Kathryn A. **Mummah**

Graduate Student in Nuclear Engineering & Engineering Physics

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nuclearkatie.github.io nuclearkatie nuclearkatie

Education

University of Wisconsin-Madison — *Madison, WI*

Graduate Student, Nuclear Engineering & Engineering Physics — *Aug. 2017-PRESENT*

- Advisor: Professor Paul Wilson
- Fellow, Consortium for Verification Technology
- Graduate Certificate in Energy Analysis & Policy

University of Illinois — *Urbana, IL*

B.S. Nuclear, Plasma, and Radiological Engineering — *May 2017*

- Graduated with Honors
- Concentration, Power, Safety, and the Environment
- Minor, Atmospheric Sciences

Research

Computational Nuclear Engineering Research Group (CNERG)

Graduate Research Assitant — *Sept. 2017 - PRESENT*

- Designed Uranium enrichment cascades in the Cyclus fuel cycle code to model post-JCPOA cascade performance scenarios for the Consortium for Verification Technology

Los Alamos National Laboratory — *Los Alamos, NM*

Graduate Research Assistant, NEN-2 Advanced Nuclear Technology

Summer Research Fellow, Glenn T. Seaborg Institute — *May 2018 - Aug. 2018*

- Identified prospective approaches to combine fuel cycle simulators and existing methodology for analyzing nuclear material diversion pathways.
- Expanded nuclear engineering primer series to 2.5 hours of material including detailed background on nuclear power accidents

Visiting Student, NEN-5 Systems Design & Analysis — *May 2017 - Aug. 2017*

- Developed MCNP decks for nuclear thermal rockets
- Taught a primer on nuclear engineering for students without a background in nuclear science and engineering
- Created a reactor lab module to incorporate nonproliferation concepts into undergraduate curricula

Idaho National Laboratory — *Idaho Falls, ID*

Intern, Fuels Modeling & Simulation — *May 2016 - Aug. 2016*

- Benchmarked the BISON fuel performance code with experimental data from the Halden Research Reactor, focusing on pellet clad mechanical interactions (PCMI)
- Organized the collection of donations at 16 different buildings/complexes on the INL site. Ultimately collected $1500, 100 handwritten cards, and 150 lbs of donations to be sent to active servicemembers, veterans, and first responders through Operation Gratitude.

Experience

University of Wisconsin-Madison Engineering Physics Department — *Madison, WI*

Grader

- NE405: Nuclear Reactor Theory, Spring 2018

University of Illinois — *Urbana, IL*

Teaching Assistant

- Lead Engineering Learning Assistant (ELA), ENG 100 for Nuclear, Plasma, and Radiological Engineering Department. Fall 2015 & ’16
- Teaching Assistant, NPRE 100: Introduction to Nuclear, Plasma, and Radiological Engineering. Fall 2014, ’15, & ’16
- Teaching Assistant, NPRE 101: Introduction to Energy Sources. Spring 2014 & ’15
- Grader, ASTR 100: Introduction to Astronomy. Fall 2014

Oyster Creek Generating Station

Forked River, NJ

Intern, Reactor Engineering — *Jun. 2015 - Aug. 2015*

- Aligned 700 employees on Reactivity Management (RM) responsibility. For example, the weekly plant newsletter includes a "Reactivity Management System of the Week" that focuses on how that particular system could effect reactivity, or power changes in the core.
- Verified Special Nuclear Material Inventory and bundle orientations for spent fuel
- Lead a raffle fundraiser that raised $600 to place retired Military Working Dogs in loving homes, often with retired servicemembers.

Exelon Generation Cantera Regional Headquarters

Warrenville, IL

Intern, Spent Fuel & Decommissioning — *Jun. 2014 - Aug. 2014*

- Accumulated and analyzed data on fuel cycle burnups and fuel assembly failures.
- Tracked and reviewed documents on Special Nuclear Material

Fermilab

Batavia, IL

QuarkNet High School Summer Intern, Optical Astronomy — *Jun. 2012 - Aug. 2012*

- Analyzed Sloan Digital Sky Survey (SDSS III) data and studied blue tip stars vs. I to determine north-south stellar number density
- Acknowledged in "The Stellar Number Density Distribution in the Local Solar Neighborhood is North-South Asymmetric", published by Brian Yanny and Susan Gardner in The Astrophysical Journal. 777. 2013.

Leadership & Extracurriculars

American Nuclear Society (ANS)

Student Director — *June 2017 - PRESENT*
Member, Nuclear Nonproliferation Policy Division Executive Committee — *June 2018 - PRESENT*
Member, Diversity and Inclusion Committee — *July 2018 - PRESENT*
Member, Local Sections Committee — *June 2016 - PRESENT*
Member, Student Sections Committee — *June 2016 - PRESENT*

American Nuclear Society, University of Wisconsin-Madison Student Section

Governor — *May 2018 - PRESENT*
Member — *Aug. 2017-PRESENT*
Advocacy co-chair — *Jun. 2017 - Nov. 2017*

Wisconsin Baja Racing

Member — *Aug. 2018 - PRESENT*

American Nuclear Society, University of Illinois Student Section

Member — *Aug. 2013 - May 2017*
President — *Apr. 2015 - Apr. 2016*
Internal Vice President — *Apr. 2014 - Apr. 2015*
Freshman President — *Oct. 2013 - Apr. 2014*

Women in Nuclear, University of Illinois Student Section

Cofounder — *Aug. 2015*
Member — *Aug. 2015 - May 2017*

Engineering Ambassadors

Recruitment & Publicity Chair — *Apr. 2016 - Dec. 2016*
Ambassador — *Nov. 2015 - May 2017*

Phi Mu - Delta Beta Chapter

Academic Excellence Chairman — *Dec. 2016 - May 2017*

Engineering Council

Undergraduate Advisory Board Representative — *Apr. 2014 - Dec. 2016*
Student Introduction to Engineering (SITE) Reservations Chair — *May 2015 - May 2016*

Student Chapter of the American Meteorological Society

Secretary — *Apr. 2015 - Apr. 2016*

Member — *Jan. 2015 - May 2017*

Illinois Space Society

RASC-AL Technical Team — *Aug. 2014 - Dec. 2014*

Representative to Students for the Exploration and Development of Space (SEDS) — *Sept. 2013 - Sept. 2014*

Conference Posters & Presentations

Modeling Potential JCPOA Diversion Scenarios with Cyclus — *Philadelphia, PA*

2018 American Nuclear Society Annual Meeting — *June 2018*

B. Mouginot, K. Mummah, P. P.H. Wilson

Gas Centrifuge Cascade Behavior of Off-Normal Enrichment Scenarios — *Ann Arbor, MI*

DOE NNSA 2018 University Program Review Meeting — *June 2018*

K. Mummah, B. Mouginot, P. P.H. Wilson

Off-normal operation in gas centrifuge enrichment cascades — *Gainesville, Fl*

2018 American Nuclear Society Student Conference - Poster Session — *Apr. 2018*

K. Mummah, B. Mouginot, P. P.H. Wilson

NuWWIS: An Interim Storage Solution for Spent Fuel — *Pittsburgh, PA*

2017 American Nuclear Society Student Conference — *Apr. 2017*

K. Mummah, J. Bae, D. OGrady, A. Lopez

Investigating the Effects of Fuel Pellet Geometry on Pellet Cladding Mechanical Interaction (PCMI) using BISON — *Las Vegas, NV*

2016 American Nuclear Society Winter Meeting - Student Poster Session — *Nov. 2016*

K. Mummah, R. Williamson

Public Image in Spent Fuel Disposal: Lessons Learned from Sweden's SKB — *Madison, WI*

2016 American Nuclear Society Student Conference — *Apr. 2016*

K. Mummah, C. Kuprianczyk

- Winner of "Public Image" technical track

Reactivity Management: More Than Just Reactor Engineers — *Washington, DC*

2015 American Nuclear Society Winter Meeting - Student Poster Session — *Nov. 2016*

K. Mummah

Selected Honors & Awards

Awards

2018	**Glenn T. Seaborg Institute Summer Research Fellow**,
2017-2019	**Graduate Fellow, Consortium for Verification Technology**,
2017	**University of Illinois Knights of St. Patrick**,
2016	**Alpha Nu Sigma**,
2016	**William R. Schowalter Award**,
2016	**American Nuclear Society Commendation for Service and Leadership**,
2014	**American Nuclear Society Most Committed Member**,
2013	**University of Illinois James Scholar**,

Scholarships

2017-2019 **ANS Fuel Cycle and Waste Management Division Randall Scholar**,
2016-2017 **Roy G. Post Foundation Scholarship**,
2016-2017 **Dale W. and Wanda L. Weaver Engineering Scholarship**,
2016-2017 **Crowe Horwath Scholarship**,
2016-2017 **Edith and Harry Darby Leadership Scholarship**,
2015-2017 **DOE Nuclear Energy University Program (IUP) Scholarship Award**,
2015-2017 **Nuclear Regulatory Commission Scholarship**,
2015-2017 **American Nuclear Society Decommissioning & Environmental Sciences Scholarship**,
2015-2017 **Catherine Pritchard Undergraduate Scholarship**,
2015-2016 **Exelon Energy for Education Scholarship Award**,
2014-2016 **National Academy for Nuclear Training Scholarship**,
2013-2017 **Mike Harper Leadership Scholarship**,

Short Courses

Nondestructive Assay (NDA) Summer Course

Los Alamos, NM

Los Alamos National Lab — *June 2018*

- One-week course on the fundamentals of gamma spectroscopy and neutron detection for nondestructive assay. The course was based on Los Alamos training given to all International Atomic Energy Agency inspectors but with an extra focus on classifying undeclared items

Nuclear Innovation Bootcamp

Berkeley, CA

University of California, Berkeley — *July 2017*

- Two week program designed to teach students entrepreneurship and innovation as relevant to the nuclear industry
- Students developed small teams and were required to give a business pitch on the last day of the bootcamp

Dr. G. Robert Keepin Nonproliferation Summer School

Los Alamos, NM

Los Alamos National Lab — *Jun. - Aug. 2017*

- Eight week part time summer school that focuses on nuclear nonproliferation concepts, including treaty verification, and arms control. Students also toured relevant Los Alamos lab facilities, as well two visit to Sandia National Lab

Geological Storage of Nuclear Spent Fuel

Oskarshamn, Sweden

Swedish Royal Institute of Technology (KTH) & Swedish Nuclear Fuel and Waste Management Co. — *June 2015*

- Two week intensive course to learn about nuclear spent fuel storage in precambrian geological formations in Sweden and perform field studies deep underground at the Äspö Hard Rock Laboratory near Oskarshamn