

Invited papers/seminars

"Particle Transport Theory Methods on Supercomputers," Nuclear Engineering Program, Ohio State University, Fall 1990.

"Spatial and Angular Domain Decomposition Algorithms for the Curvilinear S_N Transport Theory Method," US-USSR Workshop on "Frontiers in Numerical Transport Theory," Texas A&M, November 1991.

"New Spatial Parallel S_N Algorithms for the 1-D Spherical Geometry," International Symposium on Numerical Transport Theory, Moscow, Russia, May 26-28, 1992.

"Parallel Computing for Neutron Transport Problems," Chemical and Nuclear Engineering Department, University of New Mexico, Albuquerque, New Mexico, March, 1993.

" S_N Transport Theory Codes for Parallel Architectures," Specialists Meeting on Adapting Computer Codes in Nuclear Applications to Parallel Architectures, Madrid, Spain, October, 1993.

"Discrete Ordinates (S_N) Algorithms for Parallel Computers," Nuclear Engineering Department, University of Michigan, Ann Arbor, MI, November, 1993.

" S_N Algorithms for Parallel Computers," 1994 Topical Meeting in Reactor Physics, Knoxville, TN, April, 1994.

"Parallel S_N Algorithms for Shared- and Distributed-Memory Machines," 1995 X ENFIR/ III ENAN Joint Conference, Aguas de Lindoi, Brazil, August 7-11, 1995.

"Parallel Algorithms for the S_N Transport Methods - Iterative Schemes and Domain Decomposition Approaches," 1995 X ENFIR/ III ENAN Joint Conference, Aguas de Lindoi, Brazil, August 7-11, 1995.

"Methodology and Benchmarking of Pressure Vessel Neutron Fluence," Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, August 14-17, 1995.

" S_N Particle Transport Methods on the Distributed Memory SP1," SCSC'95, Ottawa, Ontario, Canada, July 1995.

"Neutron and Gamma Transport Calculations for Deep-Penetration Problems - Uncertainty, New Developments," March 3-15, 1996, presented at the following institutions:
VTT Research Center of Finland, Espoo, Finland; Rossendorf Research Center, Institute for Safety Research, Dresden, Germany; Nuclear Research Institute, Rez, Czech Republic; Skoda Nuclear Machinery Plant, Plzen, Czech Republic; Belgium Nuclear Research Center, Mol, Belgium; CEA/Saclay, Saclay, France; OECD Nuclear Energy Agency, Paris, France.

"Parallel Algorithms for S_N Transport Method - Phase Space Decomposition, Iterative, and Differencing Schemes," March 3-15, 1996, presented at the following institutions:

VTT Research Center of Finland, Espoo, Finland; Rossendorf Research Center, Institute for Safety Research, Dresden, Germany; Nuclear Research Institute, Rez, Czech Republic; Skoda Nuclear Machinery Plant, Plzen, Czech Republic; Belgium Nuclear Research Center, Mol, Belgium; CEA/Saclay, Saclay, France; OECD Nuclear Energy Agency, Paris, France.

"Parallel Algorithms for Linear Boltzmann Equation Based on Complete Phase Space Decomposition," 1996 SIAM Annual Meeting, Kansas City, Missouri, July 1996.

"Sn and Monte Carlo Methods for Reactor Dosimetry and PV Neutron Fluence Calculation," Ninth International Symposium on Reactor Dosimetry, Benchmark & Intercomparison Workshop, Sept. 2-6, 1996.

"Multigroup Cross Section Generation with a Bilinear Adjoint Weighting Approach and its Application to PV Dosimetry," Ninth International Symposium on Reactor Dosimetry, Adjustment and Cross Section Workshop, Sept. 2-6, 1996.

3D Deterministic Radiation Transport Computer Programs - Features, Applications, and Perspectives," OECD Chateau de la Muette, Paris XVI, France, Dec. 2-3, 1996:

- "PENTRAN- A 3-D Discrete Ordinates Transport Code with Complete Phase Space Decomposition for Parallel Computers,"
- "Implementation of PENTRAN on Distributed Memory Architectures,
- "An Adaptive Differencing Strategy and A Simplified Multigrid Acceleration Method with TPMC in PENTRAN,
- "Determination of Neutron Flux at the BWR Core Shroud Using PENTRAN,"

"Advances in Deterministic Methods for Solving the Neutron Transport Equation," Bettis Atomic Power Laboratory, Jan. 17, 1997.

"Monte Carlo PWR Cavity Dosimetry Calculations Using an Automatic Variance Reduction Technique," Joint International Conference on Mathematical Methods and Supercomputing in Nuclear Applications, Saratoga Springs, NY, (Oct. 6-10, 1997)

"PENTRAN - A 3-D Cartesian Parallel Sn Code with Angular, Energy, and Spatial Decomposition," Joint International Conference on Mathematical Methods and Supercomputing in Nuclear Applications, Vol. II, 1267-1276, Saratoga Springs, NY (Oct. 6-10, 1997)

"The Exponential Directional Weighted (EDW) Sn Differencing Scheme in 3-D Cartesian Geometry," Joint International Conference on Mathematical Methods and Supercomputing in Nuclear Applications, Saratoga Springs, NY (Oct. 6-10, 1997)

"PENTRAN - Parallel Environment Neutral-particle TRANsport in 3-D Cartesian Geometry," Joint International Conference on Mathematical Methods and Supercomputing in Nuclear Applications, Saratoga Springs, NY (Oct. 6-10, 1997), presented by A. Haghghat

" Particle Transport Methods for LWR Dosimetry Developed by the PSTTG Group," ANS Winter Meeting, Albuquerque, NM (Nov. 1997), presented by A. Haghghat [Invited Paper].

Proceedings of the DORT/TORT workshop, Nashville, TN, April 24-25, 1998, "Adjoint Transport Methodology, Application, and Calculation"

Parallel Processing in Particle Transport Theory - PENTRAN, A 3-D Parallel Sn Code, High Performance Computing Invited Seminar Series IHPCA, Penn State University, University Park, Jan. 8 1999.

Tenth International Symposium on Reactor Dosimetry, Sept. 12-17, 1999, Osaka, Japan

“Modeling of BWR for Neutron and Gamma Fields Using PENTRAN.”

“Design and Characterization of a Facility for Fast Neutron Irradiation of Semiconductors at Penn State.”

“VENUS-3 Modeling with PENTRAN.”

“Significance of Adaptive Differencing for Sn Differencing in Void and Pure Absorber”.

XVI International Conference on Transport Theory, May 10-15, 1999, GaTech, The G.W. Woodruff School of Mechanical Engineering, Atlanta, GA

The 2000 International Topical Meeting on Advances in Reactor Physics and Mathematics and Computation into the Next Millennium (PHYSOR 2000), May 7-11, 2000.

“Graduate Education in Reactor Physics – Influence of Advancements in Computing Technologies”

“Angular Multigrid Acceleration for Parallel Sn Method with Application to Shielding Problems,”

“Advanced 3-D Deterministic and Monte Carlo Codes for Simulation of Real-Life Complex Nuclear Systems,” ANS 2000 Annual Meeting, June 2000, San Diego, CA.

A short course on “Neutron & Radiation Transport Simulation: Theory and Applications,” Feb. 19-22, 2001, KAIST, Taejon, Korea

Discrete ordinates (Sn) transport methods

Monte Carlo methods and variance reduction techniques

Demonstration of PENTRAN code system

Demonstration of A³MCNP

“Monte Carlo Methods in Reactor Physics,” ANS 2001 Summer Meeting, June 2001, Milwaukee, WI, Nov. 2001.

High Performance Computing Methods in Particle Transport Theory, University of National Autonomous of Mexico, Jan. 22, 2002.

Invited seminars for a committee formed by JAERI (Japan Atomic Energy Research Institute) to discuss the future requirements on the system of the Information Technology Based Laboratory (ITBL), especially in the field of nuclear technology, Feb. 24-26, 2002. The titles of these seminars were:

High Performance Computing Methods in Particle Transport Theory

Monte Carlo methods: Automated CADIS Variance Reduction Methodology, A³MCNP

I presented an invited plenary talk at the 10th International Conference on Radiation Shielding (ICRS-10) and 2004 Radiation Protection and Shielding (RPS 2004) Joint Conference (ICRS-10/RPS 2004), May 9-14, 2004, Madeira, Funchal, Portugal)

Invited talk at the International Joint Meeting Cancun 2004 LAS/ANS-SNM-SMSR XV SNM Annual Meeting and XXII SMSR Annual Meeting, Cancún, Q.R., Mexico, July 11-14, 2004.

Dr. Alireza Haghghat presented an invited paper at the International Nuclear Atlantic Conference, INAC 2005, Santos, SP, Brazil, August 28 to September 2, 2005; the title of this talk

is "Recent Advances in Hybrid Methods Applied to Neutral Particle Transport Problems".

Prof. Haghighat gave an invited talk at the workshop on "Advanced Simulations: A Critical Tool for Future Nuclear Fuel Cycles," Dec. 14-16, 2005; the title of this talk is "Hybrid and Parallel Computing Particle Transport Methods for Shielding and Core Physics".

Dr. Haghighat gave an invited talk at the Workshop on High End Computing for Nuclear Fission Science and Engineering, Salt Lake City, Feb 23-24, 2006. The workshop was sponsored by INL; the title of this talk is "Real-World World Neutronics Calculations".

Prof. Haghighat presented an invited plenary talk at The Radiation Protection and Shielding Division of the American Nuclear Society's Biennial Topical Meeting April 3-6 in 2006, Carlsbad, NM, USA; the title of this talk is "A Guide to Detailed Transport Simulations: Hybrid Methods".