ABIGAIL COLCLASURE

CONTACT INFORMATION

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EDUCATION

BS Massachusetts Institute of Technology, Physics
BS Massachusetts Institute of Technology, Earth, Atmospheric, and Planetary Science
Class of 2024
GPA: 4.8/5.0

RESEARCH EXPERIENCE

NSF REU, University of Hawaii Institute for Astronomy Summer 2023 - Present
Undergraduate Researcher, Advisor: Dr. Michael Liu

- Calculated distortion solution for the Canada-France-Hawaii Telescope's WIRCam instrument. Solution will be publicly available as part of a data analysis pipeline for high-precision parallax measurements of brown dwarfs.

MIT Planetary Astronomy Laboratory Jan. 2022 - Present
Undergraduate Researcher, Advisor: Dr. Michael Person

- Studied change in Pluto's atmosphere. Observed a stellar occultation of Pluto in Australia. Reduced raw images to lightcurves using Python. Tested high-speed POETS camera system that was used for observations. Presented results three times.
- Using python to analyze occultation data of Kuiper Belt Object Ixion to calculate its diameter and oblateness (in progress).

MIT Wallace Astrophysical Observatory Jun. 2021 – Aug. 2022
Undergraduate Researcher, Advisors: Dr. Stephen Slivan and Dr. Michael Person

- Observed several Koronis family asteroids and Pluto with optical telescopes.
- Measured photometric changes over their rotational periods, for both Koronis family asteroids and Pluto. Some results published in the Minor Planet Bulletin.
- Performed maintenance on instrumentation including replacing a telescope's mount control board, cleaning the optical components of a finderscope, and calibrating the spectrograph's micrometer.

PUBLICATIONS

3. Slivan, S.M.; Brothers, T.; **Colclasure, A**.; Larsen, S.; McLellan-Cassivi, C.; Neto, O.; Noto, M.; Redden, M.; Wilkin, F.; Das, N. (2023). "Rotation Period of Koronis Family Member (1497) Tampere." *Minor Planet Bulletin, **50,** 125-126*

2. Slivan, S.M.; **Colclasure, A**.; Larsen, S.; McLellan-Cassivi, C.; Neto, O.; Noto, M.; Redden, M.; Wilkin, F. (2023). "Synodic and Sidereal Rotation Periods of Koronis Family Member (1389) Onnie." *Minor Planet Bulletin, **50**, 8-10*

1. Slivan, S.M.; **Colclasure, A**.; Escobedo, I.; Henopp, A.; Mitchell, A.; Wilkin, F. (2022). "Synodic and Sidereal Rotation Periods of Koronis Family Member (1762) Russell." *Minor Planet Bulletin, **49**, 71-72*

TALKS (* INVITED)

4. University of Hawaii Institute for Astronomy REU Research Symposium (July 2023): A Distortion Solution for Brown Dwarf Parallax Measurements from the Canada-France-Hawaii Telescope

3. *Lamoille County Stargazers (October 2022): "Chasing Pluto: Occultation in the Outback"

2. MIT Physics Research in the Summer Months Convention (September 2022): "Chasing Pluto: Occultation in the Outback"

1. Stellafane Convention (July 2022): "Chasing Pluto: Occultation in the Outback"

POSTER PRESENTATIONS

2. 55th American Astronomical Society Division of Planetary Sciences Meeting (Upcoming October 2023): An Improved Distortion Solution for Brown Dwarf Parallax Measurements from the Canada-France-Hawaii Telescope

1. University of Hawaii Institute for Astronomy REU Research Symposium (July 2023): A Distortion Solution for Brown Dwarf Parallax Measurements from the Canada-France-Hawaii Telescope

FELLOWSHIPS AND AWARDS

1. Research Experience for Undergraduates (REU) Fellowship at University of Hawaii Institute for Astronomy (NSF, 2023)
2. MIT Undergraduate Research Opportunities Program (UROP) (4 semesters total)

RELEVANT CLASS PROJECTS

Spectral Comparison of Jupiter and Saturn Fall 2021

Class: Observational Techniques of Optical Astronomy

- Observed spectra of Jupiter and Saturn and analyzed data to compare their chemical compositions. Performed statistical tests and interpreted results in a paper and presentation.

Chemical Analysis of HE 2226-1529 Fall 2022

Class: Observational Stellar Archeology

- Analyzed spectra of a low mass, early generation star to study the early universe. Computed the radial velocity correction, chemical abundances, stellar parameters (temperature, surface gravity, microturbulence), performed statistical analyses using python and communicated results in a paper and presentation.

TEACHING EXPERIENCE

Hands-On Astronomy: Observing Stars and Planets Spring 2023

Undergraduate Teacher's Assistant

- Assisted students during weekly observational astronomy labs. Helped students learn how to use DSLR cameras and small (72 mm – 24in) telescopes.

MIT Experimental Study Group – Physics I Fall 2021

Undergraduate Teacher's Assistant

- Guided students to answer weekly problem sets during office hours and graded problem sets. Improved personal teaching abilities by enrolling in ES.200 ESG Undergraduate Teaching.

PUBLIC OUTREACH

- Led tours of MIT Wallace Astrophysical Observatory to MIT community members and members of the public (Summer & Fall 2022).

MENTORSHIP

- **McCormick Big (Fall 2021 and 2022).** Mentor in the McCormick (an undergraduate dorm) Big/Little program. Provided support and assistance for a first-year student during their first semester.

SKILLS

- Python: numpy, astropy, photutils, pandas, scipy, matplotlib
- Software: SkyX, AstroImageJ, SAOImage DS9, Jupyter Notebook, Visual Studio Code, Solidworks
- Other: Experience using 14-24 inch optical telescopes

PROFESSIONAL MEMBERSHIPS

American Astronomical Society (2023 – present)