

## 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

<b>Professional Appointments</b>	<b>Postdoctoral Research Fellow - Argonne National Laboratory</b>	2022-
	Cosmological Physics and Advanced Computing Group	
	<b>Graduate Research Assistant - Vanderbilt University</b>	2016-2022
	Department of Physics & Astronomy	
<b>Education</b>	<b>Ph.D. - Vanderbilt University</b> , 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>B.A. - Wellesley College</b> , Wellesley, MA	May 2016
	B.A., <i>cum laude</i>	Advisors: Kim McLeod, James Battat
<b>Honors &amp; Awards</b>	Astrophysics major, German minor	
	<b>Most Outstanding Student Publication Award</b>	2020
	Vanderbilt Physics & Astronomy Department	
	<b>Graduate Student Poster Competition Winner</b>	2019
	Vanderbilt Data Science Symposium	
	<b>Akunuri V. Ramayya Award for Outstanding Teaching Assistant</b>	2018
	Vanderbilt Physics & Astronomy Department	
	<b>Provost Graduate Fellowship</b>	2016–2021
	Vanderbilt University	
<b>Grants</b>	<b>Undergraduate Chambliss Achievement Honorable Mention</b>	2016
	227th American Astronomical Society Meeting	
	<b>Sarah Frances Whiting Medal for Achievement in Astronomy</b>	2014
	Wellesley College	
	<b>XSEDE Grant</b>	2019, 2020
	Awarded 58.4k total Node Hours (2.8M CPU hours) on Stampede2	
<b>Publications</b>	<b>McMinn Research Grant</b>	2019, 2020
	Vanderbilt Physics & Astronomy Department (\$3,000 total)	
	<b>Graduate Summer Research Award</b>	2018
	Vanderbilt College of Arts and Sciences (\$1,900)	
<b>Publications</b>	<b>Submitted &amp; Published</b>	
	Total Citations: 83	
	6. <b>Beltz-Mohrmann, G. D.</b> , 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., <b>Beltz-Mohrmann, G. D.</b> , 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. <b>Beltz-Mohrmann, G. D.</b> , 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. <b>Beltz-Mohrmann, G. D.</b> , 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", *The Astronomical Journal*, 151, 4
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

#### In Preparation

2. **Beltz-Mohrmann, G. D.**, Hearin, A. P., Alarcon-Gonzalez, A., Bekcer, M. R., 2023, "On the redshift-evolution of the HOD of DESI galaxy samples", in prep.
1. **Beltz-Mohrmann, G. D.** et al. 2023, "DESI C3 Emulator Mock Challenge", in prep.

Recent Invited Talks	<b>KITP Workshop</b> , 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 &amp; Lingering Tension</i>	
	<b>CAMELS Workshop</b> , Center for Computational Astrophysics	Dec. 2022
	<i>Toward Accurate Modeling of Galaxy Clustering on Small Scales: Halo Model Extensions &amp; Lingering Tension</i>	
	<b>N-Body Shop Workshop</b>	June 2022
	<i>Accurate Modeling of Galaxy Clustering on Small Scales</i>	
	<b>High-Energy and AstroPhysics Seminar</b> , University of Utah	Jan. 2022
	<i>Developing an Accurate Probe of the Galaxy-Halo Connection</i>	
	<b>KICP Seminar</b> , University of Chicago	Nov. 2021
	<i>Developing an Accurate Probe of the Galaxy-Halo Connection</i>	
Recent Posters	<b>Galaxies and AGN Journal Club</b> , Johns Hopkins University	July 2021
	<i>Impact of baryonic physics on the abundance, clustering, &amp; concentration of halos</i>	
	<b>Galaxy Lunch talk</b> , Yale University	March 2021
Mentoring	<i>Impact of baryonic physics on the abundance, clustering, &amp; concentration of halos</i>	
	<b>KITP Workshop</b> , UC Santa Barbara	Aug. 2020
	Galaxy-Halo Connection Across Cosmic Time <i>HMF Discrepancies between Hydrodynamic and DMO Simulations</i>	
	<b>Galaxy-halo Connection Workshop</b> , Universität Innsbruck	March 2020
	<i>Taking Halo Modeling to the Next Level</i>	
Recent Posters	<b>First Shanghai Assembly on Cosmology &amp; Galaxy Formation</b>	Nov. 2019
	<i>Taking HOD Modeling to the Next Level</i>	
Mentoring	<b>Santa Cruz Galaxy Workshop</b>	Aug. 2019
	<i>Can We Ignore Baryons in Halo Modeling?</i>	
	<b>DESI Mentorship Program</b>	Fall 2023 -
	<i>Mentor for students in the DESI Collaboration</i>	
	<b>GEM Fellowship Program</b> , Argonne National Laboratory	Summer 2023
Teaching	<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>	
	<b>STEM Research Program</b> , 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 &amp; Engineering Fair in 2018 and 2019</i>	
Teaching	<b>Conference for Undergraduate Women in Physics</b>	Jan. 2023
	Argonne National Lab <i>Developed and lead several python workshops during the conference; taught students</i>	

	<i>Python basics and introduced them to galaxy redshift data from SDSS</i>	
	<b>Graduate Teaching Assistant</b> , Vanderbilt University	Fall 2016 – Spring 2019
	Introductory Astronomy Lab instructor	
	<i>Lectured on lab concepts; helped develop and improve lab material; taught students 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>	
	<b>Astronomy Tutor</b> , Vanderbilt University	Fall 2016
	<i>Individual tutor for introductory astronomy lectures (1-2 hours per week)</i>	
	<b>Supplemental Instruction Leader</b> , 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>	
	<b>Physics Tutor</b> , 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>	
	<b>Summer Academy at Vanderbilt for the Young</b>	July 2017
	<i>Developed material for a week-long course for middle school students to learn VPython and build a solar system simulation</i>	
	<b>Vanderbilt Student Volunteers for Science</b>	Fall 2016
	<i>Gave monthly chemistry and physics demonstrations to middle school classes</i>	
<b>Skills &amp; Experience</b>	<b>Programming Languages:</b> PYTHON, C, MATLAB, BASH, GIT, L <sup>A</sup> T <sub>E</sub> X	
	<b>Misc.:</b> scikit-learn, Jax, emcee	
	<b>Parallel Computing:</b> MPI, OPENMP	
	<b>Simulation Software:</b> GADGET-2 & GADGET-4, CAMB, 2LPTIC, ROCKSTAR	
	<b>Observing Experience:</b>	
	~ 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	
<b>Public Service &amp; Outreach</b>	~ 100 hours using 8" reflector telescopes at Wellesley College and Vanderbilt University	
	~ 100 hours using 6" and 12" historic refractor telescopes at Wellesley College	
	<b>Scholarly Journal Peer Reviewer:</b> JCAP, Physics of the Dark Universe	
	<b>AAS Congressional Visits Day (virtual)</b>	Sept. 2020
	<i>Spoke with state representatives about the importance of funding scientific research</i>	
	<b>Science Day with Nashville Girl Scout Troop</b>	March 2019
	<i>Built bottle rockets and answered questions about being an astronomer</i>	
	<b>Meet the Astronomer Night at Dyer Observatory</b>	Oct. 2018
<b>Collaborations</b>	<i>Public talk and Q&amp;A</i>	
	<b>Whitin Observatory Volunteer</b> , Wellesley College	2012–2016
	<i>Gave monthly public talks and telescope demonstrations to guests of all ages</i>	
	<b>Leadership:</b>	
	LasDamas (Large Suite of Dark Matter Simulations) Collaboration	2017–2022
	<i>Co-Investigator &amp; XSEDE Allocation Manager</i>	
	<b>General Member:</b>	
	Dark Energy Spectroscopic Instrument Collaboration	2022–
<b>Pre-doctoral Positions</b>	<i>C3 Working Group, Sustainability Committee</i>	
	LSST Dark Energy Science Collaboration	2022–
	CAMELS Collaboration	2022–
	N-Body Shop Collaboration	2020–
	American Astronomical Society	2015–
	LIGO Summer Undergraduate Research Fellow, Caltech	Summer 2015
	NSF Summer REU, University of Wyoming	Summer 2014
	Keck Northeast Astronomy Consortium Fellow, Williams College	Summer 2013
	Undergraduate Research Assistant, Wellesley College	2013–2016