

EXPERIENCE

Probabilistic Physics of Failure Intern, Idaho National Laboratory	<i>May 2025 – Aug. 2025</i>
Development of probabilistic physics of failure model of fusion divertor components using multi-physics modeling in MOOSE, and risk-benefit optimization studies. <i>Software:</i> MOOSE, TMAP8, Cubit, Python <i>Skills:</i> uncertainty quantification, model development, hazard analysis, risk-benefit analysis	
Physics Model Development Intern, Idaho National Laboratory	<i>May 2024 – Aug. 2024</i>
Neutronics simulation of material diversion effects on reactor core physics and performance using Serpent 2 and Python. <i>Software:</i> Serpent 2, Python, Git, LaTeX <i>Skills:</i> Technical writing, collaboration in GitHub, using PBS and Slurm in an HPC environment.	
Co-op Intern, General Electric Vernova Advanced Research Center	<i>May 2023 – May 2024</i>
Radiation transport model development and integration with machine learning framework. Originally 12-week internship, extended for 1 year. <i>Software:</i> MCNP, Python <i>Skills:</i> Using PBS in an HPC environment, experiment design, remote collaboration.	
Student Undergraduate Research Assistant, Idaho State University	<i>Sept. 2022 – May 2023</i>
Monte Carlo modeling of radiation and non-destructive assay systems in the Monte Carlo N ² Particle software. Prepared technical reports for the Department of Energy according to requirements set forth through a work-based structure. <i>Software:</i> MCNP, Python, Matlab <i>Skills:</i> Team collaboration, technical writing, experiment design	
Career Path Intern, Idaho State University	<i>May 2021 – Sept. 2022</i>
Performed various tasks and contributed to various projects, including: research reactor Safety Analysis Report review and renewal, research reactor operation, maintenance, and safety drills, inventory cataloguing, and certified source handler.	
Peer Tutor, Idaho State University	<i>May 2021 – Aug. 2021 & May 2022 – Aug. 2022</i>
Tutored various classes and positions over the course of two summers. Tutored mathematics and statistics over the summer term on a personal and group basis. Additionally tutored mathematics as a part of a GED equivalency program.	

EDUCATION

Doctorate of Philosophy in Nuclear Engineering

North Carolina State University

Dissertation Subject: High fidelity multi-physics modeling of nuclear reactors for nuclear nonproliferation and safeguards.

Advisor: Dr. Jason Hou

Coursework:

- Verification and Validation in Scientific Computing
- Scientific Machine Learning

Enrolled

Aug. 2025

Masters of Science in Nuclear Science and Engineering

Idaho State University

Thesis Title: [The Monte Carlo Simulation of Nuclear Fuel Assay via Nuclear Resonance Fluorescence.](#)

Committee: Dr. Daniel LaBrier, Dr. Dan Dale, Dr. Chad L. Pope (chair)

Coursework:

- Advanced Reactor Physics
- Advanced Subcritical Physics
- Nuclear Criticality Safety
- Probabilistic Risk Assessment
- Dynamic Behaviors of Nuclear Reactors
- Nuclear Engineering Experiments
- Nuclear Nonproliferation and Safeguards
- Nuclear Reactor Safety and Economics

Jan. 2024 –

May 2025

Bachelors of Science in Nuclear Engineering, Summa Cum Laude

Idaho State University

Senior Project: “Microreactor Design, Deployment, and Regulation”

Elective Coursework:

- Neutron Transport Theory
- Advanced Engineering Mathematics
- Monte Carlo Methods and Applications

Additional Relevant Coursework:

- Nuclear Systems Laboratory, experimental class
- Radiation Detection and Measurement, experimental class

Aug. 2020 –

Dec. 2023

PUBLICATIONS

Journal Publications:

Non-destructive assay performance evaluations of used nuclear fuels via the Dual Isotope Notch Observer

(Accepted to Nuclear Technology, primary author)

Primary author, investigates the optimized performance of the dual-isotope notch observer on current (oxide) light water reactor fuels, and on advanced reactor fuels (metallic, TRISO, HALEU, and molten salts).

[*Gamma Resonance Absorption Technology for Nuclear Materials Assay as a Means of Enhancing Pyroprocessing Safeguards*](#)

(Published with Nuclear Technology, co-author)

The modeling and evaluation of various aspects of a nuclear pyro-processing facility employing a nuclear resonance-based means of input assay and its effects on material safeguards.

[*Understanding Pyroprocessing Throughput in the Context of Safeguards*](#)

(Published with IntechOpen, DOI: 10.5772/intechopen.1007939, co-author)

A book chapter concerning the safeguards Lense of pyroprocessing.

Conference Publications:

[*Application of NRF Based NDA of Advanced Reactor Fuels*](#)

(2025 ANS Student Conference, primary author)

Applied detection of the dual-isotope notch observer to current and advanced nuclear fuels. An evaluation of the impact and comparison to current techniques.

[*Machine Learning Optimization of the Monte Carlo Particle Simulation of an NDA Technique*](#)

(2024 ANS Student Conference, primary author)

The integration of Monte Carlo simulations with machine learning models to combine the data generation and training tasks. The conference abstract and presentation focused on the application to a specific problem and the lessons learned.

[*Selected Proliferation Studies on TRISO-fueled, Heat-Pipe-cooled Microreactors*](#)

(2024 ANS Winter Conference, co-author)

A conference abstract concerning a limited scope of proliferation scenarios and detection methods applicated to TRISO-fueled microreactors.

[*A Neutron Resonance Absorption Technology for Materials Assay in Commercial Pyroprocessing Facility Development*](#)

(2023 ANS Winter Conference, co-author)

[*Nuclear Resonance Fluorescence for the Detection of Fissile Mass*](#)

(2023 ANS Student Conference, primary author)

PRESENTATIONS:

2025 ANS Student Conference Presentation

On the subject of the performance of a machine learning optimized non-destructive gamma-ray based assay system and its application to various current and advanced nuclear fuel types.

2024 ANS Student Conference Lightning Talk

On the subject of the conference abstract: “Machine Learning Optimization of the Monte Carlo Particle Simulation of an NDA Technique”.

2023 ANS Student Conference Poster Presentation

On the subject of the conference abstract: “Nuclear Resonance Fluorescence for the Detection of Fissile Mass”

HONORS:

Best Lightning Talk Award

Graduate Section

2024 ANS Student Conference

Graduate Fellowship

Nuclear Regulatory Commission University Leadership Program Fellowship