

CURRICULUM VITAE

KANG SEOG KIM, Ph.D.

Distinguished R&D Staff
Nuclear Transmutation and Decay Physics Group
Nuclear Energy and Fuel Cycle Division
Oak Ridge National Laboratory
P.O. Box 2008 MS6172, Oak Ridge, TN 37831-6172
Tel: 865-576-5052(Office), 865-789-8804(Mobile)
E-mail: kimk1@ornl.gov (work), kimks0687@gmail.com (personal)
<https://www.ornl.gov/staff-profile/kang-seog-kim>
<https://www.linkedin.com/in/kang-seog-kim-73b72195/>

EDUCATION

09/1996–05/2000 Ph.D. in Nuclear Engineering, Oregon State University, Corvallis, OR, USA
03/1984–02/1986 M.S. in Physics, Yonsei University, Seoul, South Korea
03/1980–02/1984 B.S. in Physics, Yonsei University, Seoul, South Korea

PROFESSIONAL EXPERIENCE

07/2011–present Oak Ridge National Laboratory: Distinguished R&D Staff (2023), Senior R&D Staff (2011)
00/2018–present Journal of Nuclear Engineering: Editorial Board Member
06/1989–06/2011 Korea Atomic Energy Research Institute: Principal Researcher (2003), Senior Researcher (1992), Researcher (1989)
03/2010–12/2010 Kyunghee University: Adjunct Lecturer for Department of Nuclear Engineering
06/2009–12/2009 Oak Ridge National Laboratory: Research Consultant
06/2008–05/2009 Oak Ridge National Laboratory: Visiting Researcher
01/1997–05/2000 Oregon State University: Teaching and Research Assistant
04/1994–03/1995 ABB-CE: Visiting Researcher

PROFESSIONAL ACHIEVEMENTS

07/11–present Oak Ridge National Laboratory :: Development of Modeling & Simulation Code Packages for Advanced Reactors and Light Water Reactor Reactors

- Development of XSPROC-API for high performance computing (NRC, on going)
- Development of fast reactor simulator (NRC, on going)
- Development of efficient case matrix for cross section functionalization (NRC, on going)
- Enhancement of the Polaris-GenPMAXS-PARCS procedure for reflector cross section, micro depletion capability and cross section functionalization (NRC, on going)
- Development of the ENDF/B-VII.1 and VIII.0 AMPX 61- and 258-group libraries for SCALE-7.0 (NRC)
- SCALE/Polaris-PARCS validation for reactor physics (NRC)
- Development of an on-the-fly energy group collapsing for the SCALE-7.0 Polaris (NRC)
- Assessment of the ENDF/B-VIII.0 and VIII.1 candidate nuclear data for depletion

- Assessment of various evaluated nuclear data (ENDF/B-VII.1, JEFF-3.1 and 3.3, JENDL-3.3 and 4.0) for Pu-239 for the LWR fuel depletion (NEAMS)
- Development of the ENDF/B-VII.1 MPACT 60-group(n)/19-group(p) library (NEAMS)
- Development of the two-term functionalization of subgroup data and method (NEAMS)
- Cell Dancoff based subgroup capability for the VERA MPACT (NEAMS)
- Neutron-Gamma coupled MPACT library and gamma transport for MPACT (NEAMS)
- Cell Dancoff based (SD) ESSM for the SCALE-6.3 Polaris (NRC)
- Improvement of XSPROC for double-heterogeneous fuels with graphite moderator (NRC)
- Improvement of XSPROC-BONAMI for multiple fuel rings with non-uniform temperature distribution (NRC)
- Evaluation of capture kappas for the ENDF/B-VII.1 nuclides (CASL)
- Development of the ENDF/B-VII.1 MPACT 69-group library for the Magnox reactor analysis (NNSA)
- Development of the perturbed MPACT MG libraries and a method to perturb subgroup data (CASL)
- Improvement of the CASL VERA MPACT for advanced reactor analysis (Molten-salt reactors, Magnox, BWR, Yellowstone energy reactor)
- Leading the SCALE-XSPROC maintenance and improvement for multigroup cross section processing for transport calculation (NRC)
- Development of the AMPX 1597-group library for advanced reactor (Sodium cooled fast reactors, fast and thermal Molten salt reactors) analysis and its verification and validation (NRC)
- Development of the spatially dependent Embedded Self-Shielding method
- Improvement of the SCALE code package for various advanced reactor (PWR, BWR, MSR, SFR, HTGR) analysis (NRC)
- Improvement of the SCALE cross section processing procedure for fast reactor analysis (NRC)
- Leading the improvement of methodologies, accuracy and performance for the CASL neutronics simulator MPACT :: Cross section library, resonance self-shielding methods, burnup and neutron/gamma transport/diffusion solver
- Development of multi-group cross section library for the CASL neutronics simulator MPACT :: 51-, 47- and 8-group MPACT libraries, and simplified burnup chain with 255 nuclides
- Development of a 2-step reactor physics analysis procedure for liquid salt-cooled Advanced High Temperature Reactor
- Development of MOC based resonance self-shielding methodology and eigenvalue calculation modules for doubly heterogeneous particulate TRISO fuels for the SCALE code package
- Improvement of an accuracy of the SCALE6.2 multi-group procedure by using SCALE-CENTRM/NEWT(or KENO) :: Group structure optimization, 2D MOC slowing down capability with high order scattering, and new weighting function
- Development of a new procedure and programs to generate resonance data (Intermediate resonance parameter, Bondarenko F-factors, subgroup data) in AMPX :: LAMBDA, IRFFACTOR and SUBGR
- Development of a resonance treatment methodology called Embedded Self-Shielding Method (ESSM) based on intermediate resonance approximation
- Development of a new resonance self-shielding method with ESSM coupled with 0-D pointwise slowing down calculation for explicit resonance interference
- Development of a new transport lattice code SCALE-POLARIS :: ESSM Resonance self-shielding and MOC

- Development of an automatic program CGOP to optimize coarse energy group structure
- Feasibility study on the applicability of the SCALE code package to the PWR small modular reactors
- Uncertainty analysis for the PWR spent fuels in the storage pool by utilizing a random sampling method
- Enhancement of the computational efficiency and convergence stability of SCALE6.2-NEWT (>5 times speedup)
- Enhancement of the computational efficiency of Denovo-MOC (>4 times speedup)
- Assessment and testing of the ANL NEAMS neutronics code package PROTEUS
- Development of a new unresolved resonance treatment method for the SCALE code package

06/89-06/11

Korea Atomic Energy Research Institute :: Development of Korean Small Modular Reactors and Modeling & Simulation Code Packages for Advanced Reactors and Light Water Reactors

- Reactor physics analysis and design for the Korean PWRs (Westinghouse and ABB-CE type reactors)
 - Initial and reload cycle nuclear design
 - Incore fuel management: Long term fuel cycle, fuel and burnable poison optimization, low leakage loading pattern
 - Safety analysis
 - Uncertainty analysis for key nuclear parameters
- Development and licensing of the Korean small and modular reactor SMART
 - Development of reactor core design procedure
 - Uncertainty analysis for key nuclear parameters
 - Reactor core design and licensing
- Development of a neutron/gamma cross section library processing code system for the transport codes KARMA and DeCART
- Development and licensing of the transport lattice code KARMA for the nuclear design of the operating Korean PWRs
- Development of the whole core transport simulator DeCART for PWR and HTGR (High Temperature Gas Cooled Reactor)
- Development of a Monte Carlo-depletion code package MCDEP
- Analysis of various critical experiments
- Development of a dynamic control rod worth measurement procedure
- Development of 2-step reactor physics analysis code packages for PWR, VHTR and SCWR (Super Critical Water Reactor)
- Development of various reactor physics related methodologies such as neutron and gamma transport, resonance treatment, burnup, criticality spectrum, acceleration schemes and spatial discretizations
- Uncertainty evaluation for various reactor physics code packages for nuclear design of PWR and small modular reactors: reactivity, power distribution, reactivity coefficients, control rod worth
- Conceptual design of a research reactor with plate type fuels
- Analysis of TRISO particle based PWR deep burn core
- Professional experience on various neutronics code packages
 - SIEMENS-KWU: FASER/MULTIMEDIUM/MEDIUM
 - STUDSVIK SCANDPOWER: CASMO, HELIOS
 - ABB-CE: DIT/ROCS
 - KAERI: KARMA/MASTER
 - OTHERS: SCALE, DRAGON, WIMS, MCNP
- Development of a graphical radiation shielding procedure by utilizing the DORT

	code
03/10–12/10	Adjunct Lecturer at Department of Nuclear Engineering, Kyunghee University <ul style="list-style-type: none"> ▪ Advanced numerical methods for reactor physics (Graduate course) ▪ Nuclear fuel cycle (Graduate course)
06/09–12/09	Research Consultant to Oak Ridge National Laboratory <ul style="list-style-type: none"> ▪ Library generation for the transport lattice codes using SCALE and AMPX
06/08–05/09	Visiting Researcher at Oak Ridge National Lab. <ul style="list-style-type: none"> ▪ Development of the unstructured partial and net current CMFD acceleration schemes for SCALE-NEWT ▪ Implementation of B1 criticality spectrum calculation capability on SCALE-NEWT ▪ Development of a multi-group library processing system for the transport code DeCART
04/94–03/95	Visiting Researcher, ABB-CE, Windsor, CT <ul style="list-style-type: none"> ▪ Generation of the DIT cross section library based on ENDF/B-VI ▪ Uncertainty evaluation of the ABB-CE reactor physics code package for the CE-type reactors

LEADING PROJECTS (Selected)

05/24–12/26	“Development of XSPROC application programming interface for high performance computing,” PI (US NRC, 3yr)
10/23–12/24	“Development of efficient case matrix for cross section functionalization,” PI (US NRC, \$0.3M/1yr)
10/23–09/24	“Sensitivity analysis of the SCALE/Polaris-PARCS code package for LWR,” PI (US NRC, \$0.1M/1yr)
10/22–09/23	“Validation of the SCALE/Polaris-PARCS Code Package for Light Water Reactor Analysis,” PI (US NRC, \$0.5M/1yr)
10/21–09/23	“Development of the SCALE-7.0 AMPX Multigroup Cross Section Libraries,” PI (US NRC, \$0.6M/2yr)
02/19–01/20	“Improvement of the SCALE-XSProc Multigroup Cross Section Processing Procedure for High Temperature Gas Cooled Reactor Analysis,” PI (US NRC)
12/18–11/20	“Adaptation of High-Fidelity Multiphysics Core Simulators for Advanced Reactor Applications,” US-ROK I-NERI between ORNL and KAERI with University of Michigan, Seoul National University and ANL, PI since 07/2019 (CASL Leveraging, \$0.9M/3yr)
10/17–09/18	“Development and Improvement of the SCALE Multigroup Procedure for Advanced Reactor Analysis,” PI (US NRC)
09/17–09/18	“Development of Spatially Dependent Embedded Self-Shielding Method” supported by Oak Ridge National Laboratory LDRD, PI (\$30K/2yr)
12/14–12/17	“Capability Enhancement and Validation of High-Fidelity Multi-Physics Reactor Simulators for Water-Cooled Power Reactor Applications,” I-NERI with MIT, University of Michigan, Seoul National University and Ulsan National Institute of Science and Technology, Co-PI, Lead of the Deterministic Core Simulator MPACT, (CASL Leveraging, \$1.2M/3yr)
02/14–02/15	“Development of a New Lattice Physics Methodology for Doubly Heterogeneous Particulate Fuels” supported by Oak Ridge National Laboratory LDRD, PI (\$190K/1yr)
12/13–09/14	“Improvement of the Unresolved Resonance Self-Shielding Method in the SCALE Code System” supported by Oak Ridge National Laboratory LDRD, PI (\$30K/1yr)
04/10–06/11	“Licensing Support and Improvement for Transport Lattice and In-core Management codes” supported by Korea Ministry of Knowledge Economy, PI (\$500K/3yr)
08/04–06/07	“Development of an advanced suite of the reactor physics analysis for the high

08/04–01/05 temperature gas cooled reactor,” I-NERI with Argonne National Lab., PI (\$500K/3yr)
“The Numerical Nuclear Reactor for High-Fidelity Integrated Simulation of Neutronic, Thermal-Hydraulic, and Thermo-Mechanical Phenomena,” I-NERI with Argonne National Lab., PI (\$1.0M/3yr)

RESEARCH INTERESTS

- Modeling and Simulation: multi-physics code & simulation, high performance computing
- Computational transport and diffusion theory: deterministic and Monte Carlo methods, whole core and lattice transport code development, transport acceleration methods, double-heterogeneity treatment, numerical methods, stability analysis
- Computational reactor physics: analysis and design code development for advanced reactors including PWR, BWR, small modular reactor, high-temperature gas-cooled reactor, fast reactor and molten salt reactor, code verification and validation, uncertainty evaluation
- Advanced reactor development: small modular reactor, GEN-IV reactors (Pebble and prismatic high-temperature gas-cooled reactor, Molten Salt reactor, Sodium-cooled fast reactor)
- Nuclear data: cross section processing methods, resonance self-shielding methods, burnup library development, nuclear data evaluation
- In-core fuel management: depletion module development, burnup chain
- Sensitivity and uncertainty quantification
- Nuclear security
- Criticality and radiation shielding: methods and applications

DEVELOPED CODES

- KARMA : 2-Dimensional neutron/gamma transport lattice code for the commercial pressurized water reactors in Korea (1st author)
- KARMA_GRAF : Graphic program for KARMA (1st author)
- LIBERTE : 2-Dimensional transport lattice code with the capability of the general geometry treatment (1st author)
- DeCART : 3-Dimensional whole-core transport code (Co-author)
- MCDEP : Monte Carlo depletion code with a coupling of MCNP and a depletion module (1st author)
- GREDIT : Program to generate multi-group cross sections for the deterministic transport codes (1st author)
- MERIT : Program to generate resonance integral table and intermediate resonance parameters for a transport lattice code (1st author)
- SUBDATA : Program to generate subgroup data (1st author)
- LIBGEN : Program to generate a neutron/gamma library for LIBERTE/KARMA/DeCART (1st author)
- LIBFORM : Programs to convert or to modify the LIBERTE/KARMA/ DeCART library (1st author)
- GEOSHIELD : Program for the automatic particle transport calculation, graphics and output processing using DORT for radiation shielding (1st author)
- RILAMB/SUBGR/DECLIB : Multi-group library generation system by using SCALE and AMPX (1st author)
- SCALE Code Package : Contributed on CENTRM, NEWT and POLARIS, and responsible for SCALE-XSProc
- AMPX Code Package : Contributed on LAMBDA and IRFFACTOR which are based on RILAMB
- VERA/MPACT CASL and NEAMS Neutronics Simulator : Contributed on methodology, accuracy and performance
- CGOP : Program to automatically optimize coarse energy group structure (1st author)
- XSTools Code Package : Programs to generate the CASL VERA-CS cross section libraries (1st author)

author)

- CapKappa : Program to generate recoverable capture energies for neutron flux normalization (1st author)
- LibSampler : Program to generate the perturbed MPACT MG libraries (1st author)

CODE EXPERIENCES

- ENDF/B data processing codes: NJOY, SCALE/AMPX
- Continuous energy Monte Carlo codes: MCNP, Serpent, SCALE/KENO-VI, SCALE/Shift
- Lattice transport codes: CASMO, HELIOS, DRAGON, KARMA (developer), SCALE/Polaris (Co-developer)
- Nodal diffusion codes: PARCS, MASTER, MEDIUM, ROCS
- Cross section functionalization codes: PROLOG, GenPMAXS
- Whole-core deterministic transport codes: DeCART (developer), VERA-MPACT, Proteus
- Thermal hydraulic codes: COBRA, MATRA
- Radiation shielding codes: DORT, TORT
- Uncertainty quantification codes: SCALE/Sampler

PUBLICATION

Google Scholar: <https://scholar.google.com/citations?user=y4cEsQMMAAAJ&hl=ko&oi=ao>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=8580424600>

A. Journals

1. Kang Seog Kim et al., "Application of the Enrichment Zoning Concept for the 17x17 KOFA," Journal of the Korean Nuclear Society, 26, No.3, 337-344 (1994).
2. J. Y. Cho, H. G. Joo, Kang Seog Kim, S. Q. Zee, "Cell Based CMFD Formulation for Acceleration of Whole-core Method of Characteristics Calculation," Journal of the Korean Nuclear Society, 34, No.3, 250-258 (2002).
3. Kang Seog Kim et al., "Monte Carlo Resonance Treatment for the Deterministic Transport Lattice Codes," Journal of the Korean Nuclear Society, 35, No.6, 581-595 (2003).
4. K. Y. Kim, H. Y. Kim, Kang Seog Kim et al., "Shielding Analysis for the Reactor Pressure Vessel of SMART-P," Journal of Nuclear Science and Technology, Supp. 4, 82-85 (2003).
5. K. Y. Kim, H. Y. Kim, B. S. Koo, Kang Seog Kim et al., "Vessel Fluence Evaluation for a Design Improvement of the Flow Mixing Header of SMART-P," Journal of Radiation Protection Bulletin, A Special Issue, 14-16 (2005).
6. David P. Weber, Tanju Sofu, Won Sik Yang, Thomas J. Downar, Justin W. Thomas, Zhaopeng Zhong, Jin Young Cho, Kang Seog Kim, Tae Hyun Chun, Han Gyu Joo, Chang Hyo Kim, "High-Fidelity Light Water Reactor Analysis with the Numerical Nuclear Reactor," Nucl. Sci. Eng., Vol. 155, 395-408 (2007).
7. Kang Seog Kim et al., "Development of a Physics Analysis Procedure for the Prismatic Very High Temperature Gas Cooled Reactors," Ann. Nucl. Energ., 34, 849-860 (2007).
8. Jin-Young Cho, Kang Seog Kim, Chung-Chan Lee, Sung-Quun Zee, Han-Gyu Joo, "Axial SP_N and Radial MOC Coupled Whole Core Transport Calculation," J. Nucl. Sci. Tech., Vol. 44, No. 9 (2007).
9. Kyung-Hoon Lee, Kang Seog Kim, Jin-Young Cho, Jae-Seung Song, Jae-Man Noh, Chung-Chan Lee, "IAEA GT-MHR Benchmark Calculations by using the HELIOS/MASTER Physics Analysis Procedure and the MCNP Monte Carlo Code," Nucl. Eng. Design, 238, 2654-2667 (2008).
10. Jin-Young Cho, Kang Seog Kim et al., "Whole Core Transport Calculation Employing Hexagonal Modular Ray Tracing and CMFD Formulation," J. Nucl. Sci. Tech., 45, 740-751 (2008).

11. Kyo Youn Kim, Kang Seog Kim et al., "Verification for a GEOSHIELD application to the SMART Vessel Fluence by a Monte Carlo Simulation," J. Nucl. Sci. Tech., Supplement 5, 24-27 (2008).
12. Gyuhong Noh, Kang Seog Kim et al., "Ex-Core Detector Response Evaluation of the SMART Reactor by Using the DORT Code," J. Nucl. Sci. Tech., Supplement 5, 78-81 (2008).
13. Gyuhong Noh, Ha Yong Kim, Kang Seog Kim, Kyo Youn Kim, "Radiation Shielding Analysis for the Reactor Assembly of the SMART Reactor," J. Nucl. Sci. Tech., Supplement 5, 82-85 (2008).
14. Jae Man Noh, Kang Seog Kim, Yong Hee Kim, Hyun Chul Lee, "Development of a Computer Code System for the Analysis of Prism and Pebble Type VHTR cores," Ann. Nucl. Energ., 35, 1919-1928, (2008).
15. Ser Gi Hong, Kang Seog Kim, Jae Seung Song, "Fourier convergence analysis of the rebalance methods for discrete ordinates transport equations in eigenvalue problems," Nucl. Sci. Eng., 164, 33-52 (2010).
16. Kang Seog Kim, Ser Gi Hong, "A New Procedure to Generate Resonance Integral Table with an Explicit Resonance Interference for Transport Lattice Codes," Ann. Nucl. Energ., 38, 118-127 (2011).
17. Ser Gi Hong, Kang Seog Kim, "Iterative Resonance Treatment Methods Using Resonance Integral Table in Heterogeneous Transport Lattice Calculations," Ann. Nucl. Energ., 38, 32-43 (2011).
18. Kang Seog Kim, Mark L. DeHart, "Unstructured Partial and Net Current Based Coarse Mesh Finite Difference Acceleration Applied to Extended Step Characteristics Method in NEWT," Ann. Nucl. Energ., 38, 527-534 (2011).
19. Kang Seog Kim, Ser Gi Hong, "The Method of Characteristics Applied to Solving Slowing Down Equation to Estimate the Self-Shielded Resonance Cross Sections with an Explicit Geometrical Effect," Ann. Nucl. Energ., 38, 438-446 (2011).
20. Kyung Hoon Lee, Kang Seog Kim, Ser Gi Hong, Jae Seung Song, "Benchmark calculations for the CE critical experiments by KARMA 1.1 with ENDF/B-VI R8 and ENDF/B-VII R0," J. Kor. Phys. Soc., 59(23), 1203-1206 (2011).
21. Kang Seog Kim, Ser Gi Hong, "Gamma Transport and Diffusion Calculation Capability Coupled with Neutron Transport Simulation in KARMA 1.2," Ann. Nucl. Energ., 57, 59-67 (2013).
22. Yuxuan Liu, William Martin, Mark L. Williams, Kang Seog 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. Eng., 180, 247-272 (2015).
23. Brendan Kochunas, Benjamin Collins, Daniel Jabaay, Shane Stimpson, Aaron Graham, Kang Seog Kim, William Wieselquist, Kevin Clarno, Scott Palmtag, Thomas Downar, Jess Gehin, "VERA Core Simulator Methodology For PWR Cycle Depletion," Nucl. Sci. Eng., 185, 217-231 (2017).
24. Ho Jin Park, Ser Gi Hong, Kang Seog Kim, Jae-Seung Song, "An Improved DeCART Library Generation Procedure with Explicit Resonance Interference Using Continuous Energy Monte Carlo Calculation," Ann. Nucl. Energ., 105, 95-105 (2017).
25. Cole Gentry, Kang Seog Kim, G. Ivan Maldonado, "Two-Step Procedure for Liquid Salt Cooled Reactor Analysis," Nuclear Technology, 204:3, 299-317 (2018).
26. Kang Seog Kim, Mark L. Williams, Dorothea Wiarda, Kevin T. Clarno, "Development of the Multigroup Cross Section Library for the CASL Neutronics Simulator MPACT: Method and Procedure," Ann. Nucl. Energ., 133, 46-58 (2019).
27. Kang Seog Kim, Cole A. Gentry, Andrew T. Godfrey, Yuxuan Liu, Scott Palmtag, "Development of the Multigroup Cross Section Library for the CASL Neutronics Simulator MPACT: Verification," Ann. Nucl. Energ., 132, 1-23 (2019).
28. Kang Seog Kim, Mark L. Williams, "Spatially Dependent Embedded Self-Shielding Method for Nonuniform Temperature Distribution," Ann. Nucl. Energ., 132, 563-575 (2019).
29. Kang Seog Kim, Mark L. Williams, Andrew Holcomb, Dorothea Wiarda, Byoung Kyu Jeon, Won Sik Yang, "The AMPX/SCALE Multigroup Cross Section Processing for Fast Reactor Analysis," Ann. Nucl. Energ., 132, 161-171 (2019).
30. Matthew A. Jessee, William A. Wieselquist, Ugur Merturek, Kang Seog Kim, Thomas M. Evans,

- Steven P. Hamilton, "Lattice Physics Calculations Using the Embedded Self-Shielding Method in Polaris, Part I: Methods and Implementation," *Ann. Nucl. Energ.*, 150, 107830 (2021).
31. Cole Gentry, Andrew Godfrey, Gary Wolfram, Eva Davidson, Tara Pandya, Katherine Royston, Germina Ilas, Scott Palmtag, Gregory Davidson, Seth Johnson, Shane Hart, Benjamin Collins, Tom Evans, Kang Seog Kim, "Secondary Source Core Reload Modeling with VERA," *Nucl. Sci. Eng.*, 195, 320-337 (2021).
 32. Yuxuan Liu, Robert Salko, Kang Seog Kim, Xinyan Wang, Matthew Kabelitz, Sooyoung Choi, Brendan Kochunas, Benjamin Collins, William Martin, "Improved MPACT Energy Deposition Model and Explicit Heat Generation Coupling with CTF," *Ann. Nucl. Energ.*, 152, 107999 (2021).
 33. Kang Seog Kim, William Wieselquist, "Neutronic Characteristics of ENDF/B-VIII.0 Compared to ENDF/B-VII.1 for Light-Water Reactor Analysis," *J. of Nucl. Engr.*, 2, 318-335 (2021).
 34. Kang Seog Kim, Byoung-Kyu Jeon, Andrew Ward, Ugur Mertuyrek, Matthew Jessee, William Wieselquist, "Validation of the SCALE/Polaris-PARCS Code Procedure with the ENDF/B-VII.1 AMPX 56-Group Library: Pressurized Water Reactor," *J. of Nucl. Engr.*, 5, 246-259 (2024).
 35. Kang Seog Kim, Andrew Ward, Ugur Mertuyrek, Mehdi Asgari, William Wieselquist, "Validation of the SCALE/Polaris-PARCS Code Procedure with the ENDF/B-VII.1 AMPX 56-Group Library: Boiling Water Reactor," *J. of Nucl. Engr.*, 5, 260-273 (2024).
 36. G.P.A. Nobre, K.S. Kim (66th) et al., "ENDF/B-VIII.1: Update Nuclear Reaction Data Library for Science and Applications," *Nuclear Data Sheet* (2024). (in review)

B. Transaction of American Nuclear Society

1. U. Decher, A. Jonsson, S. J. Kim, Kang Seog Kim, "ENDF/B-VI Performance in PWR Applications," *Trans. Am. Nucl. Soc.*, 73, 417 (1995).
2. Kang Seog Kim et al., "Diffusion Synthetic Acceleration for One-Cell Block Inversion in Slab Geometry," *Trans. Am. Nucl. Soc.*, 75, 138 (1999).
3. Kang Seog Kim et al., "Coarse-Mesh Diffusion Synthetic Acceleration for in Slab Geometry," *Trans. Am. Nucl. Soc.*, 76 (2000).
4. Kang Seog Kim et al., "Development of DENT 2D Code Based on the Characteristics Method," *Trans. Am. Nucl. Soc.*, 86, 369 (2002).
5. J. Y. Cho, H. G. Joo, Kang Seog Kim, S. Q. Zee, M. H. Chang, "Three-Dimensional Heterogeneous Whole Core Transport Calculation Employing Planar MOC Solution," *Trans. Am. Nucl. Soc.*, 87, 234 (2002).
6. J. Y. Cho, Kang Seog Kim et al., "Transient Capability for a MOC-Based Whole Core Transport Code DeCART," *Trans. Am. Nucl. Soc.*, 90, 721 (2004).
7. H. C. Lee, Kang Seog Kim et al., "The Equivalent Cylinder Models for the Homogenization of Pebble Bed Reactor Cores," *Trans. Am. Nucl. Soc.*, 93, 961 (2005).
8. Ser Gi Hong, Kang Seog Kim, Jae Seung Song, "A Resonance Integral Table-based Iteration Method for Resonance Treatment in Lattice Calculation," *Trans. Am. Nucl. Soc.*, 102, 536 (2010).
9. Kang Seog Kim, Mark L. Williams, "Preliminary Assessment of Resonance Interference Treatment by Using 0-D Slowing Down Calculation in the Embedded Self-Shielding Method," *Trans. Am. Nucl. Soc.*, 107, 1128-1131 (2012).
10. Matthew A. Jessee, William A. Wieselquist, Mark L. Williams, Kang Seog Kim, "VERA Benchmark Calculations Using the SCALE-Polaris Lattice Physics Code," *Trans. Am. Nucl. Soc.*, 109, 1413-1415 (2013).
11. Yuxuan Liu, William Martin, Kang Seog Kim, Mark L. Williams, "Modeling Spatial Dependence of Resonance Self-Shielding Effects Including Resonance Interference and Temperature Distribution," *Trans. Am. Nucl. Soc.*, 109, 800-803 (2013).
12. Kang Seog Kim, "Comparison between Spatially Dependent Embedded Self-Shielding and Subgroup Methods," *Trans. Am. Nucl. Soc.*, 119, 1193-1196, Orlando, Florida, Nov. 11-15 (2018).
13. Kang Seog Kim, Matthew A. Jessee, "Development of Perturbed MPACT Multigroup Libraries

- and the Perturbation Methodology for Subgroup Data," *Trans. Am. Nucl. Soc.*, 121, 1457-1460, Washington, D.C., Nov. 17-21 (2019).
14. Kang Seog Kim, Dorothea Wiarda, "Multigroup Cross Section Library and Processing for the CASL VERA Neutronics Simulators," 2020 ANS Winter, CASL Symposium, Chicago, IL, Nov. 15-19, (2020).
 15. Yuxuan Liu, Robert Salko, Kang Seog Kim, Xinyan Wang, Matthew Kabelitz, Sooyoung Choi, Brendan Kochunas, Benjamin Collins, William Martin, "An Improved Energy Deposition Model in MPACT with Simplified Gamma Smearing and Time-dependent Delayed Energy," ANS 2020 Winter, CASL Symposium, Chicago, IL, Nov. 15-19, (2020).
 16. Shane Stimpson, Fausto Franceschini, Benjamin Collins, Andrew Godfrey, Kang Seog Kim, and Aaron Graham, "MPACT Diffusion Coefficient Improvement Through Westinghouse Collaboration," 2020 ANS Winter, CASL Symposium, Chicago, IL, Nov. 15-19, (2020).
 17. A. Viette, E. Davidson, F. Franceschini, K.S. Kim, "Benchmarking VERA for Criticality and Depletion Calculations of Accident Tolerant Fuels," *Trans. Am. Nucl. Soc.*, 123, 1369-1372 (2020).
 18. Kang Seog Kim, William A. Wieselquist, "Reactivity Underestimation of ENDF/B-VIII.0 Compared with ENDF/B-VII.1 for the Pressurized Water Reactor Depletion Analysis," *Trans. Am. Nucl. Soc.*, 124, 521-523 (2021).
 19. Kang Seog Kim, Andrew M. Holcomb, Matthew A. Jessee, William A. Wieselquist, "Revisit of the Dancoff based Wigner-Seitz Approximation of SCALE for Pointwise and Multigroup Resonance Self-Shielding Calculations," *Trans. Am. Nucl. Soc.*, 125, 1016-1019 (2021).
 20. Kang Seog Kim, Ugur Mertuyurek, Andrew Ward, Matthew A. Jessee, William A. Wieselquist, "Benchmark Calculations for BEAVRS and Watt Bar Unit 1 Using the SCALE-6.3.0/Polaris-PARCS v3.4.2 code Package," *Trans. Am. Nucl. Soc.*, 128, 804-807 (2023).
 21. Kang Seog Kim, Ugur Mertuyurek, Andrew Ward, Matthew A. Jessee, William A. Wieselquist, "Benchmark Calculations for Peach Bottom Unit 2 and Hatch Unit 1 Using the SCALE-6.3.0/Polaris-PARCS v3.4.2 Code Package," *Trans. Am. Nucl. Soc.*, 128, 800-803 (2023).
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E. Books

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F. Technical Reports

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3. Kang Seog Kim et al., “Feasibility study of SMART core with soluble boron,” KAERI/TR-1666/2000 (2000).
4. Sung Quun Zee et al., “A study on the Nuclear Characteristics of Enriched Gadolinia Burnable Absorber Rods,” KAERI/RR-2120/2000 (2000).
5. C. C. Lee, Kang Seog Kim et al., “A Feasibility study for the application of enriched gadolinia burnable absorber rods in nuclear core design,” KAERI/TR-1713/2001 (2001).
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 79. K.S. Kim, M.A. Jessee, W.A. Wieselquist, "Pin Peaking Factor Uncertainty of the SCALE 6.3/Polaris through Benchmarking the LWR Critical Experiments," ORNL/TM-2023/2979, Oak Ridge National Laboratory (2023).
 80. K.S. Kim, U. Mertyurek, W.A. Wieselquist, "Benchmark Calculation for the Watt Bar Unit 1 Cycles 1–3 Using the SCALE 6.3/Polaris-PARCS v3.4.2 Code Package," ORNL/TM-2023/2981, Oak Ridge National Laboratory, Oak Ridge, TN (2023).
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88. W. Gurecky, K.S. Kim, M.A. Jessee, W.A. Wieselquist, "Polaris-PARCS Sensitivity Study for LWR Fuel Cycles Part I: Polaris Input Option Sensitivity," ORNL/TM-2024/6, Oak Ridge National Laboratory, Oak Ridge, TN (2024). (ORNL internal review)
89. K.S. Kim, D. Wiarda, B.K. Jeon, W.A. Wieselquist, "Development of the ENDF/B-VII.1 and VIII.0 AMPX 61- and 258-group Libraries for SCALE v7.0/Polaris LWR Analysis," ORNL/TM-2024/?, Oak Ridge National Laboratory, Oak Ridge, TN (2024). (in preparation)

INVITED TALKS & PRESENTATIONS

1. Kang Seog Kim, "Monte Carlo Resonance Treatment for the Deterministic Transport Lattice Code," Seoul National University, Nov. 11, 2003.
2. Kang Seog Kim, "Transport Lattice Code LIBERTE and Nuclear Design Code Package LIBERTE/MASTER," KEPCO Nuclear Fuel Company Ltd., Dec. 15, 2003.
3. Kang Seog Kim, "Library Generation and Resonance Treatment Methods in LIBERTE and DeCART," KAIST (Korea Advanced Institute of Science and Technology), Sept. 16, 2004.
4. Kang Seog Kim, "Nuclear Design Procedure for High Temperature Gas Cooled Reactors," KEPCO Research Institute, Aug. 29, 2007.
5. Kang Seog Kim, "Multi-group Library Generation for Neutron Transport Lattice Codes," KEPCO Nuclear Fuel Company Ltd., Nov. 17, 2009.
6. Kang Seog Kim, "KARMA 1.1 Methodology and How to use," KHNP Nuclear Engineering & Technology Institute, Aug. 31, 2010.
7. Kang Seog Kim, "Methodologies for Transport Lattice Codes Based on KARMA and Multi-group Library Generation for Neutron Transport Lattice Codes," Expert Conference on the Nuclear Reactor Physics Methods, Ulsan National Institute of Science and Technology, Feb. 22-23, 2011.
8. Kang Seog Kim, "Advancement of Multigroup Cross Section Processing and Resonance Self-Shielding Methodology for High-Fidelity Transport Calculation," KAERI, May 30, 2017.
9. Kang Seog Kim, "Advancement of Multigroup Cross Section Processing and Resonance Self-Shielding Methodology for High-Fidelity Transport Calculation," KEPCO-NF, May 31, 2017.
10. Mark L. Williams, Dorothea Wiarda, Kang Seog Kim, Cihangir Celik, "Multigroup Data Libraries for SCALE Applications," 2017 SCALE Users' Group Workshop, Sept. 27, 2018.
11. Kang Seog Kim et al., "The AMPX/SCALE Capability with the AMPX 1597-group Library for Advanced Reactor Analysis," 2018 SCALE Users' Group Workshop, Aug. 27-29, 2018.
12. Kang Seog Kim et al., "The SCALE Multigroup Capability and Challenges in Advanced Reactor Analysis: Cross Section Library and Processing," 2019 SCALE Users' Group Workshop, Aug. 19-20, 2019.
13. Kang Seog Kim, Erik Walker, Andrew Godfrey, "CASL VERA Benchmark Results with ENDF/B-VII.1 and VIII.0 for the Pressurized Water Reactors," 2019 CSEWG Meeting, Brookhaven National Laboratory, Nov. 4-6, 2019. (<https://indico.bnl.gov/event/6642/contributions/32059/>)
14. Kang Seog Kim, "Introduction to Resonance Self-Shielding Methods in SCALE: XSPROC and ESSM," 2020 SCALE Users' Group Workshop, July 27-29, 2020.
15. Kang Seog Kim, "Investigation on the Reactivity Underestimation of ENDF/B-VIII.0 Compared to ENDF/B-VII.1 for Thermal Reactor Analysis," 2020 CSEWG Meeting, Brookhaven National Laboratory, Nov. 30-Dec. 2, 2020. (<https://indico.bnl.gov/event/7233/contributions/43847/>)
16. Kang Seog Kim, "Multigroup Cross Section Processing Capability of the SCALE-6.3 XSPROC for Non-LWR analysis," 2021 SCALE Users' Group Workshop, August 4-6, 2021.
17. Kang Seog Kim, "Spatially Dependent Resonance Self-Shielding Capability for Non-Uniform Temperature in SCALE-6.3 XSPROC-BONAMI," 2022 SCALE Users' Group Workshop, April 28, 2022.
18. Kang Seog Kim et al., "SCALE-6.3.0/Polaris-PARCS v3.4.2 Validation: Reactor Physics," 2023 SCALE Users' Group Workshop, April 27, 2023.

THESIS COMMITTEE, STUDENT ADVISING AND MENTORING

1. Byoung Kyu Jeon, University of Michigan, Ph.D. Candidate, "SCALE MG Cross Section Processing for BWR and Fast Reactors using the AMPX 1597-group Library" (2018 Summer intern).
2. Byoung Kyu Jeon, Purdue University, Ph.D. Candidate, "Assessment of Multigroup Cross Section Processing of the AMPX/SCALE Code Packages for Fast Systems" (2017 Summer intern).
3. Cole Gentry, University of Tennessee, Ph.D., "Development of a Reactor Physics Analysis Procedure for the Plank-Based and Liquid Salt-Cooled Advanced High Temperature Reactor" (2015).
4. Hansol Park, Ph.D. candidate, Seoul National University, "Resonance self-shielding methods" (2015, US-ROK INERI intern).
5. Yuxuan Liu, University of Michigan, Ph.D., "Improved Deterministic Self-Shielding Method for Distributed Self-Shielding Effect and Resonance Interference" (2014).
6. Hojin Park, Seoul National University, "Generation of assembly-homogenized few group constants and estimation of their uncertainties by Monte Carlo method" (2011).

HONORS AND AWARDS

- US-DOE National R&D 100 Awards (November 4, 2016)
"Virtual Environment for Reactor Applications" <https://www.ornl.gov/news/ornl-wins-seven-rd-100-awards>
- Oak Ridge National Laboratory Significant Event Award (October, 2016)
"The High-Fidelity Benchmark of the CASL Virtual Environment for Reactor Applications Against Data from the Full Operating History of TVA's Watts Bar Nuclear Power Plant"
- Oak Ridge National Laboratory Significant Event Award (December, 2015)
"Significant Improvement in Computational Performance of the VERA Core Simulator to Meet Industry Objectives for Adoption"
- Oak Ridge National Laboratory Significant Event Award (April, 2013)
"Technical Advancements in Nuclear Data Processing that Provide Unprecedented Accuracy for CASL and NRC Reactor Physics Analysis"
- Best paper award at KNS 2011 Spring Meeting
"Implementation of the Gamma Transport Calculation Module in KARMA 1.2"
- Best paper award at KNS 2007 Spring Meeting
"Physics Analysis of a Prismatic VHTR with Asymmetric Control Rods by Using the HELIOS/MASTER Code Package"
- Best paper award at KNS 2006 Autumn Meeting
"A Two-Step Diffusion Solution to the Doubly Heterogeneous PBMR-400 Problem"
- Best paper award at KNS 2006 Spring Meeting
"Preservation of Fuel Characteristics in the RPT Method"
- Member of Alpha Nu Sigma (ANS Honor Society in Nuclear Engineering) (2000-)

PROFESIONAL ACTIVITIES

- American Nuclear Society (ANS): Member
- Korean Nuclear Society (KNS): Member
- Annals of Nuclear Energy: Reviewer
- Nuclear Science and Engineering: Reviewer
- Nuclear Engineering and Technology: Reviewer

Journal of Nuclear Science and Technology: Reviewer

Progress in Nuclear Energy: Reviewer

Technical committees and session chairs: Conferences by KNS and ANS, M&C and PHYSOR

Journal of Nuclear Engineering

- Editorial board member (2018-present)
- Guest editor for the special issue for 'Nuclear data and resonance self-shielding method'
- Guest editor for the special issue for 'Validation of code packages for light water reactor physics analysis'