

# KAI WANG 王凯

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## Contact Information:

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## RESEARCH INTERESTS

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

## WORKING EXPERIENCE

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Kavli Institute of Astronomy and Astrophysics, Peking University  
KIAA Fellow

Jul. 2022 - Now

## EDUCATION

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Tsinghua University

Sep. 2017 - Jul. 2022

Ph.D. in Astronomy

Thesis: Finding galaxy groups/clusters at  $z \sim 1$  and its application; Adviser: Prof. Cheng Li & Prof. Houjun Mo

The University of Massachusetts, Amherst

Nov. 2019 - Oct. 2021

Visiting Scholar

Supervisor: Prof. Houjun Mo

University of Science and Technology of China (USTC)

Sep. 2013 - Jul. 2017

B.S. in Astronomy

## STUDENT MENTORSHIP

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- Zeyu Gao, graduate at Peking University  
Project: Decoding SEDs of galaxies with a prior from hydrodynamical simulations; Co-advising with Prof. Yingjie Peng
- Zhijun Zhang, former undergraduate at Peking University  
Bachelor Thesis: Identify protoclusters from high-redshift photometric surveys; Co-advising with Prof. Yingjie Peng

## SERVICE

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### • Professional Service

Referee for ApJ and A & A

### • Departmental Service

Co-organizer of the speaker lunch at the Tsinghua Center for Astrophysics

2018-2019

Co-organizer of the postdoc science day at KIAA

2022

## TEACHING

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- Observational Cosmology
- Particle Cosmology
- General Relativity

Teaching Assistant, Tsinghua University, Autumn 2017

Teaching Assistant, USTC, Spring 2017

Teaching Assistant, USTC, Autumn 2016

## REFERENCES

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- Prof. Houjun Mo  
✉ [hjmo@umass.edu](mailto:hjmo@umass.edu) University of Massachusetts, Amherst
- Prof. Cheng Li  
✉ [cli2015@tsinghua.edu.cn](mailto:cli2015@tsinghua.edu.cn) Tsinghua University
- Prof. Yingjie Peng  
✉ [yjpeng@pku.edu.cn](mailto:yjpeng@pku.edu.cn) Peking University
- Prof. Zheng Cai  
✉ [zcaai@tsinghua.edu.cn](mailto:zcaai@tsinghua.edu.cn) Tsinghua University

## GRANTS

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

## HONORS AND AWARDS

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- KIAA Fellowship 2022
- MUST Fellowship (declined) 2022
- Comprehensive scholarship (2nd class) 2020
- Comprehensive scholarship (1st class) 2019
- 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

## TALKS

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- Collaboration Workshop on Cosmology and Galaxy Formation  
Speaker Shanghai, Jun. 2023
- 25th Chinese Astronomical Society Guoshoujing Symposium on Galaxies and Cosmology  
Speaker (Best oral presentation) Huangshan, May 2023
- Conference of Star Formation and Nuclei Activity in Galaxies  
Speaker Nanjing, Mar. 2023
- KIAA-DoA Seminar, Peking University  
Invited speaker Beijing, Mar. 2023
- Lunch Talk at the Department of Astronomy, Tsinghua University  
Invited speaker Beijing, Nov. 2022
- Lunch Talk at Kavli-IPMU, University of Tokyo  
Invited speaker Remote, Jun. 2021
- Journal Club at University of Massachusetts, Amherst  
Speaker Amherst MA, Mar. 2021

- The 11-th Prime Focus Spectrograph collaboration meeting  
Speaker
- The 10-th Prime Focus Spectrograph collaboration meeting  
Speaker

Pasadena CA, Dec. 2019

Shanghai, Dec. 2018

## PUBLICATION

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◆ **20** publications; **9** as the first/corresponding author; **136** citations; *H*-index: **6**

◆ [Open in NASA/ADS Library](#)

*First/Corresponding\* author papers:*

1. **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]
2. **Kai Wang**, et al. (2023) [Environmental dependence of the mass-metallicity relation in cosmological hydrodynamical simulations](#) ApJ, 951, 66
3. **Kai Wang**, et al. (2023) [Late-formed halos prefer to host quiescent central galaxies. I. Observational results](#) MNRAS, 522, 3188
4. **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
5. **Kai Wang**, et al. (2023) [Relating galaxies across different redshift to study galaxy evolution](#) MNRAS 520, 1774
6. **Kai Wang**, et al. (2021) [Finding proto-clusters to trace galaxy evolution: I. The finder and its performance](#) MNRAS 505, 3892
7. **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
8. **Kai wang**, et al. (2017) [Thermal gravitational-wave background in the general pre-inflationary scenario](#) JCAP 01, 053
9. Yi-Fan Wang, **Kai Wang\***, et al. (2016) [Smoothing methods comparison for CMB E- and B-mode separation](#) RAA 16, 4

*Co-author papers:*

10. Yangyao Chen, H.J Mo, **Kai Wang** (2023) [Massive Dark Matter Halos at High Redshift: Implications for Observations in the JWST Era](#) MNRAS accepted
11. Jiacheng Meng, et al. (2023) [Measuring galaxy abundance and clustering at high redshift from incomplete spectroscopic data: Tests on mock catalogs](#) Submitted to ApJ
12. 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
13. Yangyao Chen et al. (2023) [MAHGIC: A Model Adapter for the Halo-Galaxy Inter-Connection](#) MNRAS 507, 2510
14. Qingyang Li et al. (2023) [Groups and Protocluster Candidates in the CLAUDS and HSC-SSP Joint Deep Surveys](#) ApJ 933, 9
15. 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
16. 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
17. Yangyao Chen et al. (2021) [Relating the structure of dark matter halos to their assembly and environment](#) ApJ, 899, 81
18. Jia-Ni Ye, Kai Wang, et al. (2017) [Superconducting cosmic strings as sources of cosmological fast radio bursts](#) Eur. Phys. J. C 77:720
19. Larissa Santo et al. (2017) [Statistical imprints of CMB B-type polarization leakage in an incomplete sky survey analysis](#) JCAP, 01, 043
20. Larissa Santo et al. (2016) [Probing the statistical properties of CMB B-mode polarization through Minkowski Functionals](#) JCAP 07, 029