

Gillian D. Beltz-Mohrmann, Ph.D.

C145, Building 360
9700 S. Cass Avenue
Lemont, IL 60439

gbeltzmohrmann@anl.gov
<https://gbeltzmo.github.io>
Citizenship: USA

Professional Appointments	Postdoctoral Research Fellow - Argonne National Laboratory	2022-
	Cosmological Physics and Advanced Computing Group	
	Graduate Research Assistant - Vanderbilt University	2016-2022
	Department of Physics & Astronomy	
Education	Ph.D. - Vanderbilt University, Nashville, TN	May 2022
	Ph.D. in Astrophysics	Advisor: Andreas Berlind
	Thesis: <i>Developing an Accurate Probe of the Galaxy-Halo Connection: Baryonic Effects, Small-Scale Galaxy Clustering, and Halo Model Extensions</i>	
	B.A. - Wellesley College, Wellesley, MA	May 2016
	B.A., <i>cum laude</i>	Advisors: Kim McLeod, James Battat
	Astrophysics major, German minor	
Honors & Awards	Most Outstanding Student Publication Award	2020
	Vanderbilt Physics & Astronomy Department	
	Graduate Student Poster Competition Winner	2019
	Vanderbilt Data Science Symposium	
	Akunuri V. Ramayya Award for Outstanding Teaching Assistant	2018
	Vanderbilt Physics & Astronomy Department	
	Provost Graduate Fellowship	2016–2021
	Vanderbilt University	
	Undergraduate Chambliss Achievement Honorable Mention	2016
227th American Astronomical Society Meeting		
Sarah Frances Whiting Medal for Achievement in Astronomy	2014	
Wellesley College		
Grants	XSEDE Grant	2019, 2020
	Awarded 58.4k total Node Hours (2.8M CPU hours) on Stampede2	
	McMinn Research Grant	2019, 2020
	Vanderbilt Physics & Astronomy Department (\$3,000 total)	
	Graduate Summer Research Award	2018
Vanderbilt College of Arts and Sciences (\$1,900)		
1st & 2nd Author Publications	Submitted & Published	
	Total Citations: 88	
	6. Beltz-Mohrmann, G. D., Szewciw, A. O., Berlind, A. A., Sinha, M., 2023, “Toward Accurate Modeling of Galaxy Clustering on Small Scales: Halo Model Extensions and Lingering Tension”, The Astrophysical Journal, 948, 100	
	5. Szewciw, A. O., Beltz-Mohrmann, G. D., Berlind, A. A., Sinha, M., 2021, “Toward Accurate Modeling of Galaxy Clustering on Small Scales: Constraining the Galaxy-Halo Connection with Optimal Statistics”, The Astrophysical Journal, 926, 15	
	4. Beltz-Mohrmann, G. D., Berlind, A. A., 2021, “The impact of baryonic physics on the abundance, clustering, and concentration of halos”, The Astrophysical Journal, 921, 112	
	3. Beltz-Mohrmann, G. D., Berlind, A. A., Szewciw, A. O., 2020, “Testing the Accuracy of Halo Occupation Distribution Modelling using Hydrodynamical Simulations”, Monthly Notices of the Royal Astronomical Society, 491, 5771	

	<p>2. Dale, D. A., Beltz-Mohrmann, G. D., Egan, A. A., Hatlestad, A. J., Herzog, L. J., Leung, A. S., McLane, J. N., Phenicie, C., Roberts, J. S., Barnes, K. L., Boquien, M., Calzetti, D., Cook, D. O., Kobulnicky, H. A., Staudaher, S. M., van Zee, L., 2016, “Radial Star Formation Histories in Fifteen Nearby Galaxies”, The Astronomical Journal, 151, 4</p> <p>1. Souza, S. P., Beltz-Mohrmann, G., Sami, M., 2014, “The Light Curve and Period of MT696”, The Journal of the American Association of Variable Star Observers, 42, 154</p>
Nth Author Publications	<p>Submitted & Published</p> <p>1. Yuan, Sihan et al., 2024, “Redshift evolution and covariances for joint lensing and clustering studies with DESI Y1”, submitted to Monthly Notices of the Royal Astronomical Society, arXiv:2403.00915</p>
Recent Talks	<p>Winter DESI Meeting Dec. 2023 <i>Introducing DESI-Diffsky: A Differentiable Forward Model for Making Multi-wavelength, Multi-tracer DESI Mocks</i></p> <p>KITP Workshop, UC Santa Barbara Jan. 2023 Building a physical understanding of galaxy evolution with data-driven astronomy <i>Toward Accurate Modeling of Galaxy Clustering on Small Scales: Halo Model Extensions & Lingering Tension</i></p> <p>CAMELS Workshop, Center for Computational Astrophysics Dec. 2022 <i>Toward Accurate Modeling of Galaxy Clustering on Small Scales: Halo Model Extensions & Lingering Tension</i></p> <p>N-Body Shop Workshop June 2022 <i>Accurate Modeling of Galaxy Clustering on Small Scales</i></p> <p>High-Energy and AstroPhysics Seminar, University of Utah Jan. 2022 <i>Developing an Accurate Probe of the Galaxy-Halo Connection</i></p> <p>KICP Seminar, University of Chicago Nov. 2021 <i>Developing an Accurate Probe of the Galaxy-Halo Connection</i></p> <p>Galaxies and AGN Journal Club, Johns Hopkins University July 2021 <i>Impact of baryonic physics on the abundance, clustering, & concentration of halos</i></p> <p>Galaxy Lunch talk, Yale University March 2021 <i>Can we ignore baryons in halo modeling?</i></p> <p>KITP Workshop, UC Santa Barbara Aug. 2020 Galaxy-Halo Connection Across Cosmic Time <i>HMF Discrepancies between Hydrodynamic and DMO Simulations</i></p> <p>Galaxy-halo Connection Workshop, Universität Innsbruck March 2020 <i>Taking Halo Modeling to the Next Level</i></p>
Mentoring	<p>DESI Mentorship Program Fall 2023 - <i>Mentor for students in the DESI Collaboration</i></p> <p>GEM Fellowship Program, Argonne National Laboratory Summer 2023 <i>Mentored a graduate student in the GEM Fellowship program for 13 weeks; helped her develop a gradient descent pipeline in Jax for forward modeling galaxy SEDs</i></p> <p>STEM Research Program, Harpeth Hall High School, Nashville, TN 2017 – 2019 <i>Mentored a high school student for two years; taught her Python and guided her on a project measuring the rotation of galaxy groups in SDSS; 1st place winner at Middle Tennessee Science & Engineering Fair in 2018 and 2019</i></p>
Teaching	<p>Conference for Undergraduate Women in Physics Jan. 2023 Argonne National Lab <i>Developed and lead several python workshops during the conference; taught students Python basics and introduced them to galaxy redshift data from SDSS</i></p> <p>Graduate Teaching Assistant, Vanderbilt University Fall 2016 – Spring 2019 Introductory Astronomy Lab instructor <i>Lectured on lab concepts; helped develop and improve lab material; taught students</i></p>

	<i>to use 8 inch telescopes; guided students with mini end-of-semester research project and poster session; graded labs and lecture exams (10 hours per week)</i>	
	Astronomy Tutor , Vanderbilt University	Fall 2016
	<i>Individual tutor for introductory astronomy lectures (1-2 hours per week)</i>	
	Supplemental Instruction Leader , Wellesley College	Fall 2014 – Spring 2016
	<i>Created supplemental lessons and material and lead extra problem solving sessions for introductory physics lectures (8 hours per week)</i>	
	Physics Tutor , Wellesley College	Fall 2013 – Spring 2016
	<i>Worked through problems sets with students individually or in a group; helped students to understand concepts from lecture (4 hours per week)</i>	
	Summer Academy at Vanderbilt for the Young	July 2017
	<i>Developed material for a week-long course for middle school students to learn VPython and build a solar system simulation</i>	
	Vanderbilt Student Volunteers for Science	Fall 2016
	<i>Gave monthly chemistry and physics demonstrations to middle school classes</i>	
Skills & Experience	Programming Languages: PYTHON, C, MATLAB, BASH, GIT, L ^A T _E X	
	Misc.: scikit-learn, Jax, emcee	
	Parallel Computing: MPI, OPENMP	
	Simulation Software: GADGET-2 & GADGET-4, CAMB, 2LPTIC, ROCKSTAR	
	Observing Experience:	
	~ 80 hours using 2.3 meter telescope at Wyoming Infrared Observatory	
	~ 80 hours using 0.6 meter telescope at Williams College	
Professional Service	~ 200 hours using 0.6 meter telescope at Wellesley College	
	~ 100 hours using 8" reflector telescopes at Wellesley College and Vanderbilt University	
	~ 100 hours using 6" and 12" historic refractor telescopes at Wellesley College	
	Committees:	
	Argonne Young Scientist Symposium Series	Jun 2023 –
	Scholarly Journal Peer Reviewer:	
	Astronomy & Astrophysics	
Public Service & Outreach	Journal of Cosmology and Astroparticle Physics	
	Physics of the Dark Universe	
	AAS Congressional Visits Day (virtual)	Sept. 2020
	<i>Spoke with state representatives about the importance of funding scientific research</i>	
	Science Day with Nashville Girl Scout Troop	March 2019
	<i>Built bottle rockets and answered questions about being an astronomer</i>	
	Meet the Astronomer Night at Dyer Observatory	Oct. 2018
Collaborations	<i>Public talk and Q&A</i>	
	Whitin Observatory Volunteer , Wellesley College	2012–2016
	<i>Gave monthly public talks and telescope demonstrations to guests of all ages</i>	
	Leadership:	
	LasDamas (Large Suite of Dark Matter Simulations) Collaboration	2017–2022
	<i>Co-Investigator & XSEDE Allocation Manager</i>	
	General Member:	
	Dark Energy Spectroscopic Instrument Collaboration	2022–
	<i>C3 Working Group, Alternative Clustering Methods Topical Group</i>	
	LSST Dark Energy Science Collaboration	2022–
	CAMELS Collaboration	2022–
	N-Body Shop Collaboration	2020–
	American Astronomical Society	2015–