Ziwen Zhang

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RESEARCH INTERESTS

I devoted most of my time investigating galaxy evolution and Active Galactic Nuclei (AGN) triggering scenarios, as well as applying weak lensing technique to estimate the dark matter halo mass and establish various galaxy-halo connections. As a result, I have developed strong interests in the following two broad areas:

- galaxy formation and evolution
- weak gravitational lensing

EDUCATION

PhD in astronomy 2018/09 - 2024/11

University of Science and Technology of China (USTC), Hefei, China

Dissertation title: The influence and constraints of large-scale structure on galaxy evolution

Advisor: Huiyuan Wang

Visiting Doctoral Scholar in cosmology 2023/04 - 2024/04

CEA-Paris Saclay, Gif-Sur-Yvette, France

Advisor: Martin Kilbinger

BA in applied physics 2014/09 - 2018/06

Anhui University of Science and Technology, Huainan, China

RESEARCH EXPERIENCES

- VLA Proposal (in preparation):"Mapping the Rotation Curves of Dwarf Galaxies to Probe the Nature of Dark Matter", running with Prof. Min Yun from UMass 2025

- Using JWST data to explore galaxy clustering, in collaboration with Prof. Enci Wang from USTC 2025

- Using DESI data to study the formation and evolution of dwarf galaxies 2025

- Combining ELUCID simulations and observations to study BCG assembly, in collaboration with Prof. Houjun Mo (UMass Amherst) and Dr. Yangyao Chen (USTC) 2024

- Quantify the PSF-related systematics in weak lensing measurements with Prof. Martin Kilbinger from CEA 2023

- Observational constraints of cluster masses, in collaboration with Prof. Stefano Andreon from INAF 2023
- Construct the image coaddition pipeline for Wide Field Survey Telescope (WFST) 2020 - 2021
- Extragalactic large scale research: Observational constraints on galaxy formation and evolution 2018-Present

AWARDS AND HONORS

- Outstanding Graduate of University of Science and Technology of China 2024
- Best oral presentation of the 23rd Guo Shoujing Symposium 2021
- Second Prize of Oral Presentation in Academic Forum of Shanghai Jiaotong University 2021
- Second Prize of oral presentation in the 10th Graduate Student Academic Forum, School of Physics, USTC 2021

SCHOLARSHIPS

- CAS Presidential Scholarship 2024
- China Scholarship Council scholarship 2023
- CETC 14 Guo Rui scholarship 2022
- Cyrus Chun Ying Tang Foundations-WFST Project Grant 2022

CONFERENCES ATTENDED

Invited talks

- The 27th Guo Shoujing Academic Symposium, Changsha, China 2025
- USTC Science Week – Popular Science Lecture, Hefei, China 2025
- 2024 Annual Science Conference of the CSST Survey Space Telescope, Zhejiang, China 2024
- East-Asia AGN Workshop, Kagoshima, Japan 2023
- KIAA-DoA seminar, Online 2023
- Xiamen University Haiyun Doctoral Student Academic Forum, Xiamen, China 2022
- The 23rd Guo Shoujing Academic Symposium, Hangzhou, China 2021
- The 1st Shanghai Jiao Tong University Academic Forum for Doctors of Physics and Astronomy, Online 2021
- The 10th Academic Forum for Graduate Students, School of Physics, University of Science and Technology of China, Hefei, China 2021

Conference participation

- 2nd Active Galactic Nuclear Feedback Workshop, Shanghai, China 2024
- UNIONS weak lensing seminar, Paris, France 2023
- WFST Data Processing Seminar, Nanjin, China 2020
- International Symposium on Bias in Dark Matter halos and Galaxy Clustering at the Tsung-Dao Lee Institute, Shanghai, China 2019

- Seminar on galaxies and quasars, Huangshan, China 2019
- Explore Gas in and around Galaxies, Hefei, China 2018
- Seminar on Galaxies, Gravitational Waves and Cosmology, Hefei, China 2018

Technical and Analysis skills

- Proficient in Python, parallel computing
- Proficient in weak gravitational lensing analysis
- Proficient in two-point correlation function analysis
- Proficient in satellite kinematics analysis
- Specialized with weak lensing systematics
- Familiar with shear processing pipeline
- Familiar with image coaddition

LANGUAGES

Chinese (native), English (proficient)

References

- **Huiyuan Wang**
  Professor, College of Physics, Department of Astronomy
  University of Science and Technology of China
  No.96 Jinzhai Road, Hefei City, Anhui Province, 230026, China
  0551-63600179
  whywang@ustc.edu.cn
  Prof. Wang was my supervisor during my master's and doctoral studies.

- **Martin Kilbinger**
  Cosmologist at CEA Paris-Saclay
  CEA Paris-Saclay, Institut de Recherche sur les lois Fondamentales de l'Univers (Irfu)
  Orme des Merisiers, Bˆat 709, F-91191 Gif-sur-Yvette, France
  +33 (0)1 69 08 17 53
  martin.kilbinger@cea.fr
  I visited CEA as a joint PhD student and Martin was my supervisor.

- **Houjun Mo**
  Professor, College of Natural Sciences, Department of Astronomy
  University of Massachusetts Amherst
  LGRT-B 619E 710 North Pleasant Street Amherst, MA 01003-9305, USA
  413-577-0394
  hjmo@umass.edu
  I began working extensively with Prof. Mo during my master's and doctoral studies.

RESEARCH PUBLICATIONS

Published

[1] **Ziwen Zhang**, Yangyao Chen, Yu Rong, Huiyuan Wang, Houjun Mo, Xiong Luo, Hao Li. *Unexpected clustering pattern in dwarf galaxies challenges formation models.* Nature 642, 47–52 (2025). arXiv: 2504.03305.

[2] **Ziwen Zhang**, Martin Kilbinger, Fabian Hervas Peters, Qinxun Li, Wentao Luo, Lucie Baumont, Jean-Charles Cuillandre, Sébastien Fabbro, Stephen Gwyn, Alan McConnachie, Anna Wittje. *Point spread function errors for weak lensing – density cross-correlations: Application to UNIONS*. A&A 691A:75Z (2024). arXiv: 2405.03434.

[3] **Ziwen Zhang**, Huiyuan Wang, Wentao Luo, Houjun Mo, Jun Zhang, Xiaohu Yang, Hao Li, and Qinxun Li. *Halo Mass-observable Proxy Scaling Relations and Their Dependencies on Galaxy and Group Properties.* APJ 960, 71 (2024). arXiv:2305.06803.

[4] **Ziwen Zhang**, Huiyuan Wang, Wentao Luo, Jun Zhang, Houjun J. Mo, YiPeng Jing, Xiaohu Yang, and Hao Li. *Massive star-forming galaxies have converted most of their halo gas into stars.* A&A 663:A85 (2022). arXiv:2112.04777.

[5] **Ziwen Zhang**, Huiyuan Wang, Wentao Luo, H. J. Mo, Zhixiong Liang, Ran Li, Xiaohu Yang, Tinggui Wang, Hongxin Zhang, Hui Hong, Xiaoyu Wang, Enci Wang, Pengfei Li, and JingJing Shi. *Hosts and triggers of AGNs in the Local Universe.* A&A 650:A155 (2021). arXiv:2012.10640.

[6] Li Ma, **Ziwen Zhang**, Huiyuan Wang, Xufen Wu (2025). *Measuring Mass of Gas in Central Galaxies using weak lensing and satellite kinematics in MOND.* APJ 984, 101M (2025). arXiv: 2409.13329.

[7] Fabian Hervas Peters, Martin Kilbinger, Romain Paviot, Lucie Baumont, Elisa Russier, **Ziwen Zhang**, Calum Murray, Valeria Pettorino, Thomas De Boer, Sébastien Fabbro, Sacha Guerrini, Hendrik Hildebrandt, Mike Hudson, Ludovic Van Waerbeke, Anna Wittje. *UNIONS: a direct measurement of intrinsic alignment with BOSS/eBOSS spectroscopy.* A&A (2025). arXiv: 2412.01790.

[8] Qinxun Li, Martin Kilbinger, Wentao Luo, Kai Wang, Huiyuan Wang, Anna Wittje, Hendrik Hildebrandt, Ludovic Van Waerbeke, Michael J. Hudson, Samuel Farrens, Tobías I. Liaudat, Huiling Liu, **Ziwen Zhang**, Qingqing Wang, Elisa Russier, Axel Guinot, Lucie Baumont, Fabian Hervas Peters, Thomas De Boer, Jiaqi Wang, Alan McConnachie, Jean-Charles Cuillandre, Sébastien Fabbro. *Black Hole–Halo Mass*

Relation from UNIONS Weak Lensing. APJL 969L:25L (2024). arXiv: 2402.10740.

[9] Hui Hong, Huiyuan Wang, H. J. Mo, **Ziwen Zhang**, Guangwen Chen, Wentao Luo, Tinggui Wang, Pengfei Li, Renjie Li, Yao Yao, and Aoxiang Jiang. *Dynamical Hotness, Star Formation Quenching, and Growth of Supermassive Black Holes.* APJ 954(2):183 (2023). arXiv:2305.02910.