

Tobin Wainer

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<https://tobin-wainer.github.io>

Education	Doctorate of Philosophy in Astronomy	January 2025 - Anticipated 2026
	University of Washington, Seattle, Washington	
	<ul style="list-style-type: none">Thesis: “Bridging the Scales of Star Formation: Embedded Clusters to Galactic Histories”Advisors: Ben Williams, Julianne Dalcanton, James Davenport	
	Masters of Science in Astronomy	September 2022 - June 2024
	University of Washington, Seattle, Washington	
	Honors Bachelor of Science in Physics Astronomy Emphasis	August 2017 - May 2021
	University of Utah, Salt Lake City, Utah	
	<ul style="list-style-type: none">Unweighted GPA: 3.90/4.0 (3.84/4.0 Physics GPA)Honors Thesis; “Star Clusters in the Triangulum Galaxy: Star Cluster Catalog and Mass Function Fitting”Advisors: Anil Seth, Cliff JohnsonUndergraduate Research Scholar Designation	
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Professional Employment:	Predoctoral Fellow at the Center for Computational Astrophysics	
	Advisors: Julianne Dalcanton, Mike Grudić	September 2024 - January 2025
	Post-Baccalaureate Researcher at the University of Utah	
	Advisor: Gail Zasowski	June 2021 - August 2022
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Grants	Science PI: JWST Cycle 5	Pending
	Co-I: JWST Cycle 5 (5 Proposals)	Pending
	Science PI: TESS Cycle 7, <i>Searching for Stellar Activity Cycle is Using Flares Identified is TESS Lightcurves</i>	\$70,000
	Co-I: HST Proposal. Cycle 32, ID. #17833, <i>Bringing HST to the VLA: The Interaction of Stars and Gas in the Local Group</i>	
	Co-I: JWST Proposal. Cycle 3, ID. #5145, <i>Resolving the Global Stellar Populations and Star Formation History of the Starburst Galaxy M82</i>	
	Science PI: Astrophysics Data Analysis Program (ADAP), <i>Constraining the Ages of Unresolved Star Clusters with Ensemble TESS Light Curves</i>	\$262,000
	University of Utah Undergraduate Research Opportunity Program Grant - 2020	\$1200
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Honors and Awards	University of Washington Astronomy Department Graduate Student Prize for Excellence in Research	2024

Predoctoral fellow at the Center for Computational Astrophysics	2024
Honorable Mentions in the NSF Graduate Research Fellowship Program	2024
University of Utah Physics Department Most Outstanding Teaching Assistant Award	2022
Honorable Mentions in the NSF Graduate Research Fellowship Program	2022
Honorable Mentions in the Chambliss Achievement Student Award competition for undergraduates at the 237th AAS conference	2021
University of Utah Outstanding Undergraduate Research Award in Astronomy and Astrophysics	2021
University of Utah Representative for Research on Capitol Hill; presenting research to state legislators	2021
Made Dean's List each eligible semester of enrollment	F17, S18, F19, F20
Research Experience for Undergraduates at Northwestern University	2020
Summer Undergraduate Research Program at the University of Utah	2019
One-year Peer Advisor Scholarship for dedication to student learning and excellence in teaching at the University of Utah	\$2000, 2019

**Project Lead
Publications**

- Wainer, T.**, [4 Authors], 2026, "Searching for Stellar Activity Cycles using Flares II: The TESS CVZ", *In Preparation for AAS Journals*
- Wainer, T.**, [8 Authors], 2026, "The Panchromatic Hubble Andromeda Southern Treasury (PHAST). III. The Spatially Resolved Recent Star Formation History in M31", *In Preparation for AAS Journals*
- Wainer, T.**, [8 Authors], 2025, "The Timescales of Embedded Star Formation as Observed in STARFORGE", *Submitted to AAS Journals*
- Wainer, T.**, [17 Authors], 2025, "Crowded Field Photometry with Rubin: Exploring 47 Tucanae with Data Preview 1", *Research Notes of the AAS, Volume 9, Issue 7, id.171*
- Wainer, T.**, [4 Authors], 2024, "Searching for Stellar Activity Cycles using Flares: The Short and Long Timescale Activity Variations of TIC-272272592", *The Astronomical Journal, 2024AJ, 168, 232W*
- Wainer, T.**, [17 Authors], 2024, "The Panchromatic Hubble Andromeda Treasury: Triangulum Extended Region (PHATTER). VI. The High-mass Stellar Initial Mass Function of M33", *The Astronomical Journal, 2024AJ, 168, 86W*
- Wainer, T.**, [3 Authors], 2023, "ELK: A python package for correcting, analyzing, and diagnosing TESS integrated light curves", *The Journal of Open Source Software 2023 JOSS, 8(90), 05605*
- Wainer, T.**, [9 Authors], 2023, "Catalog of Integrated-light Star Cluster Light Curves in TESS", *The Astronomical Journal, 2023AJ, 166, 106W*

Contribution Publications * Indicates Student Paper	Wainer, T. , [12 Authors], 2022, “The Panchromatic Hubble Andromeda Treasury: Triangulum Extended Region (PHATTER). III. The Mass Function of Young Star Clusters in M33”, <i>The Astrophysical Journal</i> , 2022ApJ, 928, 15W	
	Johnson, L.C., Wainer, T. , [11 Authors], 2022, “The Panchromatic Hubble Andromeda Treasury: Triangulum Extended Region (PHATTER). IV. M33 Star Cluster Catalog”, <i>The Astrophysical Journal</i> 2022ApJ, 938, 81J	
	Wang, Y., [...] Wainer, T. , 2025, ”Optical Counterparts to X-ray sources in LSST DP1”, <i>Submitted to AAS Journals</i>	
	Chen, Z., [...] Wainer, T. , 2025, “PHAST. The Panchromatic Hubble Andromeda Southern Treasury. I. Ultraviolet and Optical Photometry of over 90 Million Stars in M31”, <i>The Astrophysical Journal</i> , 979, 35c	
	* Gollotti, G., [...] Wainer, T. , 2024, “Two Intriguing Transits of HIP 23309 Observed by TESS”, <i>Research Notes of the AAS</i> , 8, 293	
	Peltonen, J., [...] Wainer, T. , 2024, “JWST reveals star formation across a spiral arm in M33”, <i>Monthly Notices of the Royal Astronomical Society</i> , 527, I4	
Teaching Experience	Course Instructor September 2025 - Current Yakima Valley Community College	
	<ul style="list-style-type: none"> • <i>Introduction to Scientific Computing</i> <ul style="list-style-type: none"> – Developed course syllabus and content – Led weekly lectures of 10 students 	
	Teaching Assistant September 2022 - Current University of Washington	
	<ul style="list-style-type: none"> • <i>Astronomy 101a, 101b; Introduction to Astronomy In person and Online</i> • <i>Astronomy 192; Pre-Major in Astronomy and Physics</i> <ul style="list-style-type: none"> – Led 3 weekly sections of 30 students each – Made weekly recap lecture videos 	
	Teaching Assistant August 2018 - May 2022 University of Utah	
	<ul style="list-style-type: none"> • <i>Astronomy 1010, 4090; The Universe, Stellar Astrophysics</i> <ul style="list-style-type: none"> – Helped facilitate weekly 5-person teaching staff meeting to plan for the next week – Facilitated 20-person group sessions and provided one-on-one support – Collaborated with professor to design class structure • <i>Physics 2210, 2020; Physics I for Scientists and Engineers, General Physics II</i> 	

- Collaborated with teachers and program directors to meet academic needs of students
- Graded student assignments and exams
- *LEAP 1010, 1020; Pre-Law I, Pre-Law II, Role of Law in Society*
 - Led class when professors were attending conferences

Students Mentored

Current:

- Graduate Students: Charlie Willard (2025-)
- Undergraduate Students: Holland Stuart (2025-)

Former:

- Undergraduate Students: Giovanni Gollotti (2024-2025), Danbi Kim(2023), Amelia Ross (2023)
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Presentations and Conference Contributions

<i>PHANGS Star Clusters Group Meeting, Invited Talk</i> Virtual	October 2025
<i>Center for Computational Astrophysics Pre-Doc Symposium, Invited Talk</i> (Link to talk) New York, New York	June 2025
<i>Ballyfest; Star Formation, Stellar Feedback, and the Ecology of Galaxies, Contributed Poster</i> Visegrad, Hungary	May 2025
<i>2025 Spring Symposium: Inter+Stellar: Harnessing the Intersection Between Stars and the Interstellar Medium, Contributed Poster</i> Baltimore, Maryland	May 2025
<i>TESS Science Conference III, Contributed Poster</i> Cambridge, Massachusetts	August 2024
<i>243rd Meeting of the AAS, Contributed Talk</i> New Orleans, Louisiana	January 2024
<i>8th TESS Asteroseismic Science Consortium, Contributed Talk</i> Honolulu, Hawaii	July 2023
<i>240th Meeting of the AAS, Poster 201.01</i> (Link to Abstract) Pasadena, California	June 2022
<i>Undergraduate Research Symposium, Contributed Poster</i> University of Utah, Salt Lake City, Utah	April 2021
<i>237 Meeting of the AAS, Poster 150.07</i> (Link to Abstract) Virtual	January 2021
<i>Research Experience for Undergraduate Symposium, Contributed Poster</i> 2020 Northwestern University and Adler Planetarium, Chicago, Illinois	August 2020
<i>235 Meeting of the AAS, Poster 306.02</i> (Link to Abstract) Honolulu, Hawaii	January 2020

2019 Physics Congress, Contributed Poster
Providence, Rhode Island

November 2019

Summer Research Symposium, Contributed Poster
University of Utah, Salt Lake City, Utah

August 2019

Service

Senator in the University of Washington Graduate and Professional Student Senate September 2023 - Present

- Serve the broader University student population on issues like affordability and student wellness.

Apache Point Observatory Telescope Allocation Committee May 2023 - Present

- University of Washington graduate student representative for allocating telescope time of the 3.5 meter APO.
- Tasks include reading proposals and collaborating with faculty members of the TAC, to equitably allocate time.

Astronomy on Tap Roadshow Co-Founder September 2024 - Present

- Bring Astronomy on tap to rural communities across Washington State.

Astronomy on Tap Seattle Technical Assistant September 2023 - Present

- In charge of all technical aspects of the show from microphones and projection, to live streaming the show.

University of Washington Astronomy Planetarium Technical Assistant
September 2023 - 2024

- Point person for technological issues with the planetarium.
- Perform routine service to Planetarium software.

Society of Physics Students Communications Director May 2019 - May 2021

University of Utah Chapter

- Raised over \$7500 to send 12 undergraduates to the quadrennial SPS conference in Rhode Island
- Orchestrated monthly outreach events for local high school and middle school students
- Coordinated lab tours to help undergraduates discover research opportunities

Undergraduate Student Advisory Committee Associate Chair August 2019 - May 2021

University of Utah Department of Physics and Astronomy

- Worked with a six-person committee to generate a report providing a recommendation about a professor's Retention, Promotion, or Tenure
- Conducted interviews with professors, graduate students, and undergraduates to gather information
- Coordinate with the committee chair to facilitate meetings

**Other
Experience and
Activities**

Research on Capitol Hill
Salt Lake City Capital Building

February 2021

- Selected as 1 of 15 undergraduates to represent the University of Utah
- Presented research to state legislators

Pro Bono Law Clinic Volunteer
Salt Lake City Pro Bono Law Clinic

August 2019 - December 2019

- Worked alongside law students and practicing attorneys to provide clients with legal advice
- Conducted client interviews and consulted with attorneys
- Helped direct clients through necessary paperwork

Telescope Time Awarded 3 Nights- Apache Point Observatory 3.5M: Fall 2024
8 Half Nights- CHIRON echelle spectrograph, SMARTS 1.5 M telescope Fall 2025

Skills

- Programming Languages: Python, HTML
- Astronomy Software: DS9, Astropy, MATCH, SKIRT, SLUG
- Data Analysis: integrated spectroscopy, using large survey data (HST, JWST), HST, JWST image processing, time series analysis using TESS
- Technical skills: Stellar population synthesis modeling
- Statistical Techniques: Bayesian Modelling, Regression, Bootstrap sampling
- Other software: LATEX, Github

Professional Memberships

American Astronomical Society (AAS)
American Physics Society (APS)
Society Of Physics Students (SPS)

Hobbies

- Backpacking
- Mountaineering
- Skiing
- Sports fanatic