

# PHILIP MANSFIELD

An updated CV can be found at: [phil-mansfield.github.io](http://phil-mansfield.github.io)

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## WORK HISTORY

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<b>Stanford University</b> KIPAC Fellow	2020 - present
<b>The University of Chicago</b> Ph.D, Department of Astronomy & Astrophysics Thesis Advisor: <i>Andrey Kravtsov</i> Thesis Topic: <i>Dark Matter Halos and Their Environments</i>	2014 - 2020
<b>Carnegie Mellon University</b> BS, Department of Physics Graduated with University Honors	2010 - 2014

## FELLOWSHIPS AND AWARDS

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KIPAC Fellowship	2020 - 2023
Sugarman Award	2020
James Cronin Graduate Student Fellowship	2019-2020
William Rainey Harper Dissertation Fellowship	2019-2020
McCormick Fellowship	2014-2016
Richard E. Cutkosky Award	2014

## PUBLICATIONS

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1. Nadler, E., **Mansfield, P.**, Wang, Y., Du, X., Adhikari, S.; Banerjee, Arka., Benson, An., Darragh-Ford, E., Mao, Y., Wagner-Carena, S., Wechsler, R., Wu, H., *Symphony: Cosmological Zoom-in Simulation Suites over Four Decades of Host Halo Mass*, 2022, in review, arXiv:2209.02675
2. Chen, H., Gnedin, N., **Mansfield, P.**, *Approximating Density Probability Distribution Functions Across Cosmologies*, 2022, ApJ, 929(2), 135
3. **Mansfield, P.**, Avestruz, C., *How Biased Are Halo Properties in Cosmological Simulations?*, 2021, MNRAS, 500(3), 3309
4. He, Y., **Mansfield, P.**, Rau, M., P., Trac, H., Battaglia, N., *Debiased Galaxy Cluster Pressure Profiles from X-ray Observations and Simulations*, 2021, ApJ, Volume 908(1), 91
5. **Neuzil, M.\***, **Mansfield, P.**, Kravtsov, A., *The Sheet of Giants: Unusual Properties of the Local Volume*, 2020, MNRAS, 494, 2600
6. **Mansfield, P.**, & Kravtsov, A. V., *The Three Causes of Low-Mass Assembly Bias*, 2020, MNRAS, 493, 4763
7. Diemer, B., **Mansfield, P.**, Kravtsov, A. V., & More, S., *The Splashback Radius of Halos from Particle Dynamics. II. Dependence on Mass, Accretion Rate, Redshift, and Cosmology*, 2017, ApJ, 843, 140
8. **Mansfield, P.**, Kravtsov, A. V., & Diemer, B., *Splashback Shells of Cold Dark Matter Halos*, 2017, ApJ, 841, 34

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\*I was the primary research mentor for this student on this project.

9. Trac, H., Cen, R., & Mansfield, P., *SCORCH I: The Galaxy-Halo Connection in the First Billion Years*, 2015, ApJ, 813, 54
10. Matty, M., Mansfield, P., Hallinen, K., Albert, J., Swendsen, R., *Cluster simulations of multi-spin Potts models*, 2015, JSTAT, 1, 1026

## TEACHING & MENTORING

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Research mentor for seven undergraduate and graduate student projects 2018 - present  
*Maria Neuzil (University of St. Thomas; undergraduate), Ismael Mendoza (University of Michigan; graduate student; co-mentored with Camille Avestruz), Lindsey Payne (Stanford University; undergraduate), Sebastian Wagner-Carena (Stanford University; graduate student), Boxin Zhang (Stanford University; undergraduate), Althea Hudson (Stanford University, undergraduate), Elise Darragh-Ford (Stanford University; graduate student)*

Co-instructor of PHYSICS 16, Stanford University 2022  
*Co-instructed PHYSICS 16: The Origin and Development of the Cosmos, an introductory astronomy course on cosmology and galaxies for non-majors alongside Risa Wechsler. Split responsibility for lecture/active learning sessions, developed assignments, exams, projects, and rubrics.*

KICP Space Explorers Instructor, University of Chicago 2016 - 2017  
*Designed and taught year-long high school class on thermal physics and engineering. Students proposed, designed, and launched experiments on a weather balloon. I gave a talk on this class during the 2018 national meeting of the National Science Teachers Association.*

TA, University of Chicago 2014 - 2015  
*Three Astronomy classes: The Physics of Stars, Stellar Astronomy and Astrophysics, Origin of the Universe and How We Know*

Physics Upper Class Course Center Tutor, Carnegie Mellon University 2013-2014  
*Helped Junior and Senior undergraduates with upperclass coursework.*

TA, Carnegie Mellon University 2011 - 2012  
*Four Computer Science classes: Principles of Computing (three times), Parallel and Sequential Data Structures and Algorithms*

## OUTREACH

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Stanford University 2020 - present  
*Various outreach activities once to twice a month, ranging from speaking in classrooms, to giving talks for amateur astronomy societies, to star-gazing parties.*

Office of Special Programs Tutor, University of Chicago 2017 - 2019  
*Weekly tutoring for low-income, minority, and first-generation high school students on classes ranging from AP Computer Science to Introductory Geometry. 2-5 hours per week.*

Yerkes Institute Designer and Instructor, University of Chicago 2016 - 2018  
*Designed over 50 hours of novel lab material and taught over 200 hours of labs for six high school-level winter and summer science camps. I was the head designer for two of these camps.*

- Self-Driving Cars 2018
- City of Tomorrow 2018
- Demystifying Everyday Electronics 2017
- The Physics of Toys (lead designer) 2017
- Up and Down (lead designer) 2016

Astronomy Conversations Presenter, Adler Planetarium  
*Monthly presentations on astronomy to planetarium visitors.*

2014 - 2016

## PUBLIC CODES

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Guppy, (2022), [github.com/phil-mansfield/guppy](https://github.com/phil-mansfield/guppy)

*A compression algorithm for N-body simulation data*

Symlib, (2022), [phil-mansfield.github.io/symphony/build/html/index.html](https://phil-mansfield.github.io/symphony/build/html/index.html)

*A publicly accessible code base which makes working with simulated dark matter halo data more student-friendly. Written for the Symphony simulation suite.*

Shellfish, (2017), [github.com/phil-mansfield/shellfish](https://github.com/phil-mansfield/shellfish)

*An algorithm for finding the splashback edge of dark matter halos in simulations*

Gotetra, (2015) [github.com/phil-mansfield/gotetra](https://github.com/phil-mansfield/gotetra)

*Tesselation-based visualization software for N-body simulations*

## CONFERENCE TALKS AND SEMINARS

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The Galaxy-Halo Connection Across Cosmic Time, KITP, University of California

2020

Cosmology Seminar, University of California, Berkeley

2019

Cosmology Seminar, KIPAC, Stanford University

2019

Halo and Galaxy Assembly Bias, Tsung Dao Lee Institute, Shanghai

2019

National Science Teachers Association 2018 National Conference, Atlanta, GA

2018

Quantifying and Understanding the Galaxy–Halo Connection, KITP, University of California

2017

Astronomy & Astrophysics Chalk Talk, University of Chicago

2016