KAI WANG 王凯

Contact Information:
Kavli Institute for Astronomy and Astrophysics,
Peking University, 5 Yiheyuan Road,
Haidian District, Beijing 100871, P. R. China

Email: wkcosmology@gmail.com
Homepage: www.KosmosWalker.com
OCRID: 0000-0002-3775-0484

RESEARCH INTERESTS

- Galaxy-Halo Connection: *galaxy group identification; secondary galaxy-halo connection*
- Dark Matter Halo: *protohalo; halo assembly bias; halo structure*
- Protoclusters: *protocluster identification; protocluster evolution*
- Galaxy Quenching: *environmental quenching; relation to the galaxy-halo connection*

WORKING EXPERIENCE

- KIAA Fellow, Kavli Institute of Astronomy and Astrophysics, **Peking University** since Jul. 2022

EDUCATION

Ph.D. in Astronomy, **Tsinghua University** Sep. 2017 - Jul. 2022
Supervisors: Prof. Cheng Li & Prof. Houjun Mo, Thesis: Finding galaxy groups/clusters at $z\sim1$ and its application
Visiting Scholar, **University of Massachusetts, Amherst** Nov. 2019 - Oct. 2021
Supervisor: Prof. Houjun Mo
B.S. in Astronomy, **University of Science and Technology of China (USTC)** Sep. 2013 - Jul. 2017

STUDENT MENTORSHIP

- Zeyu Gao, graduate at Peking University since Nov. 2022
  Project: Decoding SEDs of galaxies with a prior from hydrodynamical simulations
- Zhijun Zhang, undergraduate at Peking University Sep. 2022 - Jun. 2023
  Bachelor Thesis: Identify protoclusters from high-redshift photometric surveys

SERVICE

- **Professional Service**
  Referee for MNRAS, ApJ, and A&A
- **Departmental Service**
  Co-organizer of weekly Galaxy Party at KIAA 2023
  Co-organizer of the postdoc science day at KIAA 2022
  Co-organizer of the speaker lunch at the Tsinghua Center for Astrophysics 2018-2019

TEACHING

- Cosmology and Galaxy Evolution — Guest Lecturer, Peking University, Autumn 2023
- Observational Cosmology — Teaching Assistant, Tsinghua University, Autumn 2017
- Particle Cosmology — Teaching Assistant, USTC, Spring 2017
- General Relativity — Teaching Assistant, USTC, Autumn 2016

GRANTS

- KIAA fellow start-up research funding — Jul. 2022 - Jul. 2024
  50,000CNY
- China Scholarship for the Visiting Scholar — Nov. 2019 - Oct. 2021
  China Scholarship Council (CSC), $45,600
- National Astronomy Training Base — Jun. 2016 - Jun. 2017
  Measure the conditional luminosity functions of galaxies at z∼0.6 using CLAUDS and BOSS, 20,000CNY
- National Astronomy Training Base — May 2015 - May 2016
  Thermal gravitational-wave background in the general pre-inflationary scenario, 20,000CNY

HONORS AND AWARDS

- KIAA Fellowship — 2022
- MUST Fellowship (declined) — 2022
- Comprehensive scholarship (2nd class) of Tsinghua University — 2020
- Comprehensive scholarship (1st class) of Tsinghua University — 2019
- Future Scholar Scholarship of Tsinghua University — 2017
- Outstanding Graduate of USTC — 2017
- National Inspirational Award — 2016
- Encouraging Scholars of USTC — 2016
- Excellent Student Scholarship (Silver Award) — 2014
- Excellent Student Scholarship (Bronze Award) — 2013

SELECTED TALKS

- Galread: Princeton/IAS Galaxy Journal Club
  Characterizing the assembly of dark matter halos with protohalo size histories — *Remote, Oct. 2023*
- UC Santa Cruz CGI (Cosmology/Galaxies/IGM) Seminar
  Characterizing the assembly of dark matter halos with protohalo size histories — *Remote, Oct. 2023*
- Collaboration Workshop on Cosmology and Galaxy Formation
  Relating Galaxies across Cosmic Time to study galaxy evolution — *Shanghai, Jun. 2023*
- 25th Chinese Astronomical Society Guoshoujing Symposium on Galaxies and Cosmology
  Central Galaxy Quenching and its Relation to Halo Formation Time & Large-scale Environment — *Huangshan, May 2023*
- Conference of Star Formation and Nuclei Activity in Galaxies
  Central Galaxy Quenching and its Relation to Halo Formation Time & Large-scale Environment — *Nanjing, Mar. 2023*
- KIAA-DoA Seminar, Peking University
  Central Galaxy Quenching and its Relation to Halo Formation Time & Large-scale Environment — *Beijing, Mar. 2023*
- Lunch Talk at the Department of Astronomy, Tsinghua University
  Relating galaxies across different redshift — *Beijing, Nov. 2022*
- Lunch Talk at Kavli-IPMU, University of Tokyo
  Finding proto-clusters to trace galaxy evolution — *Remote, Jun. 2021*
- The 11-th Prime Focus Spectrograph collaboration meeting
  Identifying galaxy groups from high-z and incomplete spectroscopic surveys — *Pasadena, Dec. 2019*
- The 10-th Prime Focus Spectrograph collaboration meeting
  Finding groups/clusters of galaxies in the PFS galaxy evolution survey — *Shanghai, Dec. 2018*

PUBLICATION

✦**22** publications; **10** as the first/corresponding author; **153** citations; *H*-index: **7**

✦Open in NASA/ADS Library

First/Corresponding author papers:*

1. **Kai Wang**, et al. (2023) An efficient and robust method to estimate halo concentration based on the method of moments submitted to MNRAS [arXiv: 2310.00200]
2. **Kai Wang**, et al. (2023) Characterize the assembly of dark matter halos with protohalo size histories: I. Redshift evolution, relation to descendant halos, and halo assembly bias submitted to MNRAS [arXiv: 2309.01039]
3. **Kai Wang**, et al. (2023) Environmental dependence of the mass-metallicity relation in cosmological hydrodynamical simulations ApJ, 951, 66
4. **Kai Wang**, et al. (2023) Late-formed halos prefer to host quiescent central galaxies. I. Observational results MNRAS, 522, 3188
5. **Kai Wang**, et al. (2023) Dissect two-halo galactic conformity effect: The dependence of star formation activities on the large-scale environment for central galaxies MNRAS 523, 1268
6. **Kai Wang**, et al. (2023) Relating galaxies across different redshift to study galaxy evolution MNRAS 520, 1774
7. **Kai Wang**, et al. (2021) Finding proto-clusters to trace galaxy evolution: I. The finder and its performance MNRAS 505, 3892
8. **Kai Wang**, et al. (2020) Identifying galaxy groups at high redshift from incomplete spectroscopic data: I. The group finder and application to zCOSMOS MNRAS 499, 89
9. **Kai wang**, et al. (2017) Thermal gravitational-wave background in the general pre-inflationary scenario JCAP 01, 053
10. Yi-Fan Wang, **Kai Wang***, et al. (2016) Smoothing methods comparison for CMB E- and B-mode separation RAA 16, 4

Co-author papers:

11. Tao Wang et al. (2023) Black holes regulate cold gas accretion in massive galaxies Submitted to Nature [arXiv: 2311.07653]
12. Yangyao Chen, H.J Mo, **Kai Wang** (2023) Massive Dark Matter Halos at High Redshift: Implications for Observations in the JWST Era MNRAS 526, 2542
13. Cheqiu Lyu et al. (2023) From Halos to Galaxies. VII. The Connections Between Stellar Mass Growth History, Quenching History, and Halo Assembly History for Central Galaxies ApJ accepted
14. Jiacheng Meng et al. (2023) Measuring galaxy abundance and clustering at high redshift from incomplete spectroscopic data: Tests on mock catalogs Submitted to ApJ
15. Yangyao Chen et al. (2023) A Conditional Abundance Matching Method of Extending Simulated Halo Merger Trees to Resolve Low-Mass Progenitors and Sub-halos MNRAS 525, 1254
16. Qingyang Li et al. (2022) Groups and Protocluster Candidates in the CLAUDS and HSC-SSP Joint Deep Surveys ApJ 933, 9
17. Yangyao Chen et al. (2021) MAHGIC: A Model Adapter for the Halo-Galaxy Inter-Connection MNRAS 507, 2510
18. Zhaoyu Wang et al. (2021) The clustering of galaxies in the DESI imaging legacy surveys DR8:I. the luminosity and color dependent intrinsic clustering Sci. China Phys. Mech. Astron. 64, 289811
19. Yangyao Chen et al. (2021) How to empirically model star formation in dark matter halos: I. Inferences about central galaxies from numerical simulations MNRAS 504, 4865
20. Yangyao Chen et al. (2020) Relating the structure of dark matter halos to their assembly and environment ApJ, 899, 81
21. Jia-Ni Ye, **Kai Wang**, et al. (2017) Superconducting cosmic strings as sources of cosmological fast radio bursts Eur. Phys. J. C 77:720
22. Larissa Santo et al. (2017) Statistical imprints of CMB B-type polarization leakage in an incomplete sky survey analysis JCAP, 01, 043
23. Larissa Santo et al. (2016) Probing the statistical properties of CMB B-mode polarization through Minkowski Functionals JCAP 07, 029

REFERENCES

- Prof. Houjun Mo — University of Massachusetts, Amherst
  hjmo@umass.edu
- Prof. Cheng Li — Tsinghua University
  cli2015@tsinghua.edu.cn
- Prof. Yingjie Peng — KIAA, Peking University
  yjpeng@pku.edu.cn
- Prof. Zheng Cai — Tsinghua University
  zcai@tsinghua.edu.cn
- Prof. Fangzhou Jiang — KIAA, Peking University
  fangzhou.jiang@pku.edu.cn