

# RSIC Newsletter



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*Keep out of the suction caused by those who drift backwards.—E. K. Piper*

## ERRATA

The printing of ANS Division elections in the last issue of the newsletter contained an inaccuracy in the Nuclear Criticality Safety Division Executive Committee membership. **Mike Vehec** resigned his position and **Ernie Elliott**, Y-12 Nuclear Criticality Safety Department in Oak Ridge, was selected to serve out Vehec's remaining year on the Executive Committee.

## CHANGES TO THE COMPUTER CODE COLLECTION

Five changes were made to the computer code collection during the month. Two new code systems were packaged and added to the collection and three existing code packages were updated with additional documentation or minor corrections. One change resulted from a foreign contribution. A correction should be noted from last month's issue of the newsletter. RADCOMPT 2.10L was announced as CCC-631. Its true designation is PSR-348.

### **CCC-200/MCNP4A**

**OP SYS:** UNIX, DOS

**Language:** Fortran 77

**Computers:** Many

**Format:** DOS, tar

The documentation for this general purpose Monte Carlo code system for calculating the time-dependent continuous-energy transport of neutrons, photons, and/or electrons in three-dimensional geometries has been updated with the addition of a paper published in the *Nuclear Science and Engineering Journal*, which evaluates the performance of MCNP4A on seven computer platforms. The computers include HP/9000, Cray YMP, IBM RS/6000, Sun Sparc10 and Sparc2, Silicon Graphics ONYX, and Gateway 2000 4DX2-66V.

MCNP4A is available in UNIX tar format on cartridge tape or on 29, 3.5-in. DS/HD (1.44 MB) diskettes in self-extracting compressed DOS files. In addition to the source files, MCNP4A executables are included for personal computer users. These were created on a PC/486 under DOS 6.0 using the Lahey Fortran F77L3-EM/32 Version 5.10 compiler. Reference: LA-12625 (1993). Fortran 77 and C; UNIX workstations, PC 386, Cray, Vax, IBM, Sun, DEC, HP and SGI (C00200/ALLCP/02).

**CCC-331/EGS4****OP SYS:** VMS, MVS,  
DOS, UNIX**Language:** Fortran 77,  
MORTRAN**Computers:** SUN,  
VAX, IBM 3081, PC**Format:** DOS, tar

The Stanford Linear Accelerator Center at Stanford University in Stanford, California, has updated the documentation for this package with the addition of a paper titled "History, Overview, and Recent Improvements of EGS4." The EGS4 code system is a chain of three codes designed to solve the electromagnetic shower problem by Monte Carlo simulation. Although there have been no major revisions to the code since 1985, optional enhancements are available by including macros in user codes that become active after recompilation.

EGS4 is written in MORTRAN and translated into Fortran as a preliminary step in the job. RSIC distributes versions for mainframes, Compaq 80386, and Sun Sparc workstations. References: SLAC-265 (Dec. 1985), SLAC TN-87-4 (Aug. 1988), PIRS No. 042 (July 1986), and SLAC-PUB-6499 (June 1994). Fortran, MORTRAN; IBM 3081 and VAX (C00331/ALLMF/00), PC 386 (C00331/CQ386/00), and Sun Sparc 1 (C00331/SUN04/00).

**CCC-630/PCDOSE****OP SYS:** DOS**Language:** Lotus**Computers:** PC**Format:** DOS

Idaho National Engineering Laboratory, Idaho Falls, Idaho, contributed the PCDOSE code system for radioactive dose assessment. PCDOSE was developed for the U.S. Nuclear Regulatory Commission (NRC) to calculate radioactive dose due to the annual averaged offsite release of liquid and gaseous effluent by U.S. commercial nuclear power facilities. Using NRC approved dose assessment methodologies, it acts as an inspector's tool for verifying the compliance of the facility's dose assessment software.

PCDOSE uses spreadsheet models of the dose assessment mathematical equations. The results appear in table format. Requirements include an IBM PC or compatible. Note that Lotus 123 software, Ver. 2.01 or higher, is required to use PCDOSE. The package is transmitted on one DS/HD 3.5-in. (1.44 MB) diskette in self-extracting compressed DOS files. References: EGG-ESQ-11351 (May 1991). Lotus 123; IBM PC (C00630/IBMP/00).

**PSR-146/ALICE91****OP SYS:** DOS**Language:** Fortran 77**Computers:** PC, Cray,  
Sun**Format:** DOS, tar

Lawrence Livermore National Laboratory, Livermore, California, recommended that a minor correction be made to the Sun release, which runs on Sun workstations under both SunOS 4.1.1 and Solaris 2.3. The correction relates to a common block which was truncated in one subroutine. The 'common/dist' block in Subroutine ANGEL can be corrected by copying the common block from another routine.

Several types of calculations and combinations can be performed by ALICE including a standard Weisskopf-Ewing evaporation with multiple particle emission, s-wave approximation to give an upper limit to the enhancement of gamma-ray de-excitation due to angular momentum effects, and an evaporation calculation that can include fission competition via the Bohr-Wheeler approach. ALICE91 calculates precompound decay via Hybrid and GDH models with multiple precompound decay algorithms, single and double differential spectra, and reaction product cross sections.

Each version of ALICE can be transmitted on one DS/HD 5.25-in. (1.2 MB) diskette in DOS format. The SUN version can alternately be transmitted on one diskette written in tar format. References: UCID-20169 (September 1984), UCID-19614 (November 1982), *Physical Review C*, 28(4), 1475-1492 (October 1983), and UCRL-JC-109052 (Nov. 1991). Fortran 77; Cray (P00146/CY0MP/00), IBM PC (P00146/PCAT/00), and SUN (P00146/SUN04/01).

**PSR-347/REACTION****OP SYS:** DOS**Language:** Fortran 77**Computers:** PC,  
Macintosh**Format:** DOS,  
Macintosh

The Centro Atomico Bariloche, Comision Nacional de Energia Atomica, in Argentina contributed the REACTION code system for the calculation of integral parameters for neutron reactions on reactor lattices from WIMSD4 reaction rates. Absorption and fission rates from the WIMS output file are extracted and used for calculating the different integral parameters. The source is written in Fortran 77 and was developed on an IBM PC. It also runs on Macintosh computers. The Microsoft Fortran V5.0 compiler was used to create the executable under DOS. The Absoft MacFortran II compiler V3.3 under System 7.1.2 was used to create the executable on a Power Macintosh 8100. The packages are transmitted on one DS/HD 3.5-in. (1.44 MB) diskette in either DOS or Macintosh format. References: CAB Internal Report (1993). Fortran 77; IBM PC (P00347/IBMPC/00) and Macintosh (P00347/AL000/00).

**PSR-/RADCOMPT  
2.10L****OP SYS:** DOS**Language:** C**Computers:** PC**Format:** DOS

This code was erroneously announced as CCC-631 last month.

The MK-Ferguson Company of Oak Ridge, Tennessee, contributed this sample analysis code system for the dual channel counter. RADCOMPT is used for the determination of sample activity, minimum sample counting time, minimum detectable activity, and minimum detectable concentration for wipe samples and air samples. It may also be used for other sample types. The program also calculates the true count rates for wipe samples, the air sample volume needed to meet required limits for air sampling, long-lived activity, and derived air concentration hours with an estimate of the committed effective dose equivalent. RADCOMPT automatically corrects for crosstalk between channels, leading to a significant increase in accuracy of the calculated activities.

Borland's Turbo C++ compiler v1.01 was used to create the executable included in the package. It runs on IBM PC's and compatibles with greater than 610 K available conventional memory available to compile the source files. A math coprocessor is desirable. Reference: Informal Report (Dec. 1993). C; IBM PC (C00631/IBMPC/00).

## 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.

### Calendar

Your attention is directed to the following events of interest.

**November 1994**

*1994 ANS Winter Meeting: The State of the Industry*, Nov. 13–17, 1994, Washington, D.C. Contact: ANS Meetings Dept., 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 708-579-8258).

*Embedded Topical Meeting on Decommissioning, Decontamination, and Environmental Restoration*, Nov. 13–17, 1994, Washington, D.C. Contact: Argonne National Laboratory, OQA/EWM-201, Ms. M. G. White, 9700 S. Cass Ave., Argonne, IL 60439 (fax 708-252-5965).

*Embedded Topical Meeting on the Physics, Safety, and Applications of Pulse Reactors*, Nov. 13–17, 1994, Washington, D. C. Contact: General Chair David

Hetrick, University of Arizona, Dept. of Nuclear Engg., Tucson, AZ 85721 (phone 602-621-2514).

*40th Annual Conference on Bioassay, Analytical, and Environmental Radiochemistry*, Nov. 14–18, 1994, Cincinnati, Ohio. Contact: Dr. Henry Spitz, 40th Bioassay Conference, P.O. Box 9346, Cincinnati, OH 45209 (phone 513-556-2003, Internet seg3.nioshe2.em.cdc.gov), or Sam Glover (phone 513-841-4400, Internet seg3.nioshe2.em.cdc.gov).

*Workshop for Current MCNP4A/SABRINA Users*, Nov. 14–18, 1994, a workshop presented by Experimental and Mathematical Physics Consultants, P.O. Box 3191, Gaithersburg, MD 20885 (phone 301-869-2317; fax 301-963-3902).

*1st International Symposium on Ionizing Radiation and Polymers*, Nov. 14–19, 1994, Saint-Francois, France, sponsored by CEA Centre d'Etudes Nucleaires de Saclay. Contact: CEA-CE Saclay, DSM/DRECAM/SRSIM/LPI, A. Le Moel, F-91191, Gif sur Yvette Cedex, France (fax 33-1-69089600).

*3rd Annual Meeting of the Council on Ionizing Radiation Measurements and Standards (CIRMS)*, Nov. 16–18, 1994, Gaithersburg, Maryland, sponsored by the National Institute of Standards and Technology. Contact: Bert Coursey, C229 Radiation Physics Bldg. NIST, Gaithersburg, MD 20899-0001 (phone 301-975-5584; fax 301-869-7682; email coursey@micf.nist.gov).

*2nd Radiation Physics Conference*, Nov. 20–24, 1994, Sadaat City, Egypt, sponsored by the Atomic Energy Authority, Menoufia University. Contact: Prof. M. A. Gomaa, Atomic Energy Authority, 101. Kasr El-Aini Street, Cairo, Egypt (phone 02-355-8269/8264, fax 02-354-0982).

*Joint Meeting of the American Association of Physicists in Medicine with the Radiological Society of North America*, Nov. 27–Dec. 2, 1994, Chicago, Illinois. Contact: Executive Officer, AAPM, 335 E. 45th St., New York, NY 10017 (phone 212-661-9404).

*18th Conference of the Nuclear Societies in Israel*, Nov. 28–29, 1994, Tel-Aviv, Israel. Contact: E. Elias, Mech. Engg., Technion, Haifa, Israel 32000 (phone 9724-293263; fax 9724-324533; email nerro02@technion.technion.ac.il).

*Workshop on Various Reduction Schemes Developed at ENEA for Use With the MCNP Transport Code*, Nov. 28–Dec. 1, 1994, Bologna, Italy. Contact: K. W. Burn (kwb@iboenea.bitnet, Internet kwb@iboenea.bitnet%icineca.cineca.it).

## December 1994

*Safe Use of Radionuclides*, December 5–9, 1994, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*Modifying MCNP4A for Special Applications*, Dec. 12–16, 1994, a workshop presented by Experimental and Mathematical Physics Consultants, P.O. Box 3191, Gaithersburg, MD 20885 (phone 301-869-2317; fax 301-963-3902).

*16th U.S. Department of Energy Low-Level Radioactive Waste Management Conference*, Dec. 13–15, 1994. Contact: Donna Lake, EG&G Idaho, Inc., P.O. Box 1625, Idaho Falls, ID 83415-2420 (fax 208-526-9165).

## January 1995

*12th Symposium on Space Nuclear Power and Propulsion*, Jan. 8–12, 1995, Albuquerque, New Mexico. Contact: Mohamed S. El-Genk, Inst. for Space Nuclear Power Studies, University of New Mexico, Albuquerque, NM 87131-1341 (phone 505-277-5442).

*Health Physics Training & Education—28th Midyear Topical Meeting of the Health Physics Society*, Jan. 29–Feb. 1, 1995, Charleston, South Carolina. Contact: HPS, Suite 130, 8000 Westpark Drive, McLean, VA 22102 (phone Glenn Sturchio at 908-594-6267).

## February 1995

*International Conference on Internal Radiation Protection Dosimetry: Occupational Workers and the Public*, Feb. 21–24, 1995, Bombay, India, sponsored by the Indian Association of Radiation Protection. Contact: Dr. R. C. Sharma, IARP, Low-Level Counting Laboratory, BARC Hospital, Anushaktinagar, Bombay 400 094, India (phone 91-022-5512936; fax 91-022-556-0750).

## March 1995

*Radiation Transport Calculations Using the EGS4 Monte Carlo System*, Mar. 6–9, 1995, Seattle, Washington. Contact: Ms. Suzan Walker, Computer Services Director, The Lawrence H. Lanzl Inst. of Medical Physics, 3876 Bridge Way N., Suite 300, Seattle, WA 98103-7951 (phone 206-545-1141; fax 206-545-1347; email suzan\_walker@lanzl.com).

*1995 HEART Conference*, Mar. 13–17, 1995, Sandia National Laboratories, Albuquerque, New Mexico. Contact: Delores Walters, JAYCOR, P.O. Box 85154, San Diego, CA 92138 (619-535-9763).

*Gamma Spectroscopy*, March 20–24, 1995, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*5th Topical Meeting on Tritium Technology in Fission, Fusion, and Isotopic Applications*, Mar. 26–31, 1995, Augusta, Georgia, sponsored by the ANS. Contact: C. E. Murphy, Westinghouse SRC, Savannah River Lab., Aiken, SC 29808.

*Health Physics for the Industrial Hygienist*, March 27–31, 1995 in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

#### **April 1995**

*Applied Health Physics*, Apr. 10–May 12, 1995, in Oak Ridge, Tennessee, a five-week course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*31st Annual Meeting of the National Council on Radiation Protection and Measurements*, Apr. 12–13, 1995, Arlington, Virginia. Contact: NCRPM, Suite 800, 7910 Woodmont Ave., Bethesda, MD 20814-3095 (phone 800-229-2652; fax 301-907-8768).

*5th Topical Meeting on Emergency Preparedness and Response*, Apr. 18–21, 1995, Savannah, Georgia, sponsored by the American Nuclear Society Savannah River Section. Contact: Charles H. Hunter, Jr., Technical Program Chairman, Westinghouse Savannah River Co., Bldg. 773-A, Aiken, SC 29808 (phone 803-725-2953; fax 803-725-4233).

*ICONE-3, The Third International Conference on Nuclear Engineering—Nuclear Power and the Energy Future*, Apr. 23–27, 1995, Kyoto, Japan. Contact: Mr. M. Takahashi, Japan Society of Mechanical Engineers, Shinjuku-Sanshin Bldg. 5F, 2-4-9 Yoyogi, Shibuya-ku, Tokyo 151 Japan (phone 81-3-3379-6781; fax 81-3-3379-0934).

*SCALE Training Course*, Apr. 24–28, 1995, in Oak Ridge, Tennessee, sponsored by the DOE Transportation and Packaging Safety Division and

hosted by the Radiation Shielding Information Center (RSIC) at ORNL. Contact: Lindy Norris, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6370 (phone 615-574-6471).

*International Conference on Mathematics and Computations, Reactor Physics, and Environmental Analyses*, Apr. 30–May 4, 1995, Portland, Oregon. Contact Ms. L. Briggs, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439.

#### **May 1995**

*1995 International High-Level Radioactive Waste Management Conference*, May 1–5, 1995, Las Vegas, Nevada. Contact: Allen G. Croff, American Nuclear Society, 555 N. Kensington Ave., La Grange Park, IL 60525.

*Conference and International Symposium on Radionuclide Metrology and Its Applications*, May 15–19, 1995, Paris, France. Contact Laboratoire Primaire des Rayonnements Ionisants, P.O. Box 52, F-91193, Gif-sur-Yvette Cedex, France (fax 33-1-69-08-29-19, email ICRM@BABAORUM.CEA.FR).

#### **June 1995**

*Air Sampling for Radioactive Materials*, June 12–16, 1995, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*Environmental Monitoring*, June 26–30, 1995 in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

#### **July 1995**

*Joint Annual Meeting of the Health Physics Society and the American Association of Physicists in Medicine to Celebrate the X-Ray Centennial*, July 23–27, 1995, Boston, Massachusetts. Contact: Health Physics Society, ATTN: Richard J. Burke, Jr., Suite 130, 8000 Westpark Drive, McLean, VA 22102 (phone 703-790-1745; fax 703-790-9063) or American Association of Physicists in Medicine, ATTN: Salvatore Trofi, Jr., One Physics Ellipse, College Park, MD 20740-3846 (301-209-3350; fax 301-209-0862).

#### **August 1995**

*10th Brazilian Meeting on Reactor Physics and Thermal Hydraulics (X ENFIR)* and the 3rd

*Brazilian Meeting on Nuclear Applications (III ENAN)*, Aug. 7–11, 1995, Rio de Janeiro, Brazil. Contact: Wilma S. Bastos, IEN, C.P. 68550, CEP-21945.970, RJ, Brazil (fax 55-21-5902692; email IENRCB@BRLNCC.BITNET).

*Safe Use of Radionuclides*, August 21–25, 1995, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

#### **September 1995**

*Environmental Monitoring*, September 11–15, 1995, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*Applied Health Physics*, September 18–October 20, 1995, in Oak Ridge, Tennessee, a five-week course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge TN 37831-0117 (phone 615-576-3576 or 615-241-4888; fax 615-576-9383).

*16th Symposium on Fusion Engineering*, Sept. 30–Oct. 4, 1995, Urbana, Illinois. Contact: Cella Elliott, Conference Secretary, Fusion Studies Lab., University of Illinois, Urbana, IL 61801 (phone 217-

333-2772; fax 217-333-2906; email miley@uiucvmd.bitnet).

#### **October 1995**

*International Symposium on Nuclear Energy*, Oct. 20–21, 1995, Bucharest, Romania. Contact: C. Briatianu, Univ. Politehnicadin Bucuresti, Facultateade Inginerie Mecanica, Splaiul Independentei Nr. 313, Sector 6, 77206, Bucharest, Romania (phone 40-1-6314010/224).

#### **November 1995**

*ANS International Topical Meeting on Managing Plant Life*, Nov. 28–30, 1995, Nice, France. Contact: Dr. S. Charbonneau, Tour Fiat, Cedex 16, F-92024, Paris, France.

#### **April 1996**

*Annual Meeting of the National Council on Radiation Protection and Measurements*, Apr. 3–4, 1996, Arlington, Virginia. Contact: Natl. Council on Radiation, Protection and Measurements, Suite 800, 7910 Woodmont Ave., Bethesda, MD 20814 (fax 301-907-8768).

*Annual Meeting of the Radiation Research Society*, Apr. 13–18, 1996, Chicago, Illinois. Contact: Radiation Research Society, M. G. Watson, Suite 600, 2021 Spring Rd., Oak Brook, IL 60521.

