Radiation Safety Information Computational Center

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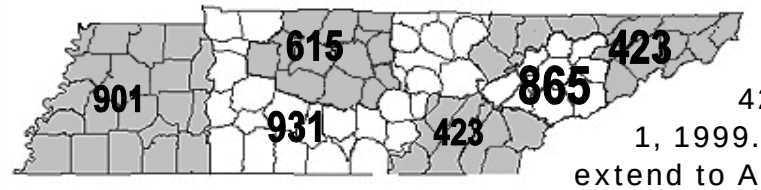
To meet the great tasks that are before us, we require all our intelligence, and we must be sound and wholesome in mind. We must proceed in order. The price of anger is failure.—Elwood Hendricks

Area Code Changes for RSICC



The area code for parts of East Tennessee changed from 423 to 865 effective November 1, 1999. The transition period will extend to April 24, 2000, during which time both area codes can be used. This period should provide enough time for the customer to make necessary changes in modems, faxes, automatic dialers, speed calling, pagers, and cellular phones for numbers dialed within the Knoxville-Oak Ridge region.

NRC Codes Made Available

Several U.S. Nuclear Regulatory Commission (NRC) software packages which were transferred from the ESTSC to RSICC were incorporated into the RSICC computer code collection. Please browse the computer code abstracts available at RSICC's www site for more information on these packages.

CCC-680/UMIBIO
PSR-449/BFR (Distribution is USSO).
PSR-451/PC-BATLE
PSR-456/PCC/SRC
PSR-457/HECTR1.5+ (Distribution is USSO).

DLC-196/PR-EDB Version 2 (Distribution is USSO).

CHANGES TO THE COMPUTER CODE COLLECTION

Three new code systems were added to the computer code collection during the month. Two code systems were contributed by foreign installations.

CCC-606/ANITA-4

OP SYS: AIX, Windows
Language: Fortran 77
Computers: IBM RS/6000, PC
Format: DOS, tar

ANITA-4 was contributed by the Commission of the European Communities, Joint Research Center, Ispra, Italy, through the NEA Data Bank, Issy-les-Moulineaux, France. ANITA-4 computes the radioactive inventory of a material subject to neutron irradiation, continuous or stepwise and provides activity, atomic density, decay heat, energy of decay gamma-rays and ingestion hazard of each nuclide. It also provides total activity, decay heat, contact dose equivalent, gamma-ray spectra, and other relevant parameters, for the irradiated material, versus cooling time. As an option, these parameters may be plotted as a function of the cooling time. The code includes a complete data base which allows one to perform calculations for all the elements with atomic number smaller than 84 (up to bismuth). The cross-sections and the decay data library were developed in fusion technology applications from the following:
(1) the EAF-4.1 neutron activation data library for the standard 100-group GAM-II neutron group structure,
(2) the JEF-2.2 decay data library and FENDL/D-2.0, and
(3) the ICRP dose coefficients for ingestion and inhalation of radionuclides.

The PC installation was done under MS-DOS under Windows 95 with Lahey F77L/EM-32 Version 5.2, and the executables are included. The IBM RS/6000 installation was tested at RSICC under AIX 4.2 with the xlf compiler. The package is transmitted on CD-ROM in both DOS and Unix formats. Reference: Draft 1998 report and EUR 12622 (1989). Fortran 77; IBM RS/6000 and Pentium (C00606MNYCP01).

CCC-682/PENELOPE

OP SYS: UNIX, Windows
Language: Fortran 77
Computers: DEC Alpha, PC
Format: DOS

Universitat de Barcelona and Institut de Tecniques Energetiques, Universitat Politecnica de Catalunya in Barcelona, Spain, through the NEA Data Bank, contributed the PENELOPE code system to perform Monte Carlo simulation of coupled electron-photon transport in arbitrary materials. A mixed procedure is used for the

simulation of electron and positron interactions (elastic scattering, inelastic scattering and bremsstrahlung emission), in which "hard" events (i.e. those with deflection angle and/or energy loss larger than pre-selected cutoffs) are simulated in a detailed way, while "soft" interactions are calculated from multiple scattering approaches. Gamma-ray interactions (Rayleigh scattering, Compton scattering, photoelectric effect and electron-positron pair production) are simulated in a detailed way.

PENELOPE can be run on almost any operating system supporting a Fortran 77 compiler (Unix, MS-DOS, Windows95, Windows NT, vms, etc.). The executables were created using the Lahey F77L/EM-32 compiler (Vers. 5.20) and linker (Version 5.10). The code was tested on DEC Alpha and Pentium computers. The package is transmitted on one 1.44MB diskette which contains the source, PC executables, and test cases written in a self-extracting, compressed DOS file. References: UBRPG-1998-01 (Feb. 1998) and 799 (June 1996). Fortran 77; DEC Alpha and PC (C00682MNYCP00).

PSR-450/KENO3D

OP SYS: Windows
Language: C ++
Computers: pentium PC
Format: DOS

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed this visualization tool for KENO geometry models. KENO3D is a powerful state-of-the-art visualization tool that enables KENO-V.a users to interactively display their three-dimensional geometry models. The Monte Carlo criticality program KENO V.a is distributed within the CCC-545/SCALE4.4 package and is not included in this distribution. Familiarity with KENO V.a is assumed. The KENO3D interactive options include:

- shaded or wireframe images,
- standard views (top view, side view, front view, and isometric/3-D view),
- rotating the model,
- zooming in on selected locations,
- selecting parts of the model to display,
- editing colors and displaying legends,
- displaying properties of any unit in the model,
- creating cut-away views,
- removing units or mixtures from the view of the model, and
- printing image or saving image to a common graphics format.

KENO3D has the look and feel of a typical PC Windows application. Toolbar buttons are included for all major menu options. A setup dialog allows the user to specify which toolbars should be displayed. An extensive online help system is included in this package to aid the user. The file, **KENO3D.chm**, is a compiled html file that is viewable while running KENO3D or using Internet Explorer 5.0. KENO3D provides an interface to ACIS® 3D Toolkit. To install and use KENO3D, you must have the following:

1. Windows 95/98/NT PC,
2. a VGA monitor,
3. a Pentium or later processor,
4. at least 32 Megabytes RAM (128–512 Megabytes RAM is recommended), and
5. 30 Megabytes of free disk space is recommended.

Internet Explorer 5 or later is required to use the KENO3D help files. Microsoft C++ Version 6.0 was used to create the executable included in the package. Due to the proprietary nature of the ACIS® software, source code is not available, and **each and every user** will be charged a royalty fee. The required ACIS® software is bundled into the executable. The package is transmitted on one CD-ROM which includes the documentation files, executables, and test case input written in DOS format. Reference: README.html (Sept. 1999). Microsoft Visual C++; Pentium (P00450PC58600).

Obituaries

Nunzio Joseph Palladino

Nunzio Joseph Palladino (1916–1999) of State College, Pennsylvania, died Sunday, Dec. 12.

He was born Nov. 10, 1916, in Allentown, Pennsylvania. He received a bachelor's degree in 1938 and a master's degree in 1939 in mechanical engineering from Lehigh University. He completed the University of Tennessee graduate program in nuclear engineering and the business and management program from the University of Pittsburgh. In 1964 Lehigh University awarded him an honorary doctorate of engineering.

He began his career in 1939 as a steam turbine design engineer at Westinghouse Electric Corp. in Philadelphia. He served in the European Theatre for the U.S. Army from 1942 to 1945. In the course of his service he received the Gold Medal of Honor from the French government. From 1946 to 1948, he was on loan from Westinghouse to the Oak Ridge National Laboratory in Tennessee and to the Argonne National Laboratory in Illinois. When he returned to Westinghouse, Pittsburgh, in 1950, he worked under the leadership of Adm. Hyman Rickover and was responsible for the design work of a prototype reactor, Mark I, for *Nautilus*, the world's first atomic

submarine, and for the reactor design of the world's first full-scale nuclear electric generating plant for the Shippingport Atomic Power Station. He joined Penn State as professor and head of the nuclear engineering department in 1959. In 1966 he was appointed Dean of the College of Engineering. He started the bioengineering program in collaboration with Dr. William S. Pierce of the Hershey Medical Center. He participated in many University-related activities, including memberships on the University Senate, the Penn State Reactor Safeguards Committee and the Applied Research Laboratory Advisory Board. He was a member, interim president, and board director of the Argonne Universities Association. He authored numerous articles which appeared in professional journals and publications. In 1968 he became a board director and later a vice president of Scientific Systems Inc. of State College, and in 1979 he served as a special consultant following the accident at the Three Mile Island Nuclear Power Station near Harrisburg.

He was nominated by President Ronald Reagan in 1981 to serve as the chairman of the Nuclear Regulatory Commission; his nomination was unanimously approved by the U.S. Senate. He served a full five-year term in the position, during which he received several commendations for his service.

From 1986 to 1989, he served as an independent consultant for the Institute of Nuclear Power Operations in Atlanta.

His professional memberships included fellow and director, American Society of Engineering Education; fellow, American Society of Mechanical Engineers; fellow and president, American Nuclear Society; National Society of Professional Engineers; and National Academy of Engineering. His awards include: Gotshall Scholar at Lehigh University, 1938-1939; Prime Movers Award of the American Society of Mechanical Engineers, 1956; Westinghouse Order of Merit, 1958; Lehigh Valley Renowned Native Son Bicentennial Award, 1976; American Nuclear Society Arthur Holly Compton Award, 1982; Pennsylvania Society of Professional Engineers Engineer of the Year, 1982; and the American Nuclear Society Walter Zinn Award, 1987. He served under four governors for the Science Advisory and Energy Council for the Commonwealth of Pennsylvania.

John Ellis Evans

John Ellis Evans, 84, died March 27, 1999. Ellis became a member of the ANS in 1956. He was a scientist, researcher, and reactor physicist. He was named to the team at the MIT Radiation Laboratory where he worked from 1942-1945 on magnetrons essential to the radar that helped win the Battle of Britain in World War II. He worked on the pioneering “Water Boiler” at Los Alamos Scientific Laboratory. He was director of nuclear physics research at the National Reactor Testing Station in Idaho Falls from 1952 to 1961. He

retired after 30 years with Lockheed Missiles and Space Research Laboratory in Palo Alto, California.

Nick Metropolis

Nick Metropolis, 84, died October 17, 1999, in New Mexico. He worked on the Manhattan Project alongside J. Robert Oppenheimer. Metropolis is best known for his contributions to the Monte Carlo method. He led a group of scientists in the late 1940s who developed an early high-speed digital computer, the MANIAC. He returned to the University of Chicago in 1957 to teach. He also founded the university's Institute for Computer Research. He returned to Los Alamos National Laboratory where he worked until his retirement in 1985.

CONFERENCES, COURSES, SYMPOSIA

RSICC attempts to keep its users/contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email to **raf@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.

MCNP and Visual Editor Training Course

Upcoming 2000 dates for the *MCNP and Visual Editor Training Course* are:

March 14–17 Pellissippi State Technical Community College near Knoxville, Tennessee. Cost $1650
October 9–12 in Richland, Washington. Cost $1400

The source code package can be obtained directly from RSICC.

The class will combine teaching on MCNP physics, along with instructions on how to use the visual editor. Computer demonstrations and exercises will focus on creating and interrogating input files with the visual editor. Demonstrations of advanced visualization work using MCNP will also be

made. The class will be taught on Pentium computers running the Linux operating system. Attendees are encouraged to bring their own input files for viewing and modifying in the visual editor. It is recommended that you have experience with MCNP before taking this class. For additional information contact Randy Schwarz, MS K8-34, P. O. Box 999, Richland, WA 99352 (509-372-4042, fax 509-372-6421, email **randy.schwarz@pnl.gov**, url **http://www.pnl.gov/eshs/software/ved.html**).

MCNP Workshops for the Year 2000

The following is the 2000 schedule for Monte Carlo N-Particle Transport Code workshops.

Year 2000 Schedule:		
21-24 March	**Advanced Class**	**USA, Los Alamos National Laboratory**
10-14 April	**Advanced Class**	**London**
23-26 May	**Introductory Class**	**USA, Los Alamos National Laboratory**
July	**Introductory Class**	**Europe (to be announced)**

Introductory classes are for people who have little or no experience with MCNP. The classes survey the features of MCNP so the beginning user will be exposed to the capabilities of the program and will have hands-on experience at running the code to solve rudimentary problems. Course topics include basic geometry, source definitions, output (tallies) specification and interpretation, advanced geometry (repeated structures specification), variance reduction techniques, statistical analysis, criticality, plotting of geometry, tallies, and particle tracks, and neutron/photon/electron physics.

Advanced classes are for people with MCNP experience who want to extend their knowledge and understanding. Most areas of MCNP operation will be discussed in detail, with emphasis on advanced geometry, advanced variance reduction techniques, perturbation enhancement & cumulative tallies. Time will be available to discuss approaches to specific problems of interest to students.

NOTE: While MCNP supports a number of platforms, class computers are usually UNIX machines. Experience with UNIX will be helpful to the student but is not essential.

Year 2000 classes will showcase the latest release of MCNP, Version 4C. Major new features that will be discussed include:

- Macrobodies
- Unresolved Resonance Treatment
- Perturbation Enhancement
- Alpha Eigenvalues
- Cumulative Tallies

All classes provide interactive computer learning. Time will be available to discuss individual questions and problems with MCNP experts. To Register for the LANL classes via the Internet, go to **http://www.solutionsbyhqc.com/mcnpform. html** or email Bill Hamilton at **bill@solutionsbyhqc.com**. For registration information on the European classes, contact Enrico Sartori, OECD/NEA, **sartori@nea.fr**.

8th ICESS

The *Eighth International Conference on Electronic Spectroscopy and Structure* will be held on the Clark Kerr Campus of the University of California, Berkeley, **August 8–12, 2000**. The conference will provide a broad forum for discussing experimental and theoretical aspects of laboratory- and synchrotron-radiation-based electron spectroscopy, electron- and ion-beam-excited electron spectroscopy, x-ray absorption and x-ray emission spectroscopy, various forms of spectromicroscopy and microspectroscopy, and related phenomena dealing with electronic structure and dynamics, as well as their applications to surface, interface, materials, and industrial analysis. The conference title has been changed to enlarge its scope so as to cover complementary spectroscopies such as x-ray fluorescence and near-edge x-ray absorption that are now often used in conjunction with the various electron spectroscopies. Of particular interest for the program are new developments leading to higher energy, spatial, and temporal resolutions, as well as explorations of novel materials properties and more accurate theoretical descriptions of phenomena. The scientific program will include invited talks and contributed oral and poster presentations. The conference proceedings will be published as a special issue of the *Journal of Electron Spectroscopy and Related Phenomena*. The topics to be covered include:

- Photoelectron and Auger spectroscopies in all forms,
- Related soft x-ray fluorescence and near-edge x-ray absorption spectroscopies, as well as x-ray optical measurements,
- Electron-energy-loss spectroscopies at low and high energies, including electronic and vibrational excitations,
- Photon- and electron-based spectromicroscopies and microspectroscopies, including those using laboratory x-ray and

synchrotron radiation sources, electron beams, and energy loss in electron microscopes,
- Excitation cross-sections, relaxation effects, and many-electron phenomena,
- Measurements with variable light polarization, spin detection, and time resolution; "complete" experiments of various types,
- Coincidence spectroscopies using electrons,
- Photoelectron, Auger electron, and other electron-based diffraction and holography; x-ray fluorescence holography,
- Scanning tunneling spectroscopy and related electronic spectroscopies,
- New developments in both laboratory and synchrotron radiation instrumentation,
- New theoretical approaches for describing electronic structure and dynamics, as well as for interpreting experiments, and
- Applications of the above to atoms, molecules, liquids, surfaces/interfaces, nanostructures, catalysts, environmentally relevant problems, novel and complex materials, strongly correlated and magnetic materials, and industrial analytical problems.

For information about the conference itself, please send email to **icess@lbl.gov**.

Reactor Analysis and Criticality Safety Short Courses

The Department of Nuclear Engineering at the University of Tennessee-Knoxville is offering two short courses for radiation transport specialists during Tennessee Industries Week (TIW-35), August 14-18, 2000.

Monte Carlo Analysis is often the method of choice to solve complex problems in criticality and radiation shield design. The transport analyst must often choose between Monte Carlo and deterministic methods like discrete ordinates; or the nature of the design problem may dictate that he perform a coupled (Monte Carlo/discrete ordinates) calculation. Therefore, to use Monte Carlo and other transport methods effectively, the analyst must understand the theoretical and computational fundamentals. Rather than use an existing program, it is sometimes advantageous to create a new special-purpose Monte Carlo program. The procedures that are involved in preparing a user-written Monte Carlo program will be described in terms of the classical and conceptually simple straight-ahead, one-speed, slab transmission problem.

Many advanced topics will be included that will permit optimum use of existing computer codes such as MCNP. Special attention will be given to the understanding of the adjoint calculation. Advantages and disadvantages of the adjoint mode versus the forward mode of analysis will be described.

The full range of variance reduction techniques will be studied for both forward and adjoint calculations.

The Monte Carlo Method offers the expectation that the true solution to the problem as modeled can be achieved. However, this may lead to a false sense of credibility, in particular when calculations are performed by relatively inexperienced users (the majority of people who use the Monte Carlo method do so only occasionally). Monte Carlo calculations are subject to major errors and/or misinterpretations because currently used statistical measures may be insufficient. Other methods for statistically characterizing Monte Carlo methods will be described.

The relationship of the Monte Carlo method to the other transport methods such as discrete ordinates will be described, including comparisons of computational advantages and disadvantages. The MCNP computer code will be described as required to illustrate the general features of large Monte Carlo computer programs.

Nuclear Criticality Safety Engineers, scientists, and technical managers who wish to increase their knowledge and understanding of nuclear criticality safety will be interested in this intensive one-week short course. The topics covered in the course are based primarily on the experience of the six instructors which totals over 130 years of nuclear criticality safety related experience. Such a wealth of experience needs to be shared with the criticality safety community including both new professionals in the field as well as experienced professionals.

The course topics include illustrative applications using the SCALE system developed at Oak Ridge National Laboratory with emphasis on the Monte Carlo code KENO Va, standards, regulations, review of accidents, hand calculation methods, subcritical limits, code validation techniques, emergency response, process upsets and recovery actions, and transient excursion modeling.

The registration fee is $1195 per person for each course. The deadline for registration in these courses is **August 1, 2000**. For additional information contact Lydia Salmon, Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 865-974-2525; email **lutne@utk.edu**). If you have access to the internet, you may also register via the website at **http://www.engr.utk.edu/dept/nuclear/TIW.html**.

SNA 2000

The Fourth International Conference on Supercomputing in Nuclear Applications (SNA 2000)
September 4-7, 2000, Toranomon-Pastoral, Tokyo, Japan, sponsored by Japan Atomic Energy Research Institute, cosponsored by OECD/Nuclear

Energy Agency, Atomic Energy Society of Japan, Japan Nuclear Cycle Development Institute.

In recent years numerical simulation has been employed as one of the powerful methods for doing science and engineering in a wide variety of application fields. Due to the rapid development of various parallel computer architectures and software, the state-of-the-art supercomputing technology is required to be applied in numerical simulations to enhance the computing performance.

The objective of this conference is twofold. The first is to present the newest research results in numerical simulations in a wide variety of scientific and engineering fields, in particular nuclear and its related fields. The second is to promote and encourage the introduction of supercomputing technologies to numerical simulations. Some of the sessions will be organized such that researchers in numerical simulations and high performance computing fields can engage in discussing common areas of interest.

Contributions generally focus on large scale numerical simulations in application fields and supercomputing technologies. Papers on computational science and engineering simulations, whether they are small or large scale, are welcome.

Authors interested in contributing to the SNA2000 are invited to submit manuscripts that report new technologies and practical experience related to numerical simulations in application fields and high performance computing and communication. Topics of interest include but are not restricted to the followings

Numerical Simulations in Application Fields

- Reactor Engineering: Fission and fusion, Accelerator and beam, Reactor and neutron physics, Plant simulation, operation, and design.
- Fluid Engineering: Turbulent flow, Multi-phase flow, Reactive flow, Heat transfer.
- Structural Engineering: Thermal and structural analysis, Impact dynamics and stability, Computational fracture and damage mechanics, Fluid-structure interaction, Linear and nonlinear vibration.
- Materials Science: Fracture, Brittle/ductile properties, Defects, Thermodynamic properties of materials.
- Environmental Sciences: Air, marine and/or terrestrial pollution, Global climate change, Nuclear emergence response, Nuclear waste disposal.
- Bioscience: Microdosimetry, Modeling of biological radiation effect, Dose calculation.
- Radiation and Photon Science: Utilization of radiation fields (neutrons etc.), Laser and synchrotron radiation and their applications, Interaction of laser with matter.

- Basic Research Fields: Computational physics and chemistry, Plasma physics, etc.

High Performance Computing and Communication

- High Performance Computing Infrastructure: Highly parallel algorithms, Performance and benchmarking, Distributed parallel computing systems and networking, Parallel numerical libraries, Languages for high performance computing, Visualization and graphics.
- High Performance Computing Systems: Next generation computers, Data storage systems, Special-purpose computers.

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http://ciscper.tokai.jaeri.go.jp/sna2k/

SPECTRUM 2000

SPECTRUM 2000 will be held in Chattanooga, Tennessee, **September 24–28, 2000**. The conference is a biannual international conference with a primary focus on technology development and deployment for nuclear and hazardous waste management applications. It is sponsored by the ANS Fuel Cycle & Waste Management and Decommissioning, Decontamination, and Reutilization Divisions in cooperation with the U.S. Department of Energy and organized and hosted by the ANS Oak Ridge/ Knoxville Section. The objective is to provide new avenues for business development and commercialization of products and services for nuclear waste management and for all processes that generate these wastes, namely, decommissioning & decontamination and environmental restoration through the international exchange of information related to deployed technologies, emerging technologies, and advanced technologies. Papers are solicited in the following tracks:

- Management of Hazardous Waste, Mixed Waste, and Low Level Waste
- Decontamination and Decommissioning (D&D)
- Characterization, Processing, Packaging, Handling, and Transportation
- Technologies for Spent Nuclear Fuel, High Level Waste, and TRU Waste
- Stakeholder and Regulatory Management Affecting Technology Needs and Deployment
- International Environmental Management Technology Programs

- Dose, Safety, and Risk Assessments
- Environmental Management Integration

The deadline for submitting summaries is **February 28, 2000**. General information and instructions for submitting papers is available at **http://www.engr.utk.edu/spectrum/** or from:

SPECTRUM 2000
University of Tennessee
Department of Nuclear Engineering
Knoxville, TN 37996-2300
phone: 865-974-5048, Fax: 419-828-4819
email: **spectrum2000@engr.utk.edu**

Yugoslav Nuclear Society Conference (YUNSC 2000)

The Third International Conference of the Yugoslav Nuclear Society will be held on **October 2–5, 2000**, in Belgrade, Yugoslavia. The Conference is expected to stimulate an exchange of information and ideas on the following topics:

- Nuclear Power
- Research Reactors
- Accelerators
- Numerical Methods and Models
- Nuclear Materials
- Nuclear Safety
- Nuclear Methods in Science and Technology
- Radiation Protection
- Radiation Medicine
- Fuel Cycle and Waste Management
- Environment
- Training and Education

Plenary sessions by leaders in the fields, topical sessions with invited and selected papers, and poster sessions is the planned format of the Conference. The working language of the Conference is English. Participants are invited to send a one-page abstract preferably by email to (**yuns@rt270.vin.bg.ac.yu**) as an attachment or by mail either as hardcopies or on a diskette. The papers submitted will be reviewed during April and May, and the authors notified of their acceptance or otherwise by June 15, 2000. Accepted papers will be included in the Book of Abstracts, which will be distributed to the participants on registration at the Conference. The papers, final versions of invited and selected papers, comments, and conclusions will be published in the Proceedings of YUNSC 2000 and mailed to the participants after the Conference. Detailed instructions for the preparation of

posters will be given in the Second Announcement. For pre-registration and information on submitting your work to YUNSC 2000 contact:
Radojko Pavlovi
YUNSC 2000 Conference Secretary
The VINCA Institute of Nuclear Sciences
P.O.B. 522, 11001 Belgrade, Yugoslavia
Tel No: + 381 (11) 453-867
Fax No: + 381 (11) 455-943
email: **yuns@rt270.vin.bg.ac.yu**

MC2000

The *International Conference on Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications (MC2000)* will be held **October 23-26, 2000**, in Lisbon, Portugal. At the International Conference, "Monte Carlo 2000 - Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications," all sessions will be dedicated to Monte Carlo issues. This Conference has been organized around three main categories of Monte Carlo simulations: Radiation Physics, Particle Transport Simulation and Applications involving electron-photon, neutron-gamma and hadronic codes. The following issues will be addressed:

- Theory and methods
- Physics and modeling issues
- Algorithm developments
- Computational Science
- Basic data
- Analysis of experiments and measurements
- Benchmarks
- Status of general-purpose codes
- Tools (Graphics and Analysis)
- Applications

The deadline for abstract submission is **March 31, 2000**. Inquiries regarding the conference can be addressed to: Intituto Tecnológico e Nuclear, MC2000 Conference Secretariat, Estrada Nacional 10, P-2686-953 Sacavem, Portugal (phone: +351-21-994 60 00 ext. 6154, fax +351-21-994 10 39, email **mc2000@itn1.itn.pt**, or Dr. Pedro Vaz, Technical and Scientific Program Co-ordinator at email **vaz@nea.fr**, **url http://www.itn.pt/Meetings/MC2000/**).

Calendar

Your attention is directed to the following events of interest.

February 2000

International Seminar on year 2000: Progress and Cooperation, Feb. 1-5, 2000, Vienna, Austria. Contact: IAEA, IAEA-CN-78, Wagamerstrasse 5, P.O. Box 100, A-1400, Vienna, Austria (phone 43-1-26000, fax 43-1-26007, email **official.mail@iaea.org**, url **www.iaea.org**).

Utilization of Nuclear Power in Oceans, N'ocean 2000, Feb. 21-24, 2000, Tokyo, Japan. Contact: Nobuteru Nariyama (Conference Secretary), Nuclear Technology Division, Ship Research Institute, Ministry of Transport, 6-38-1, Shinkawa, Mitaka, Tokyo 181-0004, Japan (phone +81-422-41-3138, fax +81-422-41-3136, email **nari@srimot.go.jp**, url **www.srimot.go.jp/ncl/ws/index.html)**.

Waste Management 2000, Feb. 27–Mar. 2, 2000, Tucson, Arizona. Contact: WM Symposia, phone 520-696-0399, fax 520-696-0487, url **www.wmsym.org**).

Radiation Transport Calculations using the EGSnrc Monte Carlo System, Feb. 29–Mar. 2, 2000, Ottawa, Canada. Contact: Blake Walters, Ionizing Radiation Standards, National Research Council of Canada, Ottawa, Canada, K1A 0R6 (phone 613-993-2715, fax 613-952-9865, email **bwalters@irs.phy.nrc.ca**, url **www.irs.inms.nrc.ca/inms/irs/papers/egsnrc/brochure.html**).

March 2000

Conference of the Safety of Radioactive Waste Management, Mar. 13–17, 2000, Córodba, Spain, sponsored by the IAEA. Contact: IAEA, IAEA-CN-78, wagamerstrasse 5, P.O. Box 100, A-1400, Vienna, Austria (phone 43-1-26000, fax 43-1-26007, email **official.mail@iaea.org**, url www.iaea.org**).**

MCNP and Visual Editor Training Course, Mar. 14-17, 2000, Knoxville, Tennessee. Contact: Randy Schwarz, MS K8-34, P. O. Box 999, Richland, WA 99352 (509-372-4042, fax 509-372-6421, email **randy.schwarz@pnl.gov**, url **http://www.pnl.gov/eshs/software/ved.html**).

4th Internatl. Top. Meeting on Research Reactor Fuel Management (RRFM 2000), Mar. 19–21, 2000, Colmar, France, sponsored by the European Nuclear Society. Contact: RRFM 2000 Secretariat, ENS, Belpstrasse 23, P.O. Box 5032, CH-3001 Berne, Switzerland (phone 41-31-320-6111, fax 41-31-320-6845, email **rrfm2000.forms@to.aey.ch**, url **www.aey.ch/ens/Conferences/rrfm2000/**).

MCNP Advanced Class, 21-24 March, 2000, Los Alamos National Laboratory, New Mexico. To register for the LANL classes via the Internet, go to **http://www.solutionsbyhqc.com/mcnpform.html** or email Bill Hamilton at **bill@solutionsbyhqc.com**.

12th Annual Regulatory Information Conference, Mar. 27-29, 2000, Washington, D.C., sponsored by the

NRC. Contact: Sharon Bell, phone 301-415-8217, url **http://www.nrc.gov/NRC/REACTOR/RIC/2000/index.html**.

April 2000

Eighth International Conference on Nuclear Engineering, ICONE-8, April 2–6, 2000, Baltimore, Maryland, USA. Contact: George Bockhold, US Technical Chair, c/o PO Box 116502, Gainesville, FL 32611-6502, USA (phone 352-392-9722, fax 352-392-8656, email **Submit-icone8@icone-conf.org**, url **http://www.icone-conf.org/icone8/**).

MCNP Advanced Class, 10-14 April, 2000, London. For registration information on the European classes, contact Enrico Sartori, OECD/NEA, **sartori@nea.fr**.

May 2000

PHYSOR 2000, May 7-11, 2000, Pittsburgh, Pennsylvania, sponsored by the Reactor Physics Section of the American Nuclear Society and the ANS Pittsburgh Section. Contact: Dr. Tom Congedo (phone 412-256-1084, fax 412-256-2444, email congedtv@westinghouse.com, url **http://ans-pgh.commerce.wec.com/rp2000. htm**).

MCNP Introductory Class, 23-26 May, 2000, Los Alamos National Laboratory, New Mexico. To register for the LANL classes via the Internet, go to **http://www.solutionsbyhqc.com/mcnpform.html** or email Bill Hamilton at **bill@solutionsbyhqc.com**.

June 2000

International Workshop on Neutron Field Spectrometry in Science, Technology and Radiation Protection, June 5-8, 2000, Pisa, Italy. Contact Horst Klein, PTB, dep. 6.4 `Neutron Metrology', Bundesallee 100, D-38116 Braunschweig, Germany (phone 49-531-592-6400, fax 49-531-592-7205, email **horst.klein@ptb.de**).

8th International Symposium on Radiation Physics (ISRP-8), June 5–9, 2000, Prague, the Czech Republic. Contact: Professor Ladislav Musílek, Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Bøehová 7, 115 19 Praha 1, Czech Republic (fax +4202 2320861, email **musilek@br.fjfi.cvut.cz**).

7th Workshop on Methodologies for Particle Transport Simulation of Nuclear Systems (Design, Dosimetry and Shielding), June 26-30, 2000, Penn State University, University Park, Pennsylvania. Contact: **haghigha@gracie.psu.edu**, or **iaw@psu.edu** or from the website at **http://gracie.psu.edu/wshop02/wshop02.html**.

July 2000

Plutonium Futures—The Science, July 10-13, 2000, Santa Fe, New Mexico. Contact: Plutonium Futures—The Science, Los Alamos National Laboratory, Nuclear Materials Technology Division, P.O. Box 1663, MS E500, Los Alamos, NM, USA 87545 (phone 505-665-5981, fax 505-667-7966, email **Puconf2000@lanl.gov**).

August 2000

Eighth International Conference on Electronic Spectroscopy and Structure, Campus of the University of California, Berkeley, Aug. 8–12, 2000. Contact: icess@lbl.gov (url:

http://www-als.lbl.gov/icess/).

Monte Carlo Analysis, Aug. 14-18, 2000, Knoxville, Tennessee, a short course by the University of Tennessee. Contact: Lydia Salmon, Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 865-974-2525; email **lutne@utk.edu**, **http://www.engr.utk.edu/dept/nuclear/ TIW.html**.

Nuclear Criticality Safety, Aug. 14-18, 2000, Knoxville, Tennessee, a short course by the University of Tennessee. Contact: Lydia Salmon, Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 865-974-2525; email **lutne@utk.edu**, **http://www.engr.utk.edu/dept/nuclear/ TIW.html)**.

September 2000

4th International Conference on Supercomputing in Nuclear Applications (SNA 2000), Sept. 4-7, 2000, Toranomon-Pastoral, Tokyo, Japan, sponsored by Japan Atomic Energy Research Institute, cosponsored by OECD/Nuclear Energy Agency, Atomic Energy Society of Japan, Japan Nuclear Cycle Development Institute. Contact: Hideo Kaburaki, Center for Promotion of Computational Science and Engineering, Japan Atomic Energy Research Institute (phone +81-3-5723-2513, fax +81-3-5723-2537, e-mail: **sna2000@koma.jaeri.go.jp, http://ciscper.tokai.jaeri.go.jp/sna2k/**)

Radiation Protection for our National Priorities: Medicine, the Environment, and the Legacy, Sept. 17–21, 2000, Spokane, Washington. Contact: Harvey Goldberg, ANS-EWS, P.O.Box 941, Richland, WA 99352 (email **finfrock@ambinet.com**).

SPECTRUM 2000, Chattanooga, Tennessee, Sept. 24–28, 2000. Contact: SPECTRUM 2000, University of Tennessee, Department of Nuclear Engineering, Knoxville, TN 37996-2300 (phone 865-974-5048, fax 419-828-4819, email **spectrum2000@engr.utk.edu**, url **http://www.engr.utk.edu/spectrum/**).

ICENES 2000, The 10th International Conference on Emerging Nuclear Energy Systems, Sept. 25-28, 2000, Petten, The Netherlands. Contact: Mrs. M. Hofman, Meeting Secretariat, NRG, P.O. Box 25, 1755 ZG Petten, The Netherlands (phone +31-224-56-4193, fax +31-224-56-3490, email **hofman@nrg-nl.com**, url **http://www.nrg-nl.com/congres/icenes/**).

October 2000

3rd International Conference of the Yugoslav Nuclear Society (YUNSC 2000), Oct. 2–5, 2000, Belgrade, Yugoslavia. Contact: Radojko Pavlovi, YUNSC 2000 Conference Secretary, The VINCA Institute of Nuclear Sciences, P.O.B. 522, 11001 Belgrade, Yugoslavia (phone + 381 (11) 453-867, fax + 381 (11) 455-943, email **yuns@rt270.vin.bg.ac.yu)**

MCNP and Visual Editor Training Course, Oct. 9-12, 2000, Richland, Washington. Contact: Randy Schwarz, MS K8-34, P. O. Box 999, Richland, WA 99352 (509-372-4042, fax 509-372-6421, email **randy.schwarz@pnl.gov**, url **http://www.pnl.gov/eshs/software/ved.html**).

2000 American Nuclear Society 14th Topical Meeting on the Technology of Fusion Energy, Oct. 15–19, 2000, Park City, Utah. Contact: url **http://www.ambinet.com/ans/rps2000.htm.**

4th International Workshop on Dosimetry for Radiation Processing, Oct. 22-27, 2000, San Diego, California. Contact: Dr. Harry Farrar IV, ASTM Committee E-10, 18 Flintlock Lane, Bell Canyon, CA 91307-1127 (phone 818-340-1227, fax 818-340-2132, email **hfarrar4@aol.com**).

International Conference on Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications (MC2000), October 23-26, 2000, Lisbon, Portugal. Contact: Intituto Tecnológico e Nuclear, MC2000 Conference Secretariat, Estrada Nacional 10, P-2686-953 Sacavem, Portugal (phone: +351-21-994 60 00 ext. 6154, fax +351-21-994 10 39, email **mc2000@itn1.itn.pt**, or Dr. Pedro Vaz, Technical and Scientific Program Co-ordinator at email **vaz@nea.fr**, url **http://lipulsi.lip.pt/mc2000/**).

November 2000

5th Radiation Physics Conference—Atomic Energy, Radiation Protection, Challenges and Strategies, Nov. 5-9, 2000, Cairo, Egypt. Contact: Prof. Mohammad A. Gomaa, Atomic Energy Authority, 3 Ahmad Al-Zomor St., Alzohour District, Nasr City, Children Village Post Office, Postal Code 11787, Cairo, Egypt (fax 00202-287603, email **ruatom@rusys.EG.net**).

DECEMBER ACCESSION OF LITERATURE

The following literature cited 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 shielding 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.

Radiation Shielding Literature

Health Phys., 77, 654-661 . . . *Model Validation for External Doses Due to Environmental Contaminations by the Chernobyl Accident.* . . . Golikov, V.; Balonov, M.; Erkin, V.; Jacob, P. . . . December 1999 . . . Institute of Radiation Hygiene, Petersburg, Russia; GSF-National Research Center for Environment and Health, Neuherberg, Germany.

Health Phys., 77, 662-667 . . . *Calculations of Background Beta-Gamma Radiation Dose Through Geologic Time.* . . . Karam, P.A.; Leslie, S.A. . . . December 1999 . . . University of Rochester, Rochester, NY; University of Arkansas at Little Rock, Little Rock, AR.

Health Phys., 77, 724-725 . . . *An Alternative to Monte Carlo in*

Determining Release Criteria for Patients Administered Radioactive Material. . . . Johnson, T.K.; Barnhart, T. . . . December 1999.

Health Phys., 77, 726 . . . *Response to Johnson and Barnhart.* . . . Siegel, J.A.; Sparks, R.B.; Wahl, R.L. . . . December 1999.

Health Phys., 78, 2-7 . . . *Dose Contribution from Metabolized Organically Bound Tritium After Chronic Tritiated Water Intakes in Humans.* . . . Trivedi, A.; Galeriu, D.; Lamothe, E.S. . . . January 2000 . . . AECL, Chalk River, Ontario, Canada.

Health Phys., 78, 15-20 . . . *Dose Contribution from Metabolized Organically Bound Tritium After Chronic Tritiated Water Intakes in Humans*. . . . Romanyukha, A.A.; Ignatiev, E.A.; Vasilenko, E.K. ;Drozhko, E.G.; Wieser, A.; Jacob, P.; Kei . . . January 2000 . . . Russian Academy of Sciences, Ekaterinburg.

Health Phys., 78, 46-52 . . . *Internal Dose for Ingestion of Molybdenum Radionuclides Based on a Revised Biokinetic Model.* . . . Giussani, A.; Cantone, M.C.; de Bartolo, D.; Roth, P.; Werner, E. . . . January 2000 . . . GSF-National Research Center for Environment and Health, Neuherberg, Germany; Universita degli Studi, Milano, Italy.

Health Phys., 78, 53-59 . . . *Imaging Radiation Induced Muscular Necrosis with Antimyosin-Scintigraphy and Computed Tomography.* . . . Alberini, J.L.; Lefaix, J.L.; Bansard, J.Y.; Bourguet, P. . . . January 2000 . . . Centre de Recherche et de Lutte Contre le Cancer, Rennes, France; Laboratoire de Radiobiologie et d'Etude du Genome-DSV-DRR, CEA-Saclay, France; Universite Rennes, Rennes, France.

Health Phys., 78, 60-67 . . . *Age-Dependent Thyroid Absorbed Doses for Radiobiologically Significant Radioisotopes of Iodine.* . . . Zanzonico, P.B. . . . January 2000 . . . Memorial Sloan-Kettering Cancer Center, New York, NY.

Math. of Comp., 68, 1615-1621 . . . *Tau Method Approximation of a Generalized Epstein-Hubbell Elliptic-Type Integral.* . . . Khajah, H.G. . . . January 2000.

Nucl. Sci. Technol., 36, 957-958 . . . *Ambiguity of the Mean Time to Loss of a Neutron in a Critical Reactor.* . . . Hayashi, M. . . . October 1999 . . . Research Reactor Institute, Kyoto University, Osaka, Japan.

X-Ray Spectro., 28, 215-223 . . . *Compilation of Photon Cross-Sections: Some Historical Remarks and Current Status.* . . . Hubbell, J.H. . . . 1999.

Rad. Prot., 19, 226-234 . . . *Dose Control and Alara at Nuclear Power Plants.* . . . Xia Yihua; Li Xutong . . . May 1999 . . . China Institute of Atomic Energy, Beijing, China. . . . In Chinese.

Rad. Prot., 19, 246-262 . . . *Dosimetric Constants for Isotropic Point Source of Radionuclides Emitting Photons.* . . . ; Li Shijun . . . July 1999 . . . Suzhou Medical College. . . In Chinese.

Rad. Prot., 19, 263-271 . . . *Calibration of In Vivo Measurement System for Transuranic Elements and Results Comparison Using LLNL and JAERI Phantoms*. . . . Fan Yaoguo; Jin Yueru; Han Yueqin; Hu Zunsu . . . July 1999 . . .China Institute for Radiation Protection, Taiyuan, China. . . . In Chinese.

Rad. Prot., 19, 277-283 . . . *A Comparison Between the Effective Dose, E with the Effective Dose Equivalent, He from External Radiation.* . . . ; Chen Mingjun . . . July 1999 . . . China Institute for Radiation Protection, Yaiyuan, China. . . . In Chinese.

Rad. Prot., 19, 316 . . . *U.S. Defense Nuclear Wastes and Site Contamination.* . . . Luo Shanggeng . . . July 1999 . . .

China Institute of Atomic Energy, Beijing, China. . . . In Chinese.

INDC(NDS)-406 . . . *Extension and Improvement of the FENDL Library for Fusion Applications.* . . . Herman, M. . . . November 1999 . . . Fiziko-Energeticheskij Institut, Obninsk, Russia.

NISTIR 6358 . . . *An Examination and Assessment of Available Incoherent Scattering S-Matrix Theory, Also Compton Profile Information, and Their Impact on Photon Attenuation Coeff* . . . Hubbell, J.H. . . . July 1999 . . . NIST, Gaithersburg, MD.

NUREG/CR-6655, Vol. 1; ORNL/TM-13692/V1 . . . *Sensitivity and Uncertainty Analyses Applied to Criticality Safety Validation.* . . . Broadhead, B.L.; Hopper, C.M.; Childs, R.L.; Parks, C.V. . . . November 1999 . . . Oak Ridge National Laboratory, Oak Ridge, TN.

NUREG/CR-6655, Vol.2; ORNL/TM-13692/V2 . . . *Sensitivity and Uncertainty Analyses Applied to Criticality Safety Validation.* . . . Broadhead, B.L. Hopper, C.M.; Parks, C.V. . . . November 1999 . . . Oak Ridge National Laboratory, Oak Ridge, TN.