Radiation Safety Information Computational Center

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"Think wrongly, if you please; but in all cases think for yourself" --Lessing

News Additions and Updates

From time to time we receive information between publications of RSICC Newsletters that we feel should be in the current publication. We obviously cannot update the few hard copies that have been mailed out, but can update the web version **http://www-rsicc.ornl.gov/NEWSLETTER.html**. The "new" or "update" article(s) will be marked in the table of contents. So, visit the newsletter throughout the month to see if there's anything new!

SATIF6 Announcement

SATIF will be held April 10-12, 2002, at Stanford Linear Accelerator Center. A copy of the official version of the announcement and proposed program is available in PDF format at: **http://www.nea.fr/html/science/ satif/nscdoc0203.pdf.**

RADAR (RAdiation Dose Assessment Resource)

The RAdiation Dose Assessment Resource (RADAR) web site **http://www.doseinfo-radar.com/** is a new excellent resource for internal and external dose. This site contains a large quantity of information available for browsing and free download on topics related to internal and external dose assessment.

Internal Dose Assessment - This includes decay data for >800 radionuclides, dose factors (like MIRD S values or ICRP SEEs) for 19 phantoms for these >800 nuclides, specific absorbed fractions for these phantoms, dose estimates and kinetic model data for radiopharmaceuticals, IAEA dose conversion factors for inhalation or ingestion of hundreds of nuclides, fetal doses for various radiopharmaceuticals and situations in nuclear medicine, information on radiopharmaceuticals excreted in breast milk.

External Dose Assessment - This includes dose tables for external point sources, beta doses to skin, doses from immersion in air or ground contamination, external dose from medical sources and patient consent language templates.

There is other free information as well; the site will be undergoing revisions as new material can be added. There are some fee-based services, including on-line training courses and contacts with consultants.

Contact: Michael G. Stabin, PhD, CHP, Assistant Professor of Radiology and Radiological Sciences at Vanderbilt University, (tel 615-343-0068, fax 615-322-3764, e-mail **michael.g.stabin@ vanderbilt.edu).**

Wang's Argentina Adventure

Dr. J. A. Wang participated in the Atucha-I NPP RPV Safety Analysis Workshop in Lima, Argentina, from February 25-27, 2002, where he reviewed the Atucha-I surveillance program presented by Atucha-I Power Station Operator, Argentina Nuclear Regulatory Authority (ARN), and National Atomic Energy Commission of Argentina (CNEA). Twenty-two participants, including an invited foreign team from three countries, attended the Atucha-I Workshop. The foreign team consisted of four members, including Wang, from the United States representing ORNL, two representatives from Germany representing Framatome and GRS, respectively, and one from Finland representing VTT.

The Atucha-I Workshop and ARN meetings were designed to resolve the issues regarding the validity of Atucha-I surveillance data and Framatome VAK accelerated surveillance data as applied to the RPV integrity study of Atucha-I NPP. The current status and future recommendations for the Atucha-I surveillance program were summarized at the end of the workshop by the foreign team.

Subsequent to the Atucha-I Workshop, Wang and the German GRS representative participated in the meetings that were held at ARN on the RPV Integrity of Atucha-I NPP in Buenos Aires, Argentina, on February 28-March 1, 2002. From Atucha-I surveillance data and based on ARN's evaluation, Atucha-I should have reached the end of lifetime at the end of 2002. However, in light of new methods of evaluating reference temperature and the additional surveillance data from the German VAK program and IAEA JM data, the operating lifetime of Atucha-I needs to be reassessed. Several recommendations to update the dosimetry program and fluence evaluation, and regulatory safety margin for VAK accelerated data, were made by Wang during the meetings.

Obituary

Muriel Landis, wife of John Landis, passed away on February 24, 2002. John was ANS President from 1971-72. He and Muriel established the John & Muriel Landis Scholarships and were constant contributors to the ANS Public Education Program. They recently moved to Roanoke, VA, from Boston, MA. Donations may be made to the following: Moravian College, 1200 Main Street, Bethlehem, PA 18018. John's address is 2131 Chestnut Oak Court, Roanoke, VA 24018.

NRC Codes Made Available

Four 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-506/GALE-86
CCC-685/UDAD
PSR-380/SETS
PSR-517/FRAPCON2/VIM4

Changes to the Computer Code and Data Collection

Two new packages, two additions, and one newly frozen package were added to the computer code software and data collection. Two are foreign contributions.

CCC-661/SOURCES-4B

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

Los Alamos National Laboratory, Los Alamos, New Mexico, updated the SOURCES package with the addition of the Los Alamos SOURCES Tape1 Creator and Library Link (LASTCALL) Version 1. Intended to supplement the SOURCES manual, LASTCALL is a simple graphical user interface designed to minimize common errors made during input. The optional application, LASTCALL, consists of a single dialog window launched from an executable (lastcall.exe) on Windows-based personal computers. SOURCES4B determines alpha,n; spontaneous-fission; and beta-n delayed neutron sources and spectra due to the decay of radionuclides. SOURCES 4B calculates alpha-n source rate and spectra for homogeneous medium, interface and alpha beam problems and can also calculate alpha-n source rate and spectra in a thin neutron-producing region between two alpha-producing regions.

SOURCES-4B runs on many computers including Sun, IBM RS/6000 and personal computers. A LASTCALL executable compiled using Compaq Visual Fortran Standard Edition Version 6.6.0 under Windows 2000 on a personal computer is included. No source is provided for LASTCALL, and no Unix version is available. The package is transmitted on a CD which includes the source, PC executables, data libraries, and test cases in a self-extracting compressed Windows file. The package is also transmitted in a GNU compressed tar file. References: LA-8869-MS (June 1981), LA-UR-00-5016 (2000) and LA-UR-02-709 (2002). Fortran 77; Sun and PC (C00661/MNYCP/03).

CCC-682/PENELOPE-2001

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

The Universitat de Barcelona and the Universitat Politècnica de Catalunya in Barcelona, Spain, and Universidad Nacional de Cordoba, Argentina, through the Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France, contributed a newly frozen version of this code system to perform Monte Carlo simulation of electron-photon showers in arbitrary materials. The adopted scattering model gives a reliable description of radiation transport in the energy range from a few hundred eV to about 1GeV. PENELOPE generates random electron-photon showers in complex material structures consisting of any number of distinct homogeneous regions (bodies) with different compositions.

The present version 2001 contains substantial changes/improvements to the previous versions 1996 and 2000. As for the physics, the model for electron/positron elastic scattering has been revised. Bremsstrahlung emission is now simulated using partial-wave data instead of analytical approximate formulae. Photoelectric absorption in K and L-shells is described from the corresponding partial cross sections. Fluorescence radiation from vacancies in K and L-shells is now followed. Refinements have also been introduced in the electron/positron transport mechanics, mostly to account for the energy dependence of the mean free paths for hard events. The simulation routines have been re-programmed in a more structured (and readable) way, and new example MAIN programs have been written with a more flexible input and expanded output.

PENELOPE can be run on almost any operating system supporting a Fortran 77 compiler (Unix, MS-DOS, Windows95, Windows NT, VMS, etc.). Note that a Fortran compiler is required on all systems to build problem-specific executables; therefore, no executables are included in the package. The code was tested at RSICC on a PC Pentium under WindowsME using GNU Fortran G77 v0.5.25. The package is transmitted on a CD which contains source files, test case input files, documentation and data files written in a self-extracting, compressed Windows file. Reference: Workshop Proceedings, Issy-les-Moulineaux, France ISBN:92-64-18475-9 (November 2001). Fortran 77; DEC Alpha, Sun, and PC (C00682/MNYCP/02).

CCC-709/TDTORT

OP SYS: Unix, Linus
Language: Fortran 77 & C
Computers: Workstation, PC
Format: Unix

The University of Tennessee, Nuclear Engineering Dept., Knoxville, Tennessee, and Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed this discrete ordinates code system. TDTORT solves the time-dependent, three-dimensional neutron transport equation with explicit representation of delayed neutrons to estimate the fission yield from fissionable material transients. This release includes a modified version of TORT from the C00650/MFMWS/01 DOORS3.1 code package plus the time-dependent TDTORT code. GIP is also included for cross-section preparation. The codes read ANISN-format cross-section libraries, which are not included in the package.

TDTORT was developed on Sun workstations. It was compiled, and test cases were run on DEC Alpha Digital Unix workstations and personal computers under Linux. Fortran and C compilers are required for installation on Unix systems. Executables created with the Portland Group Inc. Workstation 3.3 f77 compiler are included for Linux users. The package is transmitted as a GNU compressed Unix tar file on CD. The tar file contains the source files for TDTORT, TORT, and GIP, plus Linux executables, test cases, information file, and scripts. References: Ph.D. Dissertation, The University of Tennessee (August 1997), and ORNL/TM-13221 (October 1997), and ORNL/TM-8362 (September 1982). Fortran 77 and C; Sun Ultra; DEC OSF/1, PC under Linux (C00709/MNYWS/00).

PSR-405/SAPHIRE 7.06

OP SYS: Windows
Language: Modula-2
Computers: PC
Format: Windows

The Idaho National Engineering & Environmental Laboratory, Idaho Falls, Idaho, contributed an addition to the SAPHIRE 7.06 package. Included in the addition are two files associated with the GEM help-file and the GEM icon. SAPHIRE is a collection of programs developed for the purpose of performing those functions necessary to create and analyze a complete Probabilistic Risk Assessment (PRA) primarily for nuclear power plants. The programs included in this suite are the Integrated Reliability and Risk Analysis System (IRRAS), the System Analysis and Risk Assessment (SARA) system, the Models And Results Database (MAR-D) system, and the Fault tree, Event tree and P&ID (FEP). Previously these programs were graphical editors released as separate packages. These programs include functions to allow the user to create event trees and fault trees, to define accident sequences and basic event failure data, to solve system and accident sequence fault trees, to quantify cut sets, and to perform uncertainty analysis on the results. The code runs on IBM-PC compatible computers running Windows 95, 98, NT. The package is transmitted on CD and includes the executable modules and sample problem input data. Reference: NUREG/CR-6116 Vols. 1, 2, 3, 4, 5, 7, and 8 (December 1993). MODULA-2; IBM PC 486 (P00405/PC486/03).

DLC-207/MENDL-2P

OP SYS: Windows, Unix
Language: None
Computers: PC
Format: Windows

The Institute of Physics and Power Engineering, Obninsk, Russia, and NRG Nuclear Research and Consultancy Group, Petten, The Netherlands, through the OECD NEA Data Bank, Issy-les-Moulineaux, France, contributed the MENDL-2P data libraries. These neutron reaction data can be used for nuclear activation and transmutation applications at energies up to 100 MeV. This distribution contains the NEA Data Bank IAEA-1376/01 and IAEA-1376/02 packages. The Medium Energy Nuclear Data Library MENDL-2P proton induced intermediate energy cross sections were generated by Shubin, Lunev, Konobeyev and Dityuk at IPPE. The library is distributed in the original format and also in another format that has been converted to ENDF-6 and verified through the ENDF-6 utility codes CHECKR, FIZCON and PSYCHE (PSR-333/CHENDF 6.12). This was done by A.J. Koning, ECN Petten. No retrieval program is included. The package is transmitted on a CD which contains a self-extracting,

compressed Windows file with the data libraries and documents in PDF format. References: IAEA-NDS-204 (January 1998), IAEA-NDS-136 Rev. 1 (July 1995), INDC(CCP)-385 (May 1995). ASCII format; IBM PC (D00207/MNYCP/00).

Monthly Code Focus

As years have gone by many different codes and applications have been sent to RSICC for stewardship. We currently have over 1500 analytical code 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 Space Nuclear Physics 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. We hope you enjoy this new feature! Next month we will focus on Medical Applications.

Hamilton Hunter - RSICC Director

ALKASYS-PC	**LAHET 2.8; MCNPDATA**	**SLDN**
BEBC	**LSVDC**	**SOFIP**
BED	**MAVRAC**	**SPARES**
BPPC	**MCFLARE**	**STORM**
CARSTEP	**SHIELDOSE**	**TRECO**
CHARGE II	**SIGMA II**	**W-M-NRSM**
K019		

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/** and in the attached announcement and call for papers.

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.

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
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 web site **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).**

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** 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:

April 9-12	Advanced class	Los Alamos, NM
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, that has a tentative release date of April 2002. 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**).

MCNPX Workshops for 2002

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**

April 19-24 (Sun. off)	Intermediate Workshop	Santa Fe, NM
May 13-17	Introductory Workshop	Los Alamos, NM
June 24-28	Intermediate Workshop	Lisbon, Portugal

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.

All 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.**

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@creative development.com**, url **http://www.creative development.com**, **http://www.internal_dosimetry.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).**

RPSD 2002 At-a-Glance

The Division's biennial Topical Meeting is rapidly approaching. It is scheduled for April 14-18, 2002, in Santa Fe, New Mexico. RPSD 2002 is co-sponsored by the Health Physics Society, the OECD/NEA, and RSICC. In addition to an exciting technical program, there are workshops, tours, and various social events planned. There are also special registration opportunities for students, emeritus

members of ANS, exhibitors, and guests. For additional information on RPSD 2002, check the Conference Web site at **http://www.lanl.gov/ RPSD2002 or send an e-mail to rpsd2002@lanl.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**).

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

April 2002

6th International Symposium on Fusion Nuclear Technology - ISFNT-6, Apr. 7-12, 2002, San Diego, CA. Contact Claudia Hennessy (email **chennessy@vlt.ucsd.edu; url http://isfnt6.ucsd.edu**).

Thirty-Eighth Annual Meeting of the National Council on Radiation Protection and Measurements, Apr. 10-12, 2002, Arlington, VA. Contact: William M. Beckner (tel 301-657-2652, fax 301-907-8768, url **www.ncrp.com**).

Back to the Future of Nuclear Technology, 2002 ANS Student Conference, Apr. 10-13, 2002, University Park, PA. Contact: Frank Buschman (tel 814-865-6351, email **fxb129@psu.edu, url www.clubs.psu.edu/ANS**).

12th Biennial RPSD Topical Meeting, Apr. 14-18, 2002, Santa Fe, NM. Hosted by the ANS Trinity Section and cosponsored by the Health Physics Society, L'Organisation de cooperation et de developpement/L'Agence pour l'energie nucleaire (OECD/AEN, and RSICC. Contact: (email **rpsd2002@lanl.gov,** url **www.lanl.gov/RPSD2002/**).

International Youth Nuclear Congress 2002, Apr. 16-20, 2002, Taejon, Korea. Contact: Alexandre Tsiboulia or Han Seong Son (email **alexts@ippe.obninsk.ru, hsson@nanum.kaeri.re.kr, url http://www.iync.org**).

Seventh International Radiopharmaceutical Dosimetry Symposium, Apr. 17-19, 2002, Nashville, TN. Contact: Michael Stabin (email **michael.g.stabin@vanderbilt.edu,** url **http://www.doseinfo-radar.com/symphome.html**).

MCNPX Intermediate Workshop, Apr. 19-24, 2002, Santa Fe/Los Alamos, NM. Contact: Bill Hamilton (tel 505-662-9097, email **registrar@mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details). **We will take Sunday off.*

MCNP, EGS4 & BEAM Users Group Meeting, Apr. 22-24, 2002, Stoke-on-Trent, England. Contact: Craig Edwards (MCNEG Chairman) (tel + 44 (0) 1782 554070, fax + 44 (0) 1782 845140, email **radphys@dial.pipex.com, url www.mcneg.org.uk**).

International Conference on Wire System Aging, Apr. 23-25, 2002, Rockville, MD. Contact: Technical information: Jit Vora (tel 301-415-5833, fax 301-415-5151, email **jpv@nrc.gov**); registration information: Susan Monteleone (tel 631-344-7235, fax 631-344-3957, email **susanm@bnl.gov**, url **http://www.bnl.gov/icwsa**).

Radiation Transport Calculations Using the EGS Monte Carlo System, Apr. 29-May 2, 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 **www.irs.inms.nrc.ca/inms/irs/papers/egsnrc/brochure.html**).

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**).

MCNPX Introductory Workshop, May 13-17, 2002, Los Alamos, NM. Contact Bill Hamilton (tel 505-662-9097, email **registrar@ mcnpxworkshops.com**, url **http://mcnpxworkshops.com** for details).

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://mcnpx_workshops.com** for details).

July 2002

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

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/**).

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**).

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

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**).

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**).

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.

Ann. Nucl. Energy, 29, 1019-1039 . . . *Development of a Solution Method for the Differential Equations Arising in the Biosphere Module of the BNFL's Suite of Codes MONDRIAN.* . . . Williams, M.M.R.; Thorne, M.C.; Thomson, J.G.; Paulley, A. . . . June 2002 . . . Williams Scientific Services Ltd., Surrey, UK; Mike Thorne and Associates, Ltd., West Yorks, UK; BNFL, Cheshire, UK.

Ann. Nucl. Energy, 29, 1041-1054 . . . *A Practical Procedure of Bilinear Weighted Core Kinetics Parameters Computation for the Purpose of Experimental Reactivity Determination.* . . . Christoskov, I.D.; Petkov, P.T. . . . June 2002 . . . University of Sofia, Sofia, Bulgaria; Institute of Nuclear Research and Nuclear Energy, Sofia, Bulgaria.

Ann. Nucl. Energy, 29, 1055-1071 . . . *Deterministic Adjoint Transport Applications for He-3 Neutron Detector Design.* . . . Sjoden, G.E. . . . June 2002. . . (no place of business given).

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Ann. Nucl. Energy, 29, 1085-1104 . . . *New Investigations of the Criticality Property of Pure ^{232}U.* . . . Ganesan, S.; Sharma, A.R.; Wienke, H. . . . June 2002 . . . Bhabha Atomic Research Centre, Mumbai, India; Institute for Plasma Research, Gujarat State, India; SCK-CEN, Belgian Nuclear Research Center, Mol, Belgium.

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(n,np+d) Reactions for Lanthanide Isotopes in the Energy Range Between 13.4 and 14.9 MeV . . . Sakane, H.; Kasugai, Y.; Shibata, M.; Ikeda, Y.; Kawade, K. . . . July 2002 . . . Nagoya University, Nagoya, Japan; JAERI, Ibaraki-ken, Japan.

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