Radiation Safety Information Computational Center

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"The surest way to establish your credit is to work yourself into the position of not needing any. "
– Switzer

SARIS - In the Beginning

In the late '50s, science management was beginning to worry about the information "explosion" in which the scientist or the engineer working at his/her desk could not begin to keep up with the literature being published. The suggested solution was the information analysis center (IAC) where knowledgeable staff could review, evaluate, and select the best in a specialized field, package it and make it available where needed. A number of research institutions sought funding to establish such centers, mainly concerned with literature. It should be noted that at that time the detailed work of indexing and extracting of key information from selected literature specimens was manual. No existing information centers were using computers.

The Radiation Shielding Information Center (RSIC) was established at ORNL in FY 1963 by the United States Atomic Energy Commission (USAEC) to collect, organize and disseminate information on shielding against radiation from nuclear reactor and other low-energy radiation sources. The information initially was in the form of published literature and computer codes. The original staff consisted of three people: physicists S. Keith Penny and David. K. Trubey and mathematician-programmer, Betty F. Maskewitz. The latter was given the responsibility for establishing the computer codes and nuclear data activities. Penny and Trubey, assisted by Peggy Emmett as programmer, assumed the task of developing the literature system.

The computer-based Storage and Retrieval Information System (SARIS), programmed in Fortran, was the first of its kind. As RSIC's subject coverage extended to cover radiation from additional sources, i.e., radioisotopes, weapons, accelerators, and both natural and manmade radiation in space, additional staff members were called on to review literature for input to SARIS. Selected literature was announced in the RSIC Newsletter. The first broad dissemination was made by published documents, and these were considered useful by technical universities. In the early stages of research in radiation transport and shielding, the literature data base was considered to have considerable value. Prior to today's network facilities, a staff member devoted full time to managing the system, including

special searches on demand with the results mailed to the customer. Each technical staff member devoted some time to reviewing and evaluating the literature to be included in the system.

As of this edition, the SARIS portion of the Newsletter will be no more. The information that we have included in the past several years can be found on the internet. We hope it has been a helpful service to you over the past 40 years.

Betty F. Maskewitz, former RSICC Director

In regards to "what set of data (is available | is best)??"

In a recent posting to the MCNP Forum, Morgan White of the MCNP data team sent some advice to aid users in selecting data sets to be used with MCNP. While his message applies specifically to ACE libraries, much of the background information can be useful to a more general audience.

The MCNP Forum entries are archived in the electronic notebook. Please view his comments on "what set of data (is available | is best)??" at
http://rsicc.ornl.gov/cgi-bin/enote.pl?nb=mcnp5&action=view&page=385

The September 2004 Edition of the "International Handbook of Evaluated Criticality Safety Benchmark Experiments"

The September 2004 edition, of the "*International Handbook of Evaluated Criticality Safety Benchmark Experiments*" will be available for distribution on DVD near the end of September. Twenty-nine newly approved evaluations are included in this version in addition to all previously approved evaluations. A new volume, Volume VIII, entitled "Criticality Alarm / Shielding Benchmarks" has been added to the 2004 edition of the Handbook. Provided in this volume are benchmark specifications that are intended primarily for validation of calculational techniques used to determine the need for criticality alarms and placement of those alarms. Only one evaluation of this type is included, and it is included only as a DRAFT. This evaluation includes benchmark specifications for 6 labyrinth-type configurations with multiple measurement points for each. Two other evaluations of this type were prepared, but are not included because of time constraints. Publishing information in DRAFT form is not a common practice for the ICSBEP. However, in this case we are soliciting comments from the user community before including more of these types of benchmarks. Please forward any comments to **bbb@inel.gov** prior to January 31, 2005.

Focus on Women In Nuclear (WIN)

Women In Nuclear (WIN), is truly a win for the many professionals who have joined and continue to carry the banner of nuclear professionalism.

WIN is a worldwide association of professional women and men working in the fields of nuclear energy and applications of radiation. The goal of WIN is to educate the public on nuclear energy and radiation. WIN accomplishes its goal through educational programs, information

exchange and scientific visits. WIN members come from all sectors involved in nuclear applications.

Current news highlights from WIN are available from **http://www.world-nuclear.org/win-global/news/2004/04-35.pdf**.

The website for WIN is **http://www.world-nuclear.org/win-global/index.htm**.

Bernadette L. Kirk, WIN US

Visit to RSICC from Gazi University

Prof. Dr. Sumer Sahin and Assoc. Prof. Dr. Haci Mehmet Sahin from Gazi University, Ankara, Turkey, visited RSICC in the period from August 11 to September 14, 2004. In this time, they started to work on a project, lead by Dr. John Wagner, in relation with the analysis of detector response in a PWR, using the MCNP code. It was decided that they will continue their Monte Carlo analysis within the framework of the same project and on the MC analysis of other nuclear reactor physics problems of mutual interest in close communication with Dr. John Wagner upon their return to Turkey. We at RSICC enjoyed their stay.

E. E. Lewis's "Equationless Book"

In this absorbing exploration of technological creativity throughout the ages, E. E. Lewis, professor of mechanical engineering at Northwestern University, eloquently tells the story of how science and engineering—which had little in common until a few hundred years ago—came together to create the technological world of the 21st century.

The book Masterworks of Technology: The Story of Creative Engineering, Architecture, and Design can be ordered by clicking on the pdf **order form.** More information is available at: **http://www.prometheusbooks.com/site/catalog/book_1537.html**.

News Briefing of the World Nuclear Association

Please read the latest edition (September 1-7, 2004) of World Nuclear Association at **http://www.world-nuclear.org/win-global/news/2004/04-36.pdf**.

Changes to the Computer Code and Data Collection

CCC-430/EDMULT 6.4

OP SYS: Windows, Unix
Language: Fortran 77
Computers: PC, Workstation
Format: WinZIP

The Institute for Data Evaluation and Analysis, Sakai, Osaka, Japan, contributed a correction to EDMULT. Subroutine EDBREM was modified to eliminate a warning-level error when compiling. EDMULT evaluates depth dose distributions produced by plane parallel electron beams normally incident on one to six layer slab absorbers. EDMULT is based on an analytic expression of the depth dose curve in semi-infinite medium and a simple model of electron penetration through a multilayer absorber. The effect of the different medium beyond an interface

is accounted for by the difference of backscattering, which is evaluated by considering the branching of electron beam into transmitted and backscattered components.

The code is operable on almost any computer with a Fortran compiler. The developer ran it on several computers including Macintosh with the Absoft compiler. An executable created with the Lahey F95 V5.60a compiler is included in the package for PC Windows users. This release was tested at RSICC on:

IBM RS/6000 Model 270 running AIX 4.3.3 with XL Fortran Version 7.1
Intel-Linux 7 with g77 under RedHat Linux 7
WindowsXP on Pentium IV with Compaq Visual Fortran 6.6B
WindowsXP on Pentium IV with Lahey 95 5.60a

EDMULT is transmitted on a CD with the document, source files, sample problem input and output, and a Windows PC executable in a WinZIP file. Reference: RCOP TR-8 (November 1987). Fortran 77; Intel PC, Workstations, MacIntosh (C00430MNYCP02).

PSR-528/CEAR-PPU

OP SYS: Windows
Language: Fortran 77
Computers: Pentium
Format: WinZIP

North Carolina State University, Raleigh, North Carolina, contributed this Monte Carlo simulation code, which was developed to simulate pulse pile-up spectra for high counting rates from given true spectra. In this simulation, the exponential pulse interval distribution is used and the multichannel analyzer (MCA) is assumed to operate perfectly in obtaining and scoring the first local maximum from a sum pulse. Forcing and other variance reduction techniques are used to accelerate the simulation process. Simulation results showed excellent agreement with benchmark measurements with an Fe-55 source and a Si(Li) detector. Use of this code in conjunction with a Monte Carlo code that simulates true spectral responses will allow one to simulate the actual pulse height spectra obtained for radiation analyzer systems. This, in turn, will allow the use of a suitable nonlinear approach for the routine analysis of *in vivo* medical or on-line process samples at very high counting rates.

The Lahey/Fujitsu Fortran 95 Compiler Release 5.50a on Windows XP was used to create the included executable. The executable can also be run under Windows 2000, but the code cannot be run on other computers because the Fortran source is not included. The package is transmitted on a CD in a WinZIP file that contains the user's guide, the Windows executable and test cases. Reference: User's Guide (February 2004). Fortran 77; PC Windows (P00528PC58600).

DLC-221/YUMMY

OP SYS: Unix, Windows
Language: N/A
Computers: Workstation, PC
Format: Unix, tar

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed this multi-temperature, neutron cross section library based on ENDF/B-V and ENDF/B-VI for use with MCNP. Point-wise cross sections that exist in most MCNP neutron libraries contain data for room temperature, i.e., at 294K. Although some isotopes contain data generated at one or more temperatures other than the room temperature. The availability of data for a wider range of temperatures is important for applications such as criticality safety. For this purpose, point-wise cross sections in ACE format were generated for 134 nuclides at 7 temperatures, including 0K, 294K, 373.15K, 423.15K, 473.15K, 523.15K, 587K.

The cross sections in the new library are called YUMMY (YUcca Mountain MCNP-librarY) were generated with the NJOY99.90 code. In NJOY, a 0.1% tolerance was utilized in the RECONR,

BROADR and THERMR modules. For data generation at 0K, only the RECONR and ACER modules were used. YUMMY contains 134 nuclides as listed in Table 1 of the package abstract on the RSICC website. This table lists nuclide identifiers in the MCNP library and their sources of data. In the new library, ENDF/B-V based data have nuclide identifier extensions of 80c, 81c, 82c, 83c, 84c, 85c and 86c for 0K, 294K, 373.15K, 423.15K, 473.15K, 523.15K, 587K, respectively. For ENDF/B-VI, extensions 91c, 92c, 93c, 94c, 95c and 96c are used. For example, 92238.80c corresponds to 238U cross sections based on ENDF/B-V at 0K.

No source files are included in this package. The code MAKXSF, which is distributed with MCNP, can be used to perform conversion between formatted, sequential access (ASCII) files and unformatted, direct access (binary) files. Two forms of the library are included in the package: ASCII and big endian binary. The YUMMY data and XSDIR files are transmitted in GNU compressed Unix tar files on 2 CDs or 1 DVD. Reference: Draft report ORNL/TM-2204/124 (June 2004). ASCII and binary; Unix workstations or PC (D00221MNYCP00).

CONFERENCES, COURSES, SYMPOSIA

RSICC attempts to keep its users/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 **FINCHSY@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. Below is a condensed list of the **conferences** only listed chronologically. More details (if available) are listed alphabetically following the table.

Condensed Table of Conferences

Name of Conference	Date and Location	Web Site	Abstract/Paper Due Date
Americas Nuclear Energy Symposium 2004	Oct. 3-6, 2004 Miami Beach, FL	**http://anes.fiu.edu/2004/**	NA
11th International Congress on Neutron Capture Therapy (ISNCT-11)	Oct. 11-15, 2004 Boston, Massachusetts	**http://meetingsandconferences.com/ISNCT-11/**	
ANS Annual Winter Meeting and Nuclear Technology Expo	Nov. 14-18, 2004 Washington, D.C.	**http://www.ans.org/meetings/**	
2005 HEART Conference	Mar. 21-25, 2005 Tampa, Florida		passed

Name of Conference	Date and Location	Web Site	Abstract/Paper Due Date
Monte Carlo 2005 Topical Meeting	Apr. 17-21, 2005 Chattanooga, Tennessee	**http://MonteCarlo2005.org**	**call for papers**
Twelfth International Symposium on Reactor Dosimetry	May 8-13, 2005 Gatlinburg, Tennessee	**announcement / call for papers in pdf** **http://reactordosimetry.com**	passed
2005 International Congress on Advances in Nuclear Power Plants (2005 ICAPP)	May 15-19, 2005 Seoul, Korea	**http://www.icapp2005.org**	passed
International Nuclear Chemistry Society (INCS)	May 22-29, 2005 Kusadasi, Turkey	**http://incs.ege.edu.tr/1st-INCC.html**	Oct. 1, 2004
ANS Annual Summer Meeting	June 5-9, 2005 San Diego, California	**http://www.ans.org/meetings/**	
Seventh Topical Conference on Nuclear Applications of Accelerator Technology "AccApp05"	Aug. 28-Sept. 1, 2005 Venice, Italy	future	Mar. 31, 2005
230th American Chemical Society National Meeting	Aug. 28-Sept. 1, 2005 Washington, D.C.	**www.cofc.edu/~nuclear** (future web site)	April 2005
International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear Biological Applications (M&C 2005)	Sept. 12-17, 2005 Avignon, France	**http://mcavignon2005.cea.fr**	
2005 NCSD Topical Meeting	Sept. 19-22, 2005 Knoxville, Tennessee	**http://meetingsandconferences.com/ncsd2005/**	Jan. 7, 2005
Eleventh International Topical Meeting on Nuclear Reactor Thermal Hydraulics	Oct. 2-6, 2005 Avignon, France	**http://nureth11.com/**	passed

2004 Conferences

Advanced Training Course/Workshop on Electron-Photon Transport Modeling with PENELOPE-2003 Physics, Code Structure and Operation

The Advanced Training Course/Workshop on Electron-Photon Transport Modeling with PENELOPE-2003 Physics, Code Structure and Operation will be held **October 18-21, 2004,** in Athens, Greece.

This course is addressed to researchers in radiation physics and applications. The main objective is to provide participants with a detailed description of PENELOPE and a broader perspective on Monte Carlo methods for simulation of electron/photon transport. The emphasis will be on the reliability of the interaction models and on the accuracy of the numerical methods and approximations implemented in the codes. A number of practical cases will be discussed, including benchmark comparisons with experiments. The course will include practical sessions on the efficient use of the example main programs for planar and cylindrical geometries and on the design of the main program for specific applications.

For more information contact Marios Anagnostakis (tel +30-210-7722912, fax +30-210-7722914, email **managno@nuclear.ntua.gr**, url **http://www.nea.fr/lists/penelope.html**, registration **http://www.nea.fr/html/dbprog/penelope2004-1reg.html**).

Americas Nuclear Energy Symposium 2004

The United States Department of Energy and the American Nuclear Society are pleased to announce the next Americas Nuclear Energy Symposium (ANES 2004), which will take place Sunday through Wednesday, **October 3-6, 2004,** at the Deauville Beach Resort in Miami Beach, Florida.

ANES 2004 will feature the theme "Building Bridges to Greater Cooperation." The symposium will provide you with the latest information about the use and development of nuclear energy technology throughout the Americas. The format will include open panel discussions, case studies, technical breakout sessions, and an exhibit of international organizations, not to mention great opportunities to network.

ANES 2004 will include sessions on nuclear reactors; technology development and deployment; production, disposal and usage of isotopes; fuel cycle and waste management; new applications; finance; and environmental, infrastructure and communications issues.

Another successful event is anticipated with the largest number of participants yet attending from across Canada, the Caribbean, Latin America and the United States. Please visit the website at **http://anes.fiu.edu** for frequent updates.

MCNPX Workshops

Lead Teachers: Drs. John Hendricks, Gregg McKinney, Laurie Waters
Organizer: HQC Professional Services Contact: **bill@mcnpxworkshops.com**
More Information: **http://mcnpxworkshops.com** MCNPX homepage: **http://mcnpx.lanl.gov**

Nov. 15-19, 2004	Introductory	Europe (TBA)

2005

Jan. 24-28, 2005	Introductory	San Diego, CA
Feb. 28-Mar. 1	Intermediate	Europe (TBA)
June 13-17	Introductory	Santa Fe, CA
Aug. 1-5	Introductory (?)	Seoul, Korea
Sept. 19-23	Intermediate	Boston or D.C.
Nov. 7-11	Introductory	Santa Fe, CA

MCNPX is the LANL all-particle, all-energy (eV-TeV) Monte Carlo transport code based on MCNP4C, LAHET, CEM, etc. MCNPX has been in active development since 1995, sponsored by the particle accelerator community. It has now become an accepted tool for a broad range of applications by nuclear engineers, physicists, and scientists. The MCNPX development effort has expanded the use of the Los Alamos tools to applications such as APT, waste transmutation, accelerator shielding and health physics, particle beam cancer therapy, space shielding and cosmic ray analysis, single event effects in semiconductors, radiography, and more detailed analysis of the effects of light and heavy ions in matter. In addition, the entire functionality of MCNP4C is retained. New variance reduction and data analysis techniques, many adapted from high-energy accelerator methodologies, have also been added, such as the extensive "mesh tally" capability which allows up to 3-d plotting of particle tracks, fluence and fluence-derived quantities, energy deposition, next event estimator generation contributions and particle sources.

The workshops include hands-on instruction, generally on PC Windows machines. Subject to participant export approval for the MCNPX beta test team, participants will be able to access the Fortran-90 version of MCNPX 2.4, the LA150 (150 MeV) cross-section data for over 40 isotopes for incident neutrons and protons and 12 for photonuclear interactions, and a notebook of viewgraphs. Follow-up consultation for class participants will be provided.

The classes are taught by experienced MCNPX code developers and instructors. More information on code versions and capabilities is available at MCNPX Workshops web site **http://mcnpxworkshops .com**.

SCALE Training Courses at ORNL (Fall 2004)

http://www.ornl.gov/sci/scale/trcourse.html

Date	Title	Registration Fee*	Description
Oct. 25-29, 2004	SCALE Source Terms and Shielding Course	$1800	SCALE shielding and depletion/decay sequences (including ORIGEN-ARP)
Nov. 1-5, 2004	KENO V.A Criticality Safety	$1800	CSAS/KENO V.a (including KENO3D and GeeWiz

Nov. 8-10, 2004	TSUNAMI Sensitivity/Uncertainty Tools (KENO V.a course prerequisite for new users)	$1200	1-D and 3-D sensitivity/uncertainty analysis using XSDRNPM and KENOV.a
Nov. 11-12, 2004	STARBUCS Burnup Credit (KENO V.a course prerequisite for new users)	$1000	Automated burnup credit analysis using ORIGEN-ARP and KENO (V.a or VI).

*A late fee of $300 will be applied after September 24, 2004.
A discount of $600 per each additional week will be applied for registration to multiple courses.

2005 Conferences

Monte Carlo 2005 Topical Meeting

Monte Carlo 2005 will be held **April 17-21, 2005,** (Sunday-Thursday). The theme of the conference will be "The Monte Carlo Method: Versatility Unbounded in A Dynamic Computing World."

The conference site is the Chattanooga Marriott and Convention Center in Chattanooga, Tennessee. The conference will be hosted by the American Nuclear Society (ANS) Oak Ridge/Knoxville Section, with ANS Radiation Protection and Shielding Division (RPSD) as the sponsoring division and Mathematics and Computations Division (MCD) as a co-sponsor. Co-sponsors will also include Oak Ridge National Laboratory (ORNL), Radiation Safety Information Computational Center (RSICC) and the Organization for Economic Cooperation and Development (OECD) Nuclear Energy Agency Data Bank (NEADB).

The Monte Carlo method and its applications have been frequently addressed at several major conferences and workshops organized in recent years in the area of nuclear applications. Monte Carlo topics have included radiation shielding, radiation physics, medical physics, and high energy physics. Significant developments have taken place in computational and data issues, resulting in state-of-the-art computer codes and tools. Monte Carlo 2005 is the next in a series devoted to the topic, following Monte Carlo 2000 which was held in Lisbon, Portugal, in October 2000.

Conference topics will include: Methods Advancements (Physics) (proton transport, neutron transport, gamma transport, electron transport, heavy ion transport); Nuclear Data Advancements (proton transport, neutron transport, gamma transport, electron transport, heavy ion transport); Mathematical and Computational Advances (experiments & benchmarks, mathematical advances, computational advances, visualization); Applications (reactor, medical, accelerator, neutron science, dosimetry, shielding, fuel cycle, waste management, space & aviation, fusion, criticality safety, non-nuclear applications).

The website is **http://MonteCarlo2005.org**. Full papers are due January 21, 2005. For information contact Bernadette Kirk (**kirkbl@ornl.gov**, 865-574-6176), General Chair, or Jeff Johnson (**johnsonjo@ornl.gov**, 865-574-5262), Technical Chair.

2005 International Congress on Advances in Nuclear Power Plants (2005 ICAPP)

The 2005 International Congress on Advances in Nuclear Power Plants will be held from **May 15-19, 2005**, in Seoul, Korea. There is no doubt that continuing support and interest will be a crucial element for the success of the first ICAPP held in Asia.

The ICAPP has grown in stature since the first congress was held in 2002 to share ideas and visions for advances in nuclear power plants among operators, researchers and scholars. The 2005 ICAPP will attract the attention of the world's nuclear experts with many outstanding presentations of new developments and approaches in various studies and industrial projects. Please take the opportunity to share the results of your latest studies at the 2005 ICAPP. To ensure a successful congress, the 2005 ICAPP will consist of invited plenary sessions and topical technical sessions, as follows:
1. Water-Cooled Reactor Programs and Issues, 2. High Temperature Gas-Cooled Reactors, 3. Long-Term Reactor Programs and Strategies, 4. Operations, Performance and Reliability Management, 5. Plant Safety Assessment and Regulatory Issues, 6. Thermal Hydraulic Analysis and Testing, 7. Core and Fuel Cycle Concepts and Experiments, 8. Materials and Structural Issues, 9. Nuclear Energy and Sustainability including Hydrogen, Desalination and Other Applications, and 10. Near-Term Deployment.

Please visit the website **http://www.icapp2005.org** to find out more about the 2005 ICAPP in Seoul.

Nuclear Applications of Accelerator Technology "AccApp05" - 7th Topical Conference

The forthcoming International Topical Meeting on Nuclear Applications of Accelerator Technology (AccApp'05) is the seventh in a series of international meetings of the Accelerator Applications Division of the American Nuclear Society. It is scheduled for **August 28-September 1, 2005,** at the Island of San Servolo, Venice, Italy. The purpose of AccApp'05 is to provide an international forum for presenting and discussing the use of particle accelerator technology for a variety of applications. It is intended to focus on a wide area of applications including, among others, spallation neutron sources, isotope production, medical therapy, nuclear waste transmutation, energy production, high power accelerators under construction and future projects, material issues in a particle environment, nuclear data and experiments, codes and models for particle transport, system engineering, thermo hydraulics, contraband detection and radiation protection. For more information see: **http://www.nea.fr/listsmh/satif/pdf00004.pdf**.

Eleventh International Topical Meeting on Nuclear Reactor Thermal Hydraulics

NURETH is the foremost international technical meeting on nuclear technology thermal hydraulics. The NURETH-11 meeting will be held in the historic Palace of the Popes in Avignon, France, **October 2-6, 2005**. For more information please go to **http://nureth11.com/**.

Reactor Dosimetry - 12th International Symposium

Approximately every three years the ASTM International Committee E10 on Nuclear Technology and Applications and the European Working Group on Reactor Dosimetry organize a symposium on reactor dosimetry. The 12th International Symposium on Reactor Dosimetry will be held in Gatlinburg, Tennessee, **May 8-13, 2005**. This symposium will be of interest to anyone involved in reactor dosimetry, including researchers, manufacturers and representatives from industry, utilities and regulatory agencies. The symposium theme is dosimetry for the assessment of irradiated reactor materials and reactor experiments, featuring radiation metrology techniques, data bases and standardization. Additional

information on paper submittal and specific focus topics can be obtained by visiting the Symposium's web site **http://www.reactordosimetry.com**. In addition to the 100 to 120 oral and poster papers on the topics given on the web site, the symposium will feature six informal round-table workshops and two introductory level tutorials. The workshops will focus on discussions of problems, conflicts, recommendations, news and ideas. The workshop titles for the 12th Symposium will be: Accelerators and Fusion, Adjustments Methods and Uncertainties, Cross Section Files and Uncertainties, LWR Surveillance Dosimetry, Radiation Damage Correlations, and Test and Research Facilities. The two introductory level tutorials will be held in parallel and will address the topics of "Radiation Effects in Reactor Materials" and "Neutron Scattering Applications in Material Science." This symposium is a must-attend meeting for those serious about the field of radiation dosimetry and will be the perfect opportunity for sharing ideas and discussions with colleagues in the field of radiation dosimetry. This meeting will also be ideal for those new to the field who want to be up to date on dosimetry related issues.

CALENDAR

October 2004

Americas Nuclear Energy Symposium 2004, Oct. 3-6, 2004 Miami Beach, Florida. For more information: **http://anes.fiu.edu/2004/**.

11th World Congress on Neutron Capture Therapy (ISNCT-11), Oct. 11-15, 2004, Boston, MA. Contact: Robert G. Zamenhof (tel 617-636-1681, fax 617-636-5867, email **rzamenhof@tufts-nemc.org**, url **http://meetingsandconferences.com/ISNCT-11/**)

Advanced Training Course / Workshop on Electron-Photon Transport Modeling with PENELOPE-2003, Physics, Code Structure and Operation, Oct. 18-21, 2004, Athens, Greece. Contact: Marios Anagnostakis (tel +30-210-7722912, fax +30-210-7722914, email **managno@nuclear.ntua.gr**, url **http://www.nea.fr/lists/penelope.html**).

November 2004

ANS Annual Winter Meeting and Nuclear Technology Expo, Nov. 14-18, 2004, Washington. D.C. For more information: **http://www.ans.org/meetings/**.

MCNPX Introductory Workshop, Nov. 14-19, 2004, Europe (TBA) Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

January 2005

MCNPX Introductory Workshop, Jan. 24-28, 2005, San Diego, CA. Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

February 2005

MCNPX Intermediate Workshop, Feb. 28-Mar. 1, 2005, Europe (TBA). Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

March 2005

Forty-First Annual Meeting of the National Council on Radiation Protection and Measurements, Mar. 30-31, 2005, Arlington, VA. Additional information: **http://www.ncrp.com**.

April 2005

Monte Carlo 2005 Topical Meeting, Apr. 17-21, 2005, Chattanooga, TN. Contact: Bernadette Kirk (tel 865-574-6176, fax 865-241-4046, email **kirkbl@ornl.gov**, url **http://MonteCarlo2005.org**).

May 2005

12th International Symposium on Reactor Dosimetry, May 8-13, 2005, Gatlinburg, TN. Contact: Dr. James M. Adams (tel 301-975-6205, fax 301-926-1604, url **http://reactordosimetry.com**).

1st International Nuclear Chemistry Society (INCS), May 22-29, 2005, Kusadasi, Turkey. For

more information: **http://incs.ege.edu.tr/1st-INCC.html**.

June 2005

ANS Annual Summer Meeting, June 5-9, 2005, San Diego, CA. For more information: url **http://www.ans.org/meetings/**.

MCNPX Introductory Workshop, June 13-17, 2005, Santa Fe, CA. Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

August 2005

MCNPX Introductory(?) Workshop, Aug. 1-5, 2005, Seoul, Korea. Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

Seventh Topical Conference on Nuclear Applications of Accelerator Technology "AccApp05", Aug. 28-Sept. 1, 2005, Venice, Italy. For more information: **http://www.nea.fr/listsmh/satif/pdf00004.pdf**.

230th American Chemical Society National Meeting, Aug. 28-Sept. 1, 2005, Washington, D.C.

September 2005

International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear Biological Applications (M&C 2005), Sept. 12-17, 2005, Avignon, France. Contact: Dr. Richard Sanchez (email **avignon2005@drnsac.cea.fr**; url **http://mcavignon2005.cea.fr**).

MCNPX Intermediate Workshop, Sept. 19-23, 2005, Boston, MA or Washington, D.C. Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

2005 NCSD Topical Meeting, Sept. 19-22, 2005, Knoxville, TN. For more information: **http://meetingsandconferences.com/ncsd2005/**.

October 2005

Eleventh International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Oct. 2-6, 2005, Avignon, France. For more information: **http://nureth11.com**, **nureth11@cea.fr**.

November 2005

MCNPX Introductory Workshop, Nov. 7-11, 2005, Santa Fe, CA. Contact: Bill Hamilton (tel 505-455-0312, email **bill@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).