Radiation Safety Information Computational Center

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Managed by
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under contract DE-AC05-00OR22725

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The young man who has the combination of the learning of books with the learning which comes of doing things with the hands need not worry about getting along in the world today, or at any time.—William S. Knudson

Changes to the Computer Code and Data Collection

PSR-530/BOT3P-5.0

ENEA Nuclear Data Center, Bologna, Italy, contributed this code system for 2D and 3D mesh generation and graphical display of geometry and results for deterministic transport codes. Bologna Transport Analysis Pre-Post-Processors (BOT3P) is a set of standard Fortran 77 language programs developed at the ENEA -Bologna Nuclear Data Center. BOT3P Version 1 was conceived to give the users of the DORT and TORT deterministic transport codes, included in the CCC-650/DOORS 3.2 or DOORS3.2a software package, some useful diagnostic tools to prepare and check their input data files. Later versions were extended for compatibility with TWODANT and THREEDANT, the SUSD3D cross section sensitivity and uncertainty code, and MCNP.

BOT3P Version 5.0 (BOT3P-5.0) contains important additions such as, new 2D and 3D graphics options, more detailed standard output information and the possibility to directly manage and plot 2D R-Z geometries. The most significant new feature of BOT3P-5.0 regards the mesh generation programs. Users can optionally calculate the area/volume error of material zones with respect to the theoretical values and the automatic correction of material densities and uniformly distributed neutron sources to globally preserve masses and neutron sources, respectively. Moreover, a binary file is optionally written with the density distribution of the different materials contained in the single mesh, allowing a local density correction (per mesh) in alternative to a global density correction on the whole domain of the material zone. This 'fine' material distribution can optionally be visualized by the 2D plot BOT3P-5.0 modules DDM, DTM2.

Also included in the package is ADEFTA, which is a script file that calculates the atomic densities related to any compositional model for transport analysis. The output produced by ADEFTA can be useful

for applications with many transport codes and is particularly applicable to users of GIP, DORT and TORT (DOORS) and the Monte-Carlo MCNP code. ADEFTA runs on UNIX/Linux platforms using Bourne Shell commands and the "awk" utility.

The package is transmitted as a GNU compressed UNIX tar file on a CD. The tar file contains the source files for all programs in the auxiliary codes list, test cases, implementation instructions, procedures, description of sample problem cases, and documentation. Reference: FIS P9H6-008 (April 2005). DEC Alpha, Linux PC, IBM RS/6000 (P00530/MNYCP/00).

News to Note from ANS

Tonozuka Announced Head of Japan Atomic Energy Agency

Yuichi Tonozuka will head the Japan Atomic Energy Agency (JAEA), a new research organization created from the merger of the Japan Nuclear Cycle Development Institute (JNC) and the Japan Atomic Energy Research Institute (JAERI). The JAEA will be Japan's only comprehensive nuclear R&D organization; its primary focus will include the fast breeder reactor cycle, nuclear fusion, and disposal of high-level radioactive waste. Tonozuka said he intends to "build something new" by fusing the traditions of the two—JAERI's basic research and JNC's more project-oriented research.

Nuclear News, Sept. 2005, p 40

U.S. DOE to Establish Beijing Office

In conjunction with the first meeting of the U.S.-China Energy Policy Dialogue, held in Washington, D.C., the U.S. Department of Energy announced on June 30 the establishment of an office in Bejing to support the Department's cooperative efforts with China on energy and nuclear security issues. The office will be located in the U.S. Embassy in Beijing. Energy Secretary Samuel Bodman said, "Through the U.S.-China Energy Policy Dialogue, and with on-site assistance from the new DOE office, we can enhance our cooperation to promote energy efficiency, diversify our energy supplies, expand the use of clean energy technologies, as well as continue our mutual efforts to increase nuclear security in both our nations."   *Nuclear News*, Sept. 2005, p 40

University of Manchester Launches New Nuclear Institute

A ceremony at the University of Manchester on July 18 launched the new Dalton Nuclear Institute. The Institute's research will include electricity generation, fuel cycles, waste treatment and disposal, decommissioning, policy, and regulation. It will also tie its research into advancing areas such as nuclear medicine and fusion. The Institute is named for John Dalton, who joined with Manchester businessmen and industrialists in 1824 to establish the Mechanics' Institute, which became the University of Manchester, to ensure that workers could learn the basic principles of science. In 1803, Dalton unveiled his atomic theory which was the basis for all subsequent chemical investigations. Richard Clegg, formerly with British Nuclear Fuels plc, is the first director of the Institute. He said, "By 2015, if people want to do nuclear research, they will have the choice to go to two or three leading universities in the world, and Manchester will be one of them."   *Nuclear News*, Sept. 2005, p 41

Obituaries

[Ray H. Crist](#) died July 23 in Carlisle, Pennsylvania; he was 105. He is believed to be the [oldest published research scientist](#) in history. A chemist, he joined the faculty of Columbia University in 1925. He joined the Manhattan Project in 1941 to help produce the atomic bomb. In 1946 he became a researcher for Union Carbide. At 63 he retired from the corporate sector and returned to teaching; he taught the history of science at Dickenson College (1963–1970) and environmental chemistry at Messiah College (1974–2004). During the last two decades at Messiah he performed innovative experiments involving the absorption of toxic metals by plant material.

Paul V. Harper, M.D., 89, professor emeritus in the departments of surgery and radiology at the University of Chicago, died July 15 in Evanston, Illinois. A pioneer in the 1950s in the diagnostic and therapeutic uses of radiation, he was a key member of the team investigating the medical applications of dozens of radioactive isotopes, including technetium-99m, iodine-125, and thallium, all of which are widely used today. He was appointed to the International Commission on Radiation Units and Measurements in 1975. Though he retired from the University of Chicago in 1986, he continued to do research until last year.

Nuclear News, Sept. 2005, p 66

RPI Nuclear Engineering Faculty Positions

The Nuclear Engineering and Engineering Physics Program at Rensselaer Polytechnic Institute has announced several faculty positions made available by the new dean of the School of Engineering. These tenure-track positions are at assistant/associate/full professor levels, depending on the qualification, and cover technical areas which include reactor physics, applied radiation technologies, and biomedical use of radiation (i.e., health/medical physics with strong background in radiation transport simulations). Please send an application with the names and the contact information of three references to Search Committee Chair, Professor Robert Block:

Dr. Robert C. Block
Director of Gaerttner LINAC Laboratory
Dept. of Mechanical, Aerospace and Nuclear Engineering
Rensselaer Polytechnic Institute
Troy, New York 12180-3590
Tel. No.: (518) 276 6404   Fax. No.: (518) 276 4007   E-Mail : blockr@rpi.edu

CONFERENCES, COURSES, SYMPOSIA

RSICC attempts to keep its users and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email to riceaf@ornl.gov with "conferences" in the subject line by the 20th of each month. Please include the announcement in its native format as an attachment to the message. If the meeting is on a website, please include the url.

Every attempt is made to ensure that the links provided in the Conference and Calendar sections of this newsletter are correct and live. However, the very nature of the web creates the possibility that the links may become unavailable. In that case, please call or mail the contact provided.

Fall 2005 SCALE Training Courses at ORNL

Date	Title	Registration Fee*	Description
October 24–28, 2005	**KENO V.a Criticality Safety Course**	$1800	CSAS/KENO V.a (including [KENO3D](#) and GeeWiz)
October 31– November 3, 2005	**TSUNAMI Sensitivity/Uncertainty Tools** (Experienced KENO users only)	$1500	1-D and 3-D sensitivity/uncertainty analysis using XSDRNPM and KENOV.a

*A late fee of $300 will be applied after September 17, 2005. A discount of $600 per each additional week will be applied for registration to multiple courses. Course descriptions can be found at http://www.ornl.gov/sci/scale/training.htm.

SCALE Source Terms and Shielding Course

The SCALE Source Terms and Shielding Course covers SAS2 and ORIGEN-ARP (depletion/ source-term generation), SAS1/XSDRNPM (1-D neutron/gamma shielding), SAS4/MORSE-SGC (3-D Monte Carlo neutron/gamma shielding), and QADS/QAD-CGGP (3-D point kernel gamma shielding). The course will feature the use of SCALE Windows GUIs: OrigenArp for Windows, ORIGEN-S plotting utility PlotOPUS, and the ESPN shielding input processor for SAS4.

KENO V.a Criticality Safety Course

The SCALE KENO V.a Criticality Course focuses on KENO V.a and associated criticality analysis sequences in CSAS. KENO V.a is a widely used 3-D multigroup Monte Carlo criticality safety code that has been in use for 20 years. It is a fast, easy-to-use code that allows one to build complex geometry models using basic geometrical bodies of cuboids, spheres, cylinders, hemispheres, and hemicylinders. Two-dimensional color plots of the geometry model can be generated in KENO V.a or the model may be viewed using the KENO3D 3-D visualization tool.

TSUNAMI Sensitivity/Uncertainty for Criticality Safety Course

Sensitivity coefficients produced by TSUNAMI sequences predict the relative changes in a system's calculated k-eff value due to changes in the neutron cross-section data. TSUNAMI produces sensitivity data on a groupwise basis for each region defined in the system model. First-order perturbation theory is used to compute sensitivity coefficients from both cross-section and flux data. TSUNAMI folds sensitivity data with cross-section covariance data to calculate the uncertainty in the calculated k-eff value due to tabulated uncertainties in cross-section data. The applicability of benchmark experiments to the criticality validation of a given application can be assessed using S/U-based integral indices that can quantify system similarity. Attendees must have attended a KENO course or be experienced KENO users.

MCNPX Workshops

Lead Teachers: Drs. John Hendricks, Gregg McKinney, Laurie Waters
Organizer: HQC Professional Services
Contact: bill@mcnpxworkshops.com

Information: http://mcnpxworkshops.com and MCNPX homepage: http://mcnpx.lanl.gov

2005 Schedule		
Oct. 31–Nov. 4	Intermediate	Santa Fe, NM
2006 Schedule		
January 9–13	Introductory	Las Vegas, NV
March 27–31	Intermediate	Capetown, South Africa
June 12–16	Introductory	Santa Fe, NM

The Santa Fe workshop this fall is presently the ONLY Intermediate workshop on the U.S. schedule for the next 9 months. If you have some experience with MCNPX and related codes, you will benefit from this workshop. We will introduce you to the latest features of MCNPX along with nuances of the features with which you are already somewhat familiar.

MCNPX is packed with new and exciting plotting features, including numerous mesh tally options which can be superimposed on your geometry plot and plotted within the MCNPX run, eliminating the need for post-processing and costly additional plotting package(s). You can plot particle flux, tracks, dosage, and energy deposition as well as source points and many others.

Other capabilities which will be featured in the workshop include:

* Pulse-height tallies with variance reduction
* Radiography tallies and 2D contour plots
* MPI and PVM multiprocessing
* Criticality calculations 100 x faster
* Geometry plots have 64-colors, can shade by different cell quantities, and can label i,j,k indices
* The ability to use physics models when cross section tables are missing
* Physics models include Bertini, Dresner, ISABEL, CEM2k, and INCL/ABLA
* Photonuclear and proton plots
* Light-ion recoil
* 3-He coincidence tallies
* Default (built in) dose functions
* Multi-particle sources
* Positron sources
* Spontaneous fission sources
* Fission multiplicity
* Coincidence capture tallies
* Anticoincidence pulse-height tallies

There are still places available in this workshop.

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

Follow-up consultation for class participants will be provided.

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

MCNP Special Topics Criticality Class

A four-day special topics criticality class for the MCNP (Monte Carlo N-Particle) transport code will be held at LANL November 1–4, 2005. It will be taught by the team who develops and maintains MCNP.

The class will focus on using MCNP5 to perform criticality calculations for reactor physics and criticality safety applications. It is an intermediate level class, intended for those with at least some familiarity with MCNP.

Topics to be covered include:

- Criticality calculations using Monte Carlo methods
- Geometry, including lattices & repeated structures
- Tallies & mesh tallies
- Cross-section data
- Statistical analysis
- Assessing convergence of K-eff & the source distribution
- Interactive running & plotting with MCNP5

Classes will include lectures and hands-on computer use for a variety of criticality calculations. Time will be available to discuss individual questions & problems with the MCNP5 development staff and to pursue additional advanced topics.

Cost for the class is $1,800, with a $300 discount applied if payment is received by Oct. 24, 2005. The class fee includes a notebook with all class viewgraphs and handouts. Information will be sent by follow-up letter or email when we receive your registration information.

To register for the class, go to http://laws.lanl.gov/x5/MCNP/classinformation.html.

TRAINING COURSE ON NEUTRON SPECTRA UNFOLDING

This two-day training course on neutron spectra unfolding will be held April 7–8, 2006, in Cape Town, South Africa. The training course is organized by the Neutron Radiation department of the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany. Additional support is provided by EURADOS. The course is intended for those who do spectrometry in neutron or mixed neutron/photon fields and need to analyze their data using unfolding procedures; emphasis is on practical aspects of unfolding.

A series of lectures in the morning sessions will provide an introduction to unfolding as well as allow for discussions on the theory of unfolding. In the afternoon sessions participants will work on specific examples at PC-workplaces using the UMG software package provided by PTB (UMG: Unfolding with GRAVEL and MAXED, currently distributed by NEA as code package NEA-1665 and by RSICC as code package PSR-529). We will focus on Bonner sphere measurements for our discussion of few-channel unfolding, and on liquid scintillation spectrometer (NE213) measurements for our discussion of multi-channel unfolding.

The number of participants will be restricted due to the limited number of PC-workplaces available. Therefore, you should register as soon as possible. For on-line registration and further information please visit the website at: http://www.ptb.de/utc2006/. Contact: Burkhard Wiegel, PTB, email Burkhard.Wiegel@ptb.de The fee for the course is 800 Euro and includes a CD with a complete set of notes and unfolding software, as well as refreshments.

Radiation Process Simulation and Modeling User Group
Annual Meeting

The Radiation Process Simulation and Modeling User Group (RPSMUG) will meet November 17–18, 2005, in Arlington, Virginia, at the Hilton Garden Inn, Arlington Courthouse Plaza. The two-day meeting has two distinct themes: Day 1 is intended for everyone, particularly individuals interested in process simulation and modeling and how it can be applied to radiation processing; Day 2 will consist of more detailed technical presentations. Both days will consist of round-table discussions and informational sessions related to the use of mathematical models and simulation in radiation processing (gamma, electron beam, and X-ray). If you have a topic that you would like discussed, please submit it to questions@rpsmug.org. Watch for updates and additional information at www.rpsmug.org.

Submitted by Michael C. Saylor, Special Process Services, L.C., 703-207-0159 or mcs@his.com.

ANS RP&S Division Biennial Topical Meeting

The American Nuclear Society Radiation Protection and Shielding Division Biennial Topical Meeting will be held April 3–6, 2006, at the Pecos River Village in Carlsbad, New Mexico. The conference will open with a keynote address by Dr. Glenn Knoll. Other outstanding plenary speakers will include Dr. Kenneth Shultis, Dr. Cassiano de Oliveira and other special speakers.

Workshops will be offered on April 2 and 6, both morning and afternoon. These continuing education classes with the time and location are listed in the conference website.

There will be no charge to those registered for the conference for any of the workshops, although pre-registration is requested. Attendance at the conference will provide continuing education credits for various technical certifications depending on the degree of participation by the attendee.

Tours will be offered of the Waste Isolation Pilot Plant (WIPP), a licensed and operating deep geological repository for transuranic waste. The actual number of visitors WIPP can accommodate will depend on operational conditions and the work schedule of the facility. The WIPP site is a federal facility and advance notice will be required for a site visit so early registration is strongly encouraged.

The Trinity Site is also available to the general public independent of the conference on Saturday, April 1, 2006. The Trinity Site is the location of the world's first detonation of a nuclear weapon.

The call for papers, program and contact information for the conference can be found at http://www.ans-rpsw-carlsbad.com/.

PHYSOR 2006

The Canadian Nuclear Society has announced that the ANS Reactor Physics Topical PHYSOR-2006, "Advances in Nuclear Analysis and Simulation," will be held in Vancouver, BC, Canada, Sept. 10–14, 2006. The meeting is sponsored by the Reactor Physics Division of the ANS and co-sponsored by a host of international societies. The conference will be held at the Hyatt Regency in downtown Vancouver.

You are invited to visit the meeting website at http://www.cns-snc.ca/physor2006/ to obtain updated information and to download a copy of the call for papers. The conference chair is Benjamin Rouben, FCNS Manager, Reactor Core Physics Branch, AECL Sheridan Park (phone 905-823-9060 x 4550, fax: 905-822-0567, email: roubenb@aecl.ca). The technical program co-chair is Ken Kozier, Atomic Energy of Canada Limited (AECL), Chalk River Laboratories, Chalk River, Ontario, Canada K0J 1J0 (Phone: +1-613-584-8811 + ext.5059, email: physor2006@aecl.ca).

CALENDAR

October 2005

KENO V.a Criticality Safety Course, Oct. 24–28, 2005, Oak Ridge National Laboratory, Oak Ridge, TN. Contact: http://www.ornl.gov/sci/scale/training.htm.

TSUNAMI Sensitivity/Uncertainty Tools, Oct. 31–Nov. 3, 2005, Oak Ridge National Laboratory, Oak Ridge, TN. Contact: http://www.ornl.gov/sci/scale/training.htm.

MCNPX Intermediate Workshop, Oct. 31–Nov. 4, 2005, Santa Fe, NM. Contact: Bill Hamilton (phone 806-928-6021, email bill@mcnpxworkshops.com, url http://mcnpxworkshops.com).

November 2005

ANS Winter Meeting and Nuclear Technology Expo, "Talk About Nuclear Differently: A Good Story Untold," November 13–17, 2005, Washington, D.C. Contact: http://www.ans.org/meetings/.

Radiation Process Simulation and Modeling User Group (RPSMUG), Nov. 17–18, 2005, Arlington, Virginia. Contact: Michael C. Saylor (phone 703-207-0159; email mcs@his.com; web www.rpsmug.org).

January 2006

MCNPX Introductory Workshop, Jan. 9–13, 2006, Las Vegas, NV. Contact: Bill Hamilton (phone 806-928-6021, email bill@mcnpxworkshops.com, url http://mcnpxworkshops.com).

March 2006

HEART Conference, March 6–10, 2006, Santa Clara, CA. Contact: Technical Program Chair, Dennis Breuner (phone 858-720-7072, email dbreuner@titan.com).

MCNPX Intermediate Workshop, Mar. 27–31, 2006, Capetown, South Africa. Contact: Bill Hamilton (phone 806-928-6021, email bill@mcnpxworkshops.com, url http://mcnpxworkshops.com).

April 2006

14th Biennial Topical Meeting of the ANS Radiation Protection and Shielding Division, April 3–6, 2006, Carlsbad, New Mexico. Contact: http://www.ans-rpsw-carlsbad.com/.

Two-day training course on neutron spectra unfolding, April 7–8, 2006, Cape Town, South Africa. Contact: Burkhard Wiegel, PTB, email Burkhard.Wiegel@ptb.de or http://www.ptb.de/utc2006/.

June 2006

ANS Annual Meeting, "A Brilliant Future: Nexus of Public Support in Nuclear Technology," June 4–8, 2006, Reno, Nevada. Contact: http://www.ans.org/meetings/index.cgi?c=n.

MCNPX Introductory Workshop, June 12–16, 2006, Santa Fe, NM. Contact: Bill Hamilton (phone 806-928-6021, email bill@mcnpxworkshops.com, url http://mcnpxworkshops.com).

EXRS 2006–European Conference on X-Ray Spectrometry, June 19–23, 2006, Paris, France. Contact: exrs2006@cea.fr, http://www.nucleide.org/exrs2006/.

September 2006

PHYSOR-2006, "Advances in Nuclear Analysis and Simulation," Sept. 10–14, 2006, Vancouver, BC, Canada. Contact: Ken Kozier, Technical Program Co-Chair, Atomic Energy of Canada Limited (AECL), Chalk River Laboratories, Chalk River, Ontario, Canada K0J 1J0 (Phone: +1-613-584-8811 + ext.5059, email: physor2006@aecl.ca, web http://www.cns-snc.ca/physor2006/).

November 2006

ANS Winter Meeting and Nuclear Technology Expo, "Securing the Future in Times of Change," Nov. 12–16, 2006, Albuquerque, NM. Contact: http://www.ans.org/meetings/index.cgi?c=n.

September 2007

ICENES2007, Istanbul. Contact: http://www.icenes2007.org/