

Allison (Allie) M. McCarthy

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Education

Boston University Boston, MA	Ph.D. Candidate in Astronomy MS Astronomy Advisor: Professor P. Muirhead	2020 – Present May 2023
The University of Alabama Tuscaloosa, AL	BS in Physics Advisor: Professor J. Bailin	2016 – 2020

Research Appointments

Boston University Advisor: Dr. P. Muirhead	Ph.D. Candidate Studying the physical mechanisms driving L and T dwarf variability.	2020-Present
The University of Alabama Advisor: Dr. J. Bailin	Undergraduate Student Studied the evolution of Milky-Way like galaxies using the MUGS simulations.	2017 – 2020
The American Museum of Natural History Advisors: Dr. J. Vos, Dr. J. Faherty, Professor K. Cruz	REU Summer Intern Studied the variability of brown dwarfs and low mass stars using K2 to independently verify the rotation rate of two different sub-stellar objects as well as the evolution of their light curves.	2019
Green Bank Observatory Advisor: Dr. A. Seymour	REU Summer Intern Studied FRB 110523 using archival Arecibo telescope data to determine if it is a repeating fast radio burst.	2018

Honors and Awards

Boston University	NSF Graduate Research Fellowship 3 year full tuition fellowship with additional stipend	2021
Boston University	Clare Boothe Luce Fellowship 2 year full tuition fellowship with additional stipend	2020
The University of Alabama	Randall Research Scholars Senior Leadership Award	2020
American Astronomical Society	Chambliss Astronomy Achievement Student Award Recognize exemplary research by an undergraduate student.	2020
The University of Alabama	Randall Research Scholars Outstanding Junior	2019
The University of Alabama	Goldwater Scholarship Nominee	2019
The University of Alabama	Randall Research Scholars Outstanding Sophomore	2018
The University of Alabama	Presidential Scholarship 8 semester full tuition scholarship with additional stipend	2016

Awarded Grants

Boston University “Color Modulation of Variable L and T dwarfs” 2023
GRUF \$6,000 to support travel to the Perkins Telescope Observatory

First* and Co-Authored Publications

**Multiple Patchy Cloud Layers in the Planetary Mass Object SIMP0136+0933*

McCarthy, Allison M.; Muirhead, Philip S.; Tamburo, Patrick; Vos, Johanna M.; Morley, Caroline V.; Faherty, Jacqueline; Bardalez Gagliuffi, Daniella C.; Agol, Eric; Theissen, Christopher;
Accepted to ApJ 2024

The Perkins INfrared Exosatellite Survey (PINES). II. Transit Candidates and Implications for Planet Occurrence around L and T Dwarfs

Tamburo, Patrick; Muirhead, Philip S.; **McCarthy, Allison M.**; Hart, Murdock; Vos, Johanna M.; Agol, Eric; Theissen, Christopher; Gracia, David; Bardalez Gagliuffi, Daniella C.; Faherty, Jacqueline
The Astronomical Journal, Vol. 164, 252 2022

The Perkins INfrared Exosatellite Survey (PINES) I. Survey Overview, Reduction Pipeline, and Early Results

Tamburo, Patrick; Muirhead, Philip S.; **McCarthy, Allison M.**; Hart, Murdock; Gracia, David; Vos, Johanna M.; Bardalez Gagliuffi, Daniella C.; Faherty, Jacqueline; Theissen, Christopher; Agol, Eric; Skinner, Julie N.; Sagar, Sheila
The Astronomical Journal, Vol. 163, 253 2022

Conference Abstracts

Modeling the Surface Features of SIMP 0136

McCarthy, A.; Muirhead, Philip S.; Tamburo, Patrick; Vos, Johanna M.; Hart, Murdock; Garcia, David; Bardalez Gagliuffi, Daniella C.; Faherty, Jacqueline; Theissen, Christopher; & Agol, Eric
The 21st Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (CS21) 2022

Brown Dwarf Variability in the Optical: Results from K2 and TESS

McCarthy, A., & Vos, J.
American Astronomical Society Meeting Abstracts, Vol. 235, American Astronomical Society Meeting Abstracts #235, 274.05. 2020

The Search for a Repeating Fast Radio Burst

McCarthy, A. M.
American Astronomical Society Meeting Abstracts, Vol. 233, American Astronomical Society Meeting Abstracts #233, 347.05 2019

Presentations and Invited Talks*

Multiple Patchy Cloud Layers in the Planetary-Mass Object SIMP 0136+0933

*Exoplanet Pizza Lunch Seminar, Harvard/Center for Astrophysics Mar. 2023

*Astronomy Colloquium, Tufts University Oct. 2023

Modeling the Surface Features of SIMP 0136

Poster at the 21st Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun July 2022

Brown Dwarf Variability in the Optical: Results from K2 and TESS

Poster at the 235th meeting of the American Astronomical Society Jan. 2020

Oral presentation at the American Museum of Natural History Aug. 2019

Selected Telescope Time

Perkins Telescope	7 nights, PI	Feb. 2024
Flagstaff, AZ	7 nights, PI	Nov. 2023
	7 nights, PI	Oct. 2022
	7 nights, PI	June 2022
	7 nights, PI	May 2022
	170 nights, Co-I	July 2020- March 2022
Lowell Discovery Telescope	5 nights, PI	Oct. 2022
Happy Jack, AZ		

Research Advising* and Mentoring

Madison VanWyngarden	Boston University	2022–Present
	→ Applying to graduate school	
Zhavia Lovell*	National Technical Institute for the Deaf	2022– 2023
	→ Applying to graduate school	
Bhargavi Thackar	Boston University	2021-2022
	→ Ph.D. at Georgia Institute of Technology	
Rowan Batts	The University of Alabama	2018-2020
	→ Ph.D. at University of Connecticut	
Kelsey Johnson	The University of Alabama	2017-2020
	→ Propulsion Flight Test Engineer at Lockheed Martin	
Hannah Slater	The University of Alabama	2017-2020
	→ Ph.D. at Vanderbilt University	

Outreach

Boston University	Science Train	June 2023-Present
Boston, MA		

Boston University <i>Boston, MA</i>	Astro365	Sep. 2022-Present
Boston University <i>Boston, MA</i>	Boston University Public Open Night	Sep. 2020-Present
H.H. Wells Middle School <i>Brewster, NY</i>	Women in Science Week Speaker	Feb. 2021
The University of Alabama <i>Tuscaloosa, AL</i>	“Spooky Lab”- Haunting at the Museum	Oct. 2019
The University of Alabama <i>Tuscaloosa, AL</i>	Local Organizing Committee Conference for Undergraduate Women in Physics	Jan. 2018- Jan. 2019

Teaching Experience

The University of Alabama <i>Learning Assistant</i>	PH 101: General Physics I	Spring 2019
	PH 106: General Physics w/Calculus II	Fall 2018
	PH 105: General Physics w/Calculus I	Spring 2018
The University of Alabama <i>Teaching Assistant</i>	AEM 201: Statics	Fall 2018

Professional Service

Boston University <i>Boston, MA</i>	Inclusive Astronomy	Sep. 2022-Present
Boston University <i>Boston, MA</i>	Boston University Astronomy Graduate Student Representative	July 2021-July 2023

Professional Memberships

American Astronomical Society Student Member	Jan. 2020 – Present
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