

# Heyang Long

*She/Her/Hers*

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📄 Publication

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🐙 Github

📍 191 West Woodruff Ave, M2000, Columbus, OH 43210

🌐 Website: <https://cosmosheep.github.io>

## Research Interest

Cosmology

- Epoch of Reionization, Intergalactic Medium
- 21 cm Intensity Mapping, Line Intensity Mapping, Lyman-alpha Forest, Weak Gravitational Lensing

Astrophysics

- Gravitational Waves, Compact Objects, White Dwarf Binaries
- Primordial Black Hole

## Education

Aug 2018 –

**The Ohio State University**, Columbus, OH

*Ph.D in Physics*

Advisor: Christopher M. Hirata

Sep 2014 – June 2018

**Nanjing University**, Nanjing, China

*B.S in Physics*

## Academic Visits

Jul. – Oct. 2017

**University of Pittsburgh, PITT PACC**, Pittsburgh, PA

*Visiting Undergraduate Student with Prof. Tao Han*

Jun. 2022

**University of California, Berkeley**, Berkeley, CA

*Visiting Graduate Student with Prof. Liang Dai*

## Awards

2022-2023 | Presidential Fellowship, The Ohio State University

2022 | APS DAP Student Travel Grant

2018 | Outstanding Graduates, Nanjing University

## Publications

### Major Author

1. "Impact of inhomogeneous reionization on post-reionization 21 cm intensity mapping measurement of cosmological parameters"  
**Heyang Long**, Catalina Morales-Gutiérrez, Paulo Montero-Camacho, and Christopher M. Hirata.  
Submitted to MNRAS ([arXiv](#))
2. "Probing Large Scale Ionizing Background Fluctuation with Lyman  $\alpha$  Forest and Galaxy Cross-correlation at  $z=2.4$ "  
**Heyang Long**, Christopher M. Hirata. Submitted to MNRAS ([arXiv](#))
3. "Streaming Velocity Effects on the Post-reionization 21 cm Baryon Acoustic Oscillation Signal"  
**Heyang Long**, Jahmour J. Givans, and Christopher M. Hirata. *MNRAS*, 513, 1, 117 -128 (2022) ([arXiv](#))

4. "A synthetic Roman Space Telescope High-Latitude Imaging Survey: simulation suite and the impact of wavefront errors on weak gravitational lensing."  
Troxel, M. A., **Heyang Long**, C. M. Hirata, A. Choi, M. Jarvis, R. Mandelbaum, K. Wang, M. Yamamoto, S. Hemmati, and P. Capak. *MNRAS*, 501, 2, 2044-2070 (2021) ([arXiv](#))

### Contributing Author

6. "A Synthetic Roman Space Telescope High-Latitude Time-Domain Survey: Supernovae in the Deep Field"  
Wang, Kevin X., et al. (inc. **Heyang Long**). Submitted to MNRAS ([arXiv](#))
7. "Weak Gravitational Lensing Shear Estimation with Metacalibration for the Roman High-Latitude Imaging Survey."  
Yamamoto, Masaya, et al. (inc. **Heyang Long**). Accepted by *MNRAS* ([arXiv](#))

### Presentations

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- Nov. 2022 | **6. Invited Talk**, Cosmology Lunch, Institute for Advanced Study/ Princeton University, Princeton, NJ
- Oct. 2022 | **5. Invited Talk**, DESI Lyman- $\alpha$  & WG Telecon, remote
- Apr. 2022 | **4. Contributed Talk**, APS April Meeting, New York City, NY
- Nov. 2021 | **3. Invited Talk**, Roman Science Investigation Team Workshop, remote
- Aug. 2021 | **2. Contributed Talk**, COSMO'21, remote, UIUC, IL
- Aug. 2019 | **1. Poster**, The 12th Great Lakes Cosmology Workshop, Rochester, NY

### Conferences & Summer Schools

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- Aug. 2022 | 4. N3AS School on Multi-Messenger Astrophysics, Santa Cruz, CA
- Aug. 2021 | 3. CMB-S4 Summer Collaboration Meeting, remote
- Jun. 2020 | 2. Michigan Cosmology Summer School, remote, Ann Arbor, MI
- Mar. 2019 | 1. WFIRST Synthetic Data Hackathon, Baltimore, MD

### Research Advising Experience

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- 2021 - | **Catalina Morales-Gutiérrez**, Undergraduate Student at Universidad de Costa Rica
- 2021 - | **Yuanyuan Yang**, Undergraduate Student at OSU
- 2021 - | **Emily Koivu**, Graduate Student at OSU

### Service & Outreach & Teaching Experience

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- 2022 - | **Referee**, MNRAS
- 2021 - 2022 | **Co-organizer**, Cosmology Lunch Journal Club, CCAPP, OSU
- 2018 - 2020 | **Graduate Teaching Assistant**
- Physics 1250, *Mechanics, Work and Energy, Thermal Physics*, OSU, Fall 2018 & Fall 2019
  - Physics 1251, *E&M, Waves, Optics, Modern Physics*, OSU, Spring 2019 & Spring 2020

### Programming Skills

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- **Language**: Proficient in Python, experienced in C and Fortran

- **Cosmology & Astrophysics Simulations:** GalSim, GADGET-2, 21cmFAST, CLASS, Starburst99, Tlusty
- **Script:** Perl, Bash

## Outreach

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Jul 2022 - | **Treasurer**, Society of Women in Physics, OSU

2022 | **Volunteer Judge**, Ohio Academy of Science State Science Day, Columbus, OH

## Reference

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- **Prof. Christopher M. Hirata**  
*Department of Physics and Astronomy, The Ohio State University*  
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- **Prof. Michael Troxel**  
*Department of Physics, Duke University*  
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- **Prof. Liang Dai**  
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- **Dr. Paulo Montero-Camacho**  
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