

# GILLIAN DORA BELTZ-MOHRMANN

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## EDUCATION

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Ph.D., Astrophysics, Vanderbilt University	expected 2022
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>	
M.A., Astrophysics, Vanderbilt University	2018
B.A., Astrophysics, German, <i>cum laude</i> , Wellesley College	2016
Advisors: Kim McLeod, James Battat	

## HONORS & AWARDS

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Vanderbilt Physics & Astronomy Dept. - Most Outstanding Student Publication Award	2020
Vanderbilt Data Science Symposium - Graduate Student Poster Competition (1st place)	2019
Vanderbilt Akunuri V. Ramayya Award for Outstanding Teaching Assistant	2018
Vanderbilt Provost Graduate Fellowship	2016–2021
Undergraduate Chambliss Astronomy Achievement Award (Honorable Mention)	2016
Wellesley College Sarah Frances Whiting Medal for Achievement in Astronomy	2014

## GRANTS

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XSEDE - Awarded 58.4k Node Hours (2.8M CPU hours) on Stampede2	2019, 2020
Vanderbilt Physics & Astronomy Dept. - McMinn Research Grants (\$3,000 total)	2019, 2020
Vanderbilt College of Arts and Sciences - Graduate Summer Research Award (\$1,905)	2018

## PUBLICATIONS

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### Submitted & Published

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”, submitted to The Astrophysical Journal, arXiv:2110.03701
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, in press, arXiv:2103.05076
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
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

1. **Beltz-Mohrmann, G. D.**, Szewciw, A. O., Berlind, A. A., Sinha, M., 2021, “Toward Accurate Modeling of Galaxy Clustering on Small Scales: Extensions to the Standard Halo Model”, in prep.

## RECENT TALKS & POSTERS

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### Invited Talks

- Johns Hopkins Galaxies and AGN Journal Club 2021  
*The impact of baryonic physics on the abundance, clustering, and concentration of halos*
- Yale Galaxy Lunch 2021  
*The impact of baryonic physics on the abundance, clustering, and concentration of halos*

### Contributed Talks

- KITP Conference: The Galaxy-Halo Connection Across Cosmic Time 2020  
*HMF Discrepancies between Hydro and DMO Simulations*
- Universität Innsbruck Conference: The connection between galaxies and dark matter haloes 2020  
*Taking Halo Modeling to the Next Level*

### Contributed Posters

- The First Shanghai Assembly on Cosmology and Galaxy Formation 2019  
*Taking HOD Modeling to the Next Level: Results from SDSS & Hydrodynamic Simulations*
- Santa Cruz Galaxy Workshop 2019  
*Can We Ignore Baryons in Halo Modeling?*

## COMPUTATIONAL SKILLS & EXPERIENCE

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**Languages:** PYTHON, C, MATLAB, BASH, GIT, L<sup>A</sup>T<sub>E</sub>X

**Parallel Computing:** MPI, OPENMP

**Supercomputing:** Co-Investigator & Allocation Manager of Las Damas Project 2017–present  
Experience generating initial conditions using CAMB and 2LPTIC, running cosmological N-body simulations using GADGET-2 & GADGET-4, creating halo catalogues using ROCKSTAR halo finder, and running MCMC parameter searches on Stampede2 supercomputer

## TEACHING & OUTREACH

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- Co-mentored** high school student Caleigh Dennis 2017–2019  
Two-time 1st place winner at Middle Tennessee Science & Engineering Fair
- Outreach at Vanderbilt University** 2016–present  
Dyer Observatory Volunteer: Solar Eclipse talk (2017), Meet the Astronomer Night (2018)  
Nashville Girl Scout Troop talk (2018)  
Volunteer for Summer Academy at Vanderbilt for the Young (July 2017)  
Vanderbilt Student Volunteers for Science (Fall 2016)
- Graduate Teaching Assistant**, *Intro Astronomy Lab*, Vanderbilt University 2016–2019  
~ 50 hours experience using 12" reflecting telescopes
- Physics Tutor**, Wellesley College 2013–2016
- Whitin Observatory Volunteer**, Wellesley College 2012–2016  
~ 100 hours experience using 6" & 12" historic refracting telescopes  
~ 50 hours experience using 12" reflecting telescopes

## PRE-DOCTORAL RESEARCH POSITIONS

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- Graduate Research Assistant, Vanderbilt University 2016–present
- LIGO Summer Undergraduate Research Fellow, Caltech 2015  
Advisors: Alan Weinstein, Jonah Kanner
- NSF Summer REU, University of Wyoming 2014  
Advisor: Daniel Dale
- Summer Research Fellow, Keck Northeast Astronomy Consortium, Williams College 2013  
Advisor: Steven Souza
- Undergraduate Research Assistant, Wellesley College 2013–2016