

# RSIC Newsletter



**Oak Ridge National Laboratory**  
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Phone No. 615-574-6176 or FTS 624-6176  
EasyLink Mailbox: 62813374  
Telex(Answer Back): 854467(ORNL EPIC UD)  
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*You have a shilling. I have a shilling. We swap. You have my shilling and I have yours. We are no better off. But suppose you have an idea and I have an idea. We swap. Now you have two ideas and I have two ideas. We have increased our stock of ideas 100 per cent.—A. S. Gregg*

## Trubey Completes Masters

**David K. Trubey**, RSIC co-founder with *Keith Penny* in 1963, recently completed the requirements for a Master of Science Degree in Computer Science from the University of Tennessee. At a point in his career when he might have felt he knew everything he needed to know, David instead undertook this new challenge. At a rate of one course per quarter over a four-year period, and

while maintaining his normal workload, David completed all formal course requirements. He then did a thesis entitled *JANE: A New Information Retrieval System for the Radiation Shielding Information Center*, which developed advanced concepts for application to the RSIC shielding literature data base. We congratulate David on his accomplishment.

*R. W. Roussin*

## CHANGES TO THE COMPUTER CODE COLLECTION

During the month seven changes were made to the computer code collection. A new code system was packaged and added to the collection; five existing codes packages were replaced with newly frozen versions (two were also extended with additional hardware versions); and one code was corrected. Four changes resulted from foreign contributions.

### CCC-126/ASOP

A newly frozen version of this multigroup one-dimensional, discrete ordinates transport code system for shield optimization, based on CCC-254/

ANISN-ORNL, was contributed by the developer at Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee. This version corrects some errors present in the previous version. A listing of the changes required to correct the errors is available upon request to users who wish to update their source files. The new ANISN-ORNL source is also included in this package. References: CTC-INF-941 (September 1969). FORTRAN IV; IBM.

### CCC-254/ANISN-ORNL

Savannah River Laboratory, Aiken, South Carolina, identified some problems in the IBM

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version of this multigroup, one-dimensional, discrete ordinates transport code with anisotropic scattering. The original contributor at ORNL reviewed the problem areas and incorporated necessary changes into a new release of the code which has been designated CCC-254A. ORNL also contributed a CRAY version, designated CCC-254B, which includes the modifications. The DEC PDP-10 version has not been modified but is still available as CCC-254G. A listing of the changes required to correct the errors is available upon request to users of ANISN who may wish to update their own versions. New users should be able to utilize one of these packages. References: K-1693 (June 1973), ORNL-TM-3049 (May 1969), NAA-SR-10951 (March 1966) and Informal Notes. FORTRAN IV; IBM (A) and CRAY(B). FORTRAN 77; DEC 10(G).

#### CCC-430/EDMULT

A newly frozen version of this code system for evaluation of electron depth-dose distributions in multilayer slab absorbers was contributed by the Radiation Center of Osaka Prefecture, Osaka, Japan. EDMULT computes depth-dose distributions produced by plane-parallel electron beams normally incident on single-, two-, or three-layer slab absorbers. The algorithm of the code is based on a simple model of electron penetration across the interface and uses empirical equations for transmission and backscattering. Reference: RCOP TR-8 (November 1987). FORTRAN 77; NEAC 300.

#### CCC-437/SFAK

The OECD Nuclear Energy Agency Data Bank, Gif-sur-Yvette, France, advised us of the need for a simple correction to the SFAK source code developed by Zentralinstitut für Kernforschung, Dresden, German Democratic Republic. The code system calculates self-absorption of unscattered gamma radiation from fuel assemblies. Users may write RSIC for a listing of the required change. Reference: ZfK-318 (November 1976). FORTRAN IV; IBM 3033.

#### CCC-530/RADSYS

This code system for calculating radioactivity buildup and radioactive waste generation calculations

was contributed by the Institute for Electrical Power Research, Budapest, Hungary. The system is comprised of two codes: RADSYS and RADTRAN. RADSYS simulates the operation of nuclear power station water systems by calculating flow rates in pipelines, coolant quantities accumulating in the tanks, regenerating and decontaminating reagent's concentrations, and the corrosion and fission product activity of coolant surfaces. RADTRAN has been used to examine the effect of pH and high-temperature filtration on activation. Reference: IEPR-93.93-030-4 (1983). FORTRAN IV; IBM 3033.

#### PSR-159/RENDER

This code system for pre-processing ENDF/B formatted data files has been replaced with 1987 versions contributed by the IAEA Nuclear Data Section, Vienna, Austria. The programs use the ENDF/B card-image format and can handle data in any version of the ENDF/B format (i.e., ENDF/B-I, -II, -III, -IV, -V, or -VI.) The package includes MERGER, LINEAR, RECENT, SIGMA1, LEGEND, FIXUP, GROUPIE, DICTION, MIXER, VIRGIN, COMLOT, EVALPLOT, RELABEL, and CONVERT. These programs are designed to operate on virtually any type of computer from large mainframes to IBM PC/AT computers. The CONVERT program converts the other codes for use on any one of a variety of computers, compilers, and precisions (single or double). The codes were run at the IAEA using an IBM FORTRAN-H compiler. The micro version uses DOS 3.20 and the PROFORT compiler from Ryan-McFarland Corporation. **Seven double-sided, high-density diskettes are required for transmittal of the PC version.** The mainframe version is available on 9-track magnetic tape. References: IAEA-NDS-39 (Feb. 1987), IAEA-NDS-69 (May 1987), UCRL-50400 Sections of Volume 17 (1979). FORTRAN IV or 77; IBM, CDC, CRAY (A), IBM PC/AT (B).

#### PSR-231/GRESS 0.0

A newly frozen version of this gradient enhanced software system was contributed by ORNL. The GRESS FORTRAN precompiler and run-time library enhances conventional FORTRAN programs with analytic differentiation of arithmetic statements. A majority of ANSI X3.9- 1978 stan-

dard FORTRAN 77 is accepted. The enhanced code calculates partial derivatives for real variables on the left-hand side with respect to real variables on the right-hand side for each equation. The user inserts application dependent subroutine calls to process the partial derivatives. By calling run-time routines, derivatives can be propagated through the code via the chain rule or written to

disk for adjoint matrix generation. After the user has inserted the appropriate calls, the enhanced code is compiled, linked, and executed. GRESS is operable on the VAX family of computers running the VMS operating system. The package is available on one double-sided, double-density diskette or on 9-track magnetic tape in VAX BACKUP format. Reference: ORNL/TM-10835 (To be published). FORTRAN 77 and C; 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.

**Gail de Planque** has begun serving her tenure as 1988–1989 President of the American Nuclear Society. De Planque's past service in the Society includes serving on several national committees—the National Program Committee, the Bylaws and Rules Committee, the Finance Committee, and the Executive Committee. She is also active in the Radiation Protection and Shielding Division, having served on the Executive Committee and on the Board of Directors.

**Nicholas Tsoulfanidis** was elected the University of Missouri-Rolla Outstanding Nuclear Engineering Faculty Member for 1987–1988 by the nuclear engineer-

ing upperclassmen. Balloting was conducted by Alpha Nu Sigma, the university's nuclear engineering honor society.

### Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Vonya C. Boykin*, Alabama Dept. of Radiological Health, Montgomery; *Donald A. Flater*, Bureau of Radiological Health, Des Moines, Iowa; *Michael C. Vredenburg*, Bureau of Radiation Control, Houston, Texas; *Lynn B. Dobbs*, South Carolina Dept. of Health and Environmental Control, Columbia; *Kathleen Kaufman*, Los Angeles County Health Dept., California; *Cheryl K. Rogers*, Nebraska Dept. of Health, Lincoln; *Michael J. McCarty*, Michigan Dept. of Public Health, Lansing; *Elyse M. Thomas*, Ohio Health, Columbus; and *Antoine Cossic*, Commissariat à l'Energie Atomique, Gif-sur-Yvette, France.

## 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.

### Call for Papers

**The Canadian Radiation Protection Association** has announced the general subjects for its *10th Annual Meeting*, to be held April 30–May 3, 1989, in Victoria, British Columbia. Contributed papers are solicited in the areas of Radiation Dosimetry, Radiation Instrumentation, Radiation Protection in Medicine, Ra-

diation Protection in Industry, Health Physics of the Nuclear Fuel Cycle, Non-Ionizing Radiation, Radiation Safety Training, Emergency Planning, Waste Management, Radiation Safety Program Organization, and Public Information. Abstracts of no more than 250 words should be submitted to Lutz E. Moritz, TRIUMF, 4004 Wesbrook Mall, Vancouver, B. C., Canada V6T 2A3 (phone 604-222-1047; Telex (0)-4508503; FAX 604-222-1047), by **January 15, 1989**.

### Calendar

Your attention is directed to the following events of interest.

#### September 1988

*Industrial Radiation and Radioisotope Measurement Applications*, Sept. 6-8, 1988, Pinehurst, North Carolina, a topical meeting sponsored by the Isotopes and Radiation Division of the ANS. Contact: Robin P. Gardner, General Chairman, or Kuruvilla Verghese, Tech. Program Chairman, North Carolina State Univ., School of Engineering, Box 7909, Raleigh, NC 27695-7909.

*International Topical Meeting on Waste Management: SPECTRUM '88*, Sept. 11-15, 1988, Pasco, Washington. Contact: Bill Bonner, Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 99352 (phone 509-376-5451 or FTS 444-5451).

*7th International Conference on Radiation Shielding (ICRS)*, Sept. 12-16, 1988, Bournemouth, United Kingdom, sponsored by the OECD Nuclear Energy Agency and the UK Atomic Energy Agency. Contact: A. K. McCracken, UKAEA Winfrith, Dorchester, Dorset, DT2 8DH, UK or Leo LeSage, Argonne National Laboratory (ANL), Argonne, IL 60439 (phone 312-972-6048).

*International Reactor Physics Conference*, Sept. 18-21, 1988, Jackson Hole, Wyoming, sponsored by the ANS. Contact: Mike Lineberry, ANL, P.O. Box 2528, Idaho Falls, ID 83403 (phone 208-526-7434).

*International Conference on Disposal of Radioactive Waste in Seabed Sediments*, Sept. 20-21, 1988, Oxford, U.K., sponsored by the Society for Underwater Technology. Contact: Jean Pritchard, SUT, 1 Birdcage Walk, London SW1H9JJ, U.K. (phone 01-222-8658).

*11th International CODATA Conference, "Scientific and Technical Data in a New Era,"* Sept. 26-29, 1988, Karlsruhe, Fed. Rep. of Germany. Contact: DECHEMA, ATTN: CODATA Conference, P.O. Box 97 01 46, D-6000 Frankfurt/M. 97, Fed. Rep. of

Germany (phone 069 7564 241/242/243; Telex: 412490 dcha d.).

#### October 1988

*4th International Symposium on Radiation Physics (ISRP-4)*, Oct. 3-7, 1988, São Paulo, Brazil. Contact: Prof. Ivan Cunha Nascimento, ISRP-4 Chairman of the Organizing Committee, Inst. de Física-Universidade de São Paulo, Caixa Postal 20516 (Telex: 011-37920 IF SP -1498-São Paulo-SP-Brazil).

*4th Annual DOE Model Conference*, Oct. 3-7, 1988, Oak Ridge, Tennessee. Contact: Cynthia Kendrick, ORNL, P.O. Box 2008, Oak Ridge, TN 37831-6029 (phone 615-576-2632 or FTS 626-2632).

*Fundamentals of Nondestructive Assay of Nuclear Material*, Oct. 3-7, 1988, Los Alamos, New Mexico, sponsored by the U.S. Dept. of Energy. Contact: Linda Robinson, LANL, Los Alamos, NM 87545 (phone 505-667-5258 or FTS 843-5258).

*International Symposium on the Feedback of Operational Safety Experience from Nuclear Power Plants*, Oct. 3-7, 1988, Vienna, sponsored by the IAEA. Contact: IAEA, Conference Service Section, P.O. Box 100, A-1400 Vienna, Austria.

*8th Topical Meeting on Technology of Fusion Energy*, Oct. 9-13, 1988, Salt Lake City, Utah. Contact: Clyde R. Toole, EG&G Idaho, P.O. Box 1625 (WCB-W3), Idaho Falls, ID 83415.

*30th Annual Meeting of the American Society for Therapeutic Radiology and Oncology*, Oct. 9-14, 1988, New Orleans. Contact: ASTRO, 1891 Preston White Drive, Reston, VA 22091 (phone: 703-648-8900).

*12th International Symposium on the Scientific Basis for Nuclear Waste Management*, Oct. 10-13, 1988, Berlin, sponsored by the Materials Research Society. Contact: Helga Fuchs, Hahn-Meitner-Institute GmbH, Glienicke Strasse 100, D-1000 Berlin 39, FRG (phone 49 30 8009 2291).

*IMechE International Conference on Decommissioning of Major Radioactive Facilities*, Oct. 11-12, 1988, London, sponsored by the Institution of Mechanical Engineers. Contact: Conference Dept. C376, Inst. of Mechanical Engineers, 1 Birdcage Walk, Westminster, London SW1H 9JJ, United Kingdom.

*12th International Conference on Plasma Physics and Controlled Nuclear Fusion Research*, Oct. 12-19, 1988, Nice, France, sponsored by the IAEA. Contact: IAEA, P.O. Box 100, A-1400 Vienna, Austria.

*5th National Conference on Biomedical Physics and Engineering*, Oct. 15-17, 1988, Sofia, Bulgaria. Contact: M. Markov, Department of Biophysics, Biological Faculty, Sofia University, 8, Dragan Tzankov Blvd., Sofia 1000, Bulgaria.

*Techniques in Nuclear Shield Analysis*, a five-day short course sponsored by the University of Texas College of Engineering, October 17-21, 1988, to be held in Ft. Worth, Texas. Contact: Continuing Engineering Studies, Ernest Cockrell Hall 10.324, The University of Texas at Austin, Austin, TX 78712.

*Symposium on Multi-Level Health Effects Research: Molecules to Man*, Oct. 17-22, 1988, Richland, Washington, sponsored by the U.S. Dept. of Energy and Battelle Pacific Northwest Laboratories. Contact: James F. Parks, Battelle-Pacific Northwest Laboratories, P.O. Box 999, Richland, WA 99352 (phone: 509-375-2421 or FTS 444-2421).

*Meeting of the American Nuclear Society*, Oct. 30-Nov. 4, 1988, Washington, D.C. Contact: ANS, Meetings Department, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

*TMI-2 Accident Materials Behavior*, Oct. 30-Nov. 4, 1988, Washington, D.C., sponsored by the American Nuclear Society. Contact: Gregory R. Eidam, TMI Nuclear Plant, P.O. Box 480, Middletown, PA 17057 (phone 717-948-8000).

*2nd Conference on Radiation Protection and Dosimetry*, Oct. 31-Nov. 3, 1988, Orlando, Florida, sponsored by ORNL. Contact: C. S. Sims, ORNL, P.O. Box 2008, Oak Ridge, TN 37831-6379.

#### November 1988

*Gamma-Ray Assay of Nuclear Materials*, Nov. 28-Dec. 2, 1988, Los Alamos, New Mexico, sponsored by the U.S. Dept. of Energy. Contact: Linda Robinson, LANL, Los Alamos, NM 87545 (phone 505-667-5258 or FTS 843-5258).

#### December 1988

*Radon in Buildings: Sources, Biological Effects, Monitoring, & Control*, Dec. 19-20, 1988, a short course offered by the Harvard School of Public

Health, Boston, Massachusetts. Contact: Office of Continuing Education, Harvard School of Public Health, 677 Huntington Ave., Boston, MA 02115 (phone 617-732-1171).

#### January 1989

*6th Symposium on Space Nuclear Power Systems*, Jan. 9-12, 1989, Albuquerque, New Mexico, sponsored by the Univ. of New Mexico. Contact: Mohamed El-Genk, The Inst. for Space Nuclear Power Studies, Univ. of New Mexico, 237 Farris Engineering Center, Albuquerque, NM 87131 (phone 505-277-2813).

#### April 1989

*Advances in Nuclear Engineering Computation and Radiation Shielding*, Apr. 9-13, 1989, Santa Fe, New Mexico, a topical meeting sponsored by the ANS M&C and RP&S Divisions. Contact: E. W. Larsen, Technical Program Chairman, Group X-6, MS B226, Los Alamos National Laboratory, Los Alamos, NM 87545 USA (phone 313-936-0124)

*7th International Meeting on Radiation Processing*, April 23-28, 1989, Leeuwenhorst Congres Center, Noordwijkerhout, The Netherlands, a biennial conference dedicated to the dissemination and advancement of the technology of industrial radiation processing. Contact: E. Franken, 7th Internatl. Meeting on Radiation Processing, P.O. Box 4240, 6710 EE Ede, The Netherlands (phone AA 31 8380 37476; Telex 37030; FAX AA 31 8380 39643).

#### June 1989

*Annual Meeting of the American Nuclear Society*, June 4-8, 1989, Atlanta, Georgia. Contact: ANS Meetings Dept., 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

*Packaging and Transportation of Radioactive Materials: PATRAM '89*, June 11-16, 1989, Arlington, Virginia, sponsored by US-DOE. Contact: Larry Blalock, Chairman, US Organizing Comm., US Dept. of Energy, P.O. Box 2001, Oak Ridge, TN 37831-8765 (phone 615-576-0945 or FTS 626-0945).

## JULY 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

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