

Evan S. Gonzalez

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Education

- **University of Michigan** Ann Arbor, MI
Ph.D. Nuclear Engineering and Radiological Sciences January 2023
- **University of Michigan** Ann Arbor, MI
M.S. Nuclear Engineering and Radiological Sciences May 2019
- **Texas A&M University** College Station, TX
B.S. Nuclear Engineering, Minor in Materials Science and Engineering May 2017

Experience

- **Lawrence Livermore National Laboratory** Livermore, CA
Weapons Simulation and Computing, Computational Physicist February 2023 - Present
 - Software development for Mercury: a neutron, photon and charged particle transport code, and Imp: an Implicit Monte Carlo code used to model thermal radiative photon transfer.
 - Formulate and prototype adjoint radiation transport solvers for differentiable multi-physics codes to enable deep learning simulations.
 - Participate in strategic planning of AI integration efforts across the lab's multi-physics codes (enabling agentic workflow, enabling inference interfaces, safety/security concerns, etc.).
 - Mentor summer student projects implementing new physics capabilities into the lab's radiation transport codes.
- **CRANE: Computational Research Access Network** Remote
Board of Directors, Lecturer, and Teaching Assistant February 2023 - Present
 - Assist with python-based computational physics course geared towards undergraduate physics students by leading coding breakout sessions during lectures and conducting office hours. Topics include numerical methods for solving initial value problems, finite difference methods, fast Fourier transforms, Monte Carlo particle transport and machine learning.
- **University of Michigan** Ann Arbor, MI
Graduate Student Research Assistant 2017 - 2023
 - Project manager for a team of student developers (~ 10 people) writing an suite of radiation physics simulation codes.
 - Mentored undergraduate students for semester-long research projects.
- **Oak Ridge National Laboratory** Oak Ridge, TN
Radiation Transport Group, Graduate Student Researcher Summer 2018
 - Developed and implemented Monte Carlo splitting/rouletteing methods at various particle history events (i.e., collisions, surface crossings, mean free paths) utilizing weight windows generated by a deterministic transport solver.
- **Argonne National Laboratory** Lemont, IL
Nuclear Engineering Division, Research Aide Summer 2017
 - Converted user/theory documentation for SAS4A/SASSYS-1 (reactor dynamics and safety analysis code) from MS Word to L^AT_EX and HTML.
- **Los Alamos National Laboratory** Los Alamos, NM
ISR-1 (Space Science and Applications), Undergraduate Student Researcher Summer 2015, Summer 2016
 - Modeled nuclear detonation detection satellites with various on-board radiation detectors using GEANT4 and developed python scripts for generating angular/energy-dependent detector response matrices.
- **Texas A&M University** College Station, TX
Undergraduate Researcher 2013 - 2017

- Investigated viability of extracting isotopes from used nuclear fuel to replace Plutonium-238 as a fuel source in radioisotope thermoelectric generators. Modeled spent fuel compositions and critical mass geometries with SCALE.
- Modeled fluids through jet ejectors and heat exchangers at supersonic speeds that were coupled to a pressurized water reactor system to desalinate seawater.

Programming and Software

- **Languages:** C++, Python, Matlab, HTML, Bash, Fortran, R, LabView
- **Software Development:** Unit Testing (Catch2, Gtest), Continuous Integration Testing (TravisCI, Github CI), Version Control (Git, Mercurial), Wiki/Documentation (Sphinx, Doxygen), Command Line Debugging (LLDB, TotalView)
- **Radiation Transport Software:** Mercury/Imp, MCNP, SCALE/Shift, OpenMC, GEANT4, PARCS

Activities

- Nuclear Engineering Student Delegation, Delegate (2019), Co-Vice Chair (2020), Chair (2021)
- University of Michigan Graduate Student Advisory Council, Member (2021-22)
- American Nuclear Society, Student Section Committee Member (2021-24), Texas A&M Stu. Chap. President (2016-17)
- Texas Nuclear Engineering Student Delegation, Delegate (2017)
- Texas A&M Nuclear Engineering Student Advisory Council, Member (2014-17)

Achievements

- American Nuclear Society Winter Meeting, Best M&C Student Presentation (2021)
- Nuclear Engineering Science Laboratory Synthesis Poster Competition, 2nd Place (2018)
- Texas A&M University Nuclear Engineering Capstone Project, Best in Class (2017)
- "Aggies Invent" 24-Hour Design Competition, 3rd Place (2015)
- Texas A&M University Public Speaking Competition, Semifinalist (2014)

Journal Articles

- [1] E. S. Gonzalez, B. C. Kiedrowski, and G. G. Davidson, "The transient multi-level method for monte carlo reactor statics calculations," *Annals of Nuclear Energy*, vol. 212, p. 111021, 2025.
- [2] M. Pozulp, B. Beck, R. Bleile, P. Brantley, S. Dawson, N. Gentile, E. Gonzalez, J. Grondalski, M. Lambert, M. McKinley, M. O'Brien, R. Procassini, D. Richards, A. Robinson, S. Sepke, D. Stevens, R. Vega, and M. Yang, "Status of mercury and imp: Two monte carlo transport codes developed using shared infrastructure at lawrence livermore national laboratory," *EPJ - Nuclear Sciences and Technologies*, vol. 10, 2024.
- [3] E. S. Gonzalez and G. G. Davidson, "Choosing transport events for initiating splitting and rouletting," *Journal of Nuclear Engineering*, vol. 2, no. 2, pp. 97–104, 2021.

Conference Proceedings

- [4] E. S. Gonzalez, P. S. Brantley, and M. J. O'Brien, "Multi-material cell treatments in the LLNL Imp IMC code," in *The International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering (M&C)*, American Nuclear Society, April 2025.
- [5] E. S. Gonzalez and B. C. Kiedrowski, "A monte carlo transient multilevel implementation applied to the C5G7-TD3 benchmark," in *International Conference on Physics of Reactors 2022 (PHYSOR 2022)*, American Nuclear Society, May 2022.

- [6] E. S. Gonzalez and B. C. Kiedrowski, "C5G7-TD3 transient benchmark results with shift," in *American Nuclear Society Winter Meeting*, American Nuclear Society, December 2021.
- [7] N. F. Herring, R. A. Yessayan, K. A. Beyer, R. J. Fonti, E. S. Gonzalez, E. C. Leppink, B. D. Rucinski, S. Schunert, Y. Y. Azmy, and B. C. Kiedrowski, "Ray effects mitigation through monte carlo coupling for detector problems," in *The International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering (M&C)*, American Nuclear Society, April 2020.
- [8] E. S. Gonzalez, A. G. Tumalak, K. A. Beyer, E. J. Pearson, M. G. Gottesman, A. K. Agarwal, D. J. Fortner, F. A. Angers, D. Beqi, L. Green, B. J. Saltus, and B. C. Kiedrowski, "Hammer: An educational and research platform for neutral particle transport code development," in *American Nuclear Society Winter Meeting*, American Nuclear Society, November 2019.
- [9] E. S. Gonzalez, K. A. Beyer, R. J. Fonti, E. C. Leppink, B. D. Rucinski, N. F. Herring, R. Yessayan, S. Schunert, B. C. Kiedrowski, and Y. Y. Azmy, "Hammer: A monte carlo particle transport solver to support nonproliferation applications of the THOR deterministic S_N code," in *Advances in Nuclear Nonproliferation Technology and Policy Conference (ANTPC)*, American Nuclear Society, November 2018.
- [10] N. F. Herring, R. A. Yessayan, K. A. Beyer, R. J. Fonti, E. S. Gonzalez, E. C. Leppink, B. D. Rucinski, S. Schunert, Y. Y. Azmy, and B. C. Kiedrowski, "Mitigation of ray effects in S_N solutions through monte carlo coupling," in *Advances in Nuclear Nonproliferation Technology and Policy Conference (ANTPC)*, American Nuclear Society, November 2018.