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PROFESSIONAL EXPERIENCE

- OAK RIDGE NATIONAL LABORATORY (ORNL), Oak Ridge, Tennessee
Distinguished Research Staff, Nuclear Reactor and Systems Division 2003-Present
- LOUISIANA STATE UNIVERSITY (LSU), Baton Rouge, Louisiana
 - Professor of Physics and Astronomy 1999-2003
 - Director of Medical Physics Program 1999-2003
 - Director of Nuclear Science Center 1997-1999
 - Professor of Nuclear Science 1988-1999
 - Associate Professor of Nuclear Science 1983-1988
- OAK RIDGE NATIONAL LABORATORY, Oak Ridge, Tennessee
Research Staff, Neutron Physics Division 1974-1983
- UNIVERSITY OF TENNESSEE, Knoxville, Tennessee.
 - Adjunct Professor of Nuclear Engineering 2008-2011
 - Joint UT-ORNL faculty appointment 2011-present

EDUCATION

PhD Nuclear Engineering, University of Tennessee, Knoxville, TN, 1979
MS Nuclear Engineering, Georgia Institute of Technology, Atlanta, GA, 1974
BS Engineering Science, Louisiana State University, Baton Rouge, LA, 1972

TECHNICAL WORK EXPERIENCE

- **REACTOR PHYSICS**
 - developed and implemented lattice physics and nuclear data processing methods for SCALE code system
 - developed methods for doubly-heterogeneous self-shielding in SCALE code system
 - developed CENTRM code for discrete ordinates transport calculations with pointwise nuclear data in SCALE
 - developed LWR lattice physics codes for EPRI reactor analysis package

- developed code for core analysis of Oak Ridge Research Reactor (ORR) using diffusion theory
- performed design/analysis of irradiation experiments in EBR-2 and PFR fast reactors
- ***NUCLEAR DATA***
 - member of CSEWG ENDF/B data committees for 30 years
 - developed approximate methods to represent nuclear data covariances, and generated comprehensive covariance library distributed with SCALE and used for international benchmark program.
 - processed multigroup nuclear data libraries for reactor physics (EPRI ARMP library) and shielding calculations (EXSIR and SAILOR-95 libraries)
 - performed nuclear data testing in benchmark facilities for DOE, NRC programs
- ***RADIATION SHIELDING DESIGN***
 - developed “contributon theory” for use in radiation transport analysis in shielding
 - designed shielding for Fast Flux Test Facility (FFTF) and Clinch River Breeder Reactor (CRBR); performed analysis of related experiments at ORNL Tower Shielding Reactor (TSR)
 - performed TSR experimental design studies for GCFR fast reactors
 - performed shielding design and blanket studies for tokamak fusion reactor concept.
 - performed shielding design studies for SP-100 space reactor
- ***REACTOR PRESSURE VESSEL (RPV) EMBRITTLEMENT STUDIES***
 - member of ORNL/EPRI development team for LEPRICON code system for RPV fluence calculations
 - performed benchmark experiment validation studies of U.S. RPV analysis methodology for NRC
 - analyzed RPV surveillance capsules for numerous commercial utilities
 - performed transport analysis of BWR upper internal structures for EPRI to establish feasibility of welding repairs
- ***SENSITIVITY AND PERTURBATION THEORY***
 - developed perturbation theory for coupled nuclide/flux fields, and adjoint ORIGEN for transmutation applications
 - developed and applied generalized perturbation theory (GPT) methods for experiment design in fast reactors CRBR and EBR-II
 - developed method to treat implicit perturbations due to resonance self-shielding in SCALE computer code system
- ***MEDICAL PHYSICS***
 - Worked on developing photon and electron transport codes for cancer therapy applications
 - Performed deterministic electron transport calculations to determine x-ray spectrum produced by LINAC targets.

UNIVERSITY ACADEMIC COURSES TAUGHT

University Of Tennessee, Knoxville, TN

Undergraduate (2009):

- NE-406 Radiation Shielding

Louisiana State University, Baton Rouge, LA

Undergraduate (1983-2003):

- NS-2051 Introduction to Nuclear Science; NS-4444 Computational Methods in Nuclear Science; NS-4527 Undergraduate Reactor Physics; NS-3012 Nuclear Science Laboratory

Graduate (1983-2003):

- NS-7527 Graduate Reactor Physics-I; NS-7528 Graduate Reactor Physics-II; NS-7529 Reactor Kinetics;
- NS-7537 Radiation Transport Theory-I; NS-7538 Radiation Transport Theory-II;
- Radiation Interactions and Transport for Medical Physics MEDP-7537; MEDP-38 Monte Carlo Simulation of Radiation Transport for Medical Physics

Short course (1983-2003):

- “Basic Course in Health Physics”: two 1-week courses per year from 1985-2003. Covered dosimetry, radiation detection, hands-on lab exercises for federal and state regulators, and nuclear power plant workers

U. S. PATENT

- Embedded Radiation Emitter for Localization and Dosimetry of Brachytherapy Seed Implants by E. Sajo and M. L. Williams, United States Patent 6,761,679 B2, 2004

PROFESSIONAL ORGANIZATIONS

- AMERICAN NUCLEAR SOCIETY [1974-1983; 1985-PRESENT]
 - Executive Committee of ANS Mathematics and Computation Division, 2012-present
 - Standards Committee Working Group ANS 6.1.2, “Neutron and Gamma Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants”(2008-present)
 - ANS Computational Medical Physics Working Group, 2006-present
- AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE (AAPM) [1998-2004]
- NUCLEAR DATA ADVISORY GROUP FOR NCSP
- CROSS SECTION EVALUATORS WORKING GROUP (CSEWG): [1983-present]
 - Chairman Thermal Data Testing Subcommittee (1983-96)
 - Executive Committee (1988-1995)
 - Cross Section Covariance subcommittee (2006-present)

AWARDS Fellow of American Nuclear Society

CONSULTING AND RESEARCH CONTRACTS

(WHILE UNIVERSITY PROFESSOR FROM 1983-2003)

American Electric Power Service Corp.
Baltimore Gas and Electric Company
Bechtel Overseas Corporation
Consolidated Edison Company of New York
Electric Power Research Institute
Indiana and Michigan Electric Company
Nuclear Engineering Technology Corporation
Oak Ridge National Laboratory
Pennsylvania Power and Light Company
Public Service Electric and Gas
S. Levy, Inc.
Siemens Power Corporation
Southwest Research Institute
Technology for Energy Corporation
Tennessee Valley Authority
Texas Utility Electric Company
Trans Ware Enterprises, Inc
US DOE
US NRC
Utility Resource Associates
Virginia Power

PUBLICATION LISTING

PHD DISSERTATION - Williams, M. L. 1979. "Perturbation and Sensitivity Theory for Reactor Burnup Analysis," PhD Dissertation, the University of Tennessee, August 1979.

BOOK CHAPTERS - Williams, M. L. "Perturbation Theory for Reactor Analysis," *CRC Handbook of Nuclear Reactors Calculations, Vol. 3*, pp. 63-188, CRC Press, 1986.

PAPERS IN JOURNALS AND CONFERENCE PROCEEDINGS

Liu, Y., W. M. Martin, M. L. Williams, K. S. Kim, "A Full-Core Resonance Self-Shielding Method Using a Continuous-Energy Quasi-One-Dimensional Slowing-Down Solution that Accounts for Temperature-Dependent Fuel Subregions and Resonance Interference," *Nucl Sci Engr 180*, pp 247-272 (2015)

Liu, Y., W. R. Martin, M. L. Williams, K. S. Kim, "Resonance Self-shielding Method for Fuel Annular Subdivisions Using Quasi-1D Slowing-down Solution", *Nucl Sci Engr*, in press (2014)

Williams, M. L, S. Choi, D. Lee, "A New Equivalence Theory Method for Treating Doubly Heterogeneous Fuel – I: Theory", *Nucl Sci Engr 180*, pp 30-40 (2015)

Choi, S., D. Lee, M. L. Williams, “A New Equivalence Theory Method for Treating Doubly Heterogeneous Fuel – II: Verifications”, *Nucl Sci Engr 180*, pp 41-57 (2015)

Williams, M. L., G. Ilas, W. J. Marshall, B. T. Rearden, “Covariance Applications in Criticality Safety, Light Water Reactor Analysis, and Spent Fuel Characterization”, *Nuclear Data Sheets Journal 123*, p92-96 (Jan. 2015)

Arbanas, G., M. L. Williams, L. C. Leal, B M. E. Dunn, A. Khuwaileh, C. Wang, H. S. Abdel-Khalik, ”Advancing Inverse Sensitivity/Uncertainty Methods for Nuclear Fuel Cycle Applications”, *Nuclear Data Sheets Journal 123*, p51-56 (Jan. 2015)

Jessee, M. A., W. A. Wieselquist, T. M. Evans, S. P. Hamilton, J. J. Jarrell, K. S. Kim, J. P. Lefebvre, R. A. Lefebvre, U. Mertyurek, A. B. Thompson, M. L. Williams, “POLARIS: A New Two-Dimensional Lattice Physics Analysis Capability for the SCALE Code System”, to be published in *Proceedings of 2014 PHYSOR Conference*, Kyoto, Japan, (Sept. 2014)

Rearden, B. T., R. A. Lefebvre, J. P. Lefebvre, K. T. Clarno, M. L. Williams, L.M. Petrie, U. Mertyurek, “Modernization Enhancements in SCALE 6.2”, to be published in *Proceedings of 2014 PHYSOR Conference*, Kyoto, Japan, (Sept. 2014)

Choi, S., D. Lee, M. L. Williams, “Verification Of Doubly-Heterogeneous Self-Shielding Method Based On Equivalence Theory”, *Proceedings of 2014 PHYSOR Conference*, Kyoto, Japan, (Sept. 2014)

Peplow, D. E., G. Radulescu, M. L. Williams, R. A. Lefebvre, “SCALE Enhancements for Detailed Cask Dose Rate Analysis”, to be presented at 18th Topical Meeting of the Radiation Protection & Shielding Division of ANS, Knoxville, TN (Sept. 2014)

Radulescu, G, D. E. Peplow, M. L. Williams, J. M. Scaglione, “Dose Rate Analysis of As-Loaded Spent Nuclear Fuel Casks”, to be presented at 18th Topical Meeting of the Radiation Protection & Shielding Division of ANS, Knoxville, TN (Sept. 2014)

Radulescu, G., R. A. Lefebvre, D. E. Peplow, M. L. Williams, J. M. Scaglione, “Dose Rate Analysis Capability for Actual Spent Fuel Transportation Cask Contents”, *Institute of Nuclear Materials Management (INMM) - 55th Annual Meeting*, Atlanta GA. (July 2014)

Williams, M. L., G. Ilas, W. J. Marshall, B. T. Rearden, “Applications of Nuclear Data Covariances in Criticality Safety and Spent Fuel Characterization”, *Nuclear Data Sheets Journal 118*, p. 341-345, (January, 2014)

G. Arbanas, L. C. Leal, G. I. Fann, M. L. Williams, M. E. Dunn, “Covariance Matrix of Thermal Neutron Scattering Kernel”, *International Workshop on Nuclear Data Covariance 2014*, Santa Fe N.M., April 28-May 1, 2014

G. Arbanas, M. E. Dunn, M. L. Williams, “Inverse Sensitivity/Uncertainty Methods

Development for Nuclear Fuel Cycle Applications”, *Nuclear Data Sheets Journal* 118 , (January, 2014)

Jessee, M. A., W. A. Wieselquist, M. L. Williams K. S. Kim, “VERA Benchmark Calculations Using the SCALE-Polaris Lattice Physics Code,” *Tran. Am. Nucl. Soc.* 109, Washington ,D.C., November 2013

B. T. Rearden, M. E. Dunn, D. Wiarda, C. Celik, K. Bekar, M. L. Williams, D. E. Peplow, C. M. Perfetti, J. P. Lefebvre, F. Havluj, K. J. Dugan, ,”SCALE and AMPX Advancements to Support NCS Applications,” *Tran. Am. Nucl. Soc.* 109, Washington, D.C., November 2013

Liu, Yuxuan, W. M. Martin, M. L. Williams, K. S. Kim, “Modeling Spatial Dependence of Resonance Self-Shielding Effects Including Resonance Interference and Temperature Distribution,” *Tran. Am. Nucl. Soc.* 109, Washington ,D.C., November 2013

Khuwaileh, B. A., G. Arbanas, M. L. Williams, L. C. Leal, M. E. Dunn, H. S. Abdel-Khalik, “The Effect of Implicit Self-Shielding on the Inverse Sensitivity/Uncertainty Method for Thermal Reactors,” *Tran. Am. Nucl. Soc.* 109, Washington, D.C., November 2013

Arbanas, G., B. A. Khuwaileh, M. L. Williams, L. C. Leal, M. E. Dunn, H. S. Abdel-Khalik,” Integral Benchmark Experiments in the Inverse Sensitivity/Uncertainty Computations,” *Tran. Am. Nucl. Soc.* 109, Washington , D.C., November 2013

Williams, M. L., F. Havluj, D. Wiarda, M. Pigni, I. Gauld, “Scale Uncertainty Quantification Methodology For Criticality Safety Analysis Of Used Nuclear Fuel,” proceedings of *ANS Nuclear Criticality Safety Conference 2013*, Wilmington, NC, Sept. 29-Oct 3, 2013

Williams, M. L., G. Ilas, M. A. Jessee, B. T. Rearden, D. Wiarda, W. Zwermann, L. Gallner, M. Klein, B. Krzykacz-Hausmann, A. Pautz, “A Statistical Sampling Method For Uncertainty Analysis With SCALE And XSUSA,” *Nuclear Technology*183,3, p515-527 (Sept. 2013)

Williams, M. L., G. Ilas, W. J. Marshall, B. T. Rearden, “Applications of Nuclear Data Covariances to Criticality for Safety and Spent Fuel Characterization,” *International Conference on Nuclear Data for Science and Technology*, New York, NY, March 4-8, 2013

Arbanas, G., M. E. Dunn, M. L. Williams, “Inverse Sensitivity/Uncertainty Methods Development for Nuclear Fuel Cycle Applications,” *International Conference on Nuclear Data for Science and Technology*, New York, NY, March 4-8, 2013; also in press for publication in *Nuclear Data Sheets Journal*

Liu, Y, B. Collins, B. Kochunas, W. Martin, K. S. Kim and M. L. Williams, “Resonance Self-Shielding Methodology in Impact,” to be presented at the *International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering (M&C 2013)*, Sun Valley, Idaho, USA, May 5-9, 2013.

Liu, Y., W. Martin, K. S. Kim and M. L. Williams, "Modeling Resonance Interference by 0-D Slowing-Down Solution with Embedded Self-Shielding Method," to be presented at the *International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering (M&C 2013)*, Sun Valley, Idaho, USA, May 5-9, 2013.

Kim, K.S., M. L. Williams, "Preliminary Assessment of Resonance Interference Consideration by Using 0-D Slowing Down Calculation in the Embedded Self-Shielding Method", *Tran. Am. Nucl. Soc. 107*, San Diego, CA, November 2012

Williams, M. L., K. S. Kim, "The Embedded Self-Shielding Method," *PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education* Knoxville, Tennessee, USA, April 15-20, 2012

Williams, M. L., D. Wiarda, H. Smith, M. A. Jessee, B. T. Rearden, W. Zwermann, M. Klein, A. Pautz, "Development Of A Statistical Sampling Method For Uncertainty Analysis With Scale," *PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education* Knoxville, Tennessee, USA, April 15-20, 2012

Kim, K.S., M. L. Williams, "The Method Of Characteristics For 2-D Multigroup And Pointwise Transport Calculations In Centrm," *PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education* Knoxville, Tennessee, USA, April 15-20, 2012

Perfetti, C., W. Martin, B. T. Rearden, and M. L. Williams, "Development of Continuous-Energy Eigenvalue Sensitivity Coefficient Calculation Methods in the Shift Monte Carlo Code," *PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education* Knoxville, Tennessee, USA, April 15-20, 2012

Perfetti, C., W. Martin, B. T. Rearden, and M. L. Williams, "Determining Importance Weighting Functions For Contribution Theory Eigenvalue Sensitivity Coefficient Methodologies," *PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education* Knoxville, Tennessee, USA, April 15-20, 2012

Williams, M. L., B. T. Rearden, "Self-Shielding Effects for Uncertainty Analysis," *Tran. Am. Nucl. Soc. 104*, Hollywood, FLA D.C., June 26-30, 2011.

Zwermann, W., L. Gallner, M. Klein, B. Krzykacz-Hausmann, and A. Pautz, D. Wiarda, M. L. Williams, M. A. Jessee, and B. T. Rearden, "Nuclear Data Uncertainty Analysis For A Fuel Assembly Criticality Benchmark", *International Conference on Nuclear Criticality Safety*, Edinburgh, Scotland, Sept. 19-22, 2011.

Williams, M. L., "Resonance Self-Shielding Methodologies in SCALE," *Nuclear Technology* 174, pp149-168 (May 2011)

Rearden, B. T., M. L. Williams, M. A. Jessee, D. E. Mueller, D. A. Wiarda. "Sensitivity and

Uncertainty Analysis Capabilities in SCALE,” *Nuclear Technology* 174, pp 236-288 (May 2011)

Gauld, I. C., G. Radulescu, G. Ilas, B. D. Murphy, M. L. Williams, D. Wiarda, “Isotopic Depletion and Decay Methods and Analysis Capabilities in SCALE,” *Nuclear Technology* 174, pp 169-195 (May 2011)

Arbanas, G., M. E. Dunn, N. M. Larson, M. L. Williams, B. Becker, R. Dagan, “Computation of Temperature-Dependent Legendre Moments of a Double Differential Elastic Cross Section,” *Proceedings of International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, Rio de Janeiro, Brazil, May 8-12, 2011

DeHart, M. D. and M. L. Williams, “High Performance Technical Computing In Scale 6.1 and Beyond,” *PHYSOR 2010, Advances in Reactor Physics to Power the Nuclear Renaissance*, Pittsburgh, May 9-14, 2010.

DeHart, M. D., M. L. Williams, S. M. Bowman “Parallel Computing In SCALE,” *PHYSOR 2010, Advances in Reactor Physics to Power the Nuclear Renaissance*, Pittsburgh, May 9-14, 2010.

Rearden, B. T. L.M. Petrie, and M. L. Williams, “SCALE Sensitivity Calculations Using Contribution Theory” *Joint International Conference on Supercomputing in Nuclear Applications and Monte Carlo*, Tokyo, Japan, October 2010.

Rearden, B. T. C. Perfetti, M. L. Williams, and L.M. Petrie, “Advances in Sensitivity Analysis Capabilities with SCALE 6.0 and 6.1,” *Joint International Conference on Supercomputing in Nuclear Applications and Monte Carlo*, Tokyo, Japan, October 2010.

Jessee, M. A., M. L. Williams and M. D. DeHart 2009. "Development of Generalized Perturbation Theory Capability within the SCALE Code Package," *Proceedings of Advances in Mathematics, Computational Methods, and Reactor Physics, ANS M&C Conference, Saratoga Springs, NY., May 2009*.

Williams, M. L. and G. Ilas 2009. "ENDF/B-VII Nuclear Data Libraries for SCALE-6," *Proceedings of Advances in Fuel Management Conference, Hilton Head, S.C., April 2009*.

Williams, M. L., B. T. Rearden, “Sensitivity/Uncertainty Analysis Capabilities and New Covariance Data Libraries in SCALE,” *Nuclear Data Sheets 109: Issue 12, 2796-2800, December 2008*.

Williams, M. L., J. C. Gehin and W. S. Yang 2008. “Combining MC²-2 and SCALE Cross Section Methods to Process Nuclear Data for GNEP,” *PHYSOR 2008 Conference Proceedings, Interlaken, Switzerland, Sept. 14-19, 2008*.

Little, R. C., T. Kawano, G.D. Hale, M.T. Pigni, M. Herman, P. Obložinský, M.L. Williams, M.E. Dunn, G. Arbanas, D. Wiarda, R.D. McKnight, J.N. McKamy and J.R. Felty 2008. “The Nuclear Criticality Program ‘Low-Fidelity’ Covariance Project,” *Nuclear Data Sheets 109: Issue 12, 2828-2833, December 2008*.

Williams, M. L., B. L. Broadhead, M. E. Dunn and B. T. Rearden 2007. "Approximate Techniques for Representing Nuclear Data Uncertainties," *Eighth International Topical Meeting on Nuclear Applications and Utilization of Accelerators (AccApp'07)*, Pocatello, ID, July 30-Aug. 2, 2007.

Rearden, B. T. and Mark L. Williams 2007, "Eigenvalue Contribution Estimator for Sensitivity Calculations with TSUNAMI-3D," *Proceedings of the 8th International Conference on Nuclear Criticality Safety (ICNC 2007)*, Vol. I, 408–412, St. Petersburg, Russia, May 28–June 1, 2007.

Williams, M. L., S. B. Bowman and C. V. Parks 2007. "Plans for Future SCALE Development Beyond Version 6.0," *Tran. Am. Nucl. Soc.* 97, Washington, D.C., November 2007.

Williams, M. L. 2007. "Sensitivity and Uncertainty Analysis for Eigenvalue-Difference Responses," *Nucl. Sci. & Engr.* 155, pp. 18-36, 2007.

Williams, M. L. and S. Goluoglu 2007. "Sensitivity Analysis for Coupled Neutron-Gamma Calculations," *Tran. Am. Nucl. Soc.* 94, Boston, MA, June 2007.

Rearden, B. T. and M. L. Williams 2007. "Overview of the SCALE TSUNAMI Sensitivity and Uncertainty Analysis Tools," *Tran. Am. Nucl. Soc.* 94, Boston, MA, June 2007.

DeHart, M. D., I. C. Gauld, and M. L. Williams 2007. "High-Fidelity Lattice Physics Capabilities of the SCALE Code System Using TRITON," *Proc. of Joint International Topical Meeting on Mathematics & Computation and Supercomputing in Nuclear Applications (M&C + SNA2007)*, April 15–19, 2007.

Zong, Z., Thomas J. Downar, Yunlin Xu, Mark L. Williams and Mark D. DeHart 2006. "Continuous-Energy Multidimensional S_N Transport for Problem-Dependent Resonance Self-Shielding Calculations," *Nucl. Sci. & Engr.* 154, pp. 190-201, 2006.

Williams, M. L., J. C. Gehin and K. T. Clarno 2006. "Sensitivity Analysis of Reactivity Responses Using One-Dimensional Discrete Ordinates and Three-Dimensional Monte Carlo Methods," *PHYSOR 2006 Topical Reactor Physics Meeting on Advances in Nuclear Analysis and Simulation*, Vancouver, Canada, September 2006.

Zong, Z., T. J. Downar, M. D. DeHart and M. L. Williams 2006. "Parallelization in SCALE Continuous-Energy Resonance Module GEMINEWTRN and Transport Module NEWT," *PHYSOR 2006 Topical Reactor Physics Meeting on Advances in Nuclear Analysis and Simulation*, Vancouver, Canada, September 2006.

Clarno, K., M. L. Williams, J. C. Gehin, C. A. Cotton, D. Lee and T. J. Downar 2005. "Code-to-Code Benchmark of Coolant Void Reactivity (CVR) in the ACR-700 Reactor," *Tran. Am. Nucl. Soc.* 92, Washington, D.C., November 2005.

Goluoglu, S. and M. L. Williams 2005. "Modeling Doubly Heterogeneous Systems in SCALE," *Tran. Am. Nucl. Soc.* 92, Washington, D.C., November 2005.

Williams, M. L., S. Goluoglu and L.M. Petrie 2005. "Recent Enhancements to the SCALE-5 Resonance Self-Shielding Methodology," *Tran. Am. Nucl. Soc.* 92, San Diego, CA, June 2005.

Zhong, Z., T. J. Downar, M. D. Dehart and M. L. Williams 2005. "Continuous Energy Multidimensional SN Transport for Problem-Dependent Resonance Self-Shielding Calculations," *Tran. Am. Nucl. Soc.* 92, San Diego, CA, June 2005.

Rearden, B.T., M. L. Williams and J. E. Horwedel 2005. "Advances in TSUNAMI Sensitivity and Uncertainty Analysis Codes Beyond SCALE-5," *Tran. Am. Nucl. Soc.* 92, San Diego, CA, June 2005.

Broadhead, B. L., M. L. Williams and J. J. Wagschal 2005. "Generalized Linear Least-Squares, Revisited," *Twelfth International Symposium on Reactor Dosimetry, Gatlinburg, TN, May 8-13, 2005*.

Sajo, E. and M. L. Williams 2004. "Post-Implant Prostate Dosimetry without Seed Localization," *Medical Physics*, Vol. 31(6), pp. 1747, 2004.

Williams, M. L., D. Ilas, E. Sajo, D. B. Jones and K. E. Watkins 2004. "Deterministic Photon Transport Calculations in General 3D Geometry for External Beam Radiation Therapy," *Medical Physics* Vol. 30, 12, pp. 3183-3195, 2004.

Williams, M. L. and E. Sajo 2002. "Deterministic Calculations of Photon Spectra for Clinical Accelerator Targets," *Medical Physics* Vol. 29 (6), pp. 1019-1028, 2002.

Williams, M. L., B. L. Broadhead and C. V. Parks 2001. "Eigenvalue Sensitivity Theory for Resonance Shielded Cross Sections," *Nucl. Sci. & Engr.* 138, pp. 177-191, 2001.

Williams, M. L. 2000. "Submoment Expansion of Neutron Scattering Sources," *Nucl. Sci. & Engr.* 134, pp. 1-9, 2000.

Pratt, C. G. and M. L. Williams 2000. "Application and Sensitivity Studies Utilizing Alternate Source Term Dose Methodology," *Tran. Am. Nucl. Soc.* 83, Washington, D.C., Nov. 2000.

Asgari, M., B., Burdick, R. G., Grummer, S. Misa and M. L. Williams 2000. "Performance of Jeff2.2, ENDF-B/VI, and ENDF-B/V Nuclear Data in LWR Lattice Eigenvalue Calculations," *Trans. Am. Nucl. Soc.* 83, Washington, D.C., Nov. 2000.

Williams, M. L., D. B. Jones and K. Watkins 1999. "Trends in Deterministic Transport Code Development," *Trans. Am. Nucl. Soc.*, Boston, MA, 1999.

Williams, M. L. and M. Asgari 1998. "The Sub-Moment Expansion Method for Representing Elastic Scattering Sources," *Trans. Am. Nucl. Soc.*, Nashville, TN, (1998).

Williams, M. L. and R. Raharjo 1997. "Space-Dependant Resonance Self-Shielding," *Nucl. Sci. & Engr.* 126, pp. 19-34 (1997).

Sajo, E., M. L. Williams and M. Asgari 1996. "Pressure Vessel Spectrum Analysis of the Czech LRO/VVER-440 Benchmark Experiment," *1996 ANS Topical Meeting on Radiation Protection and Shielding*, No. Falmouth, MA, pp. 181-188, April 21-25, 1996.

Williams, M. L. and M. Asgari 1995. "Computation of Continuous-Energy Neutron Spectra with Discrete Ordinates Transport Theory," *Nucl. Sci. & Engr. 121*, pp. 173-201, 1995.

Williams, M. L., R. Q. Wright and M. Asgari 1995. "ENDF/B-VI Performance for Thermal Reactor Analysis," *Trans. Am. Nucl. Soc. 73*, San Francisco, CA, pp. 420-422, 1995.

Williams, M. L., M. Asgari and R. Tashakorri 1994. "Discrete Ordinates Transport Calculations with Pointwise Cross Section Data," *Advances in Reactor Physics*, Knoxville, TN, pp. 209-218, April 11-15, 1994.

Grow, R. L., M. L. Williams, D. B. Jones, J. R. Fisher, S. P. Baker and E. L. Fuller 1994. "CPM-3, Improved Lattice Physics Code," *Advances in Reactor Physics*, Knoxville, TN, pp. 209-218, April 11-15, 1994.

Sajo, E., M. L. Williams and M. Asgari 1993. "Comparison of Measured and Calculated Neutron Transmission through Steel for a Cf-252 Source," *Annals of Nucl. Energy 20*, pp. 585-604 1993.

Courtney, J. C., H. Manohara, and M. L. Williams 1992. "Estimates of the Radiation Environment for a Nuclear Rocket Engine," *Nuclear Technologies for Space Exploration*, Jackson Hole, WY, 1992.

Williams, M. L. and H. Manohara 1992. "Contributon Slowing Down Theory," *Nucl. Sci. & Engr. 111*, pp. 345-367, 1992.

Williams, M. L., C. Aboughantous, M. Asgari, J. E. White, R. Q. Wright and F. B. K. Kam 1991. "Transport Calculations of Neutron Transmission Through Steel," *Annals of Nucl. Energy 18*, pp. 549-565, 1991.

Williams, M. L. 1991. "Generalized Contributon Response Theory," *Nucl. Sci. & Engr. 108*, pp. 355-383, 1991.

Williams, M. L. 1991. "Reactivity Due to Deformation of a Thin Plate in a Critical Reactor," *Nucl. Sci. & Engr. 108*, pp. 150-171, 1991.

Williams, M. L., R. E. Macfarlane, M. Milgram, R. Q. Wright and A. C. Kahler 1991. "Initial Data Testing of ENDF/B-VI for Thermal Reactor Benchmark Analysis," *Trans. Am. Nucl. Soc. 64*, San Francisco, CA, pp. 561-562, 1991.

Maerker, R. E. and M. L. Williams 1991. "Improvements in Calculational Techniques for Pressure Vessel Dosimetry," *Trans. Am. Nucl. Soc. 64*, San Francisco, CA, pp. 489-490, 1991.

Yucel, A. and M. L. Williams 1990. "Perturbation Theory in Radiative Heat Transfer," *Integral*

Methods in Science and Engineering, Arlington, TX, May 1990.

Yucel, A., S. Acharaya and M. L. Williams 1989. "Natural Convection and Radiation in a Square Enclosure," *Numerical Heat Transfer, Vol. 15, No. 2, pp. 261-277, 1989.*

Wright, R. Q., M. L. Williams and C. O. Slater 1989. "Impact of U-235 Evaluation on k_{eff} of Thermal Reactor Systems," *Trans. Am. Nucl. Soc. 60, Atlanta, GA, pp. 619-620, June 1989.*

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Yucel, A. and M. L. Williams 1988. "Interaction of Conduction and Radiation in Cylindrical Geometry Without Azimuthal Symmetry," *25th Nat. Heat Transfer Conf., Houston, TX, pp. 281-290, 1988.*

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