

Heyang Long

She/Her/Hers

✉ long.1697@osu.edu ☎ 614-531-0096 🏠 191 West Woodruff Ave, M2000, Columbus, OH 43210
📄 Publication 🌐 Github 🌐 Website: <https://cosmosheep.github.io>

Research Interest

Cosmology

- Epoch of Reionization, Intergalactic Medium
- 21 cm Intensity Mapping, Line Intensity Mapping, Lyman-alpha Forest
- Cosmic Microwave Background, B-modes

Astrophysics

- Gravitational Waves, Compact Objects, White Dwarf Binaries

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

Awards

- 2022-2023 | Presidential Fellowship, The Ohio State University
2022 | APS DAP Student Travel Grant
2018 | Outstanding Graduates, Nanjing University

Publications

Major Author

1. "Lyman- α polarization from cosmological ionization fronts: II. implications for intensity mapping"
Emily Koivu, **Heyang Long**, Yuanyuan Yang, and Christopher M. Hirata. Submitted to JCAP ([arXiv](#))
2. "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](#))
3. "Probing Large Scale Ionizing Background Fluctuation with Lyman α Forest and Galaxy Cross-correlation at $z=2.4$ "
Heyang Long, Christopher M. Hirata. *MNRAS*, 520, 1, 948–962 (2023)([arXiv](#))
4. "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](#))
5. "A synthetic Roman Space Telescope High-Latitude Imaging Survey: simulation suite and the impact of wavefront errors on weak gravitational lensing."
Troxel, M. A., **H. 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. "Lyman- α polarization from cosmological ionization fronts: I. Radiative transfer simulations" Yuanyuan Yang, Emily Koivu, Chenxiao Zeng, **Heyang Long**, and Christopher M. Hirata. Submitted to JCAP ([arXiv](#))
7. "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](#))
8. "Weak Gravitational Lensing Shear Estimation with Metacalibration for the Roman High-Latitude Imaging Survey." Yamamoto, Masaya, *et al.* (inc. **Heyang Long**). *MNRAS*, 519, 3, 4241–4252 (2023) ([arXiv](#))

Presentations

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| Feb. 2023 | | 8. Invited Talk (remote) , State of The Universe Seminar, Tata Institute of Fundamental Research (TIFR), Mumbai, India |
| Jan. 2023 | | 7. Invited Talk , Cosmology Group Meeting, Institut de Física d'Altes Energies (IFAE), Barcelona, Spain |
| Nov. 2022 | | 6. Invited Talk , Cosmology Lunch, Institute for Advanced Study, Princeton, NJ |
| Oct. 2022 | | 5. Invited Talk , DESI Lyman- α & WG Telecon, remote |
| Apr. 2022 | | 4. Contributed Talk , APS April Meeting, New York City, NY |
| Nov. 2021 | | 3. Invited Talk (remote) , Roman Science Investigation Team Workshop |
| 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 & Teaching Experience

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| 2022 - | | Referee , MNRAS |
| 2021 - 2022 | | Co-organizer , Cosmology Lunch Journal Club, CCAPP, OSU |
| 2018 - 2020 | | Graduate Teaching Assistant <ul style="list-style-type: none">• Physics 1250, <i>Mechanics, Work and Energy, Thermal Physics</i>, OSU, Fall 2018 & Fall 2019• Physics 1251, <i>E&M, Waves, Optics, Modern Physics</i>, OSU, Spring 2019 & Spring 2020 |

Programming Skills

- **Language:** Proficient in Python, experienced in C and Fortran
- **Cosmology & Astrophysics Simulations:** GalSim, GADGET-2, 21cmFAST, CLASS, Starburst99, Tlusty
- **Script:** Perl, Bash

Outreach

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

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