Radiation Safety Information Computational Center

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"A dwarf standing on the shoulders of a giant can see farther than the giant himself."
--Stekel

Printable PDF file of this newsletter available at: **http://www-rsicc.ornl.gov/NEWSLETTER.html**.

Nuclear Data

Reliable nuclear cross section data and their uncertainties (sensitivity, covariance) are the basis for the design of nuclear systems. In order for nuclear cross section data to be utilized in application, they must be measured, evaluated, put into standard format, tested, released as part of the Evaluated Nuclear Data File (ENDF) library, and then processed into specific formats for subsequent use by the analytical models. The evaluation and the processing activities entail significant effort necessary to make the data available for use in nuclear applications.

In some cases, data libraries are included as part of an RSICC code “package”. In such cases, the license and export control form for that package covers both the code and its accompanying data.

In those instances in which a separate data library package is required to run the code, RSICC will no longer supply the necessary library unless that library is specifically requested. For instance, prior to April 1, users could request MCNP4C2 and would be sent the MCNP4C2 code package and its associated data package, MCNPDATA. Effective April 1, to receive a separately packaged data library, users must now specifically request the library in addition to the code package. A software license form and export control understanding and agreement form will be required for each package requested.

Export Control Information

In compliance with the Export Administration Act of 1979, the U. S. Department of Commerce through its Bureau of Export Administration regulates and enforces export control for reasons of national security, nonproliferation, international foreign policy and short supply. The regulations and provisions governing exports are detailed in the Code of Federal Regulations 15 CFR 730 through 15 CFR 774, including supplements.

Exports may include commodity items, software and/or technical data transferred outside the United States. Such transfers can occur via mail or shipment, by fax, electronic mail, telephone or computer networking, via hand-carried materials, or verbally through visits and workshops, and/or by any other means. An export is also deemed to have taken place when such EAR controlled items are released to a foreign national within the United States unless that foreign national has been granted U. S. citizenship, holds a permanent resident visa or has been granted status as a "protected person".

Software is one of the groups of items delineated on the Commerce Control List and subject to export control regulations. RSICC's software has been designated by the Department of Commerce as Classification OD999 Specific Software. As such, requesters must sign and submit an Export Control Understanding and Agreement form to receive software through RSICC. Through submission of that export control form, the user agrees to abide by all applicable United States Export Control laws and regulations. The user also agrees to prohibit direct or indirect access to the software by any individual, organization or party engaged in nuclear proliferation activities and/or identified on the Denied Entities List, Denied Parties List, Terrorist Countries List, or Specially Designated Nationals and Blocked Persons List specified on the export form.

Because of the potentially serious consequences that may result from the failure to comply with U. S. export control laws and regulations, RSICC users must be aware of their export control obligations, particularly in the use and sharing of RSICC software. Administrative, civil and criminal penalties can result from non-compliance. We strongly suggest you contact your Export Control Coordinator/Liaison to assist you in any matters related to export control. We also refer you to the Bureau of Industry and Security web site (**http://www.bxa.doc.gov/**) for additional links and further information detailing your export control obligations.

Roadmap

With the growth of electric power generation expected to reach more than 390 MW units by 2020, the National Energy Policy recommends expansion of nuclear power generating capacity to meet energy diversity and energy security objectives. The U.S. Department of Energy Office of Nuclear Energy, Science, and Technology has formed a joint government/industry cost-shared program, Nuclear Power 2010, to develop advanced reactor technologies and demonstrate new regulatory processes to facilitate the construction and licensing of new nuclear power plants in the U.S. A Near-Term Deployment Working Group directed by the DOE Nuclear Energy Research Advisory Committee issued a "A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010" which recommends actions to be taken to support the deployment of these advanced nuclear power plants. The Roadmap and additional information about Nuclear Power 2010 can be found at **www.nuclear.gov**. Source: **http://www.nuclear.gov/planning/NP2010FACTSHEET.pdf**.

Nuclear Engineering Summer Camp

Attention parents of high school juniors and seniors who may be interested in nuclear engineering as a possible career. There will be a nuclear engineering summer camp held **July 21-26** and **July 28-August 2, 2002** in Rolla, Missouri. Please note that all educational fees, boarding, and lodging expenses for the camp are covered by grants from the U.S. Department of Energy and Ameren UE (formerly Union Electric Company). However, there is a $50 application fee, which will be refunded to a student only if he/she is not accepted in the camp.

Last year, 64 students from various parts of the country attended the summer camp. The students had very good experiences. Adam Zabriskie from Idaho Falls, ID wrote, "I had a wonderful time at Rolla. I learned, had fun, and got to travel. It was the best time I had all summer."

For more information, please see the website **http://www.nuc.umr.edu/summercamp/camp.html**, call 573-341-4720, or send e-mail to **nuclear@umr.edu**.

GEN IV News Column

The following information was taken from the *U.S. News*:

DOMINION stated in April it plans to pursue an early site permit at its North Anna nuclear power plant site in Virginia. Dominion was among the utilities that told NRC in a meeting that they plan to seek the permits, which would give them early NRC approval of potential sites for new reactors without having to commit to building new units there. Entergy said it expected to announce the selection of a site within the

next two to three weeks. Exelon previously told NRC it would announce its site by June 30. All three utilities are targeting 2003 for submitting their applications to NRC. Officials from all three companies also said they plan to apply for DOE grants to help pay for the NRC review of their applications. The DOE deadline for grant applications was April 15.

NRC Codes Made Available

Three U.S. Nuclear Regulatory Commission (NRC) software packages transferred from the Energy Science and Technology Software Center, Oak Ridge, Tennessee, to RSICC were added to the RSICC computer code collection. Please browse the computer code abstracts available at RSICC's www site for more information on these packages.

CCC-310/SFACTOR **CCC-316/XOQDOQ-82** **PSR-197/METD**

Changes to the Computer Code and Data Collection

Three changes were made to the computer code collection this month. Two newly frozen packages were released, and an addition was made to one package.

CCC-553/RASCAL 3.0.2

OP SYS: Windows
Language: Basic & Fortran
Computers: Pentium
Format: Windows

Oak Ridge National Laboratory, Oak Ridge, Tennessee, Athey Consulting, Charles Town, West Virginia, and Pacific Northwest National Laboratory, Richland, Washington, contributed a newly frozen version of the RASCAL code system. This version, which is designated Version 3.0.2 (March 2002 release), estimates reactor source term, atmospheric transport and doses resulting from radiological emergencies and can be used to assist in making protective action decisions. The Radiological Assessment System for Consequence AnaLysis (RASCAL) was developed for the U.S. Nuclear Regulatory Commission. It is designed to be used in the independent assessment of dose projections during response to radiological emergencies. The system supplements assessments based on plant conditions and quick estimates based on hand-calculational methods. The tools are designed to provide a comparison to EPA Protective Action Guidance and thresholds for acute health effects. RASCAL will be used by NRC personnel to conduct an independent evaluation of dose and consequence projections and for training and drills. The model was developed to allow consideration of the dominant aspects of source term, transport, dose, and consequences. The software consists of 4 tools accessed from a menu program (or shell). These 4 tools are:

- Source Term to Dose model (STDose) of RASCAL provides estimates of the integrated doses and consequences resulting from the accidental release of radionuclides to the atmosphere. Source terms are computed for reactor accidents, UF6 releases, uranium fires and explosions, and other materials accidents.
- Field Measurement to Dose model (FMDose) computes emergency worker limits and early-phase and intermediate-phase doses and derived intervention levels (DILs) from the analyses of field measurements.
- Decay Calculator (DecayCalc) computes radiological decay and daughter ingrowth.
- Meteorological Data Processor (MetProc) is the STDose module used for entering meteorological data and preparing the data for use by the atmospheric transport and diffusion models in RASCAL.

RASCAL is a Windows application for Pentium personal computers. The software has been installed and run successfully under the Windows 95, 98, Me, 2000 and NT 4 operating systems. Microsoft Visual Basic 6.0 and Compaq Visual Fortran 6.5 compilers were used to create the executable. The package is transmitted on one CD which includes executable, data, help files, and an install procedure.

Source files are not included in this release. Reference: NUREG-1741. Fortran 77, Basic; Pentium running Windows95, NT or later (C00553/PC586/06).

CCC-665/HABIT 1.1

OP SYS: DOS
Language: Fortran
Computers: PC
Format: Self-extracting Windows

The HABIT package was developed at Pacific Northwest National Laboratory, Richland, Washington, and has been updated with additional test cases. No other changes were made to the previous 1999 release. HABIT 1.1 is a suite of computer codes designed for evaluating control room habitability in the event of an accidental release of toxic chemicals or radioactive materials. EXTRAN 1.2, CHEM, TACT5, FPFP_2, and CONHAB are included in the system. Given information about the design of a nuclear power plant, a scenario for the release of toxic chemicals or radionuclides, and information about the air flows and protection systems of the control room, HABIT can be used to estimate the chemical exposure or radiological dose to control room personnel.

HABIT 1.1 runs on IBM PC or compatible under DOS 5.0 or higher and can be run in a DOS window of Windows95. The codes were compiled with Microsoft PowerStation V 1.0a compiler, and the user interface was compiled with Microsoft VisualBasic for DOS. The package is transmitted on a CD ROM as a self-extracting, compressed Windows file which includes source code, executables, sample problem input and output. References: NUREG/CR-6210 (June 1996) and Supplement 1 (September 1998). Fortran; IBM PC and documentation (C00665/IBMPC/01).

CCC-705/MCNPX 2.3.0

OP SYS: Unix or Linus (no Windows)
Language: Fortran 77 & C
Computers: Workstations & PC
Format: tar-compressed

Los Alamos National Laboratory, Los Alamos, New Mexico, contributed a newly frozen version of this Monte Carlo N-particle transport code system for multiparticle and high energy applications. MCNPX 2.3.0 extends the CCC-660/MCNP4B code to all particles and all energies. Photonuclear capability is included in this release. Neutron tabular data are used as in MCNP4B; above the table energy limits, physics modules are used. Current physics modules include the Bertini and ISABEL models taken from the LAHET Code System (LCS) and CEM. MCNPX eliminates the need now present in LCS to transfer large files between separate codes.

MCNPX includes a test library of cross sections for running the sample problems, but the test library is not suitable for real problems. Running the code requires continuous energy cross section data included in DLC-205/MCNPXDATA or equivalent data. To receive the data from RSICC, users must also request the MCNPXDATA package and must submit a software license and Export Control form for the data.

MCNPX executes on most computers running Unix or Linux operating systems. No Windows version is available. C and Fortran 77 compilers and the GNU make utility are required for installation. RSICC tested this release on the following systems: IBM RS/6000, Redhat Linux Version 6.1, Sun UltraSparc, HP B1000, and DEC Alpha. Information about MCNPX development can be found on the web site **http://mcnpx.lanl.gov**. The package is transmitted on CD as a GNU compressed tar file. Reference: "MCNPX User's Manual" (2002). Fortran 77 and C. IBM RS/6000 AIX, DEC Alpha Digital Unix, SGI IRIX 32 and 64-bit, HP HP-UX version 10, Sun Solaris, Intel I586 Linux (C00705/MNYCP/01).

Monthly Code Focus

As years have gone by many different codes and applications have been sent to RSICC for stewardship. We currently have over 1700 analytical code and data packages and distribute as many each year to 73 countries in the world. To help 'categorize' each package, we have developed a database of 'Main Categories' to attach applications to the packages at RSICC. Doing so requires investigation into each

code package, user feedback from end use statements, and extensive RSICC staff experience and analysis so that we can deliver useful information each month on the 30 different categories we have devised thus far. Feedback from our Newsletter community is very valuable so please direct your comments and/or suggestions to **PDC@ORNL.GOV**.

This month we present **Medical Applications** for the main category of analytical tool packages at RSICC. Links to the package abstracts are embedded into the WWW version of the RSICC Newsletter. Next month we will focus on **Computation and Data Coefficients**.

Hamilton Hunter - RSICC Director

AGDATA	**GENII 1.485**	**NUCDECAY**
AKTIV	**HOTSPOT 8.0**	**PENELOPE-2001**
ALICE-91	**HUGO VI**	**RBD**
ASTROS	**I-R-MAN**	**REMIT**
CALKUX	**ITS 3.0**	**RESRAD 5.60**
CAP88-PC	**KUX**	**SEECAL**
COLUMN2	**MARINRAD**	**SABRINA 3.54**
CONDOS-II	**MCNP4C2**	**TART2000**
DOORS 3.2	**MCNPX 2.1.5**	**TERFOC-N**
EGS4	**MCNPXS**	**TIMED**
ENDLIB-97	**MRIPP 1.0**	**VARSKIN2**
FANTOM	**NJOY94.61**	**XSHLD**

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 alphabetically. 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. 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.

5th International Topical Meeting on Industrial Radioisotope and Radiation Measurement Applications (IRRMA-V)

The Fifth International Topical Meeting on Industrial Radioisotope and Radiation Measurement Applications (IRRMA-V), **June 9-14, 2002**, will be in Bologna, Italy.

This Conference, held for the first time in Europe, is the fifth in a series of topical meetings sponsored by the American Nuclear Society for the purpose of bringing together scientists and engineers from around the world who share an interest in radiation and radioisotope measurement applications. Attendees will have opportunities to share ideas having to do not only with industrial uses of radiation and radioisotopes but also with basic research and applications in related fields such as medicine, art and archaeometry, environment, analytical techniques, and new trends in sources and detector development.

More information on the scientific program, the conference site, the city of Bologna, the list of invited speakers, the call for papers, and on-line registration can be found on the conference web site **http://www.irrma.unibo.it/**.

For more information please contact: Chairman Prof. Jorge E. Fernandez, Laboratory of Montecuccolino-DIENCA, University of Bologna, via dei Colli, 16 - 40136 Bologna, Italy (tel +39-051.644.1718, fax +39-051.644.1747, e-mail **chairman@irrma.unibo.it**) (also for any request of information and inclusion in the mailing list).

Advances in Nuclear Fuel Management III - Call For Papers

Preparations for the American Nuclear Society's Advances in Nuclear Fuel Management III Topical Meeting to be held in Hilton Head Island, South Carolina, during the period of **October 5-8, 2003**, have now begun in earnest. You are invited to serve on the Meeting's Technical Program Committee (TPC). In this capacity your commitment will include:

1. Electronically submit one or more papers, and encourage colleagues to do the same
2. Help identify and organize special session(s) on timely topics you are interested in, and solicit participation
3. Electronically review papers assigned to you in a timely and professional manner

Please return the following information (name, affiliation, phone, alternative email if preferable, topics of interest) to Youssef A. Shatilla at **shatilya@westinghouse.com**.

Please remember that success of this meeting depends on your active support and involvement. Finally, please bookmark the conference web site: **http://rpd.ans.org/nfm.htm** and visit it occasionally for news and updates. Comments and suggestions are most welcome.

2002 Criticality Safety Courses

The University of New Mexico announces their 2002 schedule for Criticality Safety Courses. Dates are: **July 9-11** for the Double Contingency & Criticality Safety Evaluation Workshop, **July 15-19** is the Short Course, and **July 23-25** is the Manager's Course.

For more detailed information about the 2002 Course offerings for Criticality Safety and online registration, check out the web page at **http://www-chne.unm.edu/crit/information.htm** or contact Cheryl

Brozena at the University of New Mexico, Albuquerque (tel 505-277-2225, fax 505-277-5433, email **busch@unm.edu**).

IAEA Technical Meeting on Physics and Technology of Inertial Fusion Energy Targets and Chambers

This is the “Second Announcement and Call for Papers” for the IAEA Technical Meeting on Physics and Technology of Inertial Fusion Energy Targets and Chambers, which will be held at the General Atomics main site in San Diego, California, **June 17-19, 2002**. The Technical Meeting will include invited and contributed papers on all aspects of the following:

1. Target design and physics, including fast ignition,
2. Chamber physics and technologies,
3. Target fabrication, injection, and tritium handling, and
4. Accident analysis and safety assessment.

We would greatly appreciate your efforts in further distributing this announcement to your colleagues. Detailed meeting information including Abstract Submittal, Participation Procedures, Hotels, Social Events, etc. can be found at the meeting website **http://web.gat.com/conferences/iaea-tm/main.html**. Contacts: Dan Goodin, Chair, General Atomics (fax 858-455-3181, e-mail

dan.goodin@gat.com), Art Nobile, Co-Chair, Los Alamos National Laboratory (e-mail **anobile@lanl.gov**).

M&C 2003

To mark the beginning of the second century of nuclear science, the American Nuclear Society's Mathematics and Computation Division 2003 Topical Meeting is organized around the theme: Nuclear Mathematical and Computational Sciences: A Century in Review, A Century Anew. The conference will be held at the Park Vista Hotel, Gatlinburg, Tennessee, **April 6-10, 2003**. It is co-sponsored by the American Nuclear Society's Reactor Physics, and Radiation Protection and Shielding Divisions, as well as the ANS Oak Ridge/Knoxville Local Section, Oak Ridge National Laboratory's Radiation Safety Information Computational Center, the Nuclear Energy Agency of the OECD, Korean Nuclear Society, and the Canadian Nuclear Society.

As the Conference's title suggests, the technical sessions are arranged in two major components. The Anew component includes the typical mix of contributed papers in regular sessions and invited papers in special sessions. Members of the Technical Program Committee have been extended an invitation to help organize special sessions on timely topics, and to stimulate paper submission by colleagues. As is customary for M&C topical meetings, full papers must be submitted for review by November 1, 2002. Additional instructions to authors, including format requirements, will be posted on the Conference's web site (see below) at a later date.

The Review component of the conference is a marked departure from the standard Plenary Session format. It is comprised of eight invited lectures by world-renowned leaders in selected topics. Each half-day of conference sessions will commence with one such lecture extending for one hour, followed by a 15-minute Question/Answer session, a 15-minute break, then the regular and special sessions proceed.

The complete list of topics and invited lecturers is:

1. Deterministic Methods for the First-Order Transport Equation, Ed Larsen (University of Michigan) & Jim Morel (Los Alamos National Lab.)
2. Deterministic Transport Methods of the Second Order, Elmer Lewis (Northwestern University)
3. Monte Carlo Methods, Jerome Spanier (University of California at Irvine)
4. Reactor Core Methods, Kord Smith (Studsvik Scandpower)
5. Resonance Theory in Reactor Applications, R. N. Hwang (Argonne National Lab.)
6. Reactor Kinetics and Dynamics, Jack Dorning (University of Virginia)
7. The Role of Perturbation Theory in Sensitivity and Uncertainty Analysis, Dan Cacuci (Forschungszentrum Karlsruhe, Germany)
8. Criticality Safety Methods, Elliott Whitesides (Oak Ridge National Lab. - retired)

The topics were selected to provide a broad coverage of the major areas of research in nuclear mathematical and computational sciences in the twentieth century. The lectures will capture for future students and researchers a snap shot of what the field looked like at the turn of the century, and how it got to that point since its inception. The stature of the invited lecturers promises to make this lecture series a unique opportunity for nuclear scientists and engineers to "hear it from the lion's mouth"!

The conference's web site is: **http://meetingsandconferences.com/MC2003/**. It will be updated with new information as it becomes available. Please bookmark and visit it occasionally for news and updates. Comments and suggestions are most welcome. Contact: Yousry Azmy 865-574-8069, **azmyyy@ornl.gov** or Bernadette Kirk 865-574-6176, **kirkbl@ornl.gov**. *(See announcement on SCALE 5 workshop, that will be held immediately before the M&C Conference.)*

MACCS Meeting

The Fourth Meeting of the International MACCS Users Group (IMUG) will be held on **September 6, 2002**, in the Principality of Monaco. The focus of the Fourth IMUG Meeting will be the exchange of

technical information relating to the application of MACCS, MACCS2, and COSYMA codes to relevant problems involving atmospheric dispersion of radioactive materials and resulting consequences.

There is no fee to participate in the meeting; however, for planning purposes, advance registration is requested. Everyone, including COSYMA users, is invited to present a paper. Please visit the website **www.bnl.gov/est/IMUG2002/default.htm**, and **http://www.bnl.gov/est/IMUG2002/Latest_News.htm** to find out about IMUG, register for the meeting or request notification of web updates. The website will be updated as additional information becomes available.

MCNP Course Announcement for 2002

Registration: **http://www-xdiv.lanl.gov/XCI/PROJECTS/MCNP/registration.html**
MCNP home page: **http://www-xdiv.lanl.gov/XCI/PROJECTS/MCNP/index.html**
LANL contact: **jfb@lanl.gov**
European contact: **sartori@nea.fr**

The MCNP code developers will present several classes in 2002 in the United States and two classes in Europe. The dates for these classes are:

May 14-17	Criticality calculations	Knoxville/Oak Ridge, TN area
June 4-7	Introductory Class	Los Alamos, NM
July 30-August 1	Variance reduction class	Los Alamos, NM
September 9-13	Introductory class	Stuttgart, Germany

The introductory class is for people who have little or no experience with MCNP. The intermediate to advanced class will be held for people who have used MCNP and want to extend their knowledge and gain depth of understanding.

The classes will be based on MCNP5. The code and data package will be available through RSICC at a reduced rate to class participants. The new capabilities of version 5 will be covered.

The other capabilities on MCNP will also be covered, including: Basic geometry and advanced geometry, Source definitions, tallies, data, variance reduction, statistical analysis, criticality, plotting of geometry, and particle tracks, neutron/photon/electron physics.

All classes provide interactive computer learning. Time will be available to discuss individual questions and problems with MCNP experts or to pursue in more detail topics mentioned in the talks. Please note that other classes are offered based on MCNP. The classes mentioned here are the only ones that are taught by the people who develop and write MCNP.

MCNP Visual Editor Classes

The Visual Editor is a powerful visualization tool that can be used to rapidly create complex Monte Carlo N Particle (MCNP 4C2) geometry models, including lattices, universes, fills, and other geometrical transformations. The Visual Editor can:

Display MCNP 4C2 geometries in multiple plot windows.
Create surfaces and cells to build a geometry.
Create materials using the local xsdir file.
Store commonly used materials in a material library.
Sub-divide large cells into smaller cells.
Create cells containing universes and lattices.

Interactively set cell importances from the plot window.
Display source points and collision points in the plot window.

Two five-day classes will be held in **2002**: **June 17-21**, and **September 9-13**, both in Richland, Washington. These classes will focus on the use of the visual editor, with an overview of MCNP. The fifth day is optional and will focus on using the Visual Editor and MCNP to do some example problems.

Class will include computer demonstrations and exercises that will focus on creating and interrogating input files with the Visual Editor. Advanced visualization work using MCNP will also be demonstrated. The class will be taught on Pentium computers running the Linux operating system and Windows NT. Class attendees can use either the Linux or Windows version of the visual editor. Attendees are encouraged to bring their own input files for viewing and modifying in the visual editor. Further information on these classes can be located at: **http://www.mcnpvised.com/train.html**, or by contacting Randy Schwarz (email **randyschwarz@mcnpvised.com**).

Three classes are scheduled for **2003**: **March 17-21, June 23-27**, and **September 8-12**, all in Richland, Washington.

MCNPX Workshops for 2002 & 2003

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

2002

June 24-28	Intermediate	Lisbon, Portugal
July 8-12	Intermediate	Santa Fe / Los Alamos
August 12-16*	Intermediate	East Coast, USA
September 23-27	To be decided	San Diego, California
November 11-15	Intermediate	Tokyo, Japan

*updated

2003

January 13-17	To be decided	Orlando, Florida
February 17-21	To be decided	Las Vegas, Nevada
March 31-April 4	To be decided	Knoxville, Tennessee
May	To be decided	Los Alamos / Santa Fe
June	To be decided	Europe

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.

Classes are taught directly by experienced MCNPX code developers and instructors. For more information on code versions and their capabilities, go to the MCNPX Workshops web site **http://mcnpxworkshops.com**.

MCNPX Workshop in Lisbon, Portugal

RSICC is co-sponsoring an intermediate level workshop on "Computing Radiation Dosimetry" which will be held June 22-23, 2002, and "Training Course on MCNP-X" to be held June 24-28, 2002, in Lisbon, Portugal.

The workshop on "Computing Radiation Dosimetry" with embedded training course on MCNPX - Monte Carlo Code System for Multiparticle & High Energy Applications, will take place at the Instituto Tecnológico e Nuclear (ITN), Sacavém, Lisbon.

During the weekend of June 22-23 a series of tutorial lectures will be held. From June 24 through June 28, a daily tutorial lecture will be delivered by a senior expert, on a subject related to the MCNPX module(s) being taught that day.

The workshop and training course will be focusing on computational issues and state-of-the-art techniques in dosimetry, radiation protection, radiation shielding, biophysics, medical physics, etc.

The training course and workshop are organized by I.T.N. (Nuclear and Technological Institute, in Lisbon). At the international level formal sponsorship has been granted from:

- The Nuclear Science Committee of the Nuclear Energy Agency (NEA) of the Organization for Economic Co-operation and Development (OECD)
- The Radiation Safety Information Computational Center (RSICC) of the U.S.A.
- The European Radiation Dosimetry Group (EURADOS).

For more information, please visit the web site: **http://itn1.itn.pt/MCNPX/**.

Neutron Spectra Unfolding Training Course

Dates: **August 5-7, 2002** in Braunschweig, Germany
September 24-26, 2002 in Los Alamos, New Mexico
Contact: Burkhard Wiegel, PTB
Email: **Burkhard.Wiegel@ptb.de**
Web Site: **http://www.ptb.de/utc2002/**
Fee: 1200 Euro (course at PTB) and US$1100 (course at Los Alamos), which includes a CD with a complete set of notes and unfolding software, as well as refreshments and a dinner for the participants.

A training course on neutron spectra unfolding is being organized by the Neutron Dosimetry section of the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany, in collaboration with the Health Physics Measurements Group (ESH-4) of the Los Alamos National Laboratory (LANL). Additional

support is provided by the Helmholtz-Fonds e.V. The course will be given in August 2002 at PTB in Braunschweig, Germany, and in September 2002 in Los Alamos, New Mexico, USA.

We will emphasize practical aspects of unfolding. The course is intended for those who do spectrometry in neutron or mixed neutron/photon fields and who need to analyze their data using unfolding procedures. In the morning sessions we will have a series of lectures which will provide an introduction to unfolding as well as allow for discussions concerning the theory of unfolding. In the afternoon sessions the participants will work on specific examples at PC workplaces using unfolding software provided by PTB (the HEPRO package of unfolding codes and the MAXED code). We will focus on Bonner-sphere measurements for our discussion of few-channel unfolding, and liquid scintillation spectrometer (NE-213) measurements for our discussion of multi-channel unfolding.

The number of participants is restricted by the limited number of PC-workplaces at our disposal at each of the training centers. We therefore encourage you to register as soon as possible. For on-line registration and further information please visit our web site at: **http://www.ptb.de/utc2002/**.

Practical MCNP for the HP, Medical Physicist, and RAD Engineer

DATE: **May 6-10, 2002** **FEE**: $1,850 per person with the MCNP™ code package
($1,400 per person without code package)
PLACE: The Canyon School Complex, Los Alamos National Laboratory, New Mexico

Monte Carlo-type calculations are ideally suited to solving a variety of problems in radiation protection and dosimetry. This course is aimed at the HP, medical physicist, and rad engineer with no prior experience with Monte Carlo techniques. The focus is almost entirely on the application of MCNP™ to solve a variety of practical problems in radiation shielding and dosimetry. The intent is to "jump start" the student toward using MCNP productively. Extensive interactive practice sessions are conducted on a personal computer. Topics will include overview of the MCNP code and the Monte Carlo method, basic concepts, 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. The course fee includes a complete MCNP code package, distributed directly from the Radiation Safety Information Computational Center (RSICC). Students will also 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 **http://drambuie.lanl.gov/~esh4/mcnp.htm**. 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 ESH-4, MCNP Class/David Seagraves, Mail Stop G761, Los Alamos, NM 87545*.

Inquiries regarding registration and class space availability should be made to David Seagraves, 505-667-3241, fax: 505-665-6071, e-mail: **dseagraves@lanl.gov**. Technical questions may also be directed to Dick Olsher, 505-667-3364, e-mail: **dick@lanl.gov**.

Radiopharmaceutical Internal Dosimetry

This on-line course is designed to teach current techniques for calculating the radiation dose from radionuclides administered in nuclear medicine. Lectures include Internal Dose Assessment Techniques, Resources for Internal Dose Assessment in Nuclear Medicine, Kinetic Modeling, Standard Kinetic Models and Phantoms, Extrapolation of Animal Data, Bone Marrow Dosimetry, Study Design for Radiopharmaceutical Dose Assessment, Patient Specific Dosimetry, and Small Scale and Microdosimetry. Problem-solving exercises and a comprehensive on-line exam are included. Users completing the exam will receive a certificate of completion. Users may also interact with instructors by e-mail about any aspect of

the course. The cost of this course is $495; access to the course is through www.internaldosimetry.com. For questions or comments, contact either of the course instructors, Dr. Michael G. Stabin, (tel 615-322-3190, fax 615-322-3764, email **michael.g.stabin@vanderbilt.edu**) or Dr. Richard B. Sparks (tel 865-938-4949, fax 865-947-1550, email **rsparks@creativedevelopment.com**, url **http://www.creative development.com**, **http://www.internaldosimetry.com**).

RESRAD

Argonne National Laboratory will conduct a training course on the RESRAD family of risk assessment codes. This CRCPD and DOE cosponsored training course will be conducted on **May 1-4, 2002** at Argonne National Laboratory. The latest probabilistic versions of RESRAD 6.1 and RESRAD-BUILD 3.1 will be used. The tentative agenda of this workshop can be found on the RESRAD web site **http://web.ead.anl.gov/resrad/training/AgendaMay2002.htm**. Space is limited. For more information, please visit **http://web.ead.anl.gov/resrad/training/MayWrkshp.cfm**, or contact Carole Ealy at 630-252-5677 (email: **carole_ealy@anl.gov**).

SCALE Training Course Schedule for 2002

The SCALE staff at Oak Ridge National Laboratory (ORNL) will be offering two training courses this fall (**October 14-18 and October 21-25**) at ORNL. The courses will emphasize hands-on experience solving practical problems on PCs. There will be workgroups of two persons each. No prior experience in the use of SCALE is required to attend. The registration fee is $1800 for one course or $3000 for both courses ($300 discount if you register at least one month before the course). A copy of the SCALE software and manual on CD may be obtained for an additional fee of $700, and the KENO3D 3-D visualization tool on CD is available for $800 (single license). Registrations will be accepted on a first-come basis. Registration forms submitted directly from the Web are preferred. Registration via FAX or e-mail is also acceptable. The registration fee must be paid by check, travelers checks, bank transfer, or credit card (VISA or MasterCard only). The agenda and registration form are on the web page at **http://www.ornl.gov/scale/trcourse.html**. Contact: Kay Lichtenwalter (tel 865-574-9213, email **x4s@ornl.gov**).

SCALE 5 Workshop Announced

The first workshop on SCALE 5 is being planned in conjunction with the American Nuclear Society M&C 2003 Topical Meeting in Gatlinburg, Tennessee. The workshop will be hosted by Oak Ridge National Laboratory in nearby Oak Ridge, Tennessee. The course is scheduled for the week of March 31 - April 4, 2003, immediately before the M&C 2003 meeting. The workshop will feature some of the new modules to be released in SCALE 5, such as the SEN3 3-D sensitivity/uncertainty sequence and the STARBUCS burnup credit sequence for criticality safety. The workshop will emphasize hands-on experience solving practical problems on PCs. There will be workgroups of two persons each. No prior experience in the use of SCALE is required to attend. The registration fee is $1,800 (there is a $300 early registration discount). You can register online at www.ornl.gov/scale/register_scale5.html or as part of your M&C 2003 registration. The early registration deadline is February 28, 2003. *(See announcement on M&C 2003 Conference).*

Symposium on Radiation Measurements and Applications

The 10th in a series will be held **May 21-23, 2002**, at the University of Michigan, Ann Arbor. The program will emphasize research and recent development in ionizing radiation measurements. Proposed session topics are: radiation sources, including secondary target sources; detectors and detection systems; data acquisition and data analysis systems and methods; radiation spectroscopy; particle-induced X-ray emission and radiation-induced fluorescence; analytical standards and elemental analysis; new and

unique applications of ionizing radiation; industrial radiography and tomography; nuclear methods in space exploration and planetary science. For more information see the website at: **http://rma-symposium.engin.umich.edu/** or contact David K. Wehe at **dkw@umich.edu**.

CALENDAR

May 2002

Practical MCNP for the HP, Medical Physicist, and Rad Engineer, May 6-10, 2002, Los Alamos, NM. Contact: David Seagraves (tel 505-667-3241, fax 505-665-6071, email **deseagraves@lanl.gov**, url **http://drambuie.lanl.gov/~esh4/mcnp.htm**; technical questions to Dick Olsher, 505-667-3364, **dick@lanl.gov**).

Symposium on Radiation Measurements and Applications, May 21-23, 2002, Ann Arbor, MI. Contact: General Chair David K. Wehe (tel 734-764-6215, email **dkw@umich.edu**, url **http://rma-symposium.engin.umich.edu/**).

June 2002

ANS Annual Meeting, The Revival of the Nuclear Power Option, June 9-13, 2002, Hollywood, FL (url **http://www.ans.org/**).

Topical Meeting: Industrial Radiation and Radioisotope Measurement Applications IRRMA-V A Class IV Topical, June 9-14, 2002, Bologna, Italy, co-sponsored by the American Nuclear Society. Contact: Prof. Jorge Fernandez, Chair (e-mail: **jorge.fernandez@mail.ing.unibo.it**).

IAEA Technical Meeting on Physics and Technology of Inertial Fusion Energy Targets and Chambers, June 17-19, 2002, San Diego, CA. Contact: Dan Goodin (tel 858-455-2977, email **dan.goodin@gat.com**, url **http://web.gat.com/conferences/iaea-tm/main.html**).

Visual Editor Class, June 17-21, 2002, Richland WA. Contact: Randy Schwarz (tel 509-372-4042, email **randy.schwarz@mcnpvised.com**, url **http://mcnpvised.com/ train.html**).

14th International Conference on High-Power Particle Beams and 5th International Conference on Dense Z-Pinches, June 23-28, 2002, Albuquerque, NM (email for general inquiries **beams02@sandia.gov**; url **http://www.sandia.gov/BeamsDZP**).

MCNPX Intermediate Workshop, June 24-28, 2002, Lisbon, Portugal. Contact Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

Win Global 2002 10th Annual Meeting, June 27-28, 2002, Paris, France. Hosted by the French Nuclear Energy Society (url **http://www. win-global.org/**, fax 33-0-15358-3211, email **win-global2002@sfen.fr**).

July 2002

Snowmass Fusion Summer Study, July 8-19, 2002, Snowmass Village, CO (url **http://lithos.gat.com/snowmass/**).

MCNPX Intermediate Workshop, July 8-12, 2002, Santa Fe /Los Alamos, NM. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

August 2002

Spectrum 2002, Exploring Science-Based Solutions and Technologies, 9th Biennial International Conference on Nuclear and Hazardous Waste Management, Aug. 4-8, 2002, Reno, NV. Contact: Dr. Richard Jacobsen (email **jacor@inel.gov**, url **www.ans.org/spectrum**).

Neutron Spectra Unfolding Training Course, August 5-7, 2002, in Braunschweig, Germany. Contact: Burkhard Wiegel, PTB (email **Burkhard.Wiegel@ptb.de,** url **http://www.ptb.de/utc2002/**).

MCNPX Intermediate Workshop, August 12-16 2002, East Coast, USA. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

September 2002

Fourth Meeting of the International MACCS Users Group (IMUG), September 6, 2002, in the Principality of Monaco (url **http://www.bnl.gov/est/IMUG2002**).

22nd Symposium on Fusion Technology - SOFT, Sept. 8-13, 2002, Helsinki, Finland. Contact: Symposium Secretary Mrs. Merja Asikainen (tel +358 9 456 6854; fax +358 9 456 7002; email: **soft2002@vtt.fi**; url **http://www.vtt.fi/val/soft2002/**).

Visual Editor Class, Sept. 9-13, 2002, Richland, WA. Contact: Randy Schwarz (tel 509-372-4042, email **randy.schwarz@mcnpvised.com**, url **http://mcnpvised.com/train.html**).

MCNPX Workshop, September 23-27, 2002, San Diego, California. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

Neutron Spectra Unfolding Training Course, Sept. 24-26, 2002, in Los Alamos, NM. Contact: Burkhard Wiegel, PTB (email: **Burkhard.Wiegel@ptb.de**, url **http://www.ptb.de/utc2002/**).

YUNSC 2002 - The 4th International Conference of Yugoslav Nuclear Society, Sept.30-Oct.3, 2002, Belgrade, Yugoslavia. Contact (tel ++381 11 454-796; fax ++381 11 444-74-57; email **yuns@rt270.vin.bg.ac.yu**, url **http://www.vin.bg.ac.yu/YUNS**).

8th Annual Workshop on Monte Carlo Simulation of Radiotherapy Treatment Sources using the BEAM Code System, Sept. 30-Oct. 3, 2002, Ottawa, Canada. Contact: Blake Walters, Ionizing Radiation Standards, National Research Council of Canada, Ottawa, Canada, K1A 0R6 (tel 613-993-2715, fax 613-952-9865, e-mail **bwalters@irs.phy.nrc.ca**, url **http://www.irs.inms.nrc.ca/inms/irs/BEAM/beamhome.html**).

October 2002

2002 International Topical Meeting on Probabilistic Safety Assessment (PSA '02), Oct. 6-10, 2002, Detroit, MI. Contact: Rebecca Steinman (phone 734-930-7500, email **rls@adventengineering.com**, url **http://www-ners.engin.umich.edu/PSAConf/**).

PHYSOR 2002, Oct. 7-10, 2002, Seoul, Korea, sponsored by the American Nuclear Society and hosted by the Korean Nuclear Society. Contact: Prof. Nam Zin Cho (tel +82-42-869-3819, fax +82-42-869-5859, email **tpc@physor2002.kaist.ac.kr**, url **http://physor2002.kaist.ac.kr**).

SCALE Source Terms & Shielding Course, Oct. 14-18, 2002, Oak Ridge, TN. Contact: Kay Lichtenwalter (tel 865-574-9213, email **x4s@ornl.gov**, url **http://www.ornl.gov/scale/trcourse.html**).

First Asian and Oceanic Congress for Radiation Protection (AOCRP-1), Oct. 20-24, 2002, Seoul, Korea, sponsored by the Korean Association for Radiation Protection (KARP). Contact: Dr. Myung-Jae Song (tel +82-42-870-0202, fax +82-42-870-0269, email **mjsong@khnp.co.kr**, url **http://www.aocrp-1.com**).

SCALE KENO V.a Criticality Course, Oct. 21-25, 2002, Oak Ridge, TN. Contact: Kay Lichtenwalter (tel 865-574-9213, email **x4s@ornl.gov**, url **http://www.ornl.gov/scale/trcourse.html**).

November 2002

MCNPX Intermediate Workshop, November 11-15, 2002,Tokyo, Japan. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

15th ANS Topical Meeting on the Technology of Fusion Energy, Nov. 17-21, 2002, Washington, DC. (url **http://www.ans.org/**).

International Symposium on Standards and Codes of Practice in Medical Radiation Dosimetry, November 25-28, 2002, IAEA, Vienna. Contact: Dr. Ken R. Shortt (tel +43 1 2600 21664, fax +43 1 26007 21662, email **Dosimetry@iaea.org**, url **http://www.iaea.org/worldatom/Meetings/ 2002/infcn96.shtml**).

January 2003

MCNPX Workshop, January 13-17, 2003, Orlando, Florida. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

February 2003

MCNPX Workshop, February 17-21, 2003, Las Vegas, Nevada. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

March 2003

MCNPX Workshop, March 31-April 4, 2003, Knoxville, Tennessee. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com** url **http://mcnpxworkshops.com** for details).

April 2003

ANS Topical Meeting, Nuclear Mathematical and Computational Sciences: A Century in Review, A Century Anew, Apr. 6-10, 2003, Gatlinburg, TN. Co-sponsored by the American Nuclear Society's Reactor Physics, and Radiation Protection and Shielding Divisions, as well as the ANS Oak Ridge/Knoxville Local Section, Oak Ridge National Laboratory's Radiation Safety Information Computational Center, the Nuclear Energy Agency of the OECD, the Korean Nuclear Society, and the Canadian Nuclear Society. Contacts: Yousry Azmy (tel 865-574-8069, email **azmyyy@ornl.gov**) or Bernadette Kirk (tel 865-574-6176, email **kirkbl@ornl.gov**, url **http://meetingsandconferences.com/C2003/index.html**).

May 2003

MCNPX Workshop, May, 2003, Los Alamos / Santa Fe, New Mexico. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

June 2003

MCNPX Workshop, June, 2003, Europe. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com,** url **http://mcnpxworkshops.com** for details).

September 2003

International Conference on Supercomputing in Nuclear Applications, SNA 2003, September 22-24, 2003, Paris, France. Organizers: CEA, SFANS, co-organizer: OECD/NEA. (email **SNA-2003@cea.fr**, url **http://SNA-2003.cea.fr**).

October 2003

American Nuclear Society's Advances in Nuclear Fuel Management III Topical Meeting, Oct. 5-8, 2003, Hilton Head Island, South Carolina. Contact: Youssef A. Shatilla (email **shatilya@westinghouse.com**, url **http://rpd.ans.org/nfm.htm**).

ACCESSION of NUCLEAR SYSTEMS LITERATURE

The nuclear systems literature (shielding, safety, materials) cited below has been reviewed and placed in the RSICC Information Storage and Retrieval Information System (SARIS), now searchable on the RSICC web server (http://www-rsicc.ornl.gov/SARIS.html). This early announcement is made as a service to the nuclear sciences community. Copies of the literature are not distributed by RSICC. They may generally be obtained from the author or from a documentation center such as the National Technical Information Service (NTIS), Department of Commerce, Springfield, Virginia 22161. For literature listed as

available from INIS contact INIS Clearinghouse, International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna.

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