Christine Mazzola Daher

Ph.D. Candidate *(She/Her, US Citizen)*
+1 (662) 617-4429
c.mazzola.daher@pitt.edu
cmazzdaher.github.io

Dept. Physics and Astronomy
University of Pittsburgh
3941 O'Hara Street
Pittsburgh, PA 15260

Research focus: stellar multiplicity statistics and their correlations with stellar properties

Education

University of Pittsburgh Fall 2016 – Spring 2022

Ph.D. Physics *(expected April 2022, GPA: 3.67)*
Advisor: Prof. Carles Badenes
Dissertation: Stellar Multiplicity Statistics in APOGEE

M.S. Physics *(Fall 2016 – Spring 2018)*

Mississippi State University Fall 2012 – Spring 2016

B.S. Physics, Mathematics minor
Summa cum laude (GPA: 3.93)

Research Experience

Graduate Student Researcher, Pitt Summer 2017 – Present
Research Advisor: Prof. Carles Badenes
Topics: Doctoral research on stellar multiplicity using APOGEE radial velocity and stellar parameters. Developed a Monte Carlo script to simulate radial velocity observations of binary star systems to characterize completeness and selection effects in APOGEE targeting strategies.

Undergraduate Student Researcher, Miss. State Summer 2015
Research Advisor: Prof. Jim Dunne
Topics: Wrote a script in C to evaluate the thermodynamic performance of a heater for the cryogenic hydrogen system of targets at the Thomas Jefferson Accelerator Facility.

Undergraduate Research Assistant, Miss. State Summer 2013 – Spring 2016
Research Advisor: Jim Gafford
Topics: Managed the Advanced Electronics Laboratory in the Center for Advanced Vehicular Systems. Built prototype circuit boards using the lab's milling machine, soldered the boards' components, and assisted with prototype testing. Completed training in ITAR compliance. Characterized a Simulink model file for a vehicle's powertrain.

Mentoring and Supervision

Graduate Research	Co-supervised Victoria Bonidie and Travis Court *Stellar Multiplicity in Sag. dSph vs. the Milky Way (publication in prep.)*	Spring 2021 – Present
Undergraduate Research	Co-supervised Jakob Bindas *The Closest Companions of APOGEE RC Stars*	Fall 2021 – Present
	Co-supervised Victoria Bonidie and Polina Petrov *Constraining UV Excess in APOGEE RV Variables*	Summer 2019
Mentoring	Dept. Physics & Astronomy TA/TF Mentor *Mentored 15-40 TAs/TFs per semester*	Fall 2020 – Summer 2021
	Dept. Physics & Astronomy Graduate Student Mentor *In 3 years, mentored 10 first-year graduate students*	Fall 2018 – Summer 2021

Honors and Awards

Fellowships	Peter F. M. Koehler Predoctoral Fellowship, U. Pittsburgh *Awarded for teaching excellence and exceptional research promise*	Fall 2019 / Summer 2020
	Predoctoral Summer Research Fellowship, U. Pittsburgh	Summer 2017
Scholarships	Crow Scholarship, Dept. Physics & Astronomy, Miss. State	Fall 2015 – Spring 2016
	Rundel Scholarship, Dept. Physics & Astronomy, Miss. State	Fall 2013 – Spring 2015
	Grillot Scholarship, Dept. Physics & Astronomy, Miss. State	Fall 2012 – Spring 2013
Honor Societies	Miss. State Society of Scholars	Spring 2016
	Miss. State Shackhouls Honors College	Fall 2012 – Spring 2016
Competitions	3 Minute Thesis Winner, Dept. Physics & Astronomy, U. Pittsburgh	2019 / 2020

Conferences, Workshops, and Presentations

Invited Talks	Stellar Streams Group, U. Cambridge	Nov. 2021
	Astrolunch Seminar Series, U. Pittsburgh	Dec. 2020
Contributed Talks	SDSS 2021 Collaboration Meeting, Johns Hopkins U.	Aug. 2021
	SDSS 2020 Collaboration Meeting, New York, USA	June 2020
	U. Pittsburgh "Astrosnacks" Student Seminar	Feb. 2018 / Nov. 2018
Outreach	No-Jargon Talk Series, Women & Minorities in Physics at Pitt	July. 2021
Posters	SDSS 2019 Collaboration Meeting, Ensenada, Mexico	June 2019
Attended	Women in Medicine and Science Forum, U. Pittsburgh	Nov. 2019
	Negotiation & Management for Women in Sciences, U. Pittsburgh	Nov. 2019
	APOGEE Stellar Companions Paper Sprint, U. Virginia	Oct. 2019
	LSST Community Brokers Workshop, Seattle, Washington	June 2019

Teaching

Instructional	Pitt AstroPGH Research Boot Camp Instructor *Two-part series on plotting with Matplotlib*	May 2020
	Carnegie Mellon U. "Astrosnacks" Student Seminar Title: *Python Plotting 101*	Sept. 2019
Graduate TA	PHYS 091: Conceptual Physics	Spring 2020
	ASTRON 088: Stonehenge to Hubble	Spring 2019
	ASTRON 089: Stars, Galaxies, and the Cosmos	Fall 2016 / Spring 2017 / Spring 2019
Lab Supervisor	ECE 4653/6653: Introduction to Power Electronics	Spring 2015 / Spring 2016

Professional Skills and Memberships

Computer Languages	Python, C, Fortran, R, LaTeX
Tools	git, Mathematica, Maple, MATLAB/Simulink, Microsoft Office
Techniques	Monte Carlo, autoencoders, soldering
Memberships	Sloan Digital Sky Survey IV: APOGEE-2 Survey Sloan Digital Sky Survey V U. Pittsburgh Women and Minorities in Physics student group

Publications

Note: My name changed due to marriage in late 2020. I was previously Christine N. Mazzola and now am Christine Mazzola Daher. Mazzola is my new middle name and may appear in full, as M., or not at all, depending on the service.

⋆ – First or Second Author; *2 First Author, 4 N^{th} Author*

6. ⋆ Stellar Multiplicity and Stellar Rotation: Insights from APOGEE
   Daher, C. M., Badenes, C., Tayar, J., Pinsonneault, M., Koposov, S. E., Kratter, K., Moe, M., Anguiano, B., Godoy-Rivera, D., Majewski, S., Carlberg, J. K., Walker, M. G., Buttry, R., Dixon, D., Serna, J., Stassun, K. G., De Lee, N. M., Hernández, J., Nitschelm, C., Stringfellow, G. S., Troup, N. W., *submitted to MNRAS (arXiv:2110.01100)*

5. Stellar Kinematics of Dwarf Galaxies from Multi-Epoch Spectroscopy: Application to Triangulum II
   Buttry, R., Pace, A. B., Koposov, S. E., Walker, M. G., Caldwell, N., Kirby, E. N., Martin, N. F., Mateo, M., Olszewski, E. W., Starkenburg, E., Badenes, C., **Daher, C. M.**, *submitted to MNRAS (arXiv:2108.10867)*

4. Close Substellar-Mass Companions in Stellar Wide Binaries: Discovery and Characterization with APOGEE and Gaia DR2
   Lewis, H. M., Anguiano, B., Majewski, S., Nidever, D. L., Badenes, C., De Lee, N., Hasselquist, S., **Daher, C. M.**, Stassun, K. G., Bizyaev, D., Godoy-Rivera, D., Nitschelm, C., Oravetz, A., Pan, K., Roman-Lopes, A. (2021) *MNRAS, 509, 3355*

3. Analysis of Previously Classified White-Dwarf-Main-sequence Binaries Using Data from the APOGEE Survey
   Corcoran, K. A., Lewis, H. M., Anguiano, B., Majewski, S., Kounkel, M., McDonnal, D. J., Stassun, K. G., Cunha, K., Smith, V., Allende Prieto, C., Badenes, C., De Lee, N., **Mazzola, C. N.**, Longa-Peña, P., Roman-Lopes, A. (2021) *AJ, 161, 143*

2. ⋆ The Close Binary Fraction as a Function of Stellar Parameters in APOGEE: A Strong Anticorrelation with α Abundances
   Mazzola, C. N., Badenes, C., Moe, M., Koposov, S. E., Kounkel, M., Kratter, K., Covey, K., Walker, M. G., Thompson, T. A., Andrews, B., Freeman, P. E., Anguiano, B., Carlberg, J. K., De Lee, N. M., Frinchaboy, P. M., Lewis, H. M., Majewski, S., Nidever, D., Nitschelm, C., Price-Whelan, A. M., Roman-Lopes, A., Stassun, K. G., Troup, N. W. (2020) *MNRAS, 499, 1607*

1. ⋆ Stellar Multiplicity Meets Stellar Evolution and Metallicity: The APOGEE View
   Badenes, C., **Mazzola, C.**, Thompson, T. A., Covey, K., Freeman, P. E., Walker, M. G., Moe, M., Troup, N., Nidever, D., Allende Prieto, C., Andrews, B., Barbá, R. H., Beers, T. C., Bovy, J., Carlberg, J. K., De Lee, N., Johnson, J., Lewis, H., Majewski, S. R., Pinsonneault, M., Sobeck, J., Stassun, K. G., Stringfellow, G. S., Zasowski, G. (2018) *ApJ, 854, 147*