Christine Mazzola Daher

She/Her

Ph.D. Candidate

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EDUCATION

Mississippi State University Fall 2012 – Spring 2016

B.S. Physics, Mathematics minor
Summa cum laude *(GPA: 3.93)*
Member of Shackouls Honors College

University of Pittsburgh Fall 2016 – Spring 2022

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

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

RESEARCH EXPERIENCE

Graduate Student Researcher, Pitt Summer 2017 – Present

Research Advisor: Prof. Carles Badenes
Topics: Doctoral research in stellar multiplicity in the APOGEE survey using radial velocity, surface gravity, effective temperature, metallicity, and stellar rotation speed measurements. Developed a Monte Carlo script to simulate binary star systems with various parameters.

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 from copper-coated fiberglass sheets using the lab's milling machine and soldered the boards' components. Tested and studied a Simulink model file for a vehicle's powertrain as part of an externally funded Army project.

PUBLICATIONS *(2 First Author, 4 N^{th} Author)*

$\star$ – First or Second Author

6. $\star$ *Stellar Multiplicity and Stellar Rotation: Insights from APOGEE*
Daher, C. M., Badenes, C., Tayar, J., Pinsonneault, M., Koposov, S. E., Anguiano, B., Buttry, R., Carlberg, J. K., De Lee, N. M., Godoy-Rivera, D., Hernández, J., Majewski, S., Nitschelm, C., Serna, J., Stassun, K. G., Stringfellow, G. S., Troup, N. W., Walker, M. G., *in SDSS collaboration review*

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*

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 in press (https://doi.org/10.1093/mnras/stab2349)*

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*

HONORS AND AWARDS

Dietrich School of Arts and Sciences Peter F. M. Koehler Predoctoral Fellowship	Fall 2019, Summer 2020
Three Minute Thesis Competition Winner, Dept. Physics and Astronomy, Pitt	Spring 2019, Spring 2020
Dietrich School of Arts and Sciences Predoctoral Summer Research Fellowship	Summer 2017
Miss. State Society of Scholars	Spring 2016
Crow Scholarship, Dept. Physics and Astronomy, Miss. State	Fall 2015 – Spring 2016
Rundel Scholarship, Dept. Physics and Astronomy, Miss. State	Fall 2013 – Spring 2015
Grillot Scholarship, Dept. Physics and Astronomy, Miss. State	Fall 2012 – Spring 2013

SCIENTIFIC PRESENTATIONS

Contributed Talk, SDSS 2021 Collaboration Meeting, Johns Hopkins U. Aug. 2021
A Closer Look at Stellar Rotation and the Close Binary Fraction in APOGEE

Invited Talk, Astrolunch Seminar Series, U. Pittsburgh Dec. 2020
Stellar Multiplicity Statistics in APOGEE

Contributed Talk, SDSS 2020 Collaboration Meeting, New York, USA June 2020
Stellar Parameters and Close Binary Fraction in APOGEE

Lightning Talk, SDSS 2019 Collaboration Meeting, Ensenada, Mexico June 2019
Stellar Multiplicity Through the APOGEE Lens
Also presented a poster of the same name.

Pitt Astrosnacks Seminar Series Nov. 2018
Stellar Multiplicity Through the APOGEE Lens

Pitt Astrosnacks Seminar Series Feb. 2018
Sparsely Sampled RV Curves: Where Stellar Multiplicity, Evolution, and Metallicity Intersect

INSTRUCTIONAL PRESENTATIONS

Pitt AstroPGH Research Boot Camp May 2020

Matplotlib I: Basics of Formatting
Matplotlib II: Advanced Techniques

Carnegie Mellon University Astrosnacks Seminar Series Sept. 2019
Python Plotting 101

MENTORING AND SUPERVISION

Graduate Student Research Co-Supervisor, Pitt Spring 2021 – Present
Co-supervising Victoria Bonidie and Travis Court in a graduate research project alongside Prof. Carles Badenes, with a publication in prep.

Graduate Student Mentor and Teaching Assistant/Fellow Mentor, Pitt Fall 2020 – Spring 2021
Mentored three new students through their first year of graduate school as well as served as a mentor to all physics and astronomy teaching assistants and fellows.

Graduate Student Mentor, Pitt Fall 2019 – Spring 2020
Mentored four new students through their first year of graduate school.

Undergraduate Student Research Co-Supervisor, Pitt Summer 2019
Co-supervised Victoria Bonidie and Polina Petrov in summer research alongside Prof. Carles Badenes.

Graduate Student Mentor, Pitt Fall 2018 – Spring 2019
Mentored three new students through their first year of graduate school.

TEACHING

Graduate Teaching Assistant, Pitt Spring 2020
Course: PHYS 0091: Conceptual Physics
Responsibilities: Prepared and taught 1-hour recitations for 1 section of 26 undergraduates. Held weekly office hours and graded recitation sheets. Second half of semester was entirely online, so held online review sessions for both recitation sections.

Graduate Teaching Assistant, Pitt Spring 2019
Courses: ASTRON 0088: Stonehenge to Hubble and ASTRON 0089: Stars, Galaxies, and the Cosmos
Responsibilities: Prepared and taught 1-hour recitations for 3 sections of ASTRON 0088 under 2 different instructors and 1 section of ASTRON 0089. Attended instructor's lectures for 1 section of ASTRON 0088. Held weekly office hours and graded recitation sheets.

Graduate Teaching Assistant, Pitt Fall 2016 – Spring 2017
Course: ASTRON 0089: Stars, Galaxies, and the Cosmos
Responsibilities: Prepared and taught 1-hour recitations for 5 sections of 30-40 undergraduates. Attended professor's lectures. Held weekly office hours and graded recitation sheets.

Laboratory Supervisor, Miss. State Spring 2015, Spring 2016
Course: ECE 4653/6653: Introduction to Power Electronics
Responsibilities: Ordered parts for and created student kits. Set up laboratory space and scheduled student time slots. Monitored student use of lab equipment and answered student questions, including Skyping distance students.

WORKSHOP/CONFERENCE ATTENDANCE

SDSS 2021 Collaboration Meeting, JHU, USA Aug. 2021
SDSS 2020 Collaboration Meeting, New York, USA June 2020
Women in Medicine and Science Forum, Pitt Nov. 2019
Negotiation and Management Workshop for Women in Sciences, Pitt Nov. 2019
APOGEE Stellar Companions Paper Sprint, UVA Oct. 2019
SDSS 2019 Collaboration Meeting, Ensenada, Mexico June 2019

LSST Community Brokers Workshop, Seattle, Washington June 2019
APS Conference for Undergraduate Women in Physics, Georgia Tech Jan. 2016
APS Conference for Undergraduate Women in Physics, UM Jan. 2015

PROFESSIONAL MEMBERSHIPS

Sloan Digital Sky Survey IV: APOGEE-2 Survey
Sloan Digital Sky Survey V

BROADER IMPACT

Pitt Women and Minorities in Physics Fall 2019 – Present
Member; attend bi-weekly meetings and helped with with various efforts, including participating in an APS Committee on the Status of Women climate visit.

Volunteer at APS Conference for Undergraduate Women in Physics at Pitt Jan. 2020
Helped present a variety of physics demonstrations to conference attendees as they waited for the conference to formally begin.

Miss. State Society of Physics Students Vice President 2015
Member from Spring 2014 until graduation in Spring 2016.