Catherine Slaughter

Early-Career Astrophysicist

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Education

2017–2021 **BA in Physics and Astronomy**, *Dartmouth College*, Hanover, NH.
GPA: *3.49* Overall, *3.67* 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 submitted for publication

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

Christina Gilligan et al. Metal-Poor Calibrating Subdwarfs in the Gaia Era. *Submitted for Publication*, 2020.

Brian Grefenstette et al. Straycats: A Catalog of NuSTAR Stray Light Observations. *Submitted for Publication*, 2020.

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.

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, 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*