

# CHRISTINE MAZZOLA DAHER

## Postdoctoral Fellow

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## Center for Cosmology and AstroParticle Physics

The Ohio State University  
191 W. Woodruff Avenue  
Columbus, OH 43210  
*She/Her, US Citizen*

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

## EXPERIENCE

### CCAPP Postdoctoral Fellow

Fall 2022 – Present

CCAPP and the Departments of Physics and Astronomy · The Ohio State University · Columbus, OH

## EDUCATION

### Ph.D. Physics

Fall 2016 – Summer 2022

University of Pittsburgh · *Advisor:* Prof. Carles Badenes

### M.S. Physics

Fall 2016 – Spring 2018

University of Pittsburgh · *Completed contemporaneously with Ph.D.*

### B.S. Physics, Mathematics minor

Fall 2012 – Spring 2016

Mississippi State University · *Summa cum laude*

## MENTORING AND SUPERVISION

GRADUATE RESEARCH Co-supervised Victoria Bonidie and Travis Court Spring 2021 – Summer 2022  
*Stellar Multiplicity in Sag. dSph vs. the Milky Way*  
(published 2022, *ApJL*, 933, L18)

UNDERGRADUATE RESEARCH Co-supervised Jakob Bindas Fall 2021 – Spring 2022  
*The Closest Companions of APOGEE RC Stars*  
Co-supervised Victoria Bonidie and Polina Petrov Summer 2019  
*Constraining UV Excess in APOGEE RV Variables*

MENTORING Dept. Physics & Astronomy TA/TF Mentor Fall 2020 – Summer 2021  
*Mentored 15-40 TAs/TFs per semester*

Dept. Physics & Astronomy Graduate Student Mentor Fall 2018 – Summer 2021  
*In 3 years, mentored 10 first-year graduate students*

## HONORS AND AWARDS

FELLOWSHIPS Peter F. M. Koehler Predoctoral Fellowship, U. Pittsburgh Fall 2019 / Summer 2020  
*Awarded for teaching excellence and exceptional research promise*

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 Shackhous Honors College Fall 2012 – Spring 2016

COMPETITIONS 3 Minute Thesis Winner, Dept. Physics & Astronomy, U. Pittsburgh 2019 / 2020

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## TEACHING

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INSTRUCTIONAL	Pitt AstroPGH Research Boot Camp Instructor	May 2020
	<i>Two-part series on plotting with Matplotlib</i>	
	Carnegie Mellon U. “Astrosnacks” Student Seminar	Sept. 2019
	Title: <i>Python Plotting 101</i>	
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

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## CONFERENCES, WORKSHOPS, AND PRESENTATIONS

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INVITED TALKS	Stellar Streams Group, U. Cambridge	Nov. 2021
	Astrolunch Seminar Series, U. Pittsburgh	Dec. 2020
CONTRIBUTED TALKS	The Impact of Binaries on Stellar Evolution, Garching	Nov. 2022
	2022 CCAPP Fellows Symposium	Sept. 2022
	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	Meet with Astrophysicists, STEP at Ohio State	Nov. 2022
	Panel on Women in Physics, Society of Women in Physics at Ohio State	Oct. 2022
	No-Jargon Talk Series, Women & Minorities in Physics at Pitt	July 2021
POSTERS	SDSS 2019 Collaboration Meeting, Ensenada, Mexico	June 2019
ATTENDED	AAUW Start Smart Salary Negotiation, Ohio State	April 2023
	SDSS-V Science Festival, U. Toronto	Nov. 2022
	APOGEE Stellar Companions Paper Sprint, Vanderbilt U.	March 2022
	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

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## PROFESSIONAL SKILLS AND MEMBERSHIPS

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COMPUTER LANGUAGES	Python, C, Fortran, R, L <sup>A</sup> T <sub>E</sub> X
TOOLS	git, Mathematica, Maple, MATLAB/Simulink, Microsoft Office
TECHNIQUES	Monte Carlo, autoencoders, soldering
MEMBERSHIPS	Sloan Digital Sky Survey IV: APOGEE-2
	Sloan Digital Sky Survey V: Milky Way Mapper

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## PUBLICATIONS

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*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.

★ – Major Contributing Author; 2 *First Author*, 7 *N<sup>th</sup> Author*

10. ★ Evidence for a Regime Change in Close Binary Formation Pathways at  $T_{\text{eff}} \sim 3800$  K ( $M \sim 0.45 M_{\odot}$ ) from RV Variability in APOGEE  
**Daher, C. M.**, Badenes, C., Moe, M., Kratter, K., *to be submitted to MNRAS by end of May*

9. Spectroscopic Identification of Rapidly Rotating Red Giant Stars in APOKASC-3 and APOGEE DR16  
Patton, R. A., Pinsonneault, M. H., Cao, L., Vrad, M., Mathur, S., García, R. A., Tayar, J., **Daher, C. M.**, Beck, P. G., *submitted to MNRAS (arXiv:2303.08151)*
8. White Dwarf Binaries across the H-R Diagram  
Anguiano, B., Majewski, S., Stassun, K. G., Badenes, C., **Daher, C. M.**, Dixon, D., Allende Prieto, C., Schneider, D. P., Price-Whelan, A. M., Beaton, R. L. (2022) *AJ*, 164, 126
7. 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.** (2022) *MNRAS*, 514, 1706
6. ★ Multiplicity Statistics of Stars in the Sagittarius Dwarf Spheroidal Galaxy: Comparison to the Milky Way  
Bonidie, V., Court, T., **Daher, C. M.**, Fielder, C. E., Badenes, C., Newman, J., Moe, M., Kratter, K. M., Walker, M. G., Majewski, S. R., Hayes, C. R., Hasselquist, S., Stassun, K., Kounkel, M., Dixon, D., Stringfellow, G. S., Carlberg, J., Anguiano, B., De Lee, N., Troup, N. (2022) *ApJL*, 933, L18
5. ★ 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. (2022) *MNRAS*, 512, 2051
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  $\alpha$  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