

ANDREW BOWEN

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EDUCATION

Northwestern University, Evanston, IL
Bachelor's in Physics (Astronomy concentration)
Minor in Italian Studies

September 2016 - Present

RESEARCH

Northwestern University CIERA

2019

Eclipsing Binaries in Star Clusters with LSST

Undergraduate Research Assistant

- Worked in the Geller group at Northwestern University to determine the period-recovery capabilities of the new Large Synoptic Survey Telescope *LSST*. Compiled survey data of 2,000 open and globular clusters. Used these data to evolve binary populations for each cluster to representative age. Binaries with periods longer than the hard-soft boundary of the cluster (determined via cluster data) were not considered. Then generated and fit light curves for each binary. Determined binary period from folded light curves with a Lomb-Scargle algorithm. Used this method to compare various observing strategies for *LSST* to determine optimal cadence for viewing eclipsing binary stars. I presented this work to the Northwestern Physics and Astronomy department as well as to the general public at the Adler Planetarium. I attended the 2019 LSSTC Project Community Workshop and gave a poster presentation of this work as part of the undergraduate cohort. I also gave a poster presentation of this work at the 235th meeting of the American Astronomical Society in Honolulu, HI. This work is currently in preparation for a publication that will be released in mid-2020.

Northwestern University CIERA

2018

Eclipsing binaries with LSST

Undergraduate Research Assistant

- Attempted to determine period recovery rate of *LSST* for galactic field binaries. Utilized same strategy as that of our cluster binary analysis, without the consideration of intra-cluster dynamics for galactic field binaries. Also generated updated limb-darkening coefficients for new *LSST* filter system. Without this, the telescope would be using an outdated filter system that could render it less efficient in observing eclipsing binary stars. Our method of recovering binary periods was in agreement with previous studies. This was presented in a poster to the Northwestern Physics and Astronomy department as well as the general public at the Adler planetarium.

Northwestern University CIERA

Nov 2018 - Apr 2018

Updating Distance Estimates to Interstellar Clouds

Undergraduate Research Assistant

Worked with newly released GAIA spectroscopic parallax data to provide improved (more accurate) distance estimates to high latitude molecular interstellar clouds. Utilized reddening data from GAIA of foreground and background stars to provide tighter upper and lower bounds on distance estimates to clouds. Created sky maps of foreground and background objects with reddening values to provide better picture of chemical composition of clouds

TECHNICAL SKILLS

Programming
Software & Tools
Data Visualization

Python, C++, JavaScript, HTML/CSS
GitHub/Git, Python numerical analysis packages (numpy, scikit-learn, pandas)
matplotlib, plotly

WORK EXPERIENCE

Northwestern Office of Undergraduate Admissions

April 2019 - Present

Tour Guide Coordinator

- Managed a team of 150+ tour guides. During my tenure, I reorganized the office archive structure to improve organizational efficiency. Restructured the tour guide training program by creating online training modules to help teach guides the requisite information. Wrote software in Python that allowed guides view feedback form visitors on their tours. This program allows guides to view comments on tour performance as well as data visualizations of their reported scores. We are currently turning this software into an applet that guides can download and access anywhere.

Northwestern University Department of Italian

August 2019 - Present

Italian Tutor

- Worked as an undergraduate tutor for Northwestern University Italian undergraduate curriculum. Provided both individual and group tutoring multiple times a week. Focused on integrating grammatical concepts through informal conversation. Utilized grammar exercises to reinforce grammatical structure and vocabulary learning. Worked with students with learning disabilities tied to foreign language learning. Also provided group tutoring sessions twice a week through the department for enrolled students in intermediate and beginner courses.

HONORS AND AWARDS

Medalist: Chambliss Award for Undergraduate Poster presentation – 235th Meeting of the American Astronomical Society (AAS)

LSST Enabling Science Grant

2019 Weinberg College of Arts and Sciences Undergraduate Research Grant

2018 Illinois Space Grant Consortium Undergraduate Fellowship winner

Weinberg College of Arts and Sciences Conference Travel Grant winner

Northwestern Office of Undergraduate Research Conference Travel Grant winner