RSIC Newsletter

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The grand essentials of happiness are: something to do, something to love, and something to hope for.)Chalmers

Deterministic Methods Seminar/TORT Workshop Plans Take Shape

The RSIC Seminar/Workshop on Deterministic Methods (see August and September *RSIC Newsletter*) is planned for Tuesday through Thursday, February 4!6, 1992, in Oak Ridge, Tennessee. A lot of interest has been expressed through survey forms sent by Newsletter readers and plans are becoming firmer.

The seminar, to begin on Tuesday morning, will consist of invited and contributed papers on development and application of deterministic methods and will last for 1½ days. The workshop will begin on Wednesday afternoon and will consist of 1½ days of presentations and hands-on application of the TORT two- and three-dimensional discrete ordinates system. The workshop will be led by Wayne Rhoades of the Nuclear Analysis and Shielding Section, Engineering Physics and Mathematics Division of Oak Ridge National Laboratory. Tentative plans call for participation in the presentations by T. Burns, W. Engle, J. Pace, C. Slater, and L. Williams from the above organization, R. Childs from the Computing and Telecommunications Division at ORNL, and B. Kirk, Jennie Manneschmidt, R. Roussin, and J. White from RSIC.

A tentative agenda for the TORT Workshop follows:

FIRST SESSION WEDNESDAY AFTERNOON (2/5/92)

THE DISCRETE ORDINATES METHOD
DISCRETE ORDINATES)WHERE IT CAME FROM, HOW IT WORKS.
TORT)WHERE IT CAME FROM, HOW IT WORKS.
SCOPE AND CAPABILITY)PROBLEM SIZE, LIMITS, COST
PRESENT RANGE OF APPLICATIONS

TORT PROBLEM SETUP REQUIREMENTS

SPACE MESH AND GEOMETRY SETUP.
QUADRATURE SETS.
KEY FLUX AND RESPONSE OUTPUT.
CROSS SECTION REQUIREMENTS.
SOURCE INPUT.
CONTROL ARRAYS.

SECOND SESSION THURSDAY MORNING (2/6/92)

SPECIAL PROBLEM SOLUTION STRATEGIES) FIXED SOURCE

MESH SIZE VS. ACCURACY AND COST.
FLUX SOLUTION METHOD VS. ACCURACY AND COST.
QUADRATURE SELECTION VS. ACCURACY AND COST.
BIASED QUADRATURES FOR SPECIAL PROBLEMS.

SPECIAL PROBLEM SOLUTION STRATEGIES) SOURCE ITERATIONS

UPSCATTER, M-CALCULATIONS, K-CALCULATIONS.
SPECIAL CONVERGENCE REQUIREMENTS.
OUTPUT FILES FROM SOURCE ITERATION CALCULATIONS.

SYSTEM IMPLEMENTATION

DISTRIBUTION PACKAGE AND CONTENTS.
UNLOADING AND INSTALLING THE CODES.
TEXT FILE OVERVIEW.
CROSS SECTION SETS AVAILABLE.
SAMPLE PROBLEMS.

THIRD SESSION THURSDAY AFTERNOON (2/6/92)

GRAPHICS CAPABILITY

GEOMETRY VIEWING FOR INPUT SETUP AND DOCUMENTATION.
GRAPHIC RESULTS DISPLAY.

COMPETITIVE PROBLEM SETUP AND SOLUTION

PROCEDURE FOR PROBLEM SOLUTION ACTIVITY.
DESCRIPTION OF PROBLEM TO BE SOLVED.
GROUP PROBLEM SOLUTION AND GRADING.

In the group problem solution, the attendees work in small groups setting up solutions of the test problem using one or more approaches. The input will be set up on PCs using text editors supplied by the staff or favorite text editors brought by the participants. Solutions could be made by bringing an input disk to a staff member who would run the code on an IBM workstation. Personal computers and workstations will be made available courtesy of IBM Corporation.

CHANGES TO THE COMPUTER CODE COLLECTION

Eight changes were made to the computer code collection during the month. Four new code systems were packaged and added to the collection, two existing code packages were replaced with newly frozen verions, and existing code package was extended with two additional hardware versions, and one code package was updated with additional documentation. Five changes resulted from foreign contributions.

CCC-200/MCNP 4

The documentation for this general purpose Monte Carlo neutron and gamma-ray transport code system was extended by the developer, Los Alamos National Laboratory, New Mexico, with a summary of MCNP commands. The commands are first listed alphabetically with a one line description, followed by an alphabetical listing by command function category, and finally a concise description of the command input and defaults. MCNP4 users may contact RSIC to request copies of this document. MCNP4 is written in Fortran 77 and runs on Cray computers, IBM mainframes, Unix workstations, Vax computers and all computers in general with at least 90 megabytes of hard disk space. The mainframe package is available on either one 6250, 9-track tape or one DC 6150 cartridge tape (150 MB). The personal computer version is distributed on 20 DS/HD (1.2 MB) diskettes. References: Command Summary (Sept. 1991), LA-7396-M, Rev. 2 (September 1986), MCNP3B Newsletter (July 1988), MCNP4 Newsletter (April 1991), and informal notes. Fortran 77; Cray, IBM, Unix workstations, Vax (A); PC 386 (B).

CCC-515/KUX MICRO

This solution for the shielding of medical x-rays and mammography by the methods in NCRP Report No. 49 was contributed by Douglas J. Simpkin of the Department of Radiology, St. Luke's Medical Center, Milwaukee, Wisconsin. KUX calculates the thickness of barrier materials required to bring the weekly exposure near an x-ray or mammography room down to the maximum permitted. Shielding data from the literature are included in DATA statements for lead, concrete, gypsum, steel, and plate glass. KUX is written in Fortran 77 and runs interactively on personal computers. It is transmitted on one DS/DD (360 kb) diskette. Program flow and logic follow that of the earlier BASIC program CCC-509/KUXKVPS. Users should be aware that KUXKVPS is no longer supported because it is based on single phase x-ray transmission data that are obsolete. References: *Health Physics*, 52(4) (1987), 53(3) (1987), and 56(2) (1989). Fortran 77; IBM PC and Vax.

CCC-576/WIMS-D4

This package was extended to include two new hardware versions contributed through the NEA Data Bank, Gif-sur-Yvette Cedex, France. The Technical University of Prague, Czechoslovakia, contributed a version of WIMS-D4 to run on a PC/AT. This version, designated (C), was compiled using Microsoft Fortran Version 5.0 under the DOS 3.2 operating system. A math coprocessor and 640 K of memory are required. The Institute of Atomic Energy, Poland, contributed a version which runs on either PC/AT or PC 386 computers. This version, designated (D), was compiled using Microsoft Fortran Version 4.1 under the DOS 3.2 operating system. It requires 640 K of memory and extended memory of about 1 MB.

McMaster University, Hamilton, Ontario, Canada contributed a list of changes required to run version (B) using the Lahey Fortran F77L-EM/32 compiler. This information has been added to the document. The (B) version runs on a PC 386 with 640 K main memory, a minimum of 1 megabyte of extended memory, a math coprocessor, and a hard disk using NDP-Fortran-386 and Phar Lap 386 linker, assembler and driver under the MS-DOS version 3.2 operating system.

WIMS-D4 is a general lattice cell program which uses transport theory to calculate flux as a function of energy and position in the cell. WIMS-D4 first calculates spectra for a few spatial

regions in the full number of energy groups of its library, and uses these spectra to condense the basic cross sections into few groups. In addition to the basic cell calculation, the program may be used to carry out burnup calculations and to solve multicell problems. A 69-group data library is included. Version (B) and (C) are each distributed on two DS/HD 5.25-inch diskettes (1.2 MB). Version (D) is distributed on four DS/HD diskettes. References: NEA Data Bank informal notes; AEEW-R-538, AEEW-M-845, AEEW-M-1324, AEEW-M-1327, AEEW-M-1782, AEEW-M-1785, AEEW-M-856, AEEW-M-1783, AEEW-M-1832, RTE01-2/2-046, IJS-DP-5729. Fortran 77; IBM 3090, Vax 8810 (A), PC 386 (B), PC/AT (C), PC/AT and 386 (D).

CCC-593/HEXAB-3D

The Institute for Nuclear Research and Energy, Bulgarian Academy of Sciences, Sofia, contributed this code system to solve the three dimensional, few-group diffusion model for the calculation of the basic neutron physical characteristics of power reactors in hexagonal geometry. The nine point, mesh-centered finite difference approximation of the neutron diffusion equation is used. A standard inner-outer iteration strategy is employed. Inner iterations are solved using two different incomplete factorization techniques: AGA two sweep iterative method and modified AGA. Successive overrelaxation is applied. The power method, combined with two- or three-term Chebyshev polynomial acceleration, is applied for outer iterations. The code is written in Fortran IV for IBM 370/145 computers and requires the IBM assembler and Fortran G compiler under the OS/VS1 operating system. One DS/HD 5.25-in. (1.2 MB) diskette is required for transmittal. References: Informal notes (1987). Fortran IV; IBM 370/145 and IBM 3031.

CCC-596/TERFOC-N

The Japan Atomic Energy Research Institute (JAERI), Tokai-mura, Naka-gun, Ibaraki-ken, contributed this code system for calculating radiation doses to the public due to atmospheric releases of radionuclides in normal operations of nuclear facilities. TERFOC-N estimates the highest individual dose and the collective dose from four exposure pathways: internal doses from ingestion and inhalation, external doses from cloudshine and groundshine. A foodchain model based on the U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide 1.109 has been improved to apply not only to LWRs but also to other nuclear facilities. The transfer of ^{3}H and ^{14}C in the foodchain is estimated by the revised specific activity method. Boone's model is used in the assessment of other radionuclides. Internal doses due to ingestion and inhalation can be estimated by multiplying the annual intake of radionuclides by dose conversion factors. External doses due to cloudshine and groundshine are computed on the basis of the submersion model and finite plane model. The code runs on Facom computers and Sun SPARCstations. One DS/HD 5.25-in. (1.2 MB) diskette is required for transmittal. References: JAERI-memo 02-426 (Jan. 1991). Fortran 77; Facom M-380 and M-780 and Sun.

PSR-248/ABAREX

Argonne National Laboratory, Illinois, contributed a newly frozen version of this optical statistical model code system. ABAREX was developed for the calculation of energy averaged neutron induced nuclear reaction cross sections. The real Woods-Saxon optical model potential can have a surface component added to it as dictated by the dispersion relationship. The spherical-optical model algorithm of ABACUS and the statistical model method of NEARREX with many improvements and modifications are used. Only neutron interaction cross sections are calculated. Transmission factors are to be supplied externally if fission cross sections are to be calculated. The code runs on Vax computers or PC 286 or 386 computers with at least 640 K memory and a math coprocessor. ABAREX is transmitted on one DS/HD 5.25-inch diskette (1.2 MB). References: Internal ANL report (1991), Workshop Notes (Feb. 18 - March 18, 1988), Trieste, Italy. Fortran 77, IBM PC/AT.

PSR-312/RFUNC

Oak Ridge National Laboratory contributed this code system used to analyze high resolution differential scattering data from spin zero nuclides in the resonance energy region. RFUNC is based upon the real R-function formalism which ignores the capture reaction channel since only resonances having neutron widths much larger than their capture widths are observed in the differential scattering data. RFUNC is written in Fortran 77 and runs on Vax computers running VMS. The package is distributed on 1 DS/DD (360 kb) diskette. References: ORNL/TM-11112 (March 1989). Fortran 77; Vax.

PSR-314/NSLINK

Delft University of Technology, The Netherlands, and the Nuclear Energy Agency Data Bank in Gif-sur-Yvette, France, contributed this code system to couple the NJOY cross-section generation code to the SCALE code system retaining the Nordheim resolved resonance treatment option. The following codes are included in NSLINK: XLACSR, MILER, UNITABR, and BONAMI. Note that in this package MILER was updated and obsoletes RSIC's PSR-271/MILER package. The system is compatible with AMPX-2 master format and SCALE-3 and, therefore, cannot be used with SCALE-4. Because the GENDF format changed in the NJOY91 release, this package cannot be used with NJOY91 but is compatible with either NJOY87 (included in this package) or NJOY89. NSLINK runs on Vax computers under VMS. ENDF-4, -5, and -6 formats can be used. Three DS/HD 5.25-inch diskettes (1.2 MB) are required for transmittal. References: IRI-131-091-003 (May 1991). Fortran 77; Vax.

PERSONAL ITEMS

In serving a specialized area of scientific endeavor, it seems important that we note significant changes in the activities of people concerned with radiation protection, transport, and shielding in the nuclear industry. We, therefore, continue to carry personal items as they are brought to our attention.

We are sad to report the death of **Gerard deSaussure** on Monday, October 28, 1991. He had worked at Oak Ridge National Laboratory since August 16, 1955, and at the time of his death was a senior research staff member in the Engineering Physics and Mathematics Division. He was also an honorary professor at the University of Tennessee-Knoxville. Gerard made many contributions to RSIC and he will be missed.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Anis R. Khan*, Bangladesh Atomic Energy Commission; *Jack Courtney*, Louisiana State University, Baton Rouge; and *Fred Monette* and *S. Y. Chen*, Argonne National Laboratory, Illinois.

CONFERENCES, COURSES, SYMPOSIA

RSIC 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 to RSIC.

Nuclear Technologies for Space Exploration

A call for papers has been issued for *Nuclear Technologies for Space Exploration*, a topical meeting sponsored by the Idaho Section of the American Nuclear Society (ANS) with co-sponsorship from the ANS Education and Training Division and the ANS Special Committee on Space Applications. The meeting will be held August 16 ! 19,

1992, in Jackson Hole, Wyoming. The meeting is intended to meet the need for increased collaboration and education in all nuclear technology which may find applications in space exploration. Those who wish to submit a 1000!1500-word summary must do so by **January 2, 1992**, on the following topics:

- **Plenary: Visionary Looks at the Future**, *J. A. Angelo and D. Buden*
- **Mission Applications of Nuclear Technologies**, *D. Cooke, and R. B. Matthews*
- **Radioisotope Applications: Local Production, Irradiation, Transportation, and Medical Treatment**, *R. G. Lange and T. E. Albert*
- **Power: Spacecraft, Lunar and Mars Surface, Power Beaming, and Energy for Earth**, *G. L. Bennett and J. F. Mondt*
- **Propulsion: Nuclear Thermal Rockets, Liquid and Gas Core Rockets, Electric Propulsion, and Advanced Concepts**, *S. Anghaie and S. R. Borowski*
- **Scientific and Terrestrial Applications, Accelerators, Fusion, Astronomy, and Microgravity**, *N. F. Roderick, G. H. Miley, and J. M. Doster*
- **Engineering Support Applications: Radiation Protection and Shielding, Radiation-Hardened Robotics and Microelectronics, Exploration and Mining, Engineering Projects, Heat Pipes and Materials, and Thermal Management**, *S. K. Bhattacharya, T. Ward, and M. A. Merrigan*
- **Safety and Environmental Factors**, *J. A. Sholtis and J. H. Lee, Jr.*
- **Reliability, Risk and Extended Lifetimes**, *J. Forgola and J. C. Sawyer*
- **Special Issues for Nuclear Technology in Space**, *S. D. Harrison*
- **Student Projects/Poster Sessions**, *F. L. Williams*

State the appropriate category for your paper and submit three copies to: Program Chair, NTSE92, P.O. Box 2868, Idaho Falls, ID 83403-2868 (Fax 208-525-5616).

Calendar

Your attention is directed to the following events of interest.

February 1992

Deterministic Methods Seminar/TORT Workshop, Feb. 4!6, 1992, Oak Ridge, Tennessee. Contact: R. W. Roussin, Oak Ridge National Laboratory, Radiation Shielding Information Center, P.O. Box 2008, Oak Ridge, TN 37831-6362 (phone 615-574-6176; Fax 615-574-9619).

1992 HEART Conference, Feb. 24!28, 1992, Albuquerque, New Mexico. Contact: DASIAC, Attention: 1992 HEART Conference, 2560 Huntington Ave., Suite 500, Alexandria, VA 22303.

March 1992

1992 Topical Meeting on Advances in Reactor Physics, March 8!11, 1992, Charleston, South Carolina, sponsored by the ANS Reactor Physics and Mathematics and Computations Divisions. Contact: Russ Ferrara, Westinghouse Savannah River Co., Savannah River Laboratory, Bldg. 786-1A, Room 5, Aiken, South Carolina 29808 (phone 803-725-8233).

Radiation Transport Calculations Using EGS4, Mar. 9!12, 1992, a four-day, 80386 microcomputer-based course to be held in Seattle, Washington, sponsored by Inst. of Applied Physics and Medicine. Contact: Susan Walker, IAPM, 701 16th Ave., Seattle, WA 98122 (phone 206-553-7330).

Practical Radiation Shielding, Mar. 9!13, 1992, Atlanta, Georgia, a course sponsored by Shonka Research Associates, Inc., and the Georgia Institute of Technology. Contact: Georgia Tech Continuing Education, Georgia Institute of Technology, Atlanta, GA 30332-0385 (phone 404-894-2400, 800-325-5007).

Occupational and Environmental Radiation Protection, Mar. 23!27, 1992, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677

Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

April 1992

28th Annual Meeting of the National Council on Radiation Protection and Measurements, Apr. 1!2, 1992, Washington, D.C. Contact: NCRP, 7910 Woodmont Ave., Suite 800, Bethesda, MD 20814 (phone 301-657-2652).

New Horizons in Radiation Protection and Shielding, Apr. 26!May 1, 1992, Pasco, Washington, a topical meeting of the ANS Radiation Protection and Shielding Division. Contact: Wilbur Bunch, HO-36, Westinghouse Hanford Co., P.O. Box 1970, Richland, WA 99352 (phone 509-376-6313).

May 1992

Annual Meeting on Nuclear Technology '92, May 5!7, 1992, Karlsruhe, Germany. Contact: Inforum - Verlags- und Verwaltungsgesellschaft mbH, Postfach 120611, Huessallee 10, 5300 Bonn 1, Germany.

Radiation Protection Instrumentation, May 11!15, 1992, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

8th International Radiation Protection Association Conference, May 17!22, 1992, Montreal, Canada. Contact: G. Webb, NRPB, IRPA 8 Secretariat, Chilton, Didcot, Oxon OX11 ORQ, United Kingdom.

Meeting on Radiation Safety in Uranium Mining, May 25!29, 1992, Saskatoon, Canada. Contact: L. D. Brown, Saskatchewan Human Resources, Labour and Employment, 1870 Albert Street, Regina, Saskatchewan S4P 3V7, Canada.

International Symposium on Numerical Transport Theory, May 26!28, 1992, in Moscow. Contact: Prof. T. A. Germogenova, The Keldysh Institute of Applied Mathematics, USSR Ac. of Sci., Miusskaya Sq. 4, Moscow A-47, 125047, USSR (fax 095-972-0737). Participants from the U.S. may contact Prof. Paul Nelson, Dept. of Nuclear Engg., Texas A&M University, College Station, TX 77843-3133 (fax 409-845-6443).

June 1992

American Nuclear Society Annual Meeting, June 7!12, 1991, Boston, Massachusetts. Contact: Mary Keenan, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 708-352-6611).

10th Topical Meeting on Technology of Fusion Energy, June 7!12, 1992, Boston, Massachusetts, sponsored by the American Nuclear Society and the U.S. Department of Energy. Contact: Stephen O. Dean, Fusion Power Associates, 2 Professional Drive, Suite 248, Gaithersburg, MD 20879 (phone 301-258-0545).

Environmental Radiation Surveillance, June 8!12, 1992, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

Annual Conference of the Canadian Nuclear Association and the Canadian Nuclear Society, June 7!10, 1992, St. John, Canada. Contact: Canadian Nuclear Society, K. Krawczewsky, 111 Elisabeth St., 11th Floor, Toronto, Ontario M5J 2L7, Canada.

Workshop on Test Phantoms and Optimization in Diagnostic Radiology and Nuclear Medicine, June 15!17, 1992, Wuerzburg, Germany. Contact: Dr. N. Petoussi, Inst. f. Strahlenschutz, Ingolstädter Landstrasse 1, 8042 Neuherberg, Germany.

IAEA Review Conference on the Convention on the Physical Protection of Nuclear Materials, June 29!July 3, 1992, Vienna. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria (phone 01 222-2360).

July 1992

International Conference on Low Dose Irradiation and Biological Defense Mechanisms, July 12!16, 1992, Kyoto, Japan. Contact: Prof. Takashi Aoyama, Shita University of Medical Science, Dept. of Experimental Radiology, Seta Tsukinowa-cho, Shiga 520-21, Japan.

1992 Nuclear and Space Radiation Effects Conference, July 13!17, in New Orleans. Contact: Nelson S. Saks, NSREC Technical Program Chairman, Naval Research Laboratory, Code

6813, 4555 Overlook Ave., Washington, DC 20375-5000 (phone 202-767-2534, Fax 202-767-0546).

15th International Conference on High Energy Accelerators, July 20!24, 1992, Hamburg, Fed. Rep.
of Germany. Contact: F. Willeke, Deutsches Elektronen-Synchrotron, Notkestrasse 85, 2000 Hamburg 52, FRG.

August 1992

Nuclear Technologies for Space Exploration, Aug. 14!17, 1992, Jackson Hole, Wyoming. Contact: Dr. David Woodall, INEL EG&G Idaho, P.O. Box 1625, Idaho Falls, ID 83415-2516.

Occupational and Environmental Radiation Protection, Aug. 17!21, 1992, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

September 1992

Hazardous and Radioactive Waste Management (Spectrum 92), Sept. 13!17, 1992, Boise, Idaho, sponsored by the ANS and the U.S. Dept. of Energy. Contact: Dr. Clyde W. Frank, EM-50/6B-158, U.S. Dept. of Energy, 1000 Independence Ave., SW., Washington, DC 20585 (phone
202-586-6382)

8th International Meeting on Radiation Processing, Sept. 14!19, 1992, Beijing, China, sponsored by the International Atomic Energy Agency. Contact: International Meeting on Radiation Processing, P.O. Box 1012 (30), Beijing 100 822, China.

International Symposium on Nuclear Data Evaluation Methodology, Sept. 28!Oct. 2, 1992, Upton, New York, sponsored by Brookhaven National Laboratory. Contact: C. L. Dunford, Brookhaven National Laboratory, NNDC/197D, Upton, New York.

14th International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Sept. 30!Oct. 7, 1992, Wuerzburg, Germany, sponsored by the International Atomic Energy Agency. Contact: IAEA, Conference Service Section, P.O. Box 100, A-1400 Vienna, Austria.

November 1992

Joint American Nuclear Society and European Nuclear Society Meeting, Nov. 15!20, 1992, Chicago, Illinois. Contact: Robert Avery, Argonne National Laboratory, 9700 S. Cass Avenue, Bldg. 208, Argonne, IL (phone 708-972-4572; Fax 708-972-5318).

April 1993

Joint International Conference on mathematical Methods and Supercomputing in Nuclear Applications, Apr. 19!23, 1993, Karlsruhe, Germany. Contact: H. Kuesters, KFK/INR, Postfach 3640 D-W-7500 Karlsruhe 1, Germany, or W. Werner, GRS, D-W-8046 Garching, Germany.

October 1993

World Conference on Nuclear Energy and the Environment: Towards a Better Future, Oct. 4!8, 1993, sponsored by the American Nuclear Society and the European Nuclear Society. Contact: J. Weller, Canadian Nuclear Association, 111 Elisabeth St., 11th Floor, Toronto, Ontario M5G 1P7, Canada (phone 416-977-6152, Telex 06-23741).

OCTOBER ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. Copies of the literature are not distributed by RSIC. 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.

RSIC maintains a microfiche file of the literature entered into SARIS, and duplicate copies of out-of-print reports may be available on request. Naturally, we cannot fill requests for literature which is copyrighted (such as books or journal articles) or whose distribution is restricted.

This literature is on order. It is not in our system. Please order from NTIS or other available source as indicated.

RADIATION SHIELDING LITERATURE

Book. . *Spacecraft Design - Thermal and Radiation: An Overview of Thermophysics and Nuclear Radiation Design Technology*. . Bouquet, F.L. . 1991

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IEAv-008/91. . *Comparative Study of Few Group Thermal Reactor Cell Macroscopic Cross Sections*. . Claro, L.H.; Prati, A. . August 1991. . In Spanish

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JAERI-M 90-234. . *Radiation Shielding Provided by Residential Houses in Japan in Reactor Accidents Accompanied with Atmospheric Release*. . Yamaguchi, Y.; Minami, K. . January 1991

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COMPUTER CODES LITERATURE

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Application of ORIGEN2 Code to TRIGA Reactor Calculations.Mele, I.; Slavic, S.; Ravnik, M. Institut Jozef Stefan, Ljublijana, Yugoslavia March 1990 OSTI; NTIS (US sales only); INIS

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Physical and Computational Properties of a Multigroup Assembly Code Based on the J+/- and pik-Concept. Bernnat, W.; Emendorfer, D.; Lutz, D.; Ruckle, T.; Szczesna, B. Stuttgart University, F.R. Germany April 1987

CONF-870424, P. 1319-1332 . . . . . MARC/PN
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Twenty-five Years of Experience with the WIMS Assembly Codes. Askew, J.R.; Halsall, M.J. UKAEA, Risley, England April 1987

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