

# GAVIN RIDLEY

(865) 773 - 8135

[gavin.keith.ridley@gmail.com](mailto:gavin.keith.ridley@gmail.com)

## SUMMARY

Extensive computational engineering experience for both research and commercial applications, advancing technology applied to reactor simulation and elsewhere.

## EDUCATION

---

FALL 2019 - AUGUST 2024    **Massachusetts Institute of Technology**  
Ph. D. in Computational Nuclear Engineering

FALL 2014 - SPRING 2018    **The University of Tennessee**, Knoxville  
Bachelor of Science in Nuclear Engineering  
Minor in Mathematics  
*Summa cum laude*

## RELEVANT EXPERIENCE

- 
- 7/2023 - PRESENT    **Lead Nuclear Engineer for Aalo Atomics**
- Neutronics analysis for a sodium thermal reactor
  - Built efficient full-core simulation code
  - Built a Sieverts apparatus for benchtop scale hydride fabrication
- 9/2019 - PRESENT    **Graduate Researcher at MIT**
- Development of CUDA-based version of OpenMC
  - Developed mathematically novel MC algorithms
  - Managed compute cluster for nuclear engineering calculations
  - MIT ANS communications officer and president
- 8/2019 - 10/2019    **Independent Contractor at C-Zero LLC**
- Developed OpenFOAM model for two phase flow experiment
  - Incorporated experiment measurements to large CFD model
  - CFD results presented to Breathrough Energy Ventures
- 5/2018 - 8/2019    **Applied Research Fellow at ORNL**
- Studied coupled  $(n,\gamma)$  heat deposition in novel reactor design
  - OpenFOAM solver developed for modeling phase change driven control rod
- 2/2015 - 5/2018    **Undergraduate Research Assistant at UTK**
- Modified Serpent 2 to accelerate MSR refueling calculations
  - Researched PDE-constrained optimization for multigroup diffusion
  - Wrote python library for MSR refueling calculations
- 6/2017-8/2017    **Summer Research Assistant at UIUC**
- Developed MOOSE-based neutronics+thermal hydraulics for MSRs
  - Developed code with FOSS, reproducible emphasis via regression testing
  - Heavily leveraged HPC resources

## HONORS AND SCHOLARSHIPS

---

- 2023 Ely M. Gelbard Graduate Scholarship
- 2021 ANS Alan F. Henry/Paul A. Greebler Graduate Scholarship
- 2020 NEUP Fellowship Recipient
- 2020 MIT Alpha Nu Sigma inductee
- 2018 ANS Senior Design Competition Winner
- 2018 Innovations in Nuclear Tech. R&D Award
- 2017 Rudy Stamm'ler Reactor Physics Scholarship
- 2017 UTK Jane Temple Memorial Scholarship
- 2017 UTK Alpha Nu Sigma inductee
- 2017 NEUP Scholarship
- 2016 NEUP Scholarship
- 2016 UT NE Departmental Scholarship
- 2016 ANS Undergraduate Scholarship
- 2016 UTK Office of Undergraduate Research Grant
- 2014-2018 TN HOPE Scholarship
- 2014-2018 UTK Volunteer Scholarship

## TECHNICAL COMPETENCIES

---

**Computing:** 8 years C++ experience, 13 years python experience, acted as system administrator for a compute cluster. Use Cmake for building and testing code, somewhat regular contributions to OpenMC.

**Programs:** Deep familiarity with all source code in OpenMC, have modified Serpent for MSR calculations and have built numerous parametric Serpent inputs using Jinja templates. Moderate MCNP experience, and basic familiarity with Studsvik tools. Have written 1.5D fuel performance code for hydride fuels, my own finite element based neutronics solvers, and neutron transport solvers via  $S_n$  and MOC approaches. Have written MOOSE code used in a journal publication.

**Hardware:** Comfortable in a machine shop, experience using a drill press, fitting pipes together, basic woodworking and metalworking. Have performed maintenance on computer servers. Experienced with basic electrical work including soldering, work on a breadboard, etc.

## JOURNAL AND CONFERENCE ARTICLES

---

See Google Scholar page for full list

<https://scholar.google.com/citations?user=1KGAqQQAAAAJ&hl=en&oi=ao>

- G. Ridley, B. Forget, and Timothy Burke. Resonance Scattering Treatment with the Windowed Multipole Formalism. Submitted to *Nuclear Science and Engineering*, May 2023.
- D. R. Gaston, B. Forget, K. Smith, L. Harbour, G. Ridley, G. Giudicelli. Method of Characteristics for 3D, Full-Core Neutron Transport on Unstructured Mesh. *Nuclear Science and Engineering*, July 2021.
- Johnson, A.E., D. Kotlyar, S. Terlizzi, and G. Ridley. SerpentTools: A Python Package for Expediting Analysis with Serpent. *Nuclear Science and Engineering*; December 2020.
- A. Lindsay, G. Ridley, and K. Huff. Introduction to Moltres: an Application for Simulation of Molten Salt Reactors. *Annals of Nuclear Energy*; April 2018.
- G. Ridley and O. Chvala. A method for predicting fuel maintenance in once-through MSRs. *Annals of Nuclear Energy*; December 2017.