

Georgeta Radulescu, Ph.D.

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Education

- Ph.D. in Nuclear Engineering, 2003, The University of Texas at Austin
(Dissertation title: *Automated Variance Reduction for Monte Carlo Shielding Analyses with MCNP*).
- M.S. in Nuclear Engineering, 1997, The University of Texas at Austin
(Thesis title: *MCNP Criticality Benchmarks for Mixed Oxide Lattices of the Saxton Plutonium Program*)
- M.S. in Engineering Physics, 1986, University of Bucharest, Romania

Experience

08/2005-present

Oak Ridge National Laboratory – Nuclear Science and Technology Division – Radiation Transport and Criticality Group
Research and Development Staff

- Code manager and developer of STARBUCS, a SCALE control module for automated criticality safety analyses using burnup credit. Developed an automated computational sequence that performs iterative calculations for burnup loading curve analyses of commercial spent fuels.
- Performing depletion and criticality calculation method validations in support of licensing activities for the proposed geologic repository at Yucca Mountain, Nevada. Developed a calculation report that documents validation of the computational method used to perform postclosure criticality calculations. Performed MCNP and KENO V.a modeling and calculations for various critical experiments and applied sensitivity and uncertainty analysis techniques to determine applicability of a critical experiment to the validation of the burnup credit criticality calculation method.
- Providing support for the NRC Office of Nuclear Regulatory Research programs related to burnup credit. Evaluated the applicability of commercial reactor criticals to validation of burnup credit criticality safety calculations using sensitivity and uncertainty analysis techniques.

02/2001-08/2005

Bechtel SAIC Company, LLC – Yucca Mountain Project
Senior Engineer

- Performed dose rate calculations to determine shielding requirements for preliminary designs of surface facilities at the proposed geologic repository, including Fuel Handling Facility, Dry Transfer Facility, Remediation Facility, and Canister Handling Facility.
- Evaluated dose rates at distant locations from spent nuclear fuel aging areas.
- Performed aging pad configuration optimization studies to minimize dose rates to workers and members of the public.

- Performed optimization studies of waste emplacement turnout-drift geometry to minimize dose rates in continuous occupational access areas.
- Performed calculations to characterize dose rates in subsurface openings.
- Developed source terms for low level waste that would result from repository operations.
- Performed dose consequence calculations for Category 1 and 2 event sequences.

07/1998-02/2001

Framatome Cogema Fuels – Yucca Mountain Project
Engineer

- Performed detailed dose rate evaluations for waste packages containing commercial and DOE-owned spent nuclear fuels.
- Determined radiolytic species resulting from an in-package criticality.
- Generated radiation source terms for pressurized water reactor spent fuel.

07/1998-05/2003

The University of Texas at Austin - Department of Mechanical Engineering
Ph.D. Candidate

Developed a method for generating energy- and spatial-biasing parameters for Monte Carlo shielding calculations with MCNP using adjoint fluxes from three one-dimensional discrete ordinates adjoint calculations.

09/1995-06/1998

The University of Texas at Austin - Department of Mechanical Engineering
Graduate Research/Teaching Assistant

Performed criticality benchmark evaluations for Saxton Plutonium Critical Experiments in support of the joint U.S./Russia project Neutronics Benchmarks for the Utilization of Mixed-Oxide Fuel.

08/1986-08/1995

Institute for Nuclear Research, Pitesti, Romania - TRIGA Reactor Division
Research Scientist

- Performed source term calculations for TRIGA and CANDU spent nuclear fuels.
- Performed shielding design calculations for a transport cask loaded with 14-MW TRIGA spent nuclear fuel.
- Determined radiation dose rates for an industrial gamma irradiator.
- Designed a gamma calorimeter for reactor and gamma irradiation facilities and performed gamma heat distribution measurements.
- Participated in reactor neutron activation analyses, fuel burnup measurements, and criticality calculations.

Skills

Extensive experience with MCNP and the SCALE code system. Completed MCNP and SCALE ORIGEN-ARP/TRITON, KENO V.a, and TSUNAMI training courses. Proficient in FORTRAN 95 programming.

Publications

Journal Articles, Full-Length Topical Papers, and Conference Summaries

G. Radulescu, D.E. Mueller, and J.C. Wagner, "Evaluation of Applicability of CRC Models for Burnup Credit Validation," *Trans. Am. Nucl. Soc.*, **97**, 151 (2007).

G. Radulescu and S. Su, "Dose Rate Evaluation for Spent Fuel Aging Areas at Yucca Mountain," *Trans. Am. Nucl. Soc.*, **92**, 29 (2005).

G. Radulescu and J.S. Tang, "Shielding Evaluations of Waste Package Designs," *Proc. of the 12th Biennial RPSD Topical Meeting*, Santa Fe, NM, April 14-18, 2002.

J.S. Tang and G. Radulescu, "Radiolytic Production of Nitric Acid Outside a 21-PWR Waste Package," *Proc. of the 12th Biennial RPSD Topical Meeting*, Santa Fe, NM, April 14-18, 2002.

G. Radulescu, J.S. Tang, and T.W. Doering, "Evaluation of the Effect of Source Geometry Models on Dose Rates of Waste Packages." *J. Nucl. Sci. Tech.*, Supplement 1, 320-323 (2000) (9th International Conference on Radiation Shielding, Tsukuba, Japan, 17-22 Oct. 1999).

N.M. Abdurrahman, G. Radulescu, and I. Carron, "Benchmark Calculations for Critical Experiments of the Saxton Plutonium Program," *Nucl. Tech.*, **127**, 315-331 (1999).

G. Radulescu and N.M. Abdurrahman, "Benchmark Calculations for Relative Power Experiments of the Saxton Plutonium Critical Experiments," *Trans. Am. Nucl. Soc.*, **78**, 250 (1998).

N.M. Abdurrahman, M. Yavuz, and G. Radulescu, "MCNP Analysis of PNL Split-Table Critical Experiments Containing Mixed-Oxide Fuels," *Trans. Am. Nucl. Soc.*, **77**, 213 (1997).

G. Radulescu and N.M. Abdurrahman, "MCNP Criticality Calculations of the Saxton Plutonium Program Experiments," *Trans. Am. Nucl. Soc.*, **76**, 231 (1997).

Technical Reports

G. Radulescu, D.E. Mueller, and J.C. Wagner, [*Sensitivity and Uncertainty Analysis of Commercial Reactor Criticals for Burnup Credit*](#), NUREG/CR-6951 (ORNL/TM-2006/87), U.S. Nuclear Regulatory Commission, Oak Ridge National Laboratory, 2007.

[*Direct Radiation Dose Consequence Calculation for Category 1 and 2 Event Sequences*](#). 000-00C-WHS0-00600-000-00A. Las Vegas, Nevada: Bechtel SAIC Company, 2005.

[*Dose Rate Calculation for the Exhaust Main in Emplacement Panel 1*](#). 800-00C-SS00-00300-000-00A. Las Vegas, Nevada: Bechtel SAIC Company, 2005.

[*Dose Rate Calculation for an Optimized Turnout Drift Configuration*](#). 800-00C-SS00-00200-000-00A. Las Vegas, Nevada: Bechtel SAIC Company, 2005.

[*Shielding Calculation for Dry Transfer Facility, Remediation Facility, and Canister Handling Facility*](#). 100-00C-WHS0-00200-000-00B. Las Vegas, Nevada: Bechtel SAIC Company, 2004.

[*Dose Rate Evaluations for Spent Nuclear Fuel Aging Areas*](#). 170-00C-HAP0-00400-000-00A. Las Vegas, Nevada: Bechtel SAIC Company, 2004.

[Shielding Evaluation for Spent Nuclear Fuel Aging Areas.](#) 170-00C-HAP0-00200-000-00A.
Las Vegas, Nevada: Bechtel SAIC Company, 2004.

[Shielding Design Calculations for Dry Facility #1.](#) 110-00C-CS10-00200-000-00A.
Las Vegas, Nevada: Bechtel SAIC Company, 2003.

[Dose Rate Calculation for Emplacement Drift Turnout Configurations.](#)
800-00C-WIS0-00200-000-00A. Las Vegas, Nevada: Bechtel SAIC Company, 2003.

G. Radulescu, *Evaluation of the Relative Power Experiments for the Saxton Partial Plutonium Core*, ORNL/SUB/99-XSZ175V-4, Oak Ridge National Laboratory, 2001.

N.M. Abdurrahman, I. Carron, and G. Radulescu, *Neutronics Benchmarks for the Utilization of Mixed-Oxide Fuel: Saxton Critical Experiments*, ORNL/SUB/00-XSZ175V-2, Oak Ridge National Laboratory, 2000.