Radiation Safety Information Computational Center

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We have no more right to consume happiness without producing it, than to consume wealth without producing it.—George Bernard Shaw

RSICC will observe the holiday season beginning December 21, 2008, through January 5, 2009. We will respond to your requests upon our return.

Merry Christmas and Happy Holidays!
The RSICC Staff

ANS News

Dale E. Klein, member since 1978, and Chairman of the Nuclear Regulatory Commission, received the James N. Landis Medal for "distinguished public service and eminent achievements in the advancement of nuclear power worldwide through education, research, and assurance of the safety and security of nuclear power plants, and for contributions to the formulation and execution of policy and plans for nuclear, chemical, and biological weapons safety, and defense programs." The award was presented to Klein at the International Conference on Nuclear Engineering in Orlando, Florida, in May.

Obituaries

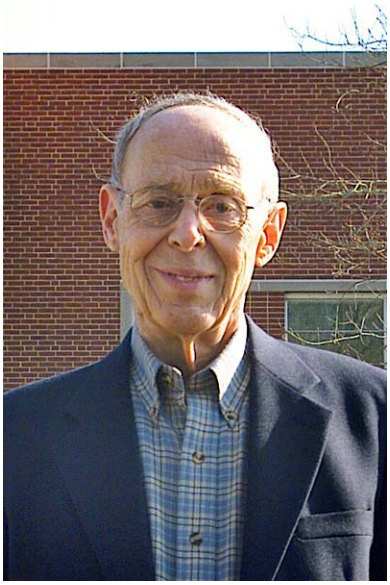

Photo Number 00431-2002

Donald B. Trauger (1920–2008) died peacefully in his sleep at his Oak Ridge home on December 3, 2008. Don was born to Charles and Ethel Trauger near Exeter, Nebraska, June 29, 1920. He grew up on the family farm which his brother still operates. A life-long fascination with science was stimulated by a trip to the Chicago World's Fair in 1934. His interest was channeled into the study of the new science of nuclear energy at Nebraska Wesleyan University. He was recruited to work on the Manhattan Project at Columbia University after college graduation in 1942. In 1946 he moved the family to Oak Ridge for "six months." After working for eight years at the K-25 gaseous diffusion plant, he joined the staff of the Oak Ridge National Laboratory, where he worked until retiring in 1993. Trauger's career included work in irradiation test engineering, development of gas-cooled reactor technology, and the Nuclear Power Options Viability Study to project the prospects for nuclear power in the early 21st century. He was Associate Director for Nuclear and Engineering Technologies at ORNL from 1970–1984 and retired as Senior Staff Assistant to the Director of ORNL. He wrote *Horse Power to Nuclear Power: Memoir of an Energy Pioneer*, published in 2002, and numerous technical papers and articles. He was a fellow of the American Nuclear Society and received honorary doctor of science degrees from Nebraska Wesleyan University and Tennessee Wesleyan College. His professional associations included the American Nuclear Society, the American Association for Advancement of Science, the American Physical Society, the Research Society of America, Sigma Pi Sigma, Tau Beta Pi, and the Tennessee Academy of Science. With an education that began in a one-room schoolhouse, he was a life-long advocate of education, serving on the board or as an officer of several school-related organizations. He was also involved in many civic organizations and was an early supporter of the Friends of Oak Ridge National Laboratory.

The October 2008 issue of the *IGC Newsletter* brought the news that the Indira Gandhi Center for Atomic Research (IGCAR) has lost two of its former directors in quick succession.

Prof. C. V. Sundaram (1929–2008) passed away August 15, 2008. His early career included positions with the Indian Institute of Science, Department of Atomic Energy, and with the Nuclear Fuel Complex. He assumed leadership of the Fast Breeder Reactor Programme of India as the Director of IGCAR at Kalpakkam when the construction of the Fast Breeder Test Reactor was nearing completion, leading the team of scientists and engineers to the successful criticality of FBTR in October 1985. Prof. Sundaram was also closely associated with the development of the Prototype Fast Breeder Reactor (500 MW(e)), currently under construction at Kalpakkam. Subsequent to his retirement in 1989, he served in several capacities; as a consultant to the Nuclear Fuel Complex; a visiting professor at IIomi Bhabha; and Honorary Visiting Professor at the National Institute of Advanced Studies at Bangalore. During his career he received many prestigious awards and was a Fellow in the Indian National Science Academy, Indian National Academy of Engineering, and Indian Academy of Sciences. He served as the Chief Editor of the *Transactions of the Indian Institute of Metals* and as President of the Indian Institute of Metals and President of the Indian Nuclear Society. For his outstanding scientific and technological achievements, the Government of India honoured Prof. C.V. Sundaram with the Sanjay Gandhi Award for Science and Technology in the field of energy in 1985 and the Padma Bhushan Award in 1986. He was always keen to foster talent and develop new leaders for the future.

Dr. Placid Rodriguez (1940–2008) passed away on August 31, 2008. Dr. Placid Rodriguez pursued his education at Kerala University, the Indian Institute of Science, University of Tennessee, and the Indira Gandhi National Open University. He joined the Department of Atomic Energy in 1960 and worked in Bhabha Atomic Research Centre, Bombay, until leaving in 1974 to join the Indira Gandhi Centre for Atomic Research, Kalpakkam. As a senior metallurgist there, he led in the establishment of world class research laboratories for metallurgical research. He was the Director of IGCAR, Kalpakkam from December 1992 until October 2000. Dr. Rodriguez is internationally known for his R&D contributions in mechanical metallurgy, welding metallurgy and nuclear materials. He has guided and nurtured several young colleagues in the multidisciplinary scientific and engineering fields for the advancement of fast breeder reactor technology in India. He has been Raja Ramanna Fellow at IIT Madras, Chennai, and AICTE-INAE Distinguished Visiting Professor at NITs; at Surathkal, Nagpur, Tiruchirapalli & PSG College of Technology, Coimbatore. He served on the Editorial Board of several international journals in Metallurgy and Materials Science and was the chief editor of *Transactions of the Indian Institute of Metals* during 1987–1997. During his career Dr. Rodriguez received many national and international awards and was a Fellow of the Indian National Academy of Engineering, the Indian Academy of Sciences, the National Academy of Sciences India and the Indian Institute of Metals. He served as President of the Indian Institute of Metals, the Indian Institute of Welding, and the Indian Nuclear Society.

Changes to the Computer Code and Data Collection

CCC-740/MCNP5/MCNPX

Los Alamos National Laboratory, Los Alamos, New Mexico, contributed new versions of their Monte Carlo N–particle transport code system. The package includes MCNP5 1.50, MCNPX 2.6.0, and MCNPDATA with newly processed ENDF/B-VII-derived data libraries.

MCNP5 1.50 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 posed 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
- Improve Compton scattering PSC calculation for detectors & DXTRAN
- Web-based documentation

MCNPX 2.6.0 is a Fortran90 Monte Carlo radiation transport computer code that transports many particles over a broad range of energies. This release was distributed as CCC-746 from June 2008 until the release of this package. New 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;
- 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. New libraries based upon ENDF/B-VII.0 evaluations are included. This package contains 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. The default continuous energy neutron transport data with 389 isotopes and 3 elements are from the ENDF70 library. The default proton transport data are from the ENDF70PROT library. The libraries MCPLIB04 and EL03 are the default libraries for photoatomic and electron transport respectively. ENDF70SAB is the default library for S(a,b), and LA150U is the default library for photonuclear transport. 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 C00740MNYCP01 includes executables for PC Windows, PC Linux, some Unix/Mac systems; MCNPDATA; test problems and the referenced documentation. The C00740MNYCP00 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 [Package ID: C00740MNYCP00 (full package) and C00740MNYCP01 (executable-only package)].

PSR-158/SAMMY-8.0.0

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed a newly frozen version of this multilevel, multichannel R-matrix code system. In addition to some corrections, several new features were added in the SAMMY8 release:

1. The value of ν (NU) for η (ETA) calculations can now be energy dependent.
2. Extensive revisions have been made to the self-shielding multiple-scattering (ssm) module.
3. Tabulated values (from Monte Carlo calculations) can be used instead of SAMMY-generated double-plus scattering corrections.
4. The "simple" resolution function may include a Gaussian whose width is a linear function of energy.
5. Input resonance parameters can now be presented as reduced width amplitudes γ instead of partial widths $\Gamma = 2P\gamma^2$.
6. For transmission measurements, the sample thickness may be non-uniform.
7. SAMMY now produces a third type of output file from which plots may be made – an ASCII file (with extension "LST") is created.

The purpose of SAMMY is to analyze time-of-flight cross section data in the resolved and unresolved resonance regions, where the incident particle is either a neutron or a charged particle (p, α, d, ...). Energy-differential cross sections and angular-distribution data are treated, as are certain forms of energy-integrated data. See the SAMMY home page for more information, http://www.ornl.gov/sci/nuclear_science_technology/nuclear_data/sammy/.

SAMMY has been tested on PC under Linux and Windows operating systems. All Unix and Linux users require a Fortran compiler to create executables. Windows users may run PC executables (included), which were created on a Dell Dimension 4100 operating under Windows 2000 SP4 with Compaq Visual Fortran Professional Edition 6.6.B.

The package is distributed on CD which contains the referenced document in PDF format and a compressed Unix tar file with the source code, Windows executable files, tutorials, scripts, and test cases. WinZIP 8.0 is required to expand this file under Windows. Reference: ORNL/TM-9179/R8 ENDF-364/R2 (October 2008). Fortran 77; PC Linux and Windows (P00158MNYCP12).

PSR-551/SELFS-3

The Energy Research Foundation (ECN), formerly known as Reactor Centrum Nederland, Petten, The Netherlands, through the OECD NEA Data Bank, Issy-les-Moulineaux, France, contributed this code package to RSICC. SELFS-3 corrects for the influence of the self-shielding effect in neutron spectrum determinations by means of the multifoil activation method. It is used in combination with the CCC-112/SAND-II program for unfolding the responses of an irradiated set of activation detectors in 620 groups. The program SELFS can calculate a corrected 620-group cross section data set for specified reactions used in the SAND-II library and for specified foil thicknesses. This procedure requires no additional assumption on the shape of the neutron spectrum and on other experimental conditions, but only some foil characteristics (reaction type, material composition, foil thickness). Application of this procedure is possible when multigroup unfolding programs are used with suitably small energy intervals. This code system was developed in the 1970's at Reactor Centrum Nederland, Petten, The Netherlands, and was contributed to RSICC through the NEA Data Bank. No changes were made to the package when it was released by RSICC in 2008. Modifications will be required to run SELFS-3 on current computer systems.

SELFS-3 was developed on a CDC 7600 computer running SCOPE 2.1 operating system with the FTN 4.8 + 538 compilers. It has not been ported to other computers and was not tested at RSICC. A Fortran compiler and source code modifications are required to run it; no executables are included in the package. The package is transmitted on one CD in a compressed Winzip file which contains the referenced reports, source code, and input sample data. Fortran IV; CDC 7600 SCOPE 2.1 (RSICC ID: P00551C660000). NEADB package identifier is NEA-0654/01. References: RCN-74-105 (August 10, 1974), RCN-75-156 (November 1975), ECN-81-013 (January 1981). Fortran IV; CDC 7600 (P00551C660000).

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.

Modelling and Computation of Multiphase Flows–-Short Courses

Short courses on Modelling and Computation of Multiphase Flows will be held in three parts February 9–13, 2009, in Zurich. The courses are hosted by the Swiss Federal Institute of Technology (ETH). Multiphase flows and heat transfer with phase change are of interest to researchers and engineers working in power, nuclear, chemical-process, oil-and-gas, cryogenic, space, bio-medical, micro-technology, and other industries. These courses offer the opportunity to meet outstanding lecturers a colleagues working worldwide on similar topics. The courses are organized in a modular form for persons having basic knowledge of fluid mechanics, heat transfer, and numerical techniques. The courses also serve as advanced courses for specialists wishing to obtain the latest information.

Complete course information, registration, and other related information is available at the website, http://www.ascomp.ch/ShortCourse/Short-Course.html or by contacting Short Course Multiphase Flow, c/o Prof. G. Yadigaroglu, ETH WEN B-13, Weinbergstrasse 94, CH-8006 Zurich, Switzerland (phone + 41 44 632 4615, fax + 41 44 632 1105, email yadi@ethz.ch). Email is the preferred method of correspondence.

Introductory and Advanced MCNP Visual Editor Training

Date 2009	Class	Location
March 16–20	Introduction to MCNP using the MCNP/MCNPX Visual Editor	Seattle, WA
May 11–15	Introduction to MCNP using the MCNP/MCNPX Visual Editor	Las Vegas, NV
June 8–12	Introduction to MCNP using the MCNP/MCNPX Visual Editor	San Francisco, CA
July 20–24	Advanced Visual Editor	Albuquerque, NM
August 10–14	Introduction to MCNP using the MCNP/MCNPX Visual Editor	Los Angeles, 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. Beta versions will only be available to students who received the RSICC version 5 release. 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.

MCNP Class Schedule

February 23–27, 2009	Introduction to MCNP5 and MCNPX	Los Alamos, NM
March 23--27, 2009	MCNP/MCNPX Intermediate Workshop	Paris, France
April 20–23, 2009	Advanced: Criticality	Los Alamos, NM
April 27–30, 2009	Advanced: Variance Reduction	Los Alamos, NM
May 18–22, 2009	MCNP/MCNPX Intermediate Workshop	US, Location TBD
June 1–5, 2009	Introduction to MCNP5 and MCNPX	Los Alamos, NM
June 8–12, 2009	Introduction to MCNP5 and MCNPX	Los Alamos, NM

Introductory classes are for people who have little or no experience with MCNP. This class surveys the features of MCNP so the beginning user will be introduced to the capabilities of the program and will have hands-on experience at running the code to solve simple problems. Course topics include Basic Geometry, Source Definitions, Output (Tallies), Advanced Geometry (repeated structures specification), Variance Reduction Techniques, Statistical Analysis, Criticality, Plotting of Geometry and Tallies, and Neutron Photon/Electron Physics.

Intermediate workshops cover the entire spectrum of MCNP/MCNPX but proceed at a much faster pace and are more in-depth than Introductory classes. These workshops are open to new users; the first day of class is a review of basics. However, the intermediate workshops are targeted toward more experienced users and are more problem solving than lecture classes. Intermediate workshops feature flexible course content, skip topics of least interest to the participants, and provide significantly more depth than introductory classes.

Advanced classes are for people with MCNP experience who want to extend their knowledge and gain depth of understanding. Most areas of MCNP operation will be discussed in detail, with emphasis on Advanced Geometry, Advanced Variance Reduction Techniques, and other advanced features of the program. Time will be available to discuss approaches to specific problems of interest to students. Classes on specific topics are offered when there is sufficient interest. In the recent past, classes on variance reduction and on criticality have been taught.

Registration and the most current information can be found at http://mcnp-green.lanl.gov/classinformation.html.

SCALE Training Courses at ORNL

2009	Title	Description
March 9–13	**TSUNAMI**	1-D and 3-D sensitivity/uncertainty analysis using XSDRNPM and KENO V.a
March 23–27	**TRITON and ORIGEN-ARP**	TRITON: 2-D reactor physics analysis using NEWT ORIGEN-ARP: Isotopic depletion/decay and source terms using latest version of ORIGEN
March 30–April 3	**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

The registration fee is $1800 for each course. A late fee of $300 will be applied after February 9. A discount of $300 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 5 or 5.1 users. All foreign national visitors must register a minimum of 40 days prior to the start date of the training course they plan to attend. Course descriptions may be found at http://www.ornl.gov/sci/scale/course_description.htm.

ANALYTICAL BENCHMARKS: CASE STUDIES IN NEUTRON TRANSPORT THEORY

The OECD/Nuclear Energy Agency, Issy-les-Moulineaux, France, is sponsoring a course on Analytical Benchmarks: Case Studies in Neutron Transport Theory, March 16–20, 2009. Participants will be provided with a copy of the course text and the handbook: B. Ganapol, A*nalytical Benchmarks for Nuclear Engineering Applications: Case Studies in Neutron Transport Theory* (ISBN 978-92-64-99056-2), in hard copy, and a CD-ROM with the corresponding computer codes.*

The training course is free of charge. Participation will be limited to the first 24 registrations. Information on accommodation can be found in the following page: http://www.nea.fr/html/general/hotels.html.

CONTE 2009

The Conference on Nuclear Training and Education, CONTE 2009, an American Nuclear Society Topical Meeting, will be held February 8–11, 2009, in Jacksonville, Florida. Titled "Education, Training & Workforce Development—The Global Path to the Nuclear Energy Future," participants will learn about:

- current nuclear energy issues and challenges,
- new education & training techniques,
- workforce development strategies,
- emerging nuclear power options,
- benchmarking,
- knowledge retention, and

*Valid for NEA Data Bank Member Countries; all others should inquire on the procedure to be followed for obtaining a copy (see: http://www.nea.fr/html/dbprog/neadbmembers.htm).

- successful methods to address these challenges.

Information about the conference will be posted on the webpage at http://www.ans.org/meetings/calendar.cgi?d=2-8-2009. The program co-chairs are Kent W. Hamlin (INPO, email HamlinKW@INPO.org) and Brian K. Hajek (Ohio State University, email hajek.1@osu.edu).

WM2009

WM2009 will be held March 1–5, 2009, in Phoenix, Arizona. This series of Waste Management (WM) Symposia is internationally recognized as the premier annual conference of the nuclear waste management industry. WM2009 will include papers describing research, development and operational experience over the complete spectrum of nuclear waste activities. Proposed topics are categorized into general tracks:

- Crosscutting policies, programs and technologies (CPPT),
- High-level radioactive wastes (HLW), spent nuclear fuel (SNF) and long-lived alpha/transuranic radioactive waste (TRU)
- Low-level waste (LLW), intermediate level waste (ILW), mixed waste (MW), NORM & TENORM
- Nuclear power plant (NPP) waste management (operational waste management and NPP spent nuclear fuel (SNF))
- Packaging and transportation (PAT)
- Decontamination & decommissioning (D&D)
- Environmental remediation (ER)
- Public communications, involvement, education and training (CE&T)
- Security, safety and safeguards (SS&S)
- Unassigned, late abstracts, and the non-paper poster session (MISC)

WM2009 also offers a student poster competition with a cash award for the best poster. No full abstract or paper is required for student posters. Submit a 50-word summary of your studies/research work and present it in the WM2009 Student Poster Competition on Monday, **March 2, 2009**. The deadline for submitting student posters is **Friday, January 30, 2009.** Every student presenting a student poster is eligible to receive **free registration and housing** for WM2009. Transportation support may also be available through donations to the Roy G. Post Foundation. Current news about the conference can be found at the website, http://www.wmsym.org/html/wm_conference.cfm.

Nuclear Safeguards and Non-Proliferation

The 5th ESARDA Course on Nuclear Safeguards and Non Proliferation will be held March 30–April 3, 2009, in Ispra, Italy. The course is organized by the European Safeguards Research & Development Association (ESARDA) and is hosted by the Nuclear Safeguards Unit, Joint Research Centre, Ispra, Italy.

The course is open to master's degree students, particularly nuclear engineering students, and to young professionals and international relations/law students. It complements nuclear engineering studies by including nuclear safeguards in the academic curriculum. The basic aim of the course is to stimulate students' interest in safeguards. The course addresses aspects of the efforts to create a global nuclear nonproliferation system and how this system works in practice: the Treaty on Nonproliferation of Nuclear Weapons (NPT), safeguards technology, and export control. Also regional settings, such as the Euratom Treaty, will be presented and discussed. The course deals in particular with the technical aspects and application of safeguards; i.e. how to implement safeguards principles and methodology within different nuclear facilities. The course will present an overview on inspection techniques, ranging from neutron/gamma detectors, to design information verification, to environmental sampling, etc. The

registration form can be found at http://esarda2.jrc.it/internal_activities/WC-MC/Web-Courses/5-contacts.html and must be completed and returned by **December 31, 2008**, to the NUSAF-Secretariat (email jrc-nusaf-secretariat@ec.europa.eu or fax +39 0332 78 9185). Additional information about the course is available at http://esarda2.jrc.it/internal_activities/WC-MC/Web-Courses/index.html.

Advances in Nuclear Fuel Management IV

Advances in Nuclear Fuel Management IV will be held April 12–15, 2009, in Hilton Head, South Carolina. The meeting is a forum for addressing a broad spectrum of front-end nuclear fuel management activities, within the context of reactor physics and fuel cycle economics. Topics will range from methods development and verification to design and implementation of new in-core fuel products and strategies.

A list of technical sessions follows.

- addressing practical design constraints on fuel management
- advanced fuel assembly and burnable absorber designs
- advanced fuel management and multi-dimensional burnup analysis
- advances in reactor stability
- automated and interactive fuel management design and optimization tools
- error quantification of core simulation capabilities
- experiences and advances in on-line core monitoring
- extended fuel cycles and economic analysis
- fuel and core design based on thorium cycles
- fuel cycle core design for advanced reactor concepts
- fuel temperature feedback for steady-state and transients
- generation of cross section libraries and whole core transport calculations
- generation-iv design concepts
- high enrichment >5wt% uo2 studies
- innovative core loading strategies and methods
- management, design, and operation issues of advanced reactor fuels
- model comparisons against measured reactor power data
- monte carlo-based depletion and full core analysis: new developments and issues
- mox utilization in reactors
- nodal and lattice physics methods
- nuclear data needs to enhance core simulation fidelity
- reactor-based plutonium disposition
- research reactor topics—fuel management practices
- simulation and study of advanced nuclear fuel cycles
- utilities experience in reload design and licensing
- utilization of zero power physics tests and core follow data to enhance core simulation fidelity
- validation of core analysis tools for fuel management

General Chair for the conference is John Siphers, Progress Energy (phone 919-546-4032, email john.siphers@pgnmail.com) and the Technical Program Co-chairs are Ivan Maldonado, University of Tennessee (phone 865-974-7562, email imaldona@utk.edu) and Atul Karve, Global Nuclear Fuel, (phone 910-675-5802, email atul.karve@gnf.com). Additional details are posted at the conference web site: http://anfm2009.org.

2009 International Conference on Advances in Mathematics, Computational Methods, and Reactor Physics

The 2009 International Conference on Advances in Mathematics, Computational Methods, and Reactor Physics will be held May 3–7, 2009, in Saratoga Springs, New York. The Conference will provide an international forum to present and discuss recent research in mathematical modeling and computing as applied to nuclear engineering and particle transport. This conference is part of a series of topical meetings organized by the Mathematics and Computation Division of the American Nuclear Society. The technical program will consist of plenary sessions, parallel oral presentation sessions, and poster sessions. There will also be one or more workshops.

Check the conference website http://local.ans.org/ne-ny/topical_2009_neny.html for general conference information. General chair of the conference is Ray Gamino (ray.g.gamino@lmco.com).

Operational Radiation Protection for Accelerators in Research and Medicine

The course Operational Radiation Protection for Accelerators in Research and Medicine will be held in Erice, Sicily (Italy), May 13–20, 2009, at the "Ettore Majorana Foundation and Centre for Scientific Culture" within the framework of the International School of Radiation Damage and Protection. The course is focused on operational radiation protection, including environmental aspects, safety systems, training and radioactive waste management at high-energy accelerators and hadron therapy facilities. Emphasis is given to all aspects of practical implementation of the principles of operational radiation protection at such facilities. The course will provide a series of presentations given by acknowledged experts with practical experience in the field. There will be ample opportunity for in-depth discussions on current problems. Details can be found at the Webpage at http://www.cern.ch/radschool.

ANIMMA

The 1st International Conference on Advancements in Nuclear Instrumentation, Measurement Methods and their Applications (ANIMMA) will be held in France at the Marseille Convention Center, June 7–10, 2009. Abstract submission guidelines, scientific program, important dates and deadlines and all others details are given on the conference web site which will be regularly updated.

Authors are invited to submit abstracts on any of the following topics before **January 18, 2009**:

- Fundamental Physics
- Nuclear Power Reactors
- Research Reactors
- Nuclear Fuel Cycle
- Safeguards, Homeland Security
- Environmental and Medical Sciences
- Education and Training Activities

For information regarding the Call for Papers campaign or the conference organization in general contact: animma@cea.fr (phone 33 442 257 588) url http://www.animma.com/.

Radionuclide Therapy and Radiopharmaceutical Dosimetry

The 3rd International Symposium on Radionuclide Therapy and Radiopharmaceutical Dosimetry and Workshop on Alpha-emitting Radionuclides in Therapy will convene June 13–17, 2009, in Toronto, Canada, in conjunction with the 2009 SNM Annual Meeting.

The 3rd Symposium will blend with SNM sessions in oncology, radiopharmaceutical chemistry, radiobiology, and dosimetry. The workshop will highlight current progress in the use of alpha-emitters for cancer therapy, continuing a series of successful alpha-emitter workshops.

You may submit your abstracts electronically by **January 13, 2009**, following instructions given at: http://www.softconference.com/snm/submissions/. Symposium topics for abstract submissions include:

- Data collection and quantitative imaging
- Dose modeling and pharmacokinetics
- Clinical dosimetry and treatment planning
- Alpha emitters in cancer therapy
- Auger electron emitters
- Biodistribution studies and biological effects
- Therapy of skeletal metastases and bone pain palliation

Further information is posted at http://isrtrd2009.labworks.org/ or may be obtained from George Sgouros, Vice-Chair, at gsgouros@jhmi.edu.

2009 ANS Annual Meeting

Advancing Nuclear Technology for a Greater Tomorrow is the theme for the 2009 ANS Annual Meeting which be held in Atlanta, Georgia, June 14–18. Summaries describing work that is new, significant, and relevant to the nuclear industry may be submitted beginning November 1 in response to the Call for Papers. Summaries must be submitted electronically using Adobe Acrobat (PDF) files and original Microsoft Word documents and the ANS Electronic Submission System. Summaries not based on the ANS template will be rejected. General Chair for the meeting is Jeffrey T. Gasser (Southern Nuclear Operating Company); the Technical Program Chair is Bojan Petrovic (Georgia Institute of Technology). Information regarding the meeting is posted at http://www.new.ans.org/meetings/c_1.

Training Course on Natural Circulation Phenomena and Modelling in Water-Cooled Nuclear Power Plants

The San Piero a Grado Nuclear Research Group (GRNSPG) of the University of Pisa in cooperation with the International Atomic Energy Agency (IAEA), Department of Nuclear Energy, are jointly organizing the "Training Course on Natural Circulation Phenomena and Modelling in Water-Cooled Nuclear Power Plants." The course will be held June 22–26, 2009, on the premises of the San Piero a Grado Nuclear Research Group (GRNSPG) in Via Livornese 1291, San Piero a Grado (Pisa), Italy.

Passive safety systems based on natural circulation are key to evolutionary and innovative water-cooled reactor designs. Education on this issue is of key importance for countries working on the next generation of LWR. The course will provide a transfer of experience and know-how from recognized experts in the natural circulation fields and will transmit information, results and expertise shared through various international activities in the field (i.e. IAEA CRPs and European Commission supported programs). It will thus contribute to maintain and increase technical competence and ensure sustainable development of nuclear technology. Further information may be requested at the following email address: grnspg@ing.unipi.it or may be obtained from the home page,

http://www.grnspg.ing.unipi.it/natural_circulation/, where information on the course, registration form and accommodation can also be found. The deadline for registration is **April 20, 2009**. Additional information may be obtained from Ms. Patricia Pla, San Piero a Grado Nuclear Research Group (GRNSPG), University of Pisa, Via Diotisalvi, 2, 56126 PISA (Italy) (phone + 39 050 2210 371, fax + 39 050 2210 384, email grnspg@ing.unipi.it) url http://www.grnspg.ing.unipi.it/natural_circulation/.

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.

Conference topics include:

- advanced fission systems and fuel cycles
- fusion energy systems
- radiation protection & shielding
- nuclear physics unusual applications
- new nuclear medicine applications
- nuclear and solar space power and propulsion
- nuclear hydrogen production & the hydrogen economy
- sustainability issues: society, energy, environment
- energy policy: the nuclear and renewable mix
- R&D organization and cooperation: new tools for new challenges

Papers on hydrogen, solar and other alternative energies as natural and mutual complements of nuclear energy in a sustainable development framework are strongly encouraged as are new proposals on how to focus R&D programs in a more efficient way. **January 15, 2009,** is **t**he deadline for abstract submission. 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.

World Nuclear University

The World Nuclear University's annual Summer Institute (WNU-SI) will be held July 5–August 15, 2009, at Christ Church College, Oxford University. The WNU is a global partnership aimed at strengthening education and leadership in nuclear science and technology. The WNU partnership includes IAEA, World Association of Nuclear Operators (WANO), NEA-OECD, and the World Nuclear Association (WNA)–-the WNU's four "Founding Supporters"–-as well as leading institutions of nuclear learning around the world. The Summer Institute is a demanding six-week leadership development program for outstanding young professionals in the nuclear field with 90–100 "WNU Fellows" from over 30 nations participating. WNU Fellows are selected from hundreds of applicants. Information about the requirements for consideration and the application form may be found at http://www.world-nuclear-university.org/about.aspx?id=17696. The deadline for receipt of applications is **December 20, 2008**.

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). The Call for Papers has been issued for papers in the following major topical areas:

- Policy, Regulations and Standards
- Methodologies and Best Practices
- Modeling and Analysis
- Technology and Development
- Systems and Applications
- Testing, Assessments and Lessons Learned
- Education, Training and Communication/Information Systems
- Counter Terrorism Measures and Responses
- Public and Homeland Security

Abstracts must be submitted by **February 1, 2009**. Details about submission and other 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).

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

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

Abstracts may be submitted online by **December 15, 2008**. Instructions for submission may be found at http://www.inspi.ufl.edu/global2009/papers/submission.html. 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). Stay up to date with current news about the conference 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*. Electronic submission of abstracts will open January 9, 2009, for 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

Contact the Technical Program Chairman, David Erickson at David_G_Erickson@rl.gov if you have questions about the abstract requirements that might not be covered at the meeting website, http://www.ncsd2009.com/.

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. **May 31, 2009**, is the deadline for submitting abstracts.

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).

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

January 2009

2009 Midyear Meeting — Recent Advances in Planning and Response to Radiation Emergencies, Jan. 31–Feb. 3, 2009, San Antonio, TX. Contact: http://www.hps.org/meetings/meeting21.html.

February 2009

CONTE 2009, Feb. 8–11, 2009, Jacksonville, FL. Contact: Kent W Hamlin (INPO, email HamlinKW@INPO.org) and Brian K. Hajek (Ohio State University, email hajek.1@osu.edu) url http://www.ans.org/meetings/calendar.cgi?d=2-8-2009.

2009 Space Nuclear Systems Forum (SNSF-09), Feb. 10–12, 2009, Houston, TX. Contact: Shannon Bragg-Sitton, Texas A&M University, (phone 979-862-8446, fax 979-845-6443, email SNSF@lpi.usra.edu) url http://www.lpi.usra.edu/meetings/nuclear2009/nuclear20091st.shtml.

March 2009

WM2009, March 1–5, 2009, Phoenix, Arizona. Contact: WMS Administration at 1-520-696-0399 or email at papers@wmarizona.org, url http://www.wmsym.org/html/wm_conference.cfm.

5th ESARDA Course on Nuclear Safeguards and Non Proliferation, March 30–April 3, 2009, Ispra, Italy. Contact: NUSAF-Secretariat (email jrc-nusaf-secretariat@ec.europa.eu or fax +39 0332 78 9185) url http://esarda2.jrc.it/internal_activities/WC-MC/Web-Courses/index.html.

International Symposium on Nuclear Security sponsored by the IAEA, March 30–April 3, 2009, Vienna, Austria. Contact: IAEA, Conference Services Section, Wagramer Strasse 5, P.O. Box 100, 1400 Vienna, Austria (phone 43-1-26000; fax 43-1-26007).

April 2009

Advances in Nuclear Fuel Management IV, April 12–15, 2009, Hilton Head, SC. Contact: General Chair John Siphers (phone 919-546-4032, email john.siphers@pgnmail.com), or Technical Program Co-chairs Ivan Maldonado (phone 865-974-7562, email imaldona@utk.edu) and Atul Karve (phone 910-675-5802, email atul.karve@gnf.com) url http://anfm2009.org.

May 2009

2009 International Conference on Advances in Mathematics, Computational Methods, and Reactor Physics, May 3–7, 2009, Saratoga Springs, NY. Contact: Ray Gamino (ray.g.gamino@lmco.com) url http://local.ans.org/ne-ny/topical_2009_neny.html.

Operational Radiation Protection for Accelerators in Research and Medicine, May 13–20, 2009, Sicily (Italy). Contact: http://www.cern.ch/radschool.

June 2009

ANIMMA, June 7–10, 2009, Marseille, France. Contact: ANIMMA_2009, CEA/DER/SPEx, Bat. 238 CEA Cadarache 13108, St Paul lez Durance Cedex FRANCE (fax +33 (0)4.42.25.78.76, email: animma@cea.fr) url http://www.animma.com/.

3rd International Symposium on Radionuclide Therapy and Radiopharmaceutical Dosimetry and Workshop on Alpha-Emitting Radionuclides in Therapy, June 13–17, 2009, Toronto, Canada. Contact: George Sgouros (gsgouros@jhmi.edu) or Michael Lassmann (Lassmann_M@klinik.uni-wuerzburg.de) url www.snm.org.

2009 ANS Annual Meeting, "Advancing Nuclear Technology for a Greater Tomorrow," June 14–18, 2009, Atlanta, GA. Contact: http://www.new.ans.org/meetings/c_1.

Training Course on Natural Circulation Phenomena and Modelling in Water Cooled Nuclear Power Plants, June 22–26, 2009, Pisa, Italy. Contact: Ms. Patricia Pla, San Piero a Grado Nuclear Research Group (GRNSPG), University of Pisa, Via Diotisalvi, 2, 56126 PISA (Italy) (phone + 39 050 2210 371, fax + 39 050 2210 384, email grnspg@ing.unipi.it) url http://www.grnspg.ing.unipi.it/natural_circulation/.

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

World Nuclear University Summer Institute (WNU-SI) July 5–August 15, 2009, Christ Church College, Oxford University. Contact: WNU Coordinating Centre, Carlton House, 22a St. James's Square, London SW1Y 4JH, United Kingdom (email wnu-applications@world-nuclear-university.org, fax +44 (0) 20 7839 1501) url http://www.world-nuclear-university.org/about.aspx?id=17696.

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

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/.

October 2009

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.

October 2010

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