Kaitlyn Yanna

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EDUCATION

Massachusetts Institute of Technology (MIT) — Cambridge, MA
Bachelor of Science degree in Nuclear Science and Engineering (NSE) — May 2025
Bachelor of Science in Global Studies and Languages (Spanish Studies) — GPA: 4.7/5.0

Madison Area Technical College (MATC) — May 2021
Graduated from the two-year STEM Academy in one year — GPA: 4.0/4.0
Inducted into Phi Theta Kappa
Conducted independent research as a part of MATC's Honors Program

University of Wisconsin-Platteville — June 2018
Completion of Introduction to Engineering Products course

RESEARCH EXPERIENCE

Plasma Science and Fusion Center — March 2022 – May 2025
Undergraduate researcher

- Verifying STEP against 70+ experimental datasets to determine the accuracy of STEP of predicting profile temperature
- Reviewed 100+ published papers about tokamaks ranging from 1970s-2023 to preform a literature search for validating STEP
- Designed an ECE diagnostic for SPARC: edited and wrote data-verified code in Python to assess analytic theory for predicting and modeling the optical system and its gaussian beam parameters
- Engineered solutions within physical and spatial restraints in collaboration with other researchers
- Conducted research on the degradation of plasma facing mirrors used in ECE by designing and running experiments on a replica of ASDEX's optical system to model gaussian beam parameters to verify the model with collected and analyzed data
- Conducted research on the Thomson-ECE Discrepancy
- Reviewed academic papers about ECE diagnostics to conduct research on the Thomson-ECE Discrepancy to learn how to interpret data from ECE diagnostics

General Atomics/DIII-D — May 2024 – August 2024
Science Undergraduate Laboratory Internship (SULI)

- Modeled loss of scaled-up photonic waveguides in the microwave regime in COMSOL
- Validated theoretical models of impedance, mode conversion loss, and bending loss to published experimental data
- Conducted a literature review of novel photonic waveguides
- Recommended waveguides for development in future fusion applications; this work was presented at APS DPP 2024

CIEMAT — May 2023 – August 2023
Intern at the Laboratorio Nacional de Fusión

- Characterized the phase difference between the density and electrostatic potential in the TJ-II stellarator to study how plasmas lose energy via turbulence
- Calculated the cross phase correlations between various ports of the heavy ion beam probe (HIBP) diagnostic
- Created and improved MATLAB codes to realize that the data is approaching the necessary quality
- Designed easily-readable graphs that inspired and informed future experimental campaigns; this work was presented at APS DPP 2023

MATC STEM Center — Aug. 2020 – Aug. 2021
Hired Worker/Independent Researcher

- Conducted independent research on optimization of composting
    - Engineered an in-vessel rotary drum bioreactor to analyze the effects of uniform turning
    - Collected and analyzed data via wiring an Arduino ESP8266, v1.2 capacitive soil moisture sensor, and a DHT22 humidity and temperature probe
    - Completed a literature review on current methods of composting
    - Wrote a report that concludes that the bioreactor and Bokashi method provide optimal moisture, temperature, and humidity.
- Manipulated 3D printers to achieve even and smooth printing; deconstructed and reconstructed the extruder assembly; optimized the heat of the nozzle and bed on Cura LulzBot software
- Fostered the interest of 25 underprivileged youth in STEM; as a Camp Lead implemented dynamic learning in a week-long STEM Camp

Terrascope: Solving Complex Problems Sep. 2021 – Dec. 2021

Virtual Arrival Lead

- Conducted collaborative research on making long distance transportation more sustainable
- Researched, assessed, and conducted an informal feasibility analysis on virtual arrival
- Edited other Terrascopers' research to improve transparency and reader comprehension

RESEARCH INTERESTS

- Plasma diagnostics
- Turbulence
- Modeling

LEADERSHIP EXPERIENCE

American Nuclear Society May 2023 - May 2025

Undergraduate Representative

- Led and participated in Visiting Committee toto offering appraisal, advice, and insight on the undergraduate NSE program at MIT
- Advocated for undergraduate NSE students in ANS board meetings
- Implemented and plan study breaks and outings to fuel and recharge NSE undergraduates

Nuclear Science and Engineering Recruitment Jan 2023 – May 2025

Student Ambassador

- Innovate creative and eye-catching short videos to encourage student and public interest in NSE
- Script, direct, act, film, and edit videos in collaboration with 5 peers using iPhones and Adobe products (Premiere Pro)

La Casa Exec Board

Cooking President May 2023 – May 2024

- Developed cooking groups in accordance with schedules and preferences every semester
- Ensured that cooking groups are completing all the duties of the dining plan
- Administrated the shared kitchen and its utensils, appliances, and supplies

Undergraduate Student Advisory Group for Engineering Oct. 2022 – Dec 2023

Member

- Innovated ways to encourage first year MIT students to discover less common areas of engineering
- Conceptualized an *Intro to Engineering* course to encourage first years to explore engineering majors
- Collaborated with peers to conceptualize ways to enhance the undergraduate student experience in the School of Engineering

P. Fitness Club Sept. 2022 – Dec 2023

President

- Organized social media presence on social media platforms to promote the club and encouraged ~200 members to join
- Secured $500 in funding by writing applications to foundations and funds to financially support this brand-new club
- Lead peers to conceptualize ways to develop the club

Project Manus Feb. 2022 – Sept. 2023

Student Mentor

- Taught first-year students on proper use of manual fabrication machines so that they feel empowered to use makerspaces
- Maintained high standards of shop cleanliness, supervised and supported other students in their projects

Visiting Committee Undergrad Student Delegation Aug. 2022 – Oct. 2022

Student Delegate for Nuclear Science and Engineering

- Successfully advocated to publicize alternatives to computational courses and for easier student access to focus area subjects as recommended by the department
- Cohesively wrote and prepared a survey, report, and presentation to faculty and staff in collaboration with 5 other students on the current state of the department

WORK EXPERIENCE

County Creek Bed Country Farmacy Sep. 2018 – Aug. 2021

Crew Lead with specializations in Ticket Sales, Pumpkin Sales, Strawberry Sales, & Concession Stand

- Collaborated with a diverse range of stakeholders including customers, owners, senior management, and coworkers
- Developed basic IT skills to trouble shoot the connection between the tablet and the chip reader to completing transactions

McDonald's July 2020 – July 2021

Manager Candidate, Crew Trainer, Crew Member

- Communicated with a diverse range of stakeholders including customers, senior management, and coworkers
- Maintained high standards of customer service during high volume, rapidly evolving conditions
- Trained 5 new employees on the policies, protocols, and procedures

Piggly Wiggly Sep. 2019 – March 2020

Lead Cashier, Stock Person, Dairy Department Leader

- Promoted three times in the span of 5 months
- Detailed focused worker; managed the flow of store's stock and building sales displays

RECOGNITION

- Future Leaders in Nuclear: Undergraduate Symposium for "recogni[tion of] the top undergraduate researchers in science and engineering fields related to nuclear," October 2024
- Outstanding UROP Award for "outstanding contributions by a Junior or Senior to a research project in the Department of Nuclear Science and Engineering," May 2024
- ANS Fusion Energy Division Dr. Kenneth R. Schultz Undergraduate Scholarship, 2024
- Kelley Douglas Fellowship for archival and library research, 2023
- Wisconsin Mathematics, Engineering & Science Talent Search Finalist for "outstanding success with [math] problems", 2018 & 2019
- Society of Women Engineers' Certificate of Merit for "excelling in STEM courses," December 2019

SKILLS

- Software: Proficient in Python, MATLAB, Github, COMSOL; Knowledge of JavaScript, IDL, Adafruit, Arduino
- Lab: Designing experiments; Prototyping; Summarizing academic and white papers; Conducting a literature search; Modeling & simulating via coding and industry standard software; Manual and digital fabrication
- Languages: Proficient in Spanish (C1/C2); Knowledge of French (A1)

ACADEMIC REFERENCES

Prof. Anne White (Research advisor, B.Sc. advisor)
Head, Nuclear Science and Engineering, MIT, Cambridge, MA 02139
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Nathan Howard (Research collaborator)
Principal Research Scientist, PSFC, Cambridge, MA 02139
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