

Zhiyuan Yao

Postdoctoral Researcher, Hebrew University of Jerusalem
Curriculum Vitae

Contact Information

Office 209, Ross building
Hebrew University of Jerusalem
Givat Ram, 9190401
Jerusalem, Israel

+972-58-475-3627
zhiyuan.yao@mail.huji.ac.il
ORCID: 0000-0003-1604-1272

Education

Postdoc, Hebrew University of Jerusalem, Israel

10/2022 - Present
Advisor: Nir Mandelker, Avishai Dekel

Joint Ph.D, Max Planck Institute for Astrophysics, Germany

04/2021 - 03/2022
Advisor: Volker Springel, Max Gronke

Ph.D, Astronomy, Shanghai Astronomical Observatory, Chinese Academy of Sciences, China

09/2016 - 06/2022
Advisor: Feng Yuan

Bachelor, Astronomy, University of Science and Technology of China, China

09/2012 - 06/2016

Research Interests

Galaxy formation and evolution; circumgalactic medium; multiphase hydrodynamics; cold streams and virial shocks; turbulence and mixing; numerical simulations; high-redshift galaxies; computational astrophysics

Honors & Awards

2024, Rosenblum prize
2021-2022, Sino-German Joint PhD Exchange Program (Shanghai Astronomical Observatory and Max Planck Institute for Astrophysics, 04/2021 - 03/2022)
2020, Academic Scholarship of University of Chinese Academy of Sciences

Selected Publications

First-author publications

Yao Z., Mandelker N., Oh S. P.

“Cold stream penetration of virial shocks: fragmentation, coagulation, and disruption in the hot circumgalactic medium”, submitted to MNRAS, arXiv:2607.14090 (2026)

Yao Z., Mandelker N., Oh S. P., Aung H., Dekel A.

“Effects of cloud geometry and metallicity on shattering and coagulation of cold gas, and implications for cold streams penetrating virial shocks”, MNRAS, 536, 3053 (2025)

Yao Z., Yuan F., Ostriker J. P.

“Active galactic nucleus feedback in an elliptical galaxy with updated AGN physics: parameter exploration”, MNRAS, 501, 398 (2021)

Yao Z. & Gan Z.

“Hot gas flows on a parsec scale in the low-luminosity active galactic nucleus NGC 3115”, MNRAS, 492, 444 (2020)

Collaborative publications

Chen, H.-Z., Li, Z., Dekel, A., **Yao Z.** et al.

“Feedback-Free Star Formation in Clusters within a Galaxy Simulated at High Resolution in Cosmic Dawn”, arXiv:2606.12605 (2026)

Dekel, A., Dutta Chowdhury, D., Lapiner, S., **Yao Z.** et al.

“From Feedback-Free Star Clusters to Little Red Dots via Compaction”, arXiv:2511.07578 (2025)

Dekel, A., Mandelker, N., Li, Z., **Yao Z.** et al.

“From FFB Starbursts at Cosmic Dawn to Quenching at Cosmic Morning: Hi-z Galaxy Bimodality”, MNRAS, 544, 160 (2025)

Yang, G. et al. (incl. **Yao Z.**)

“Do current X-ray observations capture most of the black-hole accretion at high redshifts?”, ApJ, 921, 170 (2021)

Invited Talks

12/2025, Tel Aviv University Seminar, Tel Aviv, Israel

10/2021, MPA Institute Seminar, Garching, Germany

Conference Contributions

07/2026, The 71th Annual Meeting of the Israel Physics Society, Jerusalem, Israel

11/2025, Modelling of Multiphase Astrophysical Media, Ringberg, Germany

08/2025, Galaxy Formation Workshop, Santa Cruz, United States

07/2025, Cosmic Ecosystems, Waterloo, Canada

08/2024, Galaxy Formation Workshop, Santa Cruz, United States

05/2023, Modelling of Multiphase Astrophysical Media, Kochel, Germany

08/2022, Galaxy Formation Workshop, Santa Cruz, United States

07/2021, Ringberg Retreat, Munich, Germany

Earlier (2018–2020): 4 contributed talks at meetings in China and Germany.

Technical Skills

Hydrodynamic simulation codes: AREPO, RAMSES, ZEUS-MP/2

Programming: Python, C, C++, Fortran, MPI/OpenMP

Analysis tools: yt, NumPy, SciPy, Matplotlib

High-performance computing: distributed-memory simulations on large HPC systems

Mentoring

2025 – Aviad Leibovich (B.Sc. student), Hebrew University of Jerusalem

Professional Service

Organizer, Astrolunch Seminar Series, Hebrew University of Jerusalem

References

Nir Mandelker — Hebrew University of Jerusalem — nir.mandelker@mail.huji.ac.il

Feng Yuan — Fudan University — fyuan@fudan.edu.cn

Volker Springel — Max Planck Institute for Astrophysics — vspringel@mpa-garching.mpg.de