Radiation Safety Information Computational Center



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"What you have outside you counts less than what you have inside you." -- B. C. Forbes

WISHING ALL OF RSICC CUSTOMERS WONDERFUL HOLIDAYS !

RSICC Salutes Outgoing Director

RSICC salutes Hamilton Hunter, RSICC director from 2000-2004. Under his leadership, Hamilton pushed the continued development of benchmarks through his active participation in the American Nuclear Society and the updates of the Shielding Integral Benchmark Database (SINBAD). Hamilton is moving on to new horizons. Former director, Bernadette Kirk, assumes the role of director once again.

Changes to the Computer Code and Data Collection

CCC-467/ITS 3.0

OP SYS: Linux, Windows, Unix Language: Fortran 77 Computers: PC & Workstations Format: Unix & Windows Ecopule, Inc., Springfield, Virginia, contributed a Linux implementation of the Integrated TIGER Series. ITS3, which was developed at Sandia National Laboratories, Albuquerque, New Mexico, permits a state-of-the-art Monte Carlo solution of linear, time-integrated, coupled electron/photon radiation transport problems with or without the presence of macroscopic electric and magnetic fields of arbitrary spatial dependence. RSICC tested the Linux version on an AMD Athlon under RedHat Linux 7.3 with GNU Fortran 0.5.26 and gcc 2.96.

The only code changes made facilitate execution under Linux. Unix and Windows distribution files were not modified for this release. A Fortran 77 compiler is required on Unix systems. Executables are included in the Windows and Linux versions. The

package is distributed on CD in Unix tar files and in a self-extracting compressed Windows file.

References: SAND91-1634 (March 1992), SAND92-0073, UC-705 (April 1992). Fortran 77; Cray, IBM, VAX, SUN, Personal Computers (C00467/MNYCP/02).

<u>CCC-522/VARSKIN 3</u> <u>v.2.2.0</u>

OP SYS: Windows Language: Visual Basic & Fortran Computers: PC Format: Windows Colorado State University, Fort Collins, Colorado, contributed a newly frozen version of this code system to calculate the radiation dose (gamma and beta) to skin from radioactive contamination of skin or protective clothing. In this VARSKIN Version 2.2.0 update source files were added to the package and on-line help was implemented. The code is a modification of VARSKIN MOD 2 and was designed to operate in a Windows® environment. VARSKIN 3 uses improved algorithms for calculating skin dose that take advantage of the increased power of modern personal computers. The new code is significantly easier to learn and use than VARSKIN 2 and includes numerous corrections and enhancements that are noted in the User Manual. The computer code SADDE (Scaled Absorbed Dose Distribution Evaluator)

Mod 2 is incorporated into VARSKIN 3, thus eliminating the need for additional input from the user.

Microsoft Visual Basic 6 (for the user interface) and Compaq Visual Fortran Version 6.6 compilers were used to create the Windows executables which are included in the package. VARSKIN 3 was tested at RSICC on a Pentium IV running Windows XP with Service Pack 2.0 and Windows 2000 SP 4. A graphics card is required. The package is transmitted on a CD in Windows files. Reference: NUREG/CR Draft (November 2004). Visual Basic and Fortran; Pentium (C00522PC58604).

CCC-710/MCNP5 Release 1.30

OP SYS: Unix, Linux, Windows Language: Fortran 90 & C Computers: Workstations, PC, and MAC Format: Unix & Windows Los Alamos National Laboratory, Los Alamos, New Mexico, contributed a newly frozen version of this general purpose, Monte Carlo, N-Particle code system that can be used for neutron, photon, electron, or coupled neutron/photon/electron transport. The package was updated with document revisions; a patch file; the corrected source and new executables for Windows, Linux, and MAC OSX; and an updated Visual Editor executable for Windows. Also accompanying this release is a new data library, t16_2003, which is based on preliminary ENDF/B-VII evaluations for 15 isotopes from Los Alamos National Laboratory, Nuclear Physics Group T-16. MCNP5 1.30 has 4 new features and 15 bug fixes. The patch and patch documentation to update the MCNP5 source, allowing users to re-compile it, are available now and can be downloaded from:

http://www-xdiv.lanl.gov/x5/MCNP/resources.html.

Users who are not able to re-compile the source must order the new MCNP5 distribution CDROMs from RSICC through the Ordering page of the RSICC website. The new Visual Editor executable and data library will likewise be distributed only with the new package.

The Windows-based PC version of VISED can be used for interactively constructing and visualizing MCNP geometry. The package is distributed on three 80 min., 700MB CDs. One CD contains GNU compressed Unix tar files that can be read on Unix, Linux or MAC OSX. The other two CDs are for Windows users and install the code and libraries in the same step by step automated fashion common to many Windows programs using InstallShield. Included are electronic reports; source codes; data libraries; Linux, PC and MAC executables; test problems; and installation scripts. References: LA UR 03

1987 (June 2004), LA CP 03 0245 (June 2004), LA CP 03 0284 (June 2004), informal report on VISED (2002). Fortran 90 and C; Unix systems, Windows PCs, Linux systems, Macintosh with MacOSX, Itanium (C00710MNYCP02).

PSR-395/LAPUR 5.2

OP SYS: Windows Language: Fortran Computers: PC Format: Windows ZIP Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed a newly frozen version of the LAPUR 5.2 code system, which is a mathematical description of the core of a boiling water reactor. Its two linked modules, LAPURX and LAPURW respectively, solve the steady state governing equations for the coolant and fuel and the dynamic equations for the coolant, fuel, and neutron field in the frequency domain.

The original version of LAPUR was limited to seven thermal-hydraulic regions (i.e., channels); the current version, LAPUR 5.2, has been verified with up to 200 channels, each of which can have its own axial and radial power shape. Another

significant parameter upgrade is the calculation of the transfer functions for up to 100 frequencies. All code dimensions are now parameterized and can be increased if necessary. Default values and more details are noted in the user's manual. The Microsoft Fortran PowerStation 4.0 compiler was used to build the included executables. These were tested on Pentium computers under Windows2000 Service Pack 4 and WindowsXP Service Pack 2. The package is transmitted in a WinZIP file on a CD. Reference: NUREG/CR-6696, ORNL/TM-2000/340 (November 2000). Fortran; Personal Computers (P00395PC58601).

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 **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 T	able of	Conference	S
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Name of Conference	Date and Location	Web Site	Abstract/Paper Due Date
Waste Management '05	Feb. 27-Mar. 3, 2005 Tucson, Arizona	http://www.wmsym.org	na

Name of Conference	Date and Location	Web Site	Abstract/Paper Due Date
2005 HEART Conference	Mar. 21-25, 2005 Tampa, Florida		passed
AIChE Spring National Meeting	Apr. 10-14, 2005 Atlanta, Georgia	<u>http://www.aiche.org/</u> <u>conferences/</u>	Feb. 11, 2005
Monte Carlo 2005 Topical Meeting	Apr. 17-21, 2005 Chattanooga, Tennessee	http://MonteCarlo2005.org	passed
Twelfth International Symposium on Reactor Dosimetry	May 8-13, 2005 Gatlinburg, Tennessee	<u>announcement / call for</u> <u>papers in pdf</u>	passed
		http://reactordosimetry.com	
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	<u>http://incs.ege.edu.tr/1st-</u> <u>INCC.html</u>	passed
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
XIX Nuclear Physics Divisional Conference (NPDC19) of the European Physical Society	Sept. 5-9, 2005 Pavia, Italy	http://www.pv.infn.it/~npdc1 9	NA
International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear Biological Applications (M&C 2005)	Sept. 12-15, 2005 Avignon, France	http://mcavignon2005.cea.fr	Jan. 15, 2005

Name of Conference	Date and Location	Web Site	Abstract/Paper Due Date
2005 NCSD Topical Meeting	Sept. 19-22, 2005 Knoxville, Tennessee	http://meetingsandconferen ces.com/ncsd2005/	Jan. 7, 2005
Eleventh International Topical Meeting on Nuclear Reactor Thermal Hydraulics	Oct. 2-6, 2005 Avignon, France	http://nureth11.com/	passed

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

Jan. 24-28, 2005	Introductory	San Diego, CA
Feb. 28-Mar. 4	Intermediate	Mol, Belgium
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**.

Monte Carlo 2005 Topical Meeting

Monte Carlo 2005 will be held **April 17-21, 2005,** (Sunday-Thursday). The theme of the conference is "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 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 <u>http://MonteCarlo2005.org</u>. Full papers are due January 21, 2005. For information contact Bernadette Kirk (<u>kirkbl@ornl.gov</u>, 865-574-6176), General Chair, or Jeff Johnson (<u>johnsonjo@ornl.gov</u>, 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.

Visit the website <u>http://www.icapp2005.org</u> to find out more about the 2005 ICAPP in Seoul.

International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear and Biological Applications

The International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear and Biological Applications will be held at the 'Palais des Papes,' Avignon, France, **September 12-15, 2005**.

The meeting offers an environment for interdisciplinary exchange among research in the nuclear field and comprises 19 General Technical sessions and 13 Invited Technical sessions. Details on the sessions and on the organization of the meeting are given at the web site: <u>http://mcavignon2005.cea.fr/</u>.

Papers are solicited in all areas of computational and mathematical methods and related disciplines including reactor physics, material sciences, shielding, fluid-dynamics, medical and biological applications, environmental sciences, fundamental mathematics and benchmarking.

We are now less than one year from the meeting dates and our web has been opened for the submission of extended summaries (1000 words < 1500 words). The deadline for summary submission is January 15, 2005.

Instructions on summary submission are given in the web pages under the 'Authors' button.

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

DATES: **June 6 -10, 2005** (4.5 days) FEE: \$1,450 per person PLACE: The MESA Complex, Room 130, University of New Mexico-Los Alamos Campus

Monte Carlo calculations are ideally suited to solving a variety of problems in radiation protection and dosimetry. This course is aimed at the health physicist, medical physicist, and rad engineer with no prior experience with Monte Carlo techniques. The focus is almost entirely on the application of MCNPTM to solve a variety of practical problems in radiation shielding and dosimetry. The intent is to "jump start" the student toward using MCNP productively. Extensive interactive practice sessions are conducted on personal computers. Topics will include an overview of the MCNP code and the Monte Carlo method, input file preparation, geometry, source definition, standard MCNP tallies, interpretation of the output file, exposure and dose rate calculations, radiation shielding, photon skyshine, detector simulation and dosimetry. Students will be provided with a comprehensive class manual and a diskette containing all of the practice problems. This course has been granted 32 Continuing Education Credits by the AAHP, and 4.5 CM points by the American Board of Industrial Hygiene.

The course is offered by the Health Physics Measurements Group at the Los Alamos National Laboratory and is co-sponsored by RSICC.

Registration is available online at: <u>http://drambuie.lanl.gov/~esh4/mcnp.htm</u>. Make checks payable to the University of California (checks must be in U.S. dollars on a U.S. bank) and mail together with name, address, and phone number to: Los Alamos National Laboratory, Group HSR-4, MCNP Class, David Seagraves, Mail Stop J573, Los Alamos, NM 87545.

Inquiries regarding registration and class space availability should be made to David Seagraves, 505-667-4959, fax: 505-665-7686, e-mail: <u>dseagraves@lanl.gov</u>. Technical questions may be directed to Dick Olsher, 505-667-3364; e-mail: <u>dick@lanl.gov</u>.

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

Nuclear Applications of Accelerator Technology "AccApp05"

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 ANS. It is scheduled for **August 28-September 1, 2005**, on 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, 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 <u>http://nureth11.com/</u>.

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 mustattend meeting for those serious about the field of radiation dosimetry and will offer the 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

December 2004

MARS15 Code System Course, Dec. 1-3, 2004, Stanford, CA. Contact: Heinz Vincke (hvincke@slac.stanford.edu) or Betty Eaton (bjeaton@slac.stanford.edu), or click on MARS15 course.

International Workshop on Neutrons for Science (NFS) at SPIRAL-2, Dec. 13-14, 2004, GANIL (Caen), France (url <u>http://www.ganil.fr/spiral2ws2/</u>).

January 2005

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

February 2005

- Waste Management '05, Feb. 27-Mar. 3, 2005, Tucson, AZ. Contact: Michelle Rehmann (Tech. Program Cord., tel 520-696-0399; email <u>michelle rehmann@wmarizona.org</u>; url <u>www.wmsym.org</u>).
- MCNPX Intermediate Workshop, Feb. 28-Mar. 4, 2005, Mol, Belgium. Contact: Bill Hamilton (tel 505-455-0312, email <u>bill@mcnpxworkshops.com</u>, url <u>http://mcnpxworkshops.com</u> 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: <u>http://www.ncrp.com</u>.

April 2005

- AIChE Spring National Meeting, Apr. 10-14, 2005, Atlanta, GA. Contact: James J. Laidler (630-252-4479, fax 630-972-4479, email <u>laidler@cmt.anl.gov</u> url <u>http://www.aiche.org/conferences/</u>).
- Monte Carlo 2005 Topical Meeting, Apr. 17-21, 2005, Chattanooga, TN. Contact: Bernadette Kirk (tel 865-574-6176, fax 865-241-4046, email <u>kirkbl@ornl.gov</u>, url <u>http://MonteCarlo2005.org</u>).

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 <u>http://reactordosimetry.com</u>). 1st International Nuclear Chemistry Society (INCS), May 22-29, 2005, Kusadasi, Turkey. For more information: <u>http://incs.ege.edu.tr/ 1st-INCC.html</u>.

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 <u>bill@mcnpxworkshops.com</u>, url <u>http://mcnpxworkshops.com</u> for details).

August 2005

- MCNPX Workshop, Aug. 1-5, 2005, Seoul, Korea. Contact: Bill Hamilton (tel 505-455-0312, email <u>bill@mcnpxworkshops.com</u>, url <u>http://mcnpxworkshops.com</u> for details).
- Seventh Topical Conference on Nuclear Applications of Accelerator Technology "AccApp05", Aug. 28-Sept. 1, 2005, Venice, Italy. For more information: <u>http://www.nea.fr/</u> <u>listsmh/satif/pdf00004.pdf</u>.

September 2005

- XIX Nuclear Physics Divisional Conference (NPDC19) of the European Physical Society, Sept. 5-9, 2005, Pavia, Italy. Contact: Saverio Altieri (email <u>saverio.altieri@pv.infn.it</u>, url <u>http://www.pv.infn.it/~npdc19</u>).
- International Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Nuclear Biological Applications (M&C 2005), Sept. 12-15, 2005, Avignon, France. Contact: Dr. Richard Sanchez (email <u>avignon2005@drnsac.cea.fr</u>; url <u>http://mcavignon2005.cea.fr</u>).
- MCNPX Intermediate Workshop, Sept. 19-23, 2005, Boston, MA, or Washington, D.C. Contact: Bill Hamilton (tel 505-455-0312, email <u>bill@mcnpxworkshops.com</u>, url <u>http://mcnpxworkshops.com</u> for details).
- 2005 NCSD Topical Meeting, Sept. 19-22, 2005, Knoxville, TN. For more information:

http://meetingsandconferences.com/ncsd20 05/.

October 2005

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

November 2005

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