Catherine Slaughter

Early-Career Astronomer

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Education

2017–2021 **BA in Astronomy and Physics**, *Dartmouth College*, Hanover, NH.
GPA: *3.52* overall, *3.75* in Astronomy Major
Expected to graduate in June 2021. Studied abroad and participated in an observing run at SAAO in South Africa Jan-Mar 2019.
Senior Honors Thesis: *Refining the Age of the Universe Using Globular Clusters*

Extracurricular Research Experience

2020–Present **Senior Thesis Project**, *Dartmouth College Dept. of Physics and Astronomy*, Chaboyer Group, Hanover, NH.
Implemented numerical analysis method from Dolphin 2001 along with Monte Carlo Main-Sequence fitting as done in O'Malley et al. 2017 to determine the ages of several nearby globular clusters with significantly decreased error. Doing so sets a hard lower limit for the age of the universe, potentially helpful for future research in the Hubble Tension.
- Related Publications: *Refining the Age of the Universe with Globular Clusters* in preparation

2020–Present **Caltech Summer Undergraduate Research Fellowship**, *California Institute of Technology*, Harrison Group, Pasadena, CA.
Analyzed previously unused stray-light observations from NuSTAR of several low-mass neutron star x-ray binaries. Began as a Summer project, but work continued into the school year for extracurricular interest. Research conducted remotely due to COVID-19 pandemic.
- Final Report: *Analyzing Straylight X-ray Binaries with NuSTAR*
- Related Publications: *A Straylight Analysis of NS LMXB GX17+2* in preparation
  StrayCats: A catalog of NuSTAR Stray Light Observations

2018–2019 **Undergraduate Researcher**, *Dartmouth College Dept. of Physics and Astronomy*, Chaboyer Group, Hanover, NH.
Worked calibrating DSED stellar evolution models against certain metal-poor subdwarfs.
- Related Publications: *Metal-Poor Calibrating Subdwarfs in the Gaia Era* submitted for publication July 2020
- Analyzed spectral data and measured emission line equivalent widths in splot
- Created model atmospheres using MOOG program

Publications

Brian Grefenstette et al. StrayCats: A Catalog of NuSTAR Stray Light Observations. *ApJ*, 2021.

Catherine M. Slaughter and Brian Chaboyer. Refining the Age of the Universe Using Globular Clusters. *In Preparation*, 2021.

Catherine M. Slaughter, R.M. Ludlam, and Brian Grefenstette. A Straylight Analysis of NS LMXB GX17+2. *In Preparation*, 2021.

Christina Gilligan et al. Metal-Poor Calibrating Subdwarfs in the Gaia Era. *In Preparation*, 2021.

Honors and Awards

Nov 2019 **Francis L. Town Scientific Prize (Physics and Astronomy)**, Dartmouth College.
A prize offered annually to "one meritorious and deserving student in each department of scientific study at the College" at the end of Sophomore year.

Poster Presentations

August 2020 **Caltech SFP Symposium**, Pasadena, CA.
"Analyzing Straylight X-ray Binaries with NuSTAR"
Presented electronically due to COVID-19

May 2020 **Wilder Department Symposium**, Hanover, NH.
"Refining the Age of the Universe Using Globular Clusters: Prerequisite Work"
Presented electronically due to COVID-19 Pandemic

May 2018 **Wetterhan Science Symposium**, Hanover, NH.
"Improving Metal-Poor Stellar Evolution Models"

Grants

Summer 2020 **Caltech SURF Grant**, $6620.
Awarded to Caltech Summer Undergraduate Research Fellows.

Spring 2019 **Dartmouth College Undergraduate Leave Term Grant**, $5200.
Grant awarded to students conducting a term of full-time research.

2018–2019 **Dartmouth College Sophomore Research Scholar**, $2000.
Grant awarded to second-year students assisting faculty in their research.

Teaching Experience

2019–Present **Dartmouth Emerging Engineers Tutor**, *Thayer School of Engineering*, Part-Time, Hanover, NH.
Tutor for first-year students taking introductory math, physics, and computer science courses.

2018–Present **Public Observing Guide**, *Dartmouth College Dept. of Physics and Astronomy*, Part-Time, Hanover, NH.

Summer 2019, Spring 2020 **Introductory Astronomy Teaching Assistant**, *Dartmouth College Dept. of Physics and Astronomy*, Part-Time, Hanover, NH.
Teaching assistant for an introductory astronomy course geared toward arts and humanities students.

Summer 2018 **Astronomy and Nature Guide**, *Carthage College in collaboration with the Appalachian Mountain Club*, Full-Time, Crawford Notch, NH.
Worked with the general public in order to educate about astronomy, spread awareness for environmental issues, and encourage certain social changes.

Skills

Programming	C, C++, Java, MATLAB, Python, PyRAF, VHDL, Bash	*Intermediate*
	HTML, CSS, Fortran	*Beginner*
Computer	Terminal interface, LaTeX, DS9, MOOG, XSPEC, Anaconda	
Language	English	*First Language*
	Spanish	*Conversational*