

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
Honors & Awards	Major: Astrophysics; Minor: German	
	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	
1st & 2nd Author Publications	Undergraduate Chambliss Achievement Honorable Mention	2016
	227th American Astronomical Society Meeting	
	Sarah Frances Whiting Medal for Achievement in Astronomy	2014
	Wellesley College	
	Submitted & Published	
	Total Citations: 97	
	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”, <i>The Astrophysical Journal</i> , 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”, <i>The Astrophysical Journal</i> , 926, 15	
	4. Beltz-Mohrmann, G. D. , Berlind, A. A., 2021, “The impact of baryonic physics on the abundance, clustering, and concentration of halos”, <i>The Astrophysical Journal</i> , 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”, <i>Monthly Notices of the Royal Astronomical Society</i> , 491, 5771	
	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”, <i>The Astronomical Journal</i> , 151, 4	
	1. Souza, S. P., Beltz-Mohrmann, G. , Sami, M., 2014, “The Light Curve and Period of MT696”, <i>The Journal of the American Association of Variable Star Observers</i> , 42, 154	

Recent Talks	Cosmology Talks Miniworkshop (invited expert)	August 2024
	<i>Cosmology Beyond 2pt Statistics</i>	
	DHWFEST , University of Utah	July 2024
	<i>A New Forward Model of the Galaxy-Halo Connection</i>	
	Summer DESI Meeting , Marseille, France	July 2024
	<i>Updates on the DESI Emulator Mock Challenge - Alternative Clustering Methods</i>	
	New Strategies for Extracting Cosmology from Galaxy Surveys	July 2024
	Sesto, Italy	
	<i>Simulation-based Forward Modeling of Cross-Survey Cross-Correlations with Diffsky</i>	
	Fundamental Physics from Future Spectroscopic Surveys	May 2024
	Lawrence Berkeley National Lab	
	<i>Making multi-wavelength, multi-redshift predictions for Cross-Survey Cosmological Analyses</i>	
	Winter DESI Meeting , Hawaii, USA	Dec. 2023
	<i>Introducing DESI-Diffsky: A Differentiable Forward Model for Making Multi-wavelength, Multi-tracer DESI Mocks</i>	
	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>	
	CAMELS Workshop , Center for Computational Astrophysics	Dec. 2022
	<i>Toward Accurate Modeling of Galaxy Clustering on Small Scales: Halo Model Extensions & Lingering Tension</i>	
	N-Body Shop Workshop , Center for Computational Astrophysics	June 2022
	<i>Accurate Modeling of Galaxy Clustering on Small Scales</i>	
	High-Energy and AstroPhysics Seminar , University of Utah	Jan. 2022
	<i>Developing an Accurate Probe of the Galaxy-Halo Connection</i>	
	KICP Seminar , University of Chicago	Nov. 2021
	<i>Developing an Accurate Probe of the Galaxy-Halo Connection</i>	
	Galaxies and AGN Journal Club , Johns Hopkins University	July 2021
	<i>Impact of baryonic physics on the abundance, clustering, & concentration of halos</i>	
	Galaxy Lunch talk , Yale University	March 2021
	<i>Can we ignore baryons in halo modeling?</i>	
	KITP Workshop , UC Santa Barbara	Aug. 2020
	Galaxy-Halo Connection Across Cosmic Time	
	<i>HMF Discrepancies between Hydrodynamic and DMO Simulations</i>	
	Galaxy-halo Connection Workshop , Universität Innsbruck	March 2020
	<i>Taking Halo Modeling to the Next Level</i>	
Teaching	Conference for Undergraduate Women in Physics , Argonne	Jan. 2023
	<i>Developed and led a Python workshop</i>	
	Graduate Teaching Assistant , Vanderbilt University	Fall 2016 – Spring 2019
	<i>Introductory Astronomy Lab instructor</i>	
	Astronomy Tutor , Vanderbilt University	Fall 2016
	<i>Individual tutor for introductory astronomy lectures</i>	
	Summer Academy at Vanderbilt for the Young	July 2017
	<i>Helped develop a week-long programming course for middle schoolers</i>	
	Supplemental Instruction Leader , Wellesley College	Fall 2014 – Spring 2016
Mentoring	<i>Created and led problem solving sessions for introductory physics students</i>	
	Physics Tutor , Wellesley College	Fall 2013 – Spring 2016
	<i>Individual tutor for introductory physics courses</i>	
	Emily Martsen (graduate)	Fall 2024 -
	Topic: Measuring the Two-point Clustering of Galaxy Clusters	
	DESI Mentorship Program	Fall 2023 -
	Resherle Verna (graduate, GEM Fellowship Program)	Summer 2023
	Topic: Forward modeling galaxy SEDs with Jax	

	Caleigh Dennis (high school)	2017 – 2019
	Topic: Measuring the rotation of galaxy groups in SDSS	
	<i>1st place winner at Middle Tennessee Science & Engineering Fair in 2018 & 2019</i>	
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)	
Skills & Experience	Programming Languages: PYTHON, C, BASH, GIT, L ^A T _E X	
	Misc.: Jax, scikit-learn, emcee, GADGET, CAMB, 2LPTIC, ROCKSTAR	
	Parallel Computing: MPI, OPENMP	
	Observing Experience:	
	~ 80 hours using 2.3 meter telescope at Wyoming Infrared Observatory	
	~ 80 hours using 0.6 meter telescope at Williams College	
	~ 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	
Public Service & Outreach	Science Careers in Search of Women Event , Argonne	March 2023
	<i>Panelist for Women in STEM event for local high school students</i>	
	Conference for Undergraduate Women in Physics , Argonne	Jan. 2023
	<i>Led a Python workshop, participated in Q&A sessions and panel discussions</i>	
	AAS Congressional Visits Day (virtual)	Sept. 2020
	Science Day with Nashville Girl Scout Troop	March 2019
	Meet the Astronomer Night at Dyer Observatory	Oct. 2018
	Vanderbilt Student Volunteers for Science	Fall 2016
	Whitin Observatory Volunteer , Wellesley College	2012–2016
	<i>Organized monthly events and gave public talks and telescope demonstrations</i>	
Collaborations	Dark Energy Spectroscopic Instrument (DESI) Collaboration	2022–
	<i>C3 Working Group, Alternative Clustering Methods Topical Group</i>	
	Large Suite of Dark Matter Simulations (LasDamas) Collaboration	2017–2022
	<i>Co-Investigator & XSEDE Allocation Manager</i>	
	LSST Dark Energy Science Collaboration (DESC)	2022–
	CAMELS Collaboration	2022–
	N-Body Shop Collaboration	2020–
	American Astronomical Society	2015–
Professional Service	Scholarly Journal Peer Reviewer:	
	Monthly Notices of the Royal Astronomical Society	
	Astronomy & Astrophysics	
	Journal of Cosmology and Astroparticle Physics	
	Physics of the Dark Universe	
Nth Author Publications	Submitted & Published	
	Total Citations: 3	
	2. Lange, Johannes U. et al., 2024, “Systematic Effects in Galaxy-Galaxy Lensing with DESI”, arXiv:2404.09397	
	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	