI9

The 9th International Conference on Facility Operations- Safeguards Interface (ICFO-sI9) will be held on September 23-28, 2012, in Savannah, Georgia. The topical conference program committee invites individuals with professional interest in safeguards technology and nuclear material facility operations to participate. The Conference is sponsored by the American Nuclear Society Isotopes and Radiation Division, Oak Ridge/Knoxville Local Section and is cosponsored by the Institute of Nuclear Materials Management, Central Region Chapter, Southeast Chapter.

The purpose of the conference is to foster a better understanding of the relationships of operations in nuclear facilities and the application of safeguards under national and international regimes. This ninth conference in the series will provide an international forum for exchanging ideas and experiences, as well as describing progress in the areas of safeguards implementation. The conference will be timely considering the current activities to strengthen the international safeguards regime. The four and a half day conference will be held in nine half-day sessions at which policy, technical, and scientific aspects of safeguards implementation will be discussed.

Papers are encouraged in the following areas:

- Integrated design of facility safeguards systems,
- Nuclear material accountancy,
- Materials control and accountability activities,
- Measurement and instrument techniques,
- Transparency and confidence-building measures,
- Research and development in general safeguards technology,
- Extension of safeguards in light of the threat of radiological dispersal devices,
- Preparation for and implementation of the IAEA Additional Protocol,
- Safeguards by design,
- The impact of "fully information driven safeguards" on traditional safeguards,
- Advances in process monitoring, unattended measurements/monitoring, remote measurements/monitoring, and
- Application of safeguards earlier in the front end of the fuel cycle, mining and conversion.

Conference information is posted at the website at http://ICFO-9.org.

2012 CALENDAR

May

Used Fuel Management Conference, May 7-10, 2012, St. Petersburg, FL. Contact: Linda Wells, NEI (phone 207-739-8039, email registrar@nei.org) url http://www.nei.org/newsandevents/conferencesandmeetings.

International Congress of the International Radiation Protection Association (IRPA13), May 13–18, 2012, Glasgow, Scotland. Contact: Congrex UK Limited, IRPA13 Glasgow Ltd, 4B, 50 Speirs Wharf, Port Dundas, Glasgow G4 9TH (phone +44 (0)141 331 0123, fax +44 (0)141 331 0234, email info@irpa13glasgow.com) url http://www.irpa13glasgow.com.

MCTP2012, 3rd European Workshop on Monte Carlo Treatment Planning, May 15–18, 2012, Sevilla, 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 sevilla@mctp2012.com) url http://www.mctp2012.com/index.php.

June

EMR2012, June 20-22, 2012, Torremolinos (Malaga), Spain. Follow the website for up-to-date information at http://www.formatex.org/emr2012/index.html.

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

- ICAPP '12, June 24–28, 2012, Chicago, IL. 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, IL. 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, IL. Contact: Sue Aggarwal, Technical Program Chair (phone 303-984-5788, email saggarwal@nmnuclear.com) url http://ddrd.ans.org.

July

Practical MCNP for the Health Physicist, Medical Physicist, and Radiological Engineer, July 9-13, 2012, University of New Mexico, Los Alamos, NM. For up-to-date information, visit their website at http://www.lanl.gov/orgs/rp/mcnp.shtml.

MCNPX–PoliMi Training Workshop, July 25–26, 2012, Ann Arbor, MI, USA. Follow the website for up-to-date information, http://www-ners.engin.umich.edu/labs/dnng/polimi_workshop.html.

August

IYNC2012, August 5-11, 2012, Charlotte, NC, USA. For up-to-date information, visit their website at http://www.iync.org/.

September

Workshop on Computational Medical Physics, September 2, 2012, Nara Prefectural New Public Hall, Nara, Japan. .

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 ANS Winter Meeting and Nuclear Technology Expo, Nov. 11–15, 2012, San Diego, CA, USA. For up-to-date information, visit their website at http://www.new.ans.org/meetings/c_1.