# Zihao Li (黎子豪)

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## Education

**Tsinghua University** **Sep. 2021 –**
*M.sc. in Astronomy.* GPA: 3.85/4.00 *Beijing, China*
*Advisor: Prof. Zheng Cai*

**Sichuan University** **Sep. 2017 – Jun. 2021**
*B.Eng. in Aerospace Engineering.* GPA: 3.80/4.00 rank: 2/28 *Chengdu, China*
*Honors Degree in Top-notch program.*

**University of California, Berkeley** **Jul. 2019 – Aug. 2019**
*Visiting Student in Summer Sessions (Astronomy).* GPA: 4.00/4.00 *Berkeley, USA*

## Relevant Coursework

- Physical Cosmology
- Observational Astrophysics
- Galactic Physics
- High Energy Astrophysics
- Computational Physics
- General Astronomy

## 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 NIRCam/NIRISS WFSS.
- Member of JWST ASPIRE data team.
- Member of JWST MAGNIF data team.

## Honors & Awards

- 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. 2023, to be 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 NIRCam WFSS with Dynamical Forward Modeling. 2023, submitted to ApJL, arXiv: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$\alpha$ 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, ApJ, 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

- 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

**Principle-Investigator:**

- JWST-GO-5638 (10 hours, submitted): Resolving galaxy kinematics and chemical enrichment in the $z > 8$ group environment.

**Co-Investigator:**

- JWST-GO-2883, PI Fengwu Sun: MAGNIF: Medium-band Astrophysics with the Grism of NIRCam 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

## 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** Computational Cosmology Center, Lawrence Berkeley National Lab
bahorowitz@lbl.gov