



ZIHAO LI (黎子豪)

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Education

University of Copenhagen

Ph.D. in Astronomy.

Advisor: Lise Christensen and Koki Kakiichi

Aug. 2024 –

Copenhagen, Denmark

Tsinghua University

M.sc. in Astronomy. GPA: 3.85/4.00

Advisor: Zheng Cai

Sep. 2021 – Jun. 2024

Beijing, China

Sichuan University

B.Eng. in Aerospace Engineering. GPA: 3.80/4.00 rank: 2/28

Honors Degree in Top-notch Program.

Sep. 2017 – Jun. 2021

Chengdu, China

Research Interests & Experience

- (Spatially resolved) metal enrichment of high- z galaxies.
- Environmental dependence of galaxy formation and evolution.
- Probe large scale structure through IGM tomography.
- CGM stacking using DESI.
- Data reduction for JWST NIRCам/NIRISS WFSS.
- Member of JWST ASPIRE/MAGNIF/COSMOS-3D data team.

Honors & Awards

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| • Outstanding Presentation Award for Graduate Research Nanjing University. | 2023 |
| • 1 st Scholarship for Comprehensive Performance (10k CNY) Tsinghua University. | 2022 |
| • Award for Excellent Thesis National level in Aeronautics & Astronautics. | 2021 |
| • MITACS Research Fellow in Astronomy (\$6k, cancelled due to COVID) University of Victoria. | 2020 |
| • 1 st Scholarship for Academic Performance Sichuan University. | 2020 |
| • Summer Abroad Subsidy (10k CNY) Sichuan University. | 2019 |
| • 1 st Scholarship of China Space Foundation (8k CNY) Sichuan University. | 2018 |
| • 1 st Scholarship for Comprehensive Performance Sichuan University. | 2018 |

Publications

1st/2nd Author Papers:

- **Li, Z.**, Cai, Z., et al. Cosmic evolution of galaxies' chemical abundance gradients: mode transitions of galaxy formation. Submitted
- **Li, Z.**, Cai, Z., et al. A SPectroscopic survey of biased halos In the Reionization Era (ASPIRE): First Look at the Metal Enrichment and its Environmental Effect at $z \approx 5 - 7$ in QSO fields with JWST. In Prep
- **Li, Z.**, Cai, Z., et al. MAGNIF: A Tentative Lensed Rotating Disk at $z = 8.34$ detected by JWST NIRCам WFSS with Dynamical Forward Modeling. 2023, submitted to ApJ, [arXiv:2310.09327](https://arxiv.org/abs/2310.09327)
- **Li, Z.**, Wang, X., Cai, Z., et al. First Census of Gas-phase Metallicity Gradients of Star-forming Galaxies in Overdense Environments at Cosmic Noon. 2022, [ApJL, 929, L8](#)
- Wang, X., **Li, Z.**, Cai, Z., et al. The Mass–Metallicity Relation at Cosmic Noon in Overdense Environments: First Results from the MAMMOTH–Grism HST Slitless Spectroscopic Survey. 2022, [ApJ, 926, 70](#)
- **Li, Z.**, Horowitz, B. and Cai, Z. Improved Ly α Tomography Using Optimized Reconstruction with Constraints on Absorption (ORCA). 2021, [ApJ, 916, 20](#)

Papers with Significant Contribution:

- Wu, Y, ..., **Li, Z.** et al. The Identification of a Dusty Multiarm Spiral Galaxy at $z = 3.06$ with JWST and ALMA. 2023, [ApJL, 942, L1](#) ([Press release](#))

- Lin, X., ..., **Li, Z.** et al. Metal-enriched Neutral Gas Reservoir around a Strongly Lensed Low-mass Galaxy at $z = 4$ Identified by JWST/NIRISS and VLT/MUSE. 2023, [ApJL, 944, L59](#)
- Li, M., ..., **Li, Z.** et al. The Mass–Metallicity Relation of Dwarf Galaxies at Cosmic Noon from JWST Observations. 2023, [ApJL, 955L, 18L](#)

Other Contributing Author Papers:

- Wang, F., ..., **Li, Z.** et al. A Spectroscopic survey of biased halos In the Reionization Era (ASPIRE): JWST Reveals a Filamentary Structure around a $z = 6.61$ Quasar. 2023, [ApJL, 951, L4](#) ([Press release](#))
- Yang, J., ..., **Li, Z.** et al. 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. 2023, [ApJL, 951, L5](#)

Full list in [ADS](#).

Talks

- Aug. 2024. “*Insights into cosmic evolution of gas-phase metallicity gradients with JWST*”, contributed talk at Santa Cruz Galaxy Workshop. (Santa Cruz, US)
- Nov. 2023. “*JWST insights on mass-metallicity relation and metallicity gradients of early galaxies*”, contributed talk at Nanjing University. (Nanjing, China)
- May. 2023. “*The metal-enrichment of low mass galaxies from cosmic dawn to noon in the JWST era*”, contributed talk at Chinese Astronomical Society Guoshoujing Symposium on Galaxies and Cosmology. (Huangshan, China)
- Mar. 2023. “*Research progress with HST/JWST slitless spectrograph and science preparation for CSST*”, contributed talk at China Space Station Telescope Conference 2023. (Huairou, China)

Observing Proposals

Co-Investigator:

- [JWST-GO-2883](#), PI Fengwu Sun: MAGNIF: Medium-band Astrophysics with the Grism of NIRCам in Frontier Fields.
- [JWST-GO-3325](#), PI Feige Wang: Mapping the Most Extreme Protoclusters in the Epoch of Reionization.
- [HST-GO-17159](#), PI Xin Wang: Escaping Lyman Continuum from the Overdensities of Extreme Emission Line Galaxies at $z \sim 2.2$.
- ALMA-2023.1.01213.S, PI Yunjing Wu: Revealing the dominant process that regulates gas-phase metallicity during the ongoing mergers at $z > 6$.

Teaching Experience

- Teaching Assistant of *Advanced Observational Astrophysics* at Tsinghua University. Spring 2023

Professional Service

- Reviewer for ApJ, Nat. Commun.

Outreach Activities

- Department Director of Sichuan University Astronomy Society. 2018–2019
- Co-Captain/Pilot/Technician of Sichuan University Students Aeromodel Team. 2018–2019

References

Prof. Zheng Cai

Department of Astronomy, Tsinghua University

✉ zcai@mail.tsinghua.edu.cn

Prof. Xin Wang

National Astronomical Observatories, Chinese Academy of Sciences

✉ xwang@ucas.ac.cn

Dr. Benjamin Horowitz

Kavli Institute for the Mathematics and Physics of the Universe, Tokyo University

✉ ben.horowitz@ipmu.jp