

Kaitlyn Yanna

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Nuclear Science and Engineering Department
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EDUCATION

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Bachelor of Science degree in Nuclear Science and Engineering (NSE)
Bachelor of Science in Global Studies and Languages (Spanish Studies)

May 2025

GPA: 4.7/5.0

Madison Area Technical College (MATC)

May 2021

GPA: 4.0/4.0

Graduated from the two-year STEM Academy in one year
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 perform 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 to 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 Pharmacy

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

- 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 [mathematical] problems", 2018 & 2019
- Society of Women Engineers' Certificate of Merit for "excelling in STEM courses," December 2019

SKILLS

- Software: Proficient in Python, MATLAB, Github; Knowledge of JavaScript, IDL, Adafruit, Arduino
- Lab: Knowledge of designing experiments; Knowledge of prototyping; Knowledge of summarizing academic and white papers; Knowledge of summarizing research findings in a report; Knowledge of manual and digital fabrication
- Languages: Proficient in Spanish (C1/C2); Knowledge of French (A1)

ACADEMIC REFERENCES

Prof. Anne White (Research advisor, B.Sc. advisor)

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