

# RSIC Newsletter



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*I do not believe you can do today's job with yesterday's methods and  
be in business tomorrow.—Nelson Jackson*

## SCALE Workshop Nears

Registration for the SCALE Workshop is open until March 31, 1986 (see January or February *RSIC Newsletter* for registration form and details). Early response is important because enrollment will be limited. The sessions will be led by the Nuclear Engineering Applications Department (NEAD) of Oak Ridge National Laboratory (ORNL), the group that developed the code system under the sponsorship of the Nuclear Regulatory Commission (NRC). The workshop will provide an excellent opportunity to bring the developers of the code system and the users of SCALE together for discussion of specific applications, problems, and proposed improvements.

### MCNP User Note

A useful report, *Sample Problem for Variance Reduction in MCNP*, LA-10363-MS, Los Alamos National Laboratory, October 1985, has been recently incorporated into the documentation for CCC-200/MCNP. Current users of MCNP may call or write RSIC to obtain a copy of the report.

## CHANGES TO THE COMPUTER CODE COLLECTION

Seven changes were made to the computer code collection during the month. Three new code systems were packaged, a hardware version was added to an existing code package, and three existing code packages were improved with software or added documentation. One change resulted from a foreign contribution.

### CCC-255/ANISN-W

This multigroup one-dimensional discrete ordinates transport code system with anisotropic scattering was extended to add a new version, the IBM Personal Computer (PC) which runs under the IBM PC Professional FORTRAN V compiler, Version 1.0 copyright Ryan-

McFarland Corp. 1984. It requires a hard disk, about 512K memory and the 8087 math coprocessor. Users should send 2 diskettes which will be written in DOS BACKUP/RESTORE format. The new version was contributed by EG&G Idaho, Inc., Idaho Falls, Idaho and has been designated (C) version. CDC 6600 (A), Burroughs (B), and IBM-PC (C).

IF YOU CHANGE YOUR ADDRESS, please notify us (including Building and Room No. where needed). *Third Class Mail* is returned to us at our expense if the addressee has moved. If your mail is returned, your name will be deleted from our distributions until we hear from you.

**CCC-357/AIRDOS-EPA**

This code system for estimation of radionuclide doses caused by airborne radionuclides in areas surrounding nuclear facilities was updated to correct two errors called to RSIC's attention by Battelle Project Management Division, Office of Nuclear Waste Isolation, Columbus, Ohio, and verified by the Oak Ridge National Laboratory, Oak Ridge, Tennessee. The errors occur in DOSEN subroutine when carbon-14 is a radionuclide in the assessment. The corrections properly assign the weight fraction of carbon in milk and meat. Details of the changes necessary to correct the errors are available upon request from RSIC. FORTRAN IV; IBM 3033.

**CCC-459/BOLD-VENTURE**

The documentation for this computation system for nuclear reaction core analysis was updated to add comments from the code developer. They address the difficulty that often occurs in properly defining the core exposure problem. A copy of the comments may be requested from RSIC. FORTRAN; IBM 360/370.

**CCC-476/CAAC**

This code system for implementation of atmospheric dispersion assessment required by the clean air act was updated with the modified version of AIRDOS-EPA (see CCC-357/AIRDOS-EPA correction listed earlier in this newsletter). The corrected material was supplied by Battelle Project Management Division, Office of Nuclear Waste Isolation, Columbus, Ohio, and verified by the ORNL contributors. Details of the errors and

changes may be requested from RSIC. FORTRAN IV and Assembler Language; IBM 3033.

**CCC-485(NRC-50)/BWR LTAS**

This boiling water reactor, long term accident simulation (BWR-LTAS) computer code system was contributed by ORNL via the NRC Technical Data Management Center (TDMC). It is designed for the detailed study of accident sequences at Browns's Ferry Unit One: station blackout, small break LOCA primary containment, loss of decay heat removal, loss of vessel water injection and anticipated transient without scram. The primary use of the code has been to estimate the effects of sequence leading up to but not including severe fuel damage. Reference: NUREG/CR/3764 (ORNL/TM-9163). FORTRAN IV; IBM 360/370.

**PSR-223/MESA**

This non-linear least squares spectral analysis code system for determining the periodic behavior of a time series was contributed by ORNL. MESA attempts to fit a mathematical model to a time series with the ultimate purpose of driving the residuals to white noise. Reference: ORNL/TM-7534. FORTRAN 77; IBM 3033.

**PSR-228/SUPERTOG LTT**

This code system, a modification of PSR-13/SUPERTOG, was contributed by the Institute of Nuclear Power, Bulgarian Academy of Sciences, Sofia, Bulgaria. Unlike other SUPERTOG versions, this one will produce group-to-group transfers from elastic scattering data that are either given as Legendre coefficients or tabulated as a function of scattering angle cosine. Reference: INDC(BUL)-6/GV. FORTRAN IV; IBM 360.

**IRPS Founded at ISRP-3**

The International Radiation Physics Society (IRPS) was founded September 29, 1985, at the beginning of the Third International Symposium on Radiation Physics (ISRP-3) in Ferrara, Italy. Formation of the new society was first discussed in 1974 at ISRP-1 in Calcutta, India. Support for its formation intensified in 1982 at ISRP-2 in Penang, Malaysia.

The primary objective of the society is "to promote the global exchange and integration of scientific information pertaining to the interdisciplinary subject of radiation physics," including "the promotion of (i) theoretical and experimental research in radiation physics, (ii) investigation of physical aspects of interactions of radiations with living systems, (iii) education in radiation physics, (iv) utilization of radiations for peaceful purposes." The IRPS defines radiation physics as "the branch of science which deals with the physical aspects of interactions of ionizing radiations (both electromagnetic and particulate) with matter," thus, putting its emphasis on the radiations.

Officers of the newly formed society include the President, *P. K. Iyengar*, Director of the Bhabha Atomic Research Centre, Bombay, India. He is known for many contributions to the science and for his national and international activities in the development of science policy and promotion of technology. Information about membership in the society may be obtained from the Secretary, *R. H. Pratt*, Department of Physics and Astronomy, Univ. of Pittsburgh, Pittsburgh, PA 15260, USA, (phone 412-624-4304, or Telex 812466 within the U.S., or 199126 outside the U.S.). *D. B. Isabelle* (France) serves as the first treasurer.

Information may also be obtained from the five Regional Vice Presidents: *Glenn F. Knoll* (North and South America), Dept. of Nuclear Engineering, Univ. of Michigan, Ann Arbor, MI 48109; *Daphne F. Jackson* (Western Europe), Dept. of Physics, Univ. of Surrey, Guildford, Surrey, GU25XH U. K.; *M. A. Gomaa* (Africa and the Middle East), College of Education, King Saud Univ., P.O. Box 949, Abha, Saudi Arabia; *A. Ljubicic* (Eastern Europe and the USSR), Inst. Rudjer Boskovic, P.O. Box 1016, 41001 Zagreb, Yugoslavia; and *A. M. Ghose* (Rest of Asia and Oceania), Science Univ. of Malaysia, Penang, Malaysia.

The Executive Council of the Society also includes *D. Berenyi* (Hungary), *E. Casnati* (Italy), *D. V. Gopinath* (India), *J. H. Hubbell* (U.S.), *T. Nakamura* (Japan), and *I. Wittingham* (Australia).

The Society recognized the very important roles played by A. M. Ghose and John Hubbell in the formation of the Society and the series of symposia in the opening session of ISRP-3.

### Burton Fellowship Nominees Sought

The Northern California Chapter of the Health Physics Society is accepting applications for the *Burton J. Moyer Graduate Fellowship in Radiological Protection* until May 1, 1986. The Fellowship is awarded to a student enrolled in a program leading to a master's or doctoral degree in a field closely related to radiological protection. Applicants will be evaluated on the basis of academic or professional achievement, genuine interest, and relevance of candidate's academic program to objectives of the Health Physics Society.

The Fellowship is awarded to encourage the ideals of *Burton J. Moyer* (1912-1973), a past Professor and Chairman of the Physics Department at the Univ. of California at Berkeley and a staff member of the Radiation Laboratory. Specific information and applications may be obtained from John A. Holmes, 67 Encina Hall, Stanford Univ., Stanford, CA 94305 (phone 415-497-3201).

### Principles of Radiation Shielding Errata

RSIC has been notified by Arthur Chilton, an author of the book, *Principles of Radiation Shielding*, that a list of errata has been compiled. "Anyone wishing to do so may write to one of the authors and ask for a copy of this list. The authors and their addresses are: Prof. A. B. Chilton, Nuclear Engineering Program, Univ. of Illinois, Urbana, IL 61801; Prof. R. E. Faw, Nuclear Engineering Department, Kansas State Univ., Manhattan, KS 66506; Prof. J. K. Shultis, at the same address as Prof. Faw." The book is available from Prentice Hall, Inc., Englewood Cliffs, New Jersey 07632, for \$42.95.

### Standards in the News

Specialists in a variety of scientific disciplines are involved in the creation, writing, updating, and approval of standards for radiation protection, transport, and shielding. The following is a brief and undoubtedly incomplete attempt to bring attention to current standards activity, both national and international.

#### HPS

Eight working groups are preparing standards for the Health Physics Society Standards Committee (HPSSC).

After the draft of a standard is completed it must be approved by the HPSSC before being sent to the American National Standards Institute (ANSI) for approval. Listed below are the eight standards in preparation.

PlanCo 55: How to Estimate the Overall Accuracy in Occupational Dose Determinations.

PlanCo 56: How to Document Radiation Protection Surveys.

PlanCo 57: How to Select Appropriate Procedures/Instrumentation for Characterizing Airborne Radioactive Particulates in the Workplace.

PlanCo 58: How to Estimate Radioactivity Levels in Low-Level Radioactive Waste.

PlanCo 59: How to Perform Multiple-Dosimeter Dose Measurements.

PlanCo 60: How to Select and Use Neutron Radiation Instrumentation for Individual Dose Determination.

PlanCo 61: How to Calibrate High Physics Survey Instruments.

PlanCo 62: How to Calibrate and Use Installed AC-Powered Occupational Radiation Protection Instruments.

#### ASTM

The American Society for Testing and Materials (ASTM) has published a revision of ASTM E721-85, *Method for Determining Neutron Energy Spectra with Neutron-Activation Foils for Radiation Hardness Testing of Electronics*. It may be ordered from ASTM, 1916 Race St., Philadelphia, PA 19103, for \$8.

#### IEO

The International Electrotechnical Committee is calling for comment on the following:

45A/45B (Central Office) 94/97, *Radiation Monitoring Equipment for Accident and Post-Accident*

*Conditions in Nuclear Reactor Plants - General Principles and Design Characteristics.* The draft may be ordered from IEC, 1, rue de Varembe, 1211 Geneva 20, Switzerland; or in the U. S. from ANSI. Send comments by April 3, 1986, to Daniel W. Smith, ANSI.

### FPA Offers Publications

Fusion Power Associates (FPA) was formed to ensure timely development of fusion and to increase the public's awareness and understanding of fusion and its potential. Since its beginning in 1979, FPA has grown from the initial ten corporate members to over 50 members and affiliates from industry, utilities, and universities, and 400 Individual Affiliates who share FPA goals. The FPA publishes materials updating fusion development,

presents educational and technical symposia, carries on fusion research, advises development groups, and testifies before Congress. Funding for these activities is provided by dues, contributions, and the sale of publications. A brochure which lists some of the publications distributed by FPA to the public is available from Fusion Power Associates, 2 Professional Drive, Gaithersburg, MD 20879, or phone 301 258-0545.

### Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Fu-Dong Chang*, *Chein-Liang Shih*, and *Huan-Tong Chen*, from the Institute of Nuclear Energy Research, Lung-Tan, Taiwan; *Donna Shively* and *David J. Lindenschmidt*, from Westinghouse Materials Co. of Ohio, Cincinnati; and *Itacil Chiari Gomes*, from the Univ. of Tennessee, Knoxville.

### Calendar

Your attention is directed to the following additional events of interest to the radiation shielding and protection community.

#### April 1986

*22nd Annual Meeting of the National Council on Radiation Protection and Measurements*, Apr. 2-3, 1986, Washington, D.C. Contact: NCRPM, Suite 1016, 7910 Woodmont Ave., Bethesda, MD 20814.

*Applied Health Physics*, Apr. 7-May 9, 1986, a course sponsored by ORAU. Contact: Jo T. Tipton, Registrar, ORAU, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3434).

*Annual Meeting on Nuclear Technology*, Apr. 8-10, 1986, Aachen, F. R. Germany, sponsored by the German Nuclear Society and the German Atomic Forum. Contact: Deutsches Atomforum e.V., Tagungsbuero, Heussallee 10, D-5300 Bonn 1, F. R. Germany (phone 0228-507223).

*Fast Burst Reactor Workshop*, Apr. 8-10, 1986, Albuquerque, New Mexico, sponsored by Sandia National Laboratories and ANS. Contact: T. F. Luera, SNL, Div. 4450A, P.O. Box 18063, Albuquerque, NM 87185 (phone 505-844-0049).

*International Meeting on Further Improvement of LWR Technologies*, Apr. 10-11, 1986, Tokyo, sponsored by the Japan Atomic Industrial Forum. Contact: Japan Atomic Industrial Forum, Inc., No. 1-13, 1-chome, Shimbashi, Minato-ku, Tokyo 105, Japan (phone 03-508-2411).

*2nd International Conference on Fusion Reactor Materials, (ICFRM-2)*, Apr. 13-17, 1986, Chicago,

Illinois, sponsored by the U.S. Dept. of Energy, ANS, Argonne National Laboratory, and Nuclear Metallurgy Committee of TMS/AIME and ASM. Contact: Dale Smith, Fusion Power Program, Argonne Natl. Lab., Bldg. 205, 9700 S. Cass Ave., Argonne, IL 60439, or A. Rowcliffe, ORNL, Metals and Ceramics Div., P.O. Box X, Oak Ridge, TN 37831 (phone 615-574-5057).

*12th Personnel Dosimetry Intercomparison Study*, Apr. 14-18, 1986, Oak Ridge, Tenn., sponsored by ORNL. Contact: C. S. Sims, ORNL, Bldg. 7710, P.O. Box X, Oak Ridge, TN 37831 (phone 615-574-5851).

*Data Uncertainties, Sensitivities, Consistency and Adjustment*, April 14-18, 1986, a course sponsored by ISPRA, Varese, Italy. Contact: ISPRA-Courses Secretariat, Centro Comune di Ricerca, 21020 ISPRA (Varese) Italy (phone 0332/789839-789819-781128, Telex 380042-380058 EURI).

*General Meeting of the American Physical Society*, Apr. 28-May 1, 1986, Washington, D. C. Contact: APS, 335 E. 45th St., New York, NY 10017 (phone 212-682-7341).

#### May 1986

*Seventh Annual Meeting of the Canadian Radiation Protection Association*, May 5-7, 1986, Quebec City, Canada. Contact: Roch Desrochers, Comm. de la santé et de la sécurité du travail, 1199 rue De Bleury, 9e étage, Montreal, Que., Canada H3B 3J1.

*Conference on the Science and Technology of Fast Reactor Safety*, May 12-16, 1986, Channel Islands, U. K. Contact: Inst. of Civil Engineers, Conference Office, 1-7 Great George St., London SW1P 3AA.

#### June 1986

*4th European Nuclear Conference (ENC-86)*, June 1-6, 1986, sponsored by the European Nuclear Society.

Contact: Dr. Peter Bucher, ENC-4 Conference Secretary, ENS, P.O. Box 2613, CH-3001 Berne, Switzerland.

*26th Annual International Conference of the Canadian Nuclear Association and the 7th Annual Conference of the Canadian Nuclear Society*, June 8-11, 1986. Contact: J. A. Weller, Canadian Nuclear Association, 111 Elizabeth St., Toronto, Ontario, Canada M5G 1P7.

*Air Sampling*, June 9-13, 1986, a course sponsored by ORAU. Contact: Jo T. Tipton, Registrar, ORAU, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3434).

*ANS Annual Meeting*, June 15-20, 1986, Reno, Nevada. Contact: D. G. Pettengill, ANS, 555 N. Kensington Ave., La Grange Park, IL 60535 (phone 312-352-6611 ext. 257).

*Safe Use of Radionuclides*, June 16-20, 1986, a course sponsored by ORAU. Contact: Jo T. Tipton, Registrar, ORAU, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3434).

*13th International Symposium on the Effects of Radiation on Materials*, June 23-25, 1986, Seattle, Washington, sponsored by ASTM Committee E-10 on Nuclear Technology and Applications. Contact: F. A. Garner, Westinghouse Hanford Co., P.O. Box 1970, W/A-58, Richland, WA 99352 (phone 509-376-4136).

#### July 1986

*23rd International Conference on High-Energy Physics*, July 16-23, 1986, Berkeley, California. Contact: S. C. Loken, 50-137 Lawrence Berkeley Lab., Univ. of California, Berkeley, CA 94720.

*23rd Annual Conference on Nuclear and Space Radiation Effects*, July 20-23, 1986, Providence, Rhode Island, sponsored by the Nuclear and Plasma Sciences Society and the Inst. of Electrical and Electronics Engineers. Contact: Sandra Grawet, Science Applications International Corp., 2615 Pacific Coast Highway, Hermosa Beach, CA 90254 (phone 213-318-2611).

#### August 1986

*Criticality Accident Dosimetry Training Course*, Aug. 11-15, 1986, Oak Ridge, Tenn., sponsored by ORNL. Contact: C. S. Sims, ORNL, Bldg. 7710, P.O. Box X, Oak Ridge, TN 37831 (phone 615-574-5851).

*International Nuclear Physics Conference*, Aug. 25-30, 1986, Harrogate, United Kingdom. Contact: Inst. of Physics, 47 Belgrave Square, London SW1X 8QX (phone 01-235-6111).

*8th International Conference on Solid State Dosimetry* Aug. 26-29, 1986, St. Catherine's College, Oxford, organized by the National Radiological Protection Board, U.K. Contact: Miss L. Ashby, National Radiological Protection Board, Chilton, Didcot, Oxfordshire, U.K.

#### September 1986

*International Conference on Nuclear and Radiochemistry*, Sept. 1-5, 1986, Beijing, sponsored by the Chinese Nuclear Society and Chinese Chemical Society. Contact: Prof. Liu Yuanfang, Dept. of Technical Physics, Beijing Univ., Beijing, People's Republic of China.

*International Conference on Reliable Fuels for Liquid-Metal Reactors*, Sept. 7-11, 1986, Tucson, Arizona, sponsored by ANS, AIME, and the U.S. Dept. of Energy. Contact: E. A. Aitken, Tech. Prog. Chairman, General Electric Co., Nuclear System Technology Div., 310 DeGuigne Dr., Sunnyvale, CA 94088 (phone 408-738-7237).

*International Conference on Radioactive Waste Management*, Sept. 7-12, 1986, Winnipeg, Manitoba, Canada, sponsored by the Canadian Nuclear Society and ANS. Contact: Dr. T. S. Drolet, CFFTP, 2700 Lakeshore Rd. West, Mississauga, Ontario, Canada L5J 1K3 (phone 416-823-6654).

*Conference on the Treatment and Containment of Radioactive Wastes and Disposal in Arid Environments (Radwaste '86)*, Sept. 7-13, 1986, sponsored by Atomic Energy Corp. of South Africa, Electricity Supply Commission of South Africa, and Nuclear Development Corp. of South Africa. Contact: Radwaste Conf. Secretariat, NUCOR, Private Bag X256, Pretoria 0001, South Africa (phone 27-12-21-3311 ext. 677).

*14th SOFT—Symposium on Fusion Technology*, Sept. 8-12, 1986, Avignon, France. Contact: A. Torossian, Dept. de Recherches sur la Fusion Contrôlée, Centre d'Études Nucleaires de Cadarache, B.P. No. 1, F-13108 Ste-Paul-lez Durance, France.

*Advances in Reactor Physics and Safety Meeting*, Sept. 17-19, 1986, Saratoga Springs, N. Y., sponsored by ANS. Contact: Norman C. Francis, Knolls Atomic Power Lab., River Road, Schenectady, NY 12301, or Donald R. Harris, Rensselaer Polytechnic Inst., Troy, NY (phone 518-270-6407).

#### November 1986

*International Symposium on Nuclear Material Safeguards*, Nov. 10-14, 1986, sponsored by IAEA. Contact: IAEA, Conf. Service Section, P.O. Box 100, A-1400 Vienna, Austria.

*United Nations Conference for the Promotion of International Co-operation in the Peaceful Uses of Nuclear Energy*, Nov. 10-28, 1986. Contact: Executive Secretary, UN Conf. for the Promotion of Internatl. Co-operation in the Peaceful Uses of Nuclear Energy, Vienna International Centre, P.O. Box 500, A-1400 Vienna, Austria.

*ANS and Atomic Industrial Forum Joint Meeting*, Nov. 16-21, 1986, Washington, D. C. Contact: D. G. Pettengill, ANS, 555 N. Kensington Ave., La Grange Park, IL 60535 (phone 312-352-6611 ext. 257).

## FEBRUARY 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

**AD-A-150462/0/XAB; NRL-MR-5439**, . . *Effect of the Choice of Response Matrix on Unfolded Bonner Sphere Spectra. Memorandum Report.*, . . Lowry, K.A.; Johnson, T.L., . . December 31, 1984, . . NTIS, PC A03/MF A01

**AD-A-151564/2/XAB; Thesis**, . . *Relative Effectiveness of Structures as Protection from Gamma Radiation from Cloud and Fallout Sources as a Function of Source Energy.*, . . Fingerlos, J.P., . . Air Force Inst. of Tech., Wright-Patterson AFB, OH, . . 1984, . . NTIS, MF A01

**AD-A-154374/3/XAB**, . . *Study of a Novel Shielding Principle for Protection Against Intense Gamma-Ray Beams. Technical Report, 15 September 1983 - 15 March 1984.*, . . Dunn, W.L.; O'Foghluha, F., . . March 15, 1984, . . NTIS, PC A04/MF A01

**AEW-R-1736**, . . *PCA Replica Experiment. Part I. Winfrith Measurements and Calculations.*, . . Butler, J.; Carter, M.D.; Curl, I.J.; March, M.R.; McCracken, A.K.; Murphy, M.F.; Packwood, A., . . January 1984, . . NTIS (U.S. Sales Only), PC A04/MF A01

**ANL-82-80, pp.503-528**, . . *Computational Methods for High-Energy Source Shielding.*, . . Armstrong, T.W.; Cloth, P.; Filges, D., . . January 1983, . . NTIS, PC A99/MF A01

**BARC-1222**, . . *BARC-35: A 35 Group Cross-Section Library with  $P_3$ -Anisotropic Scattering Matrices with Resonance Self-Shielding Factors.*, . . Garg, S.B.; Sinha, A., . . 1984, . . NTIS (U.S. Sales Only), PC A02/MF A01

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**BNL-51778, pp.265-304; CONF-8310104, pp.265-304**, . . *Decay Heat Data Needs.*, . . Yoshida, T.; Akiyama, M.; Matumoto, Z.; Katakura, J.; Nakasima, R., . . 1983, . . NTIS, PC A24/MF A01

**CEA-N-2388 (In French)**, . . *Transport Equation Solving Methods.*, . . Granjean, P.M., . . June 1984, . . NTIS (U.S. Sales Only), PC A12/MF A01

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**CEA-N-2429 (In French)**, . . *Contribution to Gamma Ray Transport Calculation in Heterogeneous Media.*, . . Bourdet, L., . . April 1985, . . NTIS (U.S. Sales Only), PC A06/MF A01

**CONF-840408, pp.593-601**, . . *Neutron Fluence and Cross Section Measurements for Fast Neutron Dosimetry.*, . . Lamaze, G.P.; Gilliam, D.M.; McGarry, E.D.; Fabry, A., . . From 5. International Conference on Nuclear Methods in Environmental and Energy Research; Mayaguez, Puerto Rico (2 April 1984), . . April 1984, . . NTIS, PC A99/MF A01

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**DOE-ER-40200-022**, . . *Mid Century Adventures in Particle Physics.*, . . Sudarshan, E.C.G., . . June 1985, . . Texas University, Austin, Center for Particle Theory, Dept. of Physics

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**INIS-mf-9626, Vol.1, pp.69-73; CONF-830995, Vol.1, pp.69-73**, . . *Broad Beam Attenuation in Baryt Concrete for 50 to 400 kVp X-Rays*, . . Ristic, D.; Markovic, P.; Vukovic, S., . . 1984, . . NTIS (U.S. Sales Only), PC A14/MF A01

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