

Caroline Kilian

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EDUCATION

Central Connecticut State University

Bachelor of Science in Physics, Minor in Astronomy

New Britain, CT

Expected May 2026

RESEARCH EXPERIENCE

Undergraduate Research Assistant: Debris Disks and Stellar Evolution

June 2024 – Present

PI: Dr. Meredith Hughes, Associate Professor, Astronomy Department, Wesleyan University

Middletown, CT

- Used archival ALMA data to model the spatially and spectrally resolved carbon monoxide gas emission detected in fifteen debris disks for purpose of calculating dynamical mass of the host star, specifically focusing on HD 110058, HD 32297, and 49 Ceti. Investigated sources of spectral asymmetry in targets.
- Investigated source of problems that a coding package used in research had when attempting to model high inclination disks.

Research Assistant: Supercapacitor Material Testing

Oct 2023 – May 2024

PI: Dr. Rahul Singhal, Associate Professor of Physics & Engineering Physics, CCSU

New Britain, CT

- Synthesized materials using coprecipitation methods and determined electrochemical characterization of materials.

PUBLICATIONS

- Grajales J. & **Kilian C.** et al. in prep. “Dynamical Masses of Gas-Bearing Debris Disk Host Stars”
- **Kilian C.** in prep. “Investigating Stellar Evolution: Dynamical Mass Measurements of 49 Ceti, HD 32297, and HD 110058” - *Undergraduate thesis overseen by Dr. Meredith Hughes and Dr. Kristine Larsen of CCSU.*

GRANTS/FELLOWSHIPS

Undergraduate Research Grant

June 2025 – May 2026

NASA Connecticut Space Grant Consortium (CTSGC) - Funding for 2025-2026 academic year.

AWARDS/SCHOLARSHIPS

2024-25 Dr. Celia Chung Chow Scholarship

May 2025 – May 2026

Central Connecticut State University Department of Physics and Engineering Physics

- Scholarship awarded for distinguished achievement in CCSU Physics Department degree program, applied to 2025-2026 academic year.

FAFSA Pell Grant

Feb 2025 – Present

Central Connecticut State University

CSMP Scholar

Feb 2025 – Jan 2026

Computer Science, Mathematics, and Physics (CSMP) Scholarship Program of Central Connecticut

- Single-year nonrenewable award only for Spring and Fall 2025. Covered all expenses associated with conferences (travel, registration, per diem, etc...) for semesters awarded.

WORK EXPERIENCE

Assistant Lab Technician

Nov 2024 – Present

Physics Department, Central Connecticut State University

New Britain, CT

- Supervised two introductory lab sections per week, providing students with instruction and support.
- Assisted with set up, maintenance, and organization for introductory level physics lab sections and associated equipment.

Programming Assistant

Sept 2023 – Present

“Science Saturdays” at Russell Library

Middletown, CT

- Helped manage and execute science themed programming aimed at ages three to eight and eight to fourteen once a month during the school year. Individually designed and executed astronomy themed presentation for eight to fourteen age group in January 2025.

Infant/Toddler Teacher

June 2022 – May 2025

Neighborhood Preschool

Middletown, CT

- Full time position that included managing classroom of twelve children (age range: 4 mo. to 3 yrs.) with maximum of three other teachers. Switched from full time to part time and substitute position at the preschool in June 2024 due to change of status to full time student.
- Assisted in producing weekly newsletter to the classroom community.
- Planned and executed age appropriate scientific exploration programming using play-based practices.

PROFESSIONAL DEVELOPMENT

NASA Proposal Writing and Evaluation Experience (NPWEE)

January 2026 – May 2026 (expected)

- L'Space program sponsored by NASA's Marshall Space Flight Center, weekly virtual seminars where participants gain hands-on experience in learning how to formulate a proposal to a specific solicitation and complete for a \$10,000.00 team prize to help fund their team's project.

Computational Research Access NETWORK (CRANE) Seminar

January 2025 – May 2025

- Winter/Spring Virtual Seminar - Computational Research Methods for Plasma Physics and Sciences
- Learned basics of Python, Numpy, Matplotlib, and handling FITS files

PRESENTATIONS

- **247th American Astronomical Society Meeting (January 2026):** [Investigating Stellar Evolution: Dynamical Mass Measurements for Gas-Bearing Debris Disks](#) – *Poster, Co-I*
- **New England Section of the American Physical Society (November 2025):** Investigating Stellar Evolution: Calculating Dynamical Mass Measurements of 49 Ceti, HD 110058, and HD 32297 – *Poster, First Author*
- **CT Space Grant Consortium Expo (November 2025):** Investigating Stellar Evolution: Calculating Dynamical Mass Measurements of 49 Ceti, HD 110058, and HD 32297 – *Poster, First Author*
- **Society of Physics Students Congress (October 2025):** Investigating Stellar Evolution: Calculating Dynamical Mass Measurements of 49 Ceti, HD 110058, and HD 32297 – *Poster, First Author*
- **Keck Northeast Astronomy Consortium Symposium (September 2025):** Calculating Dynamical Mass Using CO Detection in Debris Disks around HD 32297 and HD 110058 – *Poster, First Author*
- **New England Section of the American Physical Society (October 2024):** Modeling Gas Emission from the Debris Disk around HD 110058 – *Poster, First Author*
- **Keck Northeast Astronomy Consortium Symposium (September 2024):** Modeling Gas Emission from the Debris Disk around HD 110058 – *Talk, First Author*
- **Northeast Star and Planet Formation (NESPF) Symposium (June 2024):** Debris Disk Potpourri: Vertical Structures, Gas Composition and Stellar Masses – *Poster, Co-I*
- **2024 American Physical Society March Meeting (March 2024):** [Studying the effectiveness of MnO₂ in super capacitor applications in an electrochemical cell with varying amounts of carbon nanotubes introduced during the synthesis procedure](#) – *Virtual Poster, Co-I*

EXTRACURRICULARS

CCSU Physics Club

Oct 2023 – Present

- Served as Club President from October 2024 to present. Previously was the Communications Chair from May 2024 to October 2024.
- Duties as president included but were not limited to: organizing conference travel for undergraduates and faculty chaperone, planning and executing department colloquia, securing funding for student activities including conference travel, running department student mailing list reminding students to register for classes and providing information on educational/research/job opportunities inside and outside of the university, and planning weekly student meetings.

Independent Project: Backyard Radio Telescope

Aug 2025 – Present

- Building single 1.5 meter diameter dish radio telescope with friends to be donated to Earth and Space Sciences Department of CCSU.

Planning Women in Science at CCSU Event

Nov 2025 – Present

- Pitched the project and worked with the Office of Victim Advocacy and Women's Center at CCSU to plan an event to screen the documentary *Picture a Scientist* and have an open forum to address inequality in student experiences with science on campus.

MEMBERSHIPS

American Astronomical Society	Nov 2025 – Present
Sigma Pi Sigma	May 2025 – Present
American Physical Society	Oct 2024 – Present