Grace Forrey

Post Baccalaureate · University of Connecticut

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Education

University of Connecticut *Storrs, CT*

BS Undergraduate Degree in Physics *August 2021 - May 2025*

- Minor in Astrophysics
- Senior thesis/undergrad research advisor: Dr. Jonathan Trump

Research Interests

Galactic Evolution: galactic structure; star formation; metallicity; dust distribution; high redshift.

Stellar Evolution: pre-main sequence; accretion disks; stellar modeling.

Black Holes: galaxy-black hole coevolution; active galactic nuclei.

Research Experience

University of Connecticut *Storrs, CT*

Post Baccalaureate Research Technician *September 2025 – Present*

- Research project within Dr. Aleksandra Kuznetsova's research group.
- Read literature and use MESA (Modules for Experiments in Stellar Astrophysics) to run models of pre-main sequence stars, studying how disk accretion influences stellar development; analyze results using Python.

University of Connecticut, Department of Physics *Storrs, CT*

Undergraduate Student Researcher *October 2023 – May 2025*

- Conducted astrophysics research under Dr. Jonathan Trump, collaborating closely with Dr. Raymond Simons.
- Analyzed JWST NIRISS spectroscopic data from the NGDEEP collaboration using Python; created spatially resolved dust and star formation maps of 14 galaxies using the Balmer decrement, supported by the NASA Connecticut Space Grant (Summer 2024).
- Calculated galaxy positions on the star formation–mass sequence and compared SED-based and dust-corrected star formation rates.
- Completed a senior thesis and am currently preparing a paper for publication, which is expected to be published to arXiv by December 8th.

NASA Connecticut Space Grant *Storrs, CT*

Undergraduate Summer Researcher *June 2025 - August 2025*

- Worked closely with Dr. Jonathan Trump and Dr. Raymond Simons.
- Used previously produced dust distributions for a diverse sample of early-universe galaxies and calculated dust-corrected SFR surface density using Python.
- Compared dust-corrected SFR surface density with attenuation at $H\alpha$ for 14 galaxies, finding that in most cases both star formation and attenuation peak in the galactic centers and decline toward the outskirts.
- Reviewed and discussed literature weekly to better understand the field and the methodology for calculating dust-corrected SFR.

Early Research Experience

Advanced Research Mentorship *Glastonbury, CT*

High School Student *August 2020 - June 2021*

- Secured a year-long research mentorship under Prof. Christopher Elphick (Dept. of Ecology & Evolutionary Biology, University of Connecticut).
- Studied non-migratory bird behavior in Connecticut, analyzing seasonal behavioral changes with a focus on house sparrows.

Professional Experience

Greenwich Hospital *Greenwich, CT*

Chemist Tech *September 2021 - January 2022*

- Worked in Central Processing and the Microbiology lab
- Took samples that are sent from around the hospital and process them by making sure they get to the right departments so the correct tests can be run
- Processed COVID tests, urine cultures, and other tests within the Microbiology lab

Publications

To Be Published

Forrey, G., Simons, R., Trump, J., Shen, L., Koekemoer, A., "NGDEEP: A New Non-Parametric Measure of Local Star-Formation and Attenuation at Cosmic Noon," Expected to be published to arXiv by December 8th.

Grants

Summer 2024 **Undergraduate Research Grant**, NASA Connecticut Space Grant Consortium *$ 6,000*

Presentations

November 8, 2024. *Balmer Decrements at* $1 < z < 3$. Poster Session: 2024 NASA CT Space Grant Annual Grants Expo, CT.

September 17, 2024. *Opportunities in STEM (Physics and Astronomy)*. Guest Lecture, RHAM High School, Hebron, CT.

Relevant Coursework

Stars and Compact Objects
Galaxies & Interstellar Medium
Techniques Modern Astrophysics
Quantum Mechanic I
Mechanics I
Electricity and Magnetism I
Research Thesis in Physics
Computational Physics
Foundation Modern Astrophysics
Development of Quantum Physics
Advanced Undergraduate Lab
Electricity and Magnetism II

Honors, Awards, and Memberships

Spring 2025 - Present **Sigma Pi Sigma Honors Society**, Member
January 2024 - May 2024 **Dean's List**, University of Connecticut
May 2023 **Uconn Stamford Physics Award**, University of Connecticut

Leadership

April 2024 - May 2025 **Women in Physics**, Treasurer *Storrs, CT*

Conferences

APS CU*IP *Storrs, CT*

University of Connecticut *January 24-26, 2025*

- Helped organize students to attend the event and helped set up before the events started
- Went to panels and talks and networked with fellow conference attendees

Technical Skills

Programming Languages: Python; FORTRAN; Julia

Software & Application: MESA; NumPy; AstroPy; SciPy; Matplotlib; Jupyter Notebook; VS Code.

High-Performance Computing: SLURM workload manager; batch job scripting.

Data Management: Globus (large-scale dataset transfer).