

# KAI WANG 王凯

---

✉ wkcosmology@gmail.com

🏠 www.KosmosWalker.com

🐙 github.com/wkcosmology

🆔 0000-0002-3775-0484

## RESEARCH AREA

---

### ◆ Galaxy-Halo Connection

○ Galaxy groups ○ Secondary galaxy-halo connections ○ Observational evidence

### ◆ Connecting Galaxies/Structures across Cosmic Time

○ Protoclusters ○ Stellar mass assembly histories

### ◆ Galaxy Quenching

○ Internal quenching ○ Environmental quenching

## EDUCATION

---

### Tsinghua University

Ph.D. in Astronomy

Thesis: Finding galaxy groups/clusters at  $z \sim 1$  and its application

Thesis adviser: Prof. Cheng Li & Prof. Houjun Mo

Sep. 2017 - Jul. 2022

### The University of Massachusetts, Amherst

Visiting Scholar

Supervisor: Prof. Houjun Mo

Nov. 2019 - Oct. 2021

### University of Science and Technology of China (USTC)

B.S. in Astronomy

Sep. 2013 - Jul. 2017

## EXPERIENCE

---

### Kavli Institute of Astronomy and Astrophysics, Peking University

KIAA Fellow

Jul. 2022 - Now

### The University of Massachusetts, Amherst

Visiting Scholar

Nov. 2019 - Oct. 2021

## TEACHING

---

### • Observational Cosmology

Teaching assistant, Tsinghua University, Autumn 2017

### • Particle Cosmology

Teaching assistant, USTC, Spring 2017

### • General Relativity

Teaching assistant, USTC, Autumn 2016

## ADVISES

---

### • Zhijun Zhang, former undergraduate at Peking University

Co-advised with Prof. Yingjie Peng, Bachelor Thesis

### • Zeyu Gao, Ph.D. candidate at Peking University

Co-advised with Prof. Yingjie Peng

## PROFESSIONAL SERVICE

---

- Astronomy & Astrophysics - Referee

## REFERENCES

---

- 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

---

- 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

---

- 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

---

- 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 Pasadena CA, Dec. 2019
- The 10-th Prime Focus Spectrograph collaboration meeting  
Speaker Shanghai, Dec. 2018

## PUBLICATION

---

- ◆ 18 publications (15 refereed + 3 under review)
- ◆ 8 as the first/corresponding author (8 refereed)
- ◆ 131 citations
- ◆ [Open in NASA/ADS Library](#)

### First/Corresponding\* author papers:

- Environmental dependence of the mass-metallicity relation in cosmological hydrodynamical simulations  
Kai Wang, Xin Wang, Yangyao Chen  
2023, *Accepted by ApJ* (arXiv:2305.08161)
- Late-formed halos prefer to host quiescent central galaxies. I. Observational results  
Kai Wang, Yangyao Chen, Qingyang Li, Xiaohu Yang  
2023, *MNRAS*, Volume 522, Issue 2 (arXiv:2304.07189)
- Dissect two-halo galactic conformity effect: The dependence of star formation activities on the large-scale environment for central galaxies  
Kai Wang, Yingjie Peng, Yangyao Chen  
2023, *MNRAS*, Volume 523, Issue 1 (arXiv:2304.06886)
- Relating galaxies across different redshift to study galaxy evolution  
Kai Wang, H.J. Mo, Cheng Li, Yangyao Chen  
2023, *MNRAS*, Volume 520, Issue 2 (arXiv:2211.00485)
- Finding proto-clusters to trace galaxy evolution: I. The finder and its performance  
Kai Wang, H.J. Mo, Cheng Li, Yangyao Chen  
2021, *MNRAS* Volume 505, 3892 (arXiv:2104.12223)
- Identifying galaxy groups at high redshift from incomplete spectroscopic data: I. The group finder and application to zCOSMOS  
Kai Wang, H.J. Mo, Cheng Li, Jiacheng Meng, Yangyao Chen  
2020, *MNRAS* Volume 499, 89 (arXiv:2006.05426)
- Thermal gravitational-wave background in the general pre-inflationary scenario  
Kai Wang, Larissa Santo, Jun-Qing Xia, Wen Zhao  
2017, *JCAP* 01, 053 (arXiv:1608.04189)
- Smoothing methods comparison for CMB E- and B-mode separation  
Yi-Fan Wang, Kai Wang\*, Wen Zhao  
2016, *Research in Astronomy and Astrophysics* 16, 4 (arXiv:1511.01220)

## Co-author papers:

- Massive Dark Matter Halos at High Redshift: Implications for Observations in the JWST Era  
Yangyao Chen, H.J. Mo, **Kai Wang**  
[2023, Submitted to MNRAS \(arXiv:2304.13890\)](#)
- Measuring galaxy abundance and clustering at high redshift from incomplete spectroscopic data: Tests on mock catalogs  
Jiacheng Meng, Cheng Li, Houjun Mo, Yangyao Chen, **Kai Wang**  
[2023, Submitted to ApJ \(arXiv:2008.13733\)](#)
- A Conditional Abundance Matching Method of Extending Simulated Halo Merger Trees to Resolve Low-Mass Progenitors and Sub-halos  
Yangyao Chen, H.J. Mo, Cheng Li, **Kai Wang**, Huiyuan Wang, Xiaohu Yang  
[2023, Submitted to MNRAS \(arXiv:2301.08972\)](#)
- MAHGIC: A Model Adapter for the Halo-Galaxy Inter-Connection  
Yangyao Chen, H.J. Mo, Cheng Li, **Kai Wang**, Huiyuan Wang, Xiaohu Yang, Youcai Zhang, Neal Katz  
[2021, MNRAS Volume 507, 2510 \(arXiv:2106.03984\)](#)
- The clustering of galaxies in the DESI imaging legacy surveys DR8:I. the luminosity and color dependent intrinsic clustering  
Zhaoyu Wang, Haojie Xu, Xiaohu Yang, Y. P. Jing, **Kai Wang**, Hong Guo, Fuyu Dong, Min He  
[2021, Sci. China Phys. Mech. Astron. 64, 289811 \(arXiv:2106.14159\)](#)
- How to empirically model star formation in dark matter halos: I. Inferences about central galaxies from numerical simulations  
Yangyao Chen, H. J. Mo, Cheng Li, **Kai Wang**  
[2021, MNRAS, Volume 504, 4865 \(arXiv:2009.12467\)](#)
- Relating the structure of dark matter halos to their assembly and environment  
Yangyao Chen, H.J. Mo, Cheng Li, Huiyuan Wang, Xiaohu Yang, Youcai Zhang, **Kai Wang**  
[2021, ApJ, 899 81 \(arXiv:2003.05137\)](#)
- Superconducting cosmic strings as sources of cosmological fast radio bursts  
Jia-Ni Ye, **Kai Wang**, Yi-Fu Cai  
[2017, Eur. Phys. J. C 77:720 \(arXiv:1705.10956\)](#)
- Statistical imprints of CMB B-type polarization leakage in an incomplete sky survey analysis  
Larissa Santo, **Kai Wang**, Yangrui Hu, Wenjuan Fang, Wen Zhao  
[2017, JCAP 01, 043 \(arXiv:1612.03564\)](#)
- Probing the statistical properties of CMB  $B$ -mode polarization through Minkowski Functionals  
Larissa Santo, **Kai Wang**, Wen Zhao  
[2016, JCAP 07, 029 \(arXiv:1510.07779\)](#)