Quin Berfield-Brewer

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Website • GitHub

EDUCATION

Smith College, Northampton, MA *Fall 2022 - Spring 2026*

Double Major in Astronomy & Physics

Relevant Coursework

Astronomy: Telescopes and Techniques; Stellar Astrophysics; Astronomical Data Science; Cosmology; Independent Study; Observational Techniques in Optical and Infrared Astronomy;
Physics: Electricity and Magnetism; Newtonian Mechanics; Computational Physics; Mathematical Methods; Light, Relativity, and Quantum Physics; High Precision Spectroscopy; Thermal Physics; Quantum Mechanics; Electronics; Classical Mechanics;

School for Field Studies, South Caicos, Turks and Caicos Islands *Fall 2024*

Study Abroad Student at The Center for Marine Resource Studies

Coursework: Directed Research; Tropical Marine Ecology; Marine Resource Management; Marine Conservation Governance

RESEARCH EXPERIENCE

Summer Research Internship and Honors Thesis, *Summer 2025 - Spring 2026*

Five College Astronomy Department

Advisors: Professor James Lowenthal and Professor Min Yun

- Analyzing JWST NIRCam imaging to quantify the presence of highly obscured active galactic nuclei (AGN) among high redshift galaxies identified as hosts of an AGN using different multi-wavelength tracers. A specific goal of this study is to analyze the morphology of faint radio sources in the COSMOS field in different JWST/NIRCam bands. We fit all galaxies with a standard Sérsic profile with a point-source component as well as a double Sérsic profile. A comparison of these models allows us to identify the galaxies in the sample with true point sources.
- Presented iposter at the 247th meeting of the American Astronomical Society.

Independent Study, Five College Astronomy Department *Spring 2025*

Advisors: Professor Min Yun and Professor James Lowenthal

- Searched for active galactic nuclei as point sources in NIRCam F444W filter of the ultra deep continuum data from COSMOS-Web Field using CARTA for visual inspection and comparison to data from the Very Large Array.

Directed Research, School for Field Studies *Fall 2024*
Advisor: Professor C.E. O'Brien

- Developed individual research questions and collected data on the correlation between *Octopus insularis* population and predator abundance via underwater surveys, photo and video analysis. Organized and analyzed data using Microsoft Excel and RStudio. Presented findings to students, professors, gave a lightning presentation to the local community, and wrote a scientific paper.

Investigating Cataclysmic Binaries, Smith College *Spring 2024*

- Developed individual research questions and gathered data from VizieR on the influence of mass on stellar parameters of cataclysmic binaries. Conducted data organization and analysis in Python. Presented findings to students, professors, and wrote a final paper.

High Precision Spectroscopy, Smith College *Spring 2023*
Advisor: Professor Will Raven (Publishing name Will Williams)

- Gathered absolute frequency measurements on the three excited-state transitions in neutral N14 using saturated absorption spectroscopy.
- Developed an optics setup to improve the signal to noise ratio and designed Arduino based circuit to automate adjusting laser power. Analyzed data in Mathematica, with published results.

BridgeUP: STEM Brown Scholars Program, *Fall 2018 - Summer 2021*
American Museum of Natural History, New York City
Advisor: AMNH Research Fellow Danielle Rowland

- Analyzed data from Transiting Exoplanet Survey Satellite sectors 14 & 15 using Python. Sorted through 32,000 light curves using multiple cuts of the data to find two final exoplanet candidates. Submitted candidates to ExoFOP. Created a library with functions to sort TESS data using analysis of transit shape.

PUBLICATIONS

Ahrendsen, K. J., Maruko, C., Albert-Aranovich, K. R., **Berfield-Brewer, Q.**, Esseln, A., Guo, L., Ishimwe, A. E., Kuzniar, Y., McKenna, A. E., Villarreal, K. J., Uprety, A., da Silva, L. V., Vogt, K. F., & Williams, W. D. (2023). Absolute frequency measurement of the $2p^2(^3P)3s^2P\text{-}2p^2(^3P)3p^2D^0$ transitions in neutral ^{14}N. *Physical Review A, 108(4)*. https://doi.org/10.1103/physreva.108.042815

ADDITIONAL ACTIVITIES

Telescope Maintenance *Spring 2025 - Spring 2026*
Employer: Senior Laboratory Instructor Meg Thacher

- Perform weekly and routine maintenance checks of seven eight-inch Meade telescopes including: RA & DEC motion and locks; finder alignment; telrad alignment and batteries; visual back; diagonal; focus; power supply.

Astronomy Dept. Open Houses, Smith College *Spring 2025*

- Operate 8” and 20” telescopes to allow students and community members to view the night sky.

Hell’s Belles Fencing Team, Smith College *Fall 2022 - Spring 2026*

- Foil Squad Captain: lead and instruct squad at tournaments and practices.
- Foil Fencer: compete in regional and national fencing tournaments and support the team by fundraising.
- Foil Squad Armorer: perform repairs on weapon and body cord circuitry.

SKILLS

Programming Languages

- Proficient in Python, R, Java, Arduino IDE, Mathematica, LaTeX, and HTML

Software

- ImageJ, LoggerPro, StarStaX, CARTA, SAOImageDS9
- GitHub, Jupyter Notebook, JupyterLab, Google Colab, Visual Studio Code, RStudio
- Microsoft Excel, Microsoft Word, Google Sheets

Telescope

- Operate telescope for data collection
- Operate telescopes for public stargazing/star parties
- Perform weekly telescope maintenance

Technical Skills

- Astrophotography with DSLR camera
- General electronics maintenance and circuitry using a breadboard as well as Arduino circuits with sensors and motors. Projects include: AC/DC converter, maze-solving Arduino robot, and an Arduino Simon-says game.
- Video and photo analysis, species identification, visual underwater census (scuba and snorkel), underwater transect surveys
- PADI Advanced Open Water Scuba Certification

PROFESSIONAL MEMBERSHIPS

American Astronomical Society
International Dark-Sky Association
Reef Environmental Education Foundation