ZIHAO(MATTHEW) WANG

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EDUCATION AND EXPERIENCE

Peking University *Sept 2025 - June 2030 (expected)*
PhD student in Astronomy
Advisor: Prof. Kohei Inayoshi

Nanjing University *Sept 2021 - June 2025*
B.S. in Astronomy (Advanced Class)
GPA: 4.54/5 (Rank: 1/ 42)
Thesis: *Estimation and physical origin of high-redshift galaxy properties in the JWST era*
Advisor: Prof. Tao Wang

Massachusetts Institute of Technology *June 2024 - Decem 2024*
Visiting research student in Physics
Advisor: Dr. Xuejian Shen & Prof. Mark Vogelsberger

RESEARCH INTERESTS

High-redshift AGN & Little Red Dots: Theoretical modeling and predictions of the origin and evolution of Little Red Dots; Large-scale environments of high-z AGN; High-z AGN population in cosmological simulations

High-redshift galaxies & star formation: Multi-scale star formation at high-z from cloud and cluster to galactic scales; Diverse morphology of high-z galaxies; Metal enrichment

Machine learning in astrophysics: Use of machine learning techniques in galaxy parameter estimation, classification, and target hunting.

PUBLICATIONS

Publications (as of October 2026): 5 first-author papers (3 published or accepted) and 3 contributing-author papers (2 published).

First-author papers

[1] **Z. Wang**, K. Inayoshi, How Little Red Dots Turn Blue: Evolution of Kelvin-Helmholtz Contracting Black Hole Envelopes and Observational Diagnostics, *arXiv*, 2026 [2610.20709]

[2] **Z. Wang**, X. Shen et al., The THESAN-ZOOM project: clumpiness of high-redshift galaxies and its connection to bursty star formation, *arXiv*, 2026 [2608.19308]

[3] **Z. Wang**, F. Jiang et al., Halo assembly bias in the early Universe: a clustering probe of the origin of the Little Red Dots, *MNRAS, accepted*, 2026 [2603.15736]

[4] **Z. Wang**, T. Wang et al., SHAPE: I. A SOM-SED hybrid approach for efficient galaxy parameter estimation leveraging JWST, *A&A*, 2026 [2510.00187]

[5] **Z. Wang**, X. Shen et al., The THESAN-ZOOM project: star formation efficiency from giant molecular clouds to galactic scale in high-redshift starbursts, *MNRAS*, 2025 [2505.05554]

Contributing-author papers

[6] W. McClymont, V. Belokurov et al., including **Z. Wang**, Globular cluster abundance patterns inherited from giant molecular clouds, *arXiv*, 2026 [2607.05509]

[7] W. McClymont, S. Tacchella et al., including **Z. Wang**, The THESAN-ZOOM project: mystery N/O more — uncovering the origin of peculiar chemical abundances and a not-so-fundamental metallicity relation at $3 < z < 12$, *MNRAS*, 2026 [2507.08787]

[8] X. Shen, R. Kannan et al., including **Z. Wang**, The THESAN-ZOOM project: star formation efficiencies in high-redshift galaxies, *MNRAS*, 2026 [2503.01949]

TALKS AND PRESENTATIONS

[1] Conference Talk, Guoshoujing annual meeting, Haikou, China
Where Little Red Dots live tells us what they are *2026*

[2] Conference Talk, CSST annual meeting, Kunming, China
Introducing SHAPE: A SOM-SED Hybrid Approach for Efficient galaxy Parameter Estimation *2025*

[3] Conference Poster, Sino-German conference on Galaxy Formation, Chengdu, China
Elevated star formation efficiency at high-z: from a giant molecular cloud perspective *2025*

HONORS AND AWARDS

Outstanding Undergraduate Thesis of Nanjing University (the special prize) *2025*
Zheng-Gang Oversea Scholarship of Nanjing University *2024*
Elite Program Scholarship (the special prize) *2024*
People's Scholarship (the first prize) *2022, 2023, 2024*
National Astronomical Observatories Scholarship *2022*

SKILLS/HOBBIES (* DENOTES EXTENSIVELY)

Programming Languages Python*, C/C++, HTML
Machine Learning Tools SOM*, CNN, Random-Forest
Language Mandarin (Native), English (Proficient)
Simulations *Thesan-Zoom**, *LUMINA**, *ShinUchuu*, *IllustrisTNG*, *FIRE*
Hobbies cinema and photographing

PROFESSIONAL REFERENCES

Prof. Kohei Inayoshi
Kavli Institute for Astronomy and Astrophysics, PKU Email: `inayoshi0328@gmail.com`

Prof. Fangzhou Jiang
Kavli Institute for Astronomy and Astrophysics, PKU Email: `fangzhou.jiang@pku.edu.cn`

Dr. Xuejian Shen
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Prof. Mark Vogelsberger
Kavli Institute for Astrophysics and Space Research, MIT Email: `mvogelsb@mit.edu`

Prof. Tao Wang
School of Astronomy and Space Science, NJU Email: `taowang@nju.edu.cn`