

Stuart R. Slattery

Oak Ridge National Laboratory
Computational Sciences and Engineering Division
P.O. Box 2008, MS-6164
Oak Ridge, TN 37831

Email: slatterysr@ornl.gov
Office: (865) 574-8774
Fax: (865) 241-0381
Homepage: www.ornl.gov/division/csed

Education

- Ph.D. Nuclear Engineering and Engineering Physics, University of Wisconsin - Madison, 2013.
- M.S. Nuclear Engineering and Engineering Physics, University of Wisconsin - Madison, 2011.
- B.S. Nuclear Engineering and Physics (double major), University of Wisconsin - Madison, 2011.

Professional Employment

Oak Ridge National Laboratory

Computing and Computational Sciences Directorate, Computational Sciences and Engineering Division, Computational Engineering and Energy Sciences Group

R&D Staff Member

2013–present

Leading multi-institutional teams of researchers including staff members, university faculty, post-doctoral associates, and graduate students as PI and Co-PI of DOE-funded projects to develop exascale-class algorithms and software for computational physics.

General research areas include particle methods and multiphysics and multiscale simulations with a focus on particle-in-cell methods, compressible and incompressible flows, heat transfer, continuum mechanics, and general methods for linear and nonlinear algebra. Science application areas include advanced manufacturing, plasma physics, and nuclear reactor analysis.

Team Lead for Scalable Algorithms and Applications

2019–2020

ORNL team lead for scalable algorithms and applications managing a medium-sized team of staff scientists and post-doctoral associates focused on exascale code deployment for a variety of science applications.

Student Employment

University of Wisconsin - Madison

Nuclear Regulatory Commission Fellow

2012–2013

Research Assistant

2009–2012

Computational Nuclear Engineering Research Group, Department of Engineering Physics

Doctoral Dissertation: *Parallel Monte Carlo Synthetic Acceleration Methods for Discrete Transport Problems*. Advisor: Professor Paul P.H. Wilson

Undergraduate Research Assistant

2006–2009

Nuclear Materials Research Group, Department of Engineering Physics

Oak Ridge National Laboratory

Graduate Intern

2011, 2012

Consortium for Advanced Simulation of LWRs (CASL) and Radiation Transport Group, U.S. Department of Energy

Idaho National Laboratory

Undergraduate Intern

2010

Advanced Test Reactor National Scientific User Facility, U.S. Department of Energy

Undergraduate Intern

2009

Nuclear Science and Engineering Division, U.S. Department of Energy

Grants

- ORNL PI, "CoPA: Co-Design Center for Particle Applications", DOE Exascale Computing Project, \$2.5M annually (\$500K annually to ORNL), 2017-2023.
- Co-PI, "ALExa: Accelerated Libraries for Exascale", DOE Exascale Computing Project, \$1.1M annually, 2017-2023.
- PI, "Exascale GPUs-based particle-in-cell solver", ORNL LDRD, \$1.2M total, 2020-2021.
- Co-PI, "Scalable Coarse Mesh CFD Solver for Large Scale Nuclear System Simulations", ORNL LDRD, \$600K total, 2019-2020.
- Co-PI, "A High-Order Splitting Strategy for Solving Two-Phase Flow Model with Stiff Source Terms", ORNL SEED, \$125K total, 2018-2019.
- PI, "DataTransferKit: - Enabling Multiscale and Multiphysics Simulations at Exascale", ORNL LDRD, \$660K total, 2017-2018.
- Co-PI, "On the Path to Exascale: Continuous-Energy Monte Carlo Particle Transport on Advanced Computing Architectures", ORNL LDRD, \$900K total, 2016-2017.

Software Development

Current Projects

- Principal developer of **Cabana**, a co-designed library for particle-based simulations at exascale
 - Deploys general particle algorithms and data structures for heterogeneous HPC architectures
 - Released in 2018, <https://github.com/ECP-copa/Cabana>, <https://www.osti.gov/biblio/1482504-cabana>
 - GitHub 2-week statistics 8.27.20-9.09.20: **913** clones, **62** unique cloners; **1,718** page views, **93** unique visitors
 - Used in production by the XGC fusion code (DOE-FES, ECP) and Picasso (ECP) with demonstrated scaling to all of Summit (OLCF) and Cori (NERSC)
 - Developed under funding by the Exascale Computing Project (ECP)
- Principal developer of the **DataTransferKit** (DTK) package, a library for massively parallel solution transfer in multiphysics simulations
 - Provides algorithms for parallel interpolation between grids and geometries
 - Released in 2012, <https://github.com/ORNL-CEES/DataTransferKit>
 - GitHub 2-week statistics 8.27.20-9.09.20: **43** clones, **22** unique cloners; **82** page views, **16** unique visitors
 - Used in production for solution transfer in multiphysics simulations of nuclear reactors, electric vehicle batteries, and advanced manufacturing processes
 - Developed under funding by the Exascale Computing Project (ECP), the Consortium for Advanced Simulation of Light Water Reactors (CASL), the Nuclear Energy Advanced Modeling and Simulation (NEAMS) program, the National Highway Traffic Safety Administration (NHTSA), and the ORNL LDRD program
- Principal developer of **Picasso**, a framework for developing massively parallel multiphysics particle-in-cell applications
 - Development started in 2019, released in 2021, <https://github.com/picassodev/picasso>
 - Applications include free surface multiphase flow with fluid-structure interaction and phase change for advanced manufacturing and compressible flows
 - Developed under funding by the Exascale Computing Project (ECP) and the ORNL LDRD program

Previous Projects

- Principal developer of the **Cicada** multiphysics code for simulations of Crud Induced Local Corrosion (CILC) and multiscale model reduction techniques to improve simulations of Crud Induced Power Shift (CIPS) phenomena in nuclear reactors with funding by the Consortium for Advanced Simulation of Light Water Reactors (CASL).
- Developer of **Profugus**, a parallel, 3D, discrete-ordinates and Monte Carlo radiation transport proxy application for exploratory extreme-scale research. Funded by ORNL LDRD and DOE ASCR. <https://github.com/ORNL-CEES/Profugus>.

Technical Skills

- Programming Languages: Expert programming ability in C++ and C. Intermediate programming ability in Python.
- Parallel Programming: Expert ability developing general physics codes using hybrid MPI+X programming models on the latest leadership class systems in DOE. Expert ability developing GPU code using the NVIDIA CUDA library. Expert ability developing performance portable code using Kokkos including multithreaded Intel, IBM, NVIDIA, and AMD platforms.
- Tools and Software Carpentry: Experienced user of the version control system git. Experienced user of AutoTools and CMake build systems, Doxygen code documentation, and continuous integration systems. Managing small to medium-sized teams in code development.
- Advanced user of the L^AT_EX typesetting language.

Honors, Awards, & Scholarships

- R&D 100 Award Winner, "Virtual Environment for Reactor Applications (VERA)", 2016.
- ANS Mathematics & Computation Division Best Summary and Presentation Award for the presentation titled, "GPU Acceleration of History-Based Multigroup Monte Carlo." 2016 ANS Winter Meeting.
- UT-Battelle Significant Event Award, "Release of the VIBE", 2015.
- Nuclear Regulatory Commission Fellowship, 2012.
- Graduate Research Assistantship, University of Wisconsin - Madison, 2010.
- U.S. Department of Energy Science and Energy Research Challenge (SERCh) finalist, first place in computational science division, 2009.
- Nuclear Energy University Programs Scholarship, U.S. Department of Energy, 2009.
- Exelon Scholarship, University of Wisconsin - Madison, 2009.
- Exelon Scholarship, University of Wisconsin - Madison, 2008.

Professional and Community Service

- Mentoring of graduate students, post-doctoral associates, and junior staff members at ORNL
- Ph.D. committee member for students at partner universities
- Reviewer for ORNL LDRD/SEED proposals
- Reviewer for journals in areas of computational physics and applied mathematics
- Reviewer for conferences and workshops by the Association for Computing Machinery (ACM) and the American Nuclear Society (ANS)
- Reviewer for DOE ASCR RFP submissions

- Session lead for DOE workshops
- Member of SIAM and ACM

Graduate Students and Post-Doctoral Associates Supervised

- Kwitae Chong, ORNL Post-Doctoral Associate (PD mentor)
- Bryn Balls-Barker, Brigham Young University (summer mentor)
- Will Gurecky, University of Texas - Austin, Advisor: Derek Haas (Ph.D. committee member)
- Dan Moser, University of Texas - Austin, Advisor: Jayathi Murthy (summer mentor)
- Alex Toth, North Carolina State University, Advisor: C. Tim Kelley (summer mentor)

Conference Sessions and Workshops Organized

1. Committee member, Platform for Advanced Scientific Computing 2020 (PASC20), Geneva, Switzerland, June 2020 (Deferred to 2021).
2. Mini-symposium organizer, "Particle Methods: Algorithms and Software Technology for Exascale", 19th SIAM Conference on Parallel Processing for Scientific Computing (PP20), Seattle, WA, February 2020.
3. Instructor, "Kokkos Tutorial", Penn Institute for Computational Science, University of Pennsylvania, Philadelphia, PA, November 2019.
4. Session co-organizer, "Mixed Thoughts about Mixed Precision?", Smoky Mountains Conference on Computational Science, Kingsport, TN, August 28-29, 2019.
5. Session co-organizer, "Scalable Applications", Smoky Mountains Conference on Computational Science, Gatlinburg, TN, August 29-30, 2018.
6. Workshop lead organizer, 11th Material Point Method Workshop, Oak Ridge, TN, September 6-7, 2018.
7. Session co-organizer, "Implementation and High-Performance Computing", USACM conference on Meshfree and Particle Methods: Applications and Theory, Santa Fe, NM, September 10-12, 2018.
8. Mini-symposium co-organizer, "Computational Techniques for Additive Manufacturing Modeling", SIAM MS2018, Portland, OR, July 9, 2018.

Refereed Publications

1. S. Mniszewski, J. Belak, J.L. Fattebert, C. Negre, **S. Slattery**, A. Adedoyin, R. Bird, C.S. Chang, G. Chen, S. Ethier, S. Fogerty, S. Habib, C. Junghans, D. Lebrun-Grandie, J. Mohd-Yusof S. Moore, D. Osei-Kuffuor, S. Plimpton, A. Pope, S. Reeve, L. Ricketson, A. Scheinberg, A. Sharma, M. Wall, "Enabling Particle Applications for Exascale Computing Platforms", *Submitted to International Journal on High Performance Computing Applications*.

2. J. Turner, J. Belak, N. Barton, M. Bement, N. Carlson, R. Carson, S. DeWitt, J.L. Fattebert, N. Hodge, Z. Jibben, W. King, L. Levine, C. Newman, A. Plotkowski, B. Radhakrishnan, M. Rolchigo, A. Sabau, **S. Slattery**, "Metal Additive Manufacturing Simulation at the Fidelity of the Microstruction", *Submitted to International Journal on High Performance Computing Applications*.
3. W. Usher, X. Huang, S. Petruzza, S. Kumar, **S. Slattery**, S. Reeve, F. Wang, C. Johnson, V. Pascucci, "Scalable Adaptive I/O for Progressive Multi-Resolution Particle Data Layouts", *Accepted to IPDPS 2021*.
4. D. Lebrun-Grandie, A. Prokopenko, B. Turcksin, **S. Slattery**, "ArborX: A Performance Portable Search Library", *ACM Transactions on Mathematical Software*, *Accepted*, <https://arxiv.org/abs/1908.11807>
5. Xinlei Wang, Yuxing Qiu, **S. Slattery**, Yu Fang, Minchen Li, Song-Chun Zhu, Yixin Zhu, Min Tang, Dinesh Manocha, and Chenfanfu Jiang. "A massively parallel and scalable multi-GPU material point method." *ACM Transactions on Graphics (TOG)* 39, no. 4 (2020): 30-1.
6. W. Gurecky, **S. Slattery**, K. Clarno, B. Salko, "A CFD-informed model for subchannel resolution crud prediction", *Best Estimate Uncertainty International Conference (BEPU-2020)*, Sicily, Italy, May 2020.
7. R. Salko, D. Pointer, M. Delchini, W. Gurecky, **S. Slattery**, V. Petrov, A. Manera, "Implementation of a Grid Heat Transfer Hi2Low Reconstruction Capability into the Thermal Hydraulics Subchannel Code CTF", *Nuclear Technology*, February 2019. DOI: <https://doi.org/10.1080/00295450.2019.15857341>.
8. R. Salko, **S. Slattery**, T. Lange, M. Delchini, B. Collins, W. Gurecky, E. Tatli, A. Manera, "Development of a Preliminary VERA-CS Crud-Induced Localized Corrosion Modeling Capability", *Advances in Thermal Hydraulics (ATH) 2018*, Orlando, Florida, November 11-15, 2018.
9. S. Hamilton, **S. Slattery**, T. Evans, "Multigroup Monte Carlo on GPUs: Comparison of history- and event-based algorithms", *Annals of Nuclear Energy*, vol. 113, pp. 506-518, 2018.
10. S. Hamilton, T. Evans, **S. Slattery**, "Continuous-Energy Monte Carlo Neutron Transport on GPUs in Shift", *Transactions of the American Nuclear Society*, Vol. 118, Philadelphia, Pennsylvania, June 2018.
11. R. Salko, D. Pointer, M. Delchini, W. Gurecky, **S. Slattery**, V. Petrov, A. Manera, "Implementation of a Grid Heat Transfer Hi2Low Reconstruction Capability into the Thermal Hydraulics Subchannel Code CTF", *ANS Best Estimate Plus Uncertainty International Conference (BEPU-2018)*, Lucca, Italy, May 2018.
12. A. Toth, J. Ellis, T. Evans, S. Hamilton, C. Kelley, R. Pawlowski, **S. Slattery**, "Local Improvement Results for Anderson Acceleration with Inaccurate Function Evaluations", *SIAM Journal on Scientific Computing*, 2017. DOI: 10.1137/16M1080677.
13. M. Benzi, T. Evans, S. Hamilton, M. Pasini, **S. Slattery**, "Analysis of Monte Carlo Accelerated Iterative Methods for Sparse Linear Systems", *Numerical Linear Algebra with Applications*, 2017. DOI: 10.1002/nla.2088.

14. **S. Slattery**, "Mesh-Free Data Transfer Algorithms for Partitioned Multiphysics Problems: Conservation, Accuracy, and Parallelism", *Journal of Computational Physics*, vol. 307, pp. 164-188, 2016.
15. S. Hamilton, T. Evans, **S. Slattery**, "GPU Acceleration of History-Based Multigroup Monte Carlo", *Transactions of the American Nuclear Society*, Vol. 115, Las Vegas, NV, 2016.
16. **S. Slattery**, T. Evans, P. Wilson, "A Spectral Analysis of the Domain Decomposed Monte Carlo Method for Linear Systems", *Nuclear Engineering and Design*, vol. 295, pp. 632-638, 2015.
17. **S. Slattery**, S. Hamilton, T. Evans, "A Modified Moving Least Square Algorithm for Solution Transfer on a Spacer Grid Surface", *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, Tennessee · April 19–23, 2015, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2015).
18. A. Toth, C.T. Kelley, **S. Slattery**, S. Hamilton, K. Clarno, R. Pawlowski, "Analysis of Anderson Acceleration on a Simplified Neutronics/Thermal Hydraulics System", *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, Tennessee · April 19–23, 2015, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2015).
19. R. Schmidt, K. Belcourt, R. Hooper, R. Pawlowski, K. Clarno, S. Simunovic, **S. Slattery**, J. Turner, S. Palmtag, "An Approach for Coupled-Code Multiphysics Core Simulations from a Common Input", *Annals of Nuclear Energy*, vol. 84, pp. 140-152, 2014.
20. T.M. Evans, S.W. Mosher, **S. Slattery**, S.P. Hamilton, "A Monte Carlo Synthetic-Acceleration Method for Solving the Thermal Radiation Diffusion Equation", *Journal of Computational Physics*, vol. 258, pp. 338-358, 2014.
21. **S. Slattery**, T.M. Evans, P.P.H. Wilson, "A Multiple-Set Overlapping-Domain Decomposed Monte Carlo Synthetic Acceleration Method for Linear Systems", *SNA+MC 2013 - Joint International Conference on Supercomputing in Nuclear Applications + Monte Carlo*, Paris, France, 2013.
22. **S. Slattery**, P.P.H. Wilson, R. Pawlowski, "The Data Transfer Kit: A Geometric Rendezvous-Based Tool for Multiphysics Data Transfer", *International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering (M&C 2013)*, American Nuclear Society, Sun Valley, ID, May 5-9, 2013.
23. **S. Slattery**, T.M. Evans, P.P.H. Wilson, "A Spectral Analysis of the Domain Decomposed Monte Carlo Method for Linear Systems", *International Conference on Mathematics and Computational Methods Applied to Nuclear Science & Engineering (M&C 2013)*, American Nuclear Society, Sun Valley, ID, May 5-9, 2013.
24. G. Cao, S. J. Weber, S. O. Martin, T. L. Malaney, **S. Slattery**, M. H. Anderson, K. Sridharan and T. R. Allen, "In-situ Measurements of High Temperature Spectral Emissivity of Materials for Very High Temperature Reactor Applications," *Nuclear Technology*, vol. 175, No. 2, pp. 460-467, 2011.

25. **S. Slattery**, D.W. Nigg, J.D. Brockman, M.F. Hawthorne, “Improved Computational Characterization of the Thermal Neutron Source for Neutron Capture Therapy Research at the University of Missouri”, Proceedings of PHYSOR-10-Advances in Reactor Physics to Power the Nuclear Renaissance, American Nuclear Society, Pittsburgh, PA, May 9-14, 2010.
26. **S. Slattery**, S. Weber, T. Malaney, K. Sridharan, M. Anderson, T. Allen, “System for High Temperature Spectral Emissivity Measurement of Materials for VHTR Applications”, Conference Proceedings – 4th International Topical Meeting on High Temperature Reactor Technology, 2008.

Conference and Workshop Presentations

1. **S. Slattery**, ”CoPA Cabana - A Library for Developing Exascale Particle Applications”, SIAM CSE21, March 2021.
2. **S. Slattery**, D. Lebrun-Grandie, K. Chong, B. Bird, C. Junghans, G. Chen, S. Fogerty, S. Reeve, A. Scheinberg, S. Moore, S. Plimpton, ”CoPA Particle Toolkit”, SIAM PP20, Seattle, WA, February 2020.
3. A. Scheinberg, G. Chen, S. Ethier, **S. Slattery**, R. Bird, P. Worley, C-S Chang, ”Kokkos and Fortran in the Exascale Computing Project plasma physics code XGC”, Refereed Poster, The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC19), Denver, CO, November 2019.
4. M. Bement, N. Carlson, N. Hodge, **S. Slattery**, J. Turner, ”Concurrent Build and Melt Pool AM Simulations through Multi-physics Code Coupling”, 5th World Congress on Integrated Computational Materials (ICME 2019), Indianapolis, IN, July 2019.
5. A. Scheinberg, S. Ethier, G. Chen, **S. Slattery**, S. Abbot, P. Worley, E. D’Azevedo, S.H. Ku, CS Chang, ”Porting the XGC Gyrokinetic Code to Summit”, The Platform for Advanced Scientific Computing (PASC) 2019, Zurich, Switerland, June 2019.
6. **S. Slattery**, et. al., ”A Co-Designed HPC Library for Particle Applications: CoPA Cabana”, Kokkos User Group Meeting, Albuquerque, NM, April 2019.
7. A. Prokopenko, D. Lebrun-Grandie, B. Turcksin, **S. Slattery**, ”ArborX: A New Parallel Bounding Volume Hierarchy Implementation Using MPI+Kokkos”, SIAM CSE 2019, Spokane, WA, February 2019.
8. **S. Slattery**, et. al., ”A Co-Designed HPC Library for Particle Applications: CoPA Cabana”, Exascale Computing Project Annual Meeting, Houston, TX, January 2019.
9. R. Salko, T. Lange, E. Tatli, **S. Slattery**, M-O Delchini, B. Collins, W. Gurecky, A. Manera, ”Development of Preliminary VERA Crud-Induced Localized Corrosion Modeling Capability”, ANS Winter Meeting 2018, Orlando, FL, November 2018.
10. **S. Slattery**, R. Bird, G. Chen, T. Germann, A. Scheinberg, ”A Co-Designed HPC Library for Particle Applications: CoPA Cabana”, 11th MPM Workshop, Oak Ridge, TN, September 2018.

11. **S. Slattery**, D. Lebrun-Grandie, B. Turcksin, A. Prokopenko, M. Bement, "Assembling Multiphysics Simulations for Additive Manufacturing", SIAM MS2018, Portland, OR, July 9, 2018.
12. S. Hamilton, T. Evans, **S. Slattery**, "Continuous-Energy Monte Carlo Neutron Transport on GPUs in Shift", ANS Annual Meeting 2018, New Orleans, LA, June 2018.
13. S. Hamilton, T. Evans, **S. Slattery**, "Experience Porting Monte Carlo Particle Transport to GPUs", SIAM Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 2018.
14. J. Turner, et. al., "Overview and Status of the Exascale Additive Manufacturing Project ExaAM", 2018 International Conference on Crystal Plasticity, Damage, and Fracture, San Juan, Puerto Rico, January 2018.
15. **S. Slattery**, "A Review of Projection-Based Incompressible MPM Methods", 10th MPM Workshop, Livermore, CA, September 7-8, 2017.
16. S. Allu, B. Turcksin, M. Lebrun-Grandie, M. Berrill, **S. Slattery**, J. Turner, "High performance computing strategy for coupled multi-physics Li-ion battery pack simulations", VII International Conference on Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2017) - 12/14 June 2017, Rhodes Island, Greece.
17. D. Bernholdt, G. Vallee, T. Naughton, **S. Slattery**, D. Lebrun-Grandie, A.B. Maccabe, "If Virtualization is the Answer, what was the Question?", SOS21 Meeting, Davos, Switzerland, March 23, 2017.
18. S. Hamilton, T. Evans, **S. Slattery**, "GPU Algorithms for Monte Carlo Particle Transport", SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah, February 26 – March 3, 2017.
19. **S. Slattery**, T. Evans, "An HPC Approach for FLIP", 9th MPM Workshop, Portland, OR, September 8-9, 2016.
20. S. Hamilton, T. Evans, **S. Slattery**, M. Pasini, M. Benzi, "GPU Implementation of a Monte Carlo Linear Solver Algorithm", SIAM 14th Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, 2016.
21. C.T. Kelley, A. Toth, R. Pawlowski, A. Ellis, **S. Slattery**, S. Hamilton, T. Evans, "Local Improvement Results for Anderson Acceleration and Inaccurate Function Evaluations", SIAM 14th Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, 2016.
22. M. Pasini, M. Benzi, T. Evans, S. Hamilton, **S. Slattery**, "Monte Carlo Acceleration of Iterative Solvers for Eigenvalue Problems", SIAM 14th Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, 2016.
23. **S. Slattery**, H. Hamilton, T. Evans, "Parallel Algorithms for Monte Carlo Linear Solvers", SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah, March 14-18, 2015.
24. M. Pasini, M. Benzi, T. Evans, H. Hamilton, **S. Slattery**, "Iterative Performance of Monte Carlo Linear Solver Methods", SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah, March 14-18, 2015.

25. J.A. Turner, S. Hamilton, R.P. Pawlowski, **S. Slattery**, "Coupled nuclear reactor simulation with the Virtual Environment for Reactor Applications (VERA)", 2nd Frontiers in Computational Physics Conference: Energy Sciences, Zurich, Switzerland, 2015.
26. J.A. Turner, S. Allu, W.R. Elwasif, S. Kalnaus, A. Kumar, D.T. Lebrun-Grandie, S. Pannala, S. Simunovic, **S. Slattery**, "Coupled multiscale safety simulations of Li-ion batteries", 2nd Frontiers in Computational Physics Conference: Energy Sciences, Zurich, Switzerland, 2015.
27. **S. Slattery**, T.M. Evans, S.P. Hamilton, "Multilevel Monte Carlo Solvers for Linear Systems", SIAM 13th Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, 2014.
28. S.P. Hamilton, T.M. Evans, **S. Slattery**, "Monte Carlo Synthetic Acceleration as Approximate Polynomial Preconditioning", SIAM 13th Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, 2014.
29. R. Pawlowski, E. Cyr, J. Shadid, T. Smith, **S. Slattery**, P. Wilson, K. Clarno, R. Bartlett, S. Hamilton, T. Evans, "Multiphysics Coupling Tools Applied to Large-scale Simulations of a Light Water Nuclear Reactor Core", SIAM Conference on Computational Science and Engineering, Boston, MA, February 25 - March 1, 2013.
30. T.J. Tautges, J. Kraftcheck, J. Porter, A. Caceres, I. Grindeanu, D. Karpeev, R. Jain, H.J. Kim, S. Cai, S. Jackson, J. Hu, B. Smith, C. Verma, **S. Slattery**, P. Wilson, "MeshKit: An Open-Source Library for Mesh Generation", Proceedings, SIAM Conference on Computational Science and Engineering. SIAM, Reno, NV, 2011.
31. D.W. Nigg, **S. Slattery**, J.D. Brockman, W.Y. Yoon, "A New Beamline Facility for NCT Research at the University of Missouri", 2009 Conference of the Test, Research and Training Reactor (TRTR) Organization, Bethesda MD, October 13-16, 2009.

ORNL Technical Reports

1. R. Salko, **S. Slattery**, T. Lange, M. Delchini, W. Gurecky, E. Tatli, B. Collins, "Development of a Preliminary VERA-CS Crud Induced Localized Corrosion Modeling Capability", CASL Report CASL-U-2018-1617-000, 2018.
2. **S. Slattery**, W. Gurecky, N. Adamowicz, "Cicada - A Package for CILC Analysis", CASL Report CASL-U-2017-1400-000, 2017.
3. R. Salko, W. Gurecky, **S. Slattery**, K. Clarno, D. Pointer, D. Walker, and V. Petrov. "Implementation of a Grid Heat Transfer and Turbulent Kinetic Energy Hi2Lo Remapping Capability into CTF in support of the CIPS Challenge Problem." CASL Report CASL-U-2017-1322-000, 2017.
4. **S. Slattery**, W. Gurecky, "Support for CILC L1 Milestone Using STAR-CCM+", CASL Report CASL-U-2016-1237-000, October 2016.
5. **S. Slattery**, D. Lebrun-Grandie, "Implement DTK Fortran Interface for FSI Activities (M3MS-16OR0401085)", ORNL Report ORNL/TM-2016/525, September 2016.

6. J. Turner, S. Allu, S. Gorti, S. Kalnaus, A. Kumar, D. Lebrun-Grandie, S. Simunovic, **S. Slattery**, B. Turcksin, H. Wang, "Crashworthiness Models for Automotive Batteries: A Report on the Department of Energy Project 2088-A031-15 for the National Traffic Safety Administration (NHTSA), an Office of U.S. Department of Transportation", ORNL Report ORNL/TM-2016/435, July 2016.
7. A. McCaskey, **S. Slattery**, J. Billings, "Warthog: A MOOSE-Based Application for the Direct Code Coupling of BISON and PROTEUS (MS-15OR04010310)", ORNL Report ORNL/TM-2015/532, September 2015.
8. **S. Slattery**, "Demonstration of VERA Interoperability with Commercial CFD Code", CASL Report CASL-U-2015-0294-000, August 2015.
9. **S. Slattery**, "PHI Development for CFD Interoperability", CASL Report CASL-U-2015-0084-000, March 2015.
10. J. Turner, S. Allu, S. Gorti, S. Kalnaus, A. Kumar, D. Lebrun-Grandie, S. Pannala, S. Simunovic, **S. Slattery**, H. Wang, "Crash Models for Advanced Automotive Batteries", ORNL Report ORNL/TM-2015/366, February 2015.
11. **S. Slattery**, R. Pawlowski, "Investigate DTK Interoperability with External Codes", CASL Report CASL-I-2014-0167-000, August 2014.
12. S. Palmtag, R. Bartlett, K. Belcourt, K. Clarno, G. Davidson, T. Evans, A. Godfrey, S. Hamilton, R. Hooper, R. Pawlowski, R. Salko, R. Schmidt, **S. Slattery**, J. Turner, "Demonstration of Neutronics Coupled to Thermal-Hydraulics for a Full-Core Problem using VERA", CASL Report CASL-U-2013-0196-000, December 2013.
13. D. Davidson, **S. Slattery**, J. Jarrell, T. Evans, "Coupling Denovo to STAR-CCM+", ORNL Report RNSD-TN-11-010, September 2011.

Media Coverage

- ECP
 1. <https://insidehpc.com/2020/02/podcast-solving-multiphysics-problems-at-the-exascale-computing-project/>
- CASL
 1. <https://www.ornl.gov/news/ornl-wins-seven-rd-100-awards>
 2. <http://www.openhealthnews.com/content/open-source-oak-ridge-graph-analytics-medical-innovation-receives-rd-100-award>
 3. <https://www.ornl.gov/division/rnsd/awards/ornl-rd-100-award-virtual-environment-reactor-applications>
 4. <https://www.rd100conference.com/awards/winners-finalists/6631/virtual-environment-reactor-applications-vera/>
- NHTSA
 1. <http://www.greencarcongress.com/2015/04/20150406-vibe.html>

2. <https://www.ornl.gov/news/battery-boost>

Last updated: March 8, 2021