

Yunjing Wu

PERSONAL INFORMATION

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EDUCATION

2019.09 – Present Ph.D. student in Astronomy, Tsinghua University, Beijing, China
 Advisor: Prof. [Zheng Cai \(THU\)](#)
2015.09 – 2019.06 B.S. in Astronomy, University of Science and Technology of China, Hefei, China
 Thesis Title: The Observational Discoveries of AGNs on Different Scales
 Advisor: Prof. [Junxian Wang \(USTC\)](#)

EMPLOYMENT

2022.07 – 2023.11 Visiting student in Astronomy, Steward Observatory, University of Arizona,
 Tucson AZ, USA
 Mentor: Prof. [Xiaohui Fan \(UofA & SO\)](#) & Dr. [Feige Wang \(Umich\)](#)

RESEARCH INTERESTS

Circumgalactic medium: **a.** Using the background quasars to study the intervening CGM of foreground galaxies **b.** Connecting galaxies to the cosmic Web

High redshift galaxies: Using multi-wavelength observations (from rest-frame UV to radio) to investigate the physical properties of galaxies.

RESEARCH PROGRAMS

2019 – Present The SUPERCOLD-CGM Survey , Member
2019 – Present MAMMOTH-Subaru survey, Member
2021 – Present [The JWST-ASPIRE survey](#), Member
2023 – Present [The JWST-MAGNIF survey](#), Member

SELECTED TELESCOPE PROPOSALS

ALMA (PI): *Revealing the dominant process that regulates gas-phase metallicity during the ongoing mergers at $z > 6$, **14.3 hours**, Cycle 10, 2023*
ALMA (co-I): *JAKS: JWST-ALMA-Keck Synergy Study on the Circumgalactic Cold Gas Accretion **14.7 hours**, Cycle 11, 2024*
ALMA (co-I): *Probing the Cold Molecular Circum-Galactic Medium Around Most Luminous Type-2 QSOs at $z \sim 2$ with ALMA+ACA, **18.9 hours**, Cycle 11, 2024*
MUSE (co-I) The cosmic Ecosystem of the first QSOs and Galaxies:
 a MUSE/XSHOOTER/JWST/ALMA Legacy Survey, **large, 147 hours, 2023**

- JWST (co-I):** *A Spectroscopic survey of biased halos In the Reionization Era (ASPIRE): A JWST Quasar Legacy Survey, 65.8 hours*, Cycle 1, 2022
- JWST (co-I):** *Mapping the Most Extreme Protoclusters in the Epoch of Reionization. 47.5 hours*, Cycle 2, 2023
- JWST (co-I)** *MAGNIF: Medium-band Astrophysics with the Grism of NIRCam in Frontier Fields. 42.5 hours*, Cycle 2, 2023
- JWST (co-I)** *Emergence of the Baryon Cycle in the First Billion Years, 20.5 hours*, Cycle 3, 2024
- JWST (co-I)** *Mapping Cosmic Structure Evolution: Characterizing Two Massive Galaxy Protoclusters Anchored by $z > 7.5$ Luminous Quasars, 12.9 hours*, Cycle 3, 2024
- MMT (co-I):** *Understanding the galactic feedback by connecting absorption-line systems and Ly α emitting galaxies, 1.5 nights*, 2024A

OBSERVATION & DATA REDUCTION EXPERIENCE

- ~ 2 **nights** 5.1 m Hale telescope, Cosmic Web Imager (CWI)
- ~ 20 **nights** 6.5 m Magellan telescopes, FIRE, IMACS, MIKE, & MagE
- ~ 3 **nights** 8.2 m Subaru telescope, Suprime-Cam

JWST DATA Reduction: NIRCam Imaging, wide field slitless spectroscopy, NIRISS imaging, grism and NIRSpec MOS, IFU

ALMA DATA Reduction (based on [CASA](#))

Spectroscopic Data Reduction (extensively experienced in using [Pypeit](#))

FELLOWSHIP & AWARDS

- 2024 Tsinghua Astrophysics Outstanding (TAO) Scholarship, \$ 4000
The top student prize for outstanding research in the department, 1/70
- 2021, 2023 First Prize in Comprehensive Scholarship, Tsinghua University, total ~ \$ 3000
- 2019 Outstanding undergraduate students of USTC

TEACHING EXPERIENCE

- Teaching Assistant, Observational Astrophysics, 2021, 2024 Spring (THU)
- Teaching Assistant, Astronomy in a nutshell, 2019 Spring (USTC)

OUTREACH & SERVICE

- 2024.07 Diving into the Universe Summer School (to highschool students)
- 2024.04 **LOC**, [Co-evolution of galactic eco-systems and their large-scale environments](#)
- 2023.10 **LOC**, EREBUS collaboration meeting

SELECTED TALKS, CONFERENCE PRESENTATIONS & SEMINARS

- 2021.05 Contributed presentation (Best Oral Presentation) 23rd Guoshoujing Conference
- 2021.11 Lunch talk Department of Astronomy, THU
- 2023.08 Special arXiv Coffee UofA & SO
- 2023.09 Steward Observatory high-z JWST retreat
(on behalf of the SO quasar group) UofA & SO

2023.11 Visitor talk
2024.07 Contributed presentation

Department of Astronomy, NMSU
EAS 2024

MENTERSHIP

1. **Sijia Cai**, Tsinghua University, Ph.D. student, 2023–now

PUBLICATION LIST

23 papers including: 5 first author and 1 2nd-or-3rd author; 292 total citations; h-index = 9;
Full list: [ADS Link](#)

First Author; [ADS Link](#)

1. **Wu, Y.**, Cai, Z., Li, J., et al., *Searching for C II Emission from the First Sample of $z \sim 6$ O I Absorption-associated Galaxies with the Atacama Large Millimeter/submillimeter Array*, [ApJ](#), **958**, 16 (2023).
2. **Wu, Y.**, Wang, F., Cai, Z., et al., *A Spectroscopic Survey of Biased Halos in the Reionization Era (ASPIRE): JWST Discovers an Overdensity around a Metal Absorption-selected Galaxy at $z \sim 5.5$* , [ApJL](#), **956**, L40 (2023)
3. **Wu, Y.**, Cai, Z., Sun, F., et al., *The Identification of a Dusty Multiarm Spiral Galaxy at $z = 3.06$ with JWST and ALMA*, [ApJL](#), **942** L1, (2023).
4. **Wu, Y.**, Cai, Z., Neeleman, M., et al., *A [C II] 158 μm emitter associated with an O I absorber at the end of the reionization epoch*, [Nature Astronomy](#), (2021).
5. **Wu, Y.**, Wang, J.-X., Cai, Z.-Y., et al., *More than softer-when-brighter: The X-ray powerlaw spectral variability in NGC 4051*, [Science China Physics, Mechanics, and Astronomy](#), **63**, 129512 (2020).

Second or Third author; [ADS Link](#)

1. Lin, X., Cai, Z., **Wu, Y.**, et al., *Quantifying the escape of Ly α at $z \approx 5 - 6$: a census of Ly α escape fraction with H α emitting galaxies spectroscopically confirmed by JWST and VLT/MUSE*, arXiv e-prints, arXiv:2401.09532 (2024).

Co-author

1. Jin, X., et al., (including **Wu, Y.**), *A Spectroscopic survey of biased halos In the Reionization Era (ASPIRE): JWST Supports Earlier Reionization around [OIII] Emitters*, arXiv e-prints, arXiv:2410.01318 (2024).
2. Lin, X, et al. (including **Wu, Y.**), *A Spectroscopic Survey of Biased Halos In the Reionization Era (ASPIRE): Broad-line AGN at $z = 4 - 5$ Revealed by JWST/NIRCam* [WFSSApJ](#), **974**, 147 (2024)
3. Li, M., et al., (including **Wu, Y.**), *MAMMOTH-Subaru. II. Diverse Populations of Circumgalactic Ly α Nebulae at Cosmic Noon*, arXiv e-prints, arXiv:2405.13113 (2024).
4. Fudamoto, Y., et al., (including **Wu, Y.**), *JWST Discovery of 40+ Microlensed Stars in a Magnified Galaxy, the "Dragon" behind Abell 370*, arXiv e-prints, arXiv:2404.08045 (2024).

5. Ning, Y., et al., (including **Wu, Y.**), *Unveiling Luminous Ly α Emitters at $z \approx 6$ through JWST/NIRCam Imaging in the COSMOS Field*, *ApJL*, **963**, L38 (2024).
6. Zou, S., et al., (including **Wu, Y.**), *A SPectroscopic survey of biased halos In the Reionization Era (ASPIRE): Impact of Galaxies on the Circumgalactic Medium Metal Enrichment at $z > 6$ Using the JWST and VLT*, *ApJL*, **963**, L28 (2024).
7. Ma, K., et al., (including **Wu, Y.**), *MAMMOTH-Subaru. V. Effects of Cosmic Variance on Ly α Luminosity Functions at $z = 2.2 - 2.3$* , *ApJ*, **961**, 102 (2024).
8. Zhang, H., et al., (including **Wu, Y.**), *MAMMOTH-Subaru. III. Ly α Halo Identified by Stacking 3300 Ly α Emitters at $z = 2.2 - 2.3$* , *ApJ*, **961**, 63 (2024).
9. Li, M., et al., (including **Wu, Y.**), *The Mass-Metallicity Relation of Dwarf Galaxies at Cosmic Noon from JWST Observations*, *ApJL*, **955**, L18 (2023).
10. Zhang, S., et al., (including **Wu, Y.**), *Revealing the Gas Recycling in the Circumgalactic Medium (CGM) Utilizing a Luminous Ly α Nebula around a Type II Quasar at $z = 2.6$ with the Keck Cosmic Web Imager (KCWI)*, *ApJ*, **952**, 124 (2023).
11. Yang, J., et al., (including **Wu, Y.**), *A SPectroscopic Survey of Biased Halos in the Reionization Era (ASPIRE): A First Look at the Rest-frame Optical Spectra of $z > 6.5$ Quasars Using JWST*, *ApJL*, **951**, L5 (2023).
12. Wang, F., et al., (including **Wu, Y.**), *A SPectroscopic Survey of Biased Halos in the Reionization Era (ASPIRE): JWST Reveals a Filamentary Structure around a $z = 6.61$ Quasar*, *ApJL*, **951**, L4 (2023).
13. Li, J., et al., (including **Wu, Y.**), *The SUPERCOLD-CGM Survey. I. Probing the Extended CO(4-3) Emission of the Circumgalactic Medium in a Sample of 10 Enormous Ly α Nebulae at $z \sim 2$* , *ApJ*, **950**, 180 (2023).
14. Zhang, S., et al., (including **Wu, Y.**), *Inspiraling streams of enriched gas observed around a massive galaxy 11 billion years ago*, *Science*, **380**, 494 (2023).
15. Lin, X., et al., (including **Wu, Y.**), *Metal-enriched Neutral Gas Reservoir around a Strongly Lensed Low-mass Galaxy at $z = 4$ Identified by JWST/NIRISS and VLT/MUSE*, *ApJL*, **944**, L59 (2023).
16. Zhang, H., et al., (including **Wu, Y.**), *MAMMOTH-Subaru IV. Large Scale Structure and Clustering Analysis of Ly α Emitters and Ly α Blobs at $z = 2.2 - 2.3$* , arXiv e-prints, arXiv:2301.07359 (2023).
17. Li, J., et al., (including **Wu, Y.**), *Massive Molecular Outflow and 100 kpc Extended Cold Halo Gas in the Enormous Ly α Nebula of QSO 1228+3128*, *ApJL*, **922**, L29 (2021).