Kayla Clements

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Education

PhD (in progress): Nuclear Engineering   September 2020
Oregon State University   — June 2024
- Advisor: Dr. Todd Palmer
- GPA: 3.95/4.00
- ARCS Scholar (Achievement Rewards for College Scientists Foundation)

Bachelor of Science: Nuclear Engineering   December 2019
University of Florida
- GPA: 3.63/4.00
- Minor: French and Francophone Studies

Work Experience

Graduate Student Intern   June 2021 - Present
Sandia National Laboratory, NM
- Develop uncertainty quantification and global sensitivity analysis methods for stochastic solvers.
- Apply developed methods to a variety of 1D radiation transport problems solved with Monte Carlo methods, including stochastic media.
- Co-authored, and performed numerical studies for, publications on the work.

Graduate Research Assistant   September 2020 - Present
Oregon State University, OR
Center for Exascale Monte Carlo Neutron Transport (CEMeNT)
- Use dynamic-mode decomposition to develop an alternate approach to iterative alpha-eigenvalue searches (continuing work published by Dr. Ryan McClarren).
- Primary instructor for junior-level numerical methods course in the School of Mechanical Engineering.
- Participated in hackathon at ORNL to implement MFEM-based transport solver on GPU.

Reactor Physics Intern   June 2019 - August 2019,
Idaho National Laboratory, ID   January 2020 - June 2020
- Modeled fuel assemblies in MCNP for INL's Transient Reactor Test Facility using fabrication and technical specification documents from the reactor's previous design work.
- Integrated fuel model into an existing model of TREAT's current design and found a critical geometry.

Research Assistant   June 2018 - August 2018
University of Florida, Nuclear Engineering Department
- Processed the ENDF/B-VIII.0 evaluated cross section libraries with the AMPX code system in SCALE.
- Generated and tested the continuous energy and problem-independent multigroup cross sections.

National Nuclear Data Center Intern   April 2017 - May 2019
Brookhaven National Laboratory, NY
- Automated runs of the nuclear reaction code EMPIRE to generate reliable evaluated files across the whole nuclide chart, including nuclei off-stability.
- Implemented a previously developed adiabatic model to describe statically-deformed nuclei in the rare-earth region and applied it to all isotopes of Gadolinium and Tungsten.

Publications

- [Accepted with minor revisions] K. Clements, G. Geraci, A. Olson, T. Palmer, "Global Sensitivity Analysis in Monte Carlo Radiation Transport," in "Transactions of the International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering," (Aug 2023).
- A. Olson, K. Clements, J. Petticrew, "A sampling-based approach to solve Sobol' Indices using variance deconvolution for arbitrary uncertainty distributions," in "Transactions of the American Nuclear Society," (Nov 2022).
- K. Clements, G. Geraci, A. Olson, "Numerical Investigation on the Performance of a Variance Deconvolution Estimator," in "Transactions of the American Nuclear Society," (Jun 2022).
- K. Clements, G. Geraci, and A. Olson, "A Variance Deconvolution Approach to Sampling Uncertainty Quantification for Monte Carlo Radiation Transport Solvers," in "Computer Science Research Institute Summer Proceedings 2021," (Aug 2021), Technical Report SAND2022-0653R, pp.293-307.