Xianghan Cui

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Education

2023.12 – Present (2025.01)
International Centre for Radio Astronomy Research/Curtin Institute of Radio Astronomy, Australia
Visiting PhD student, Mentor: Dr. Clancy W. James

2019.09 – Present (2025.06)
Radio Astronomy
University of Chinese Academy of Sciences/National Astronomical Observatories, China
Master and PhD student, Mentors: Prof. Di Li and Prof. Chengmin Zhang

2017.03 – 2018.06
School of Management, Huazhong University of Science and Technology, China
Minor degree

2015.09 – 2019.06
Optoelectronic Information Science and Engineering
Department of Physics, Wuhan University of Technology, China
Major B.S. degree, Mentor: associate Prof. Xinting Jia

Research interests

- Radio transient (fast radio burst): statistical and population analysis, physical mechanism
- Pulsar and neutron star: statistical and population analysis, evolution model

Experience

Presentations

- 2024.11 Fast Radio Burst 2024, Khao Lak, Thailand
  Bias-corrected fast radio burst spectra using CHIME injection data (3 mins)
- 2024.06 Astronomical Society of Australia Annual Scientific Meeting Perth Hub, Perth, Australia
  Intrinsic spectral properties of CHIME fast radio bursts (8 mins)
- 2024.06 Chinese Fast Radio Burst Conference 2024, Wuhan, China (online)
  Fast radio burst mechanism and possible precursor emissions (15 mins)
- 2024.02 East Asian Young Astronomers Meeting 2024, Chiang Mai, Thailand
  Radiation mechanism of fast radio bursts: compressed bunch model (15 mins)
- 2023.08 Annual Meeting of the Chinese Astronomical Society, Weihai, China
  Fast radio bursts generated by coherent curvature radiation from compressed bunches for FRB

20190520B (poster talk)

- 2023.07 Scientific Program of FAST/Future Pulsar Symposium 12, Nanyang, China
  Multiple origins of normal radio pulsars? - some implications from statistical results (15 mins)
- 2023.07 Department of physics, Wuhan University of Technology, Invited Talk, Wuhan, China
  Statistical analysis and mechanism research of fast radio burst (30 mins)
- 2021.11 Australia-China Consortium for Astrophysical Research (ACAMAR) 7 meeting, online
  The hints to the origin of different luminosity distributions for repeating and non-repeating fast radio bursts (poster talk)

Scientific Activities

- 2024.10 Radio School 2024, Geraldton, Australia

Teaching Assistant

- 2021 – 2023 High Energy Astrophysics and Gravitational Wave (070200M02048H), UCAS graduate course, Prof. Chengmin Zhang

Awards and Scholarships

- 2024, Presidential Scholarship (Excellent Prize), Chinese Academy of Sciences
- 2024, Outstanding Student, UCAS
- 2023, Zhu Li Yuehua Outstanding Doctoral Scholarship, Chinese Academy of Sciences
- 2023, Scholarship of China Scholarship Council, Ministry of Education of P.R.China
- 2022, Scholarship of the Chinese Astronomical Society, Chinese Astronomical Society
- 2021, ACAMAR 7: People's Choice Poster Award, ACAMAR
- 2021, National Scholarship (for PhD students), Ministry of Education of P.R.China
- 2020, Merit Student, UCAS

Publications

First Author

1. **Xianghan Cui**, Zhengwu Wang, Chengmin Zhang, et al., 2023, ApJ
   Fast radio bursts generated by coherent curvature radiation from compressed bunches for FRB 20190520B
2. **Xianghan Cui**, Chengmin Zhang, Di Li, et al., 2022, Ap&SS
   Luminosity distribution of fast radio bursts from CHIME/FRB Catalog 1 by means of the updated Macquart relation
3. **Xianghan Cui**, Chengmin Zhang, Di Li, et al., 2021, MNRAS
   Statistical tests of young radio pulsars with/without supernova remnants: implying two origins of neutron stars
4. **Xianghan Cui**, Chengmin Zhang, Shuangqiang Wang, et al., 2021, RAA
   Statistical properties of fast radio bursts elucidate their origins: magnetars are favored over gamma-ray bursts
5. **Xianghan Cui**, Chengmin Zhang, Shuangqiang Wang, et al., 2020, MNRAS
   Fast radio bursts: do repeaters and non-repeaters originate in statistically similar ensembles?
6. **Xianghan Cui**, Chaolin Wang, Xinting Jia, 2019, Journal of the Optical Society of America A
   Nonparaxial propagation of vector vortex beams diffracted by a circular aperture

Main Contributor

1. Yuhao Zhu, Chenhui Niu, **Xianghan Cui**, et al., 2023, Universe
   Do multi-structural one-off FRBs trace similar cosmology history with repeaters?
2. Chengmin Zhang, **Xianghan Cui**, Di Li, et al., 2022, Universe
   Evolution of spin period and magnetic field of the Crab pulsar: decay of the braking index by the particle wind flow torque

Co-author

1. Jintao Xie, ..., **Xianghan Cui**, et al., 2024, arXiv
   Polarization characteristics of the hyperactive FRB 20240114A
2. Yuhao Zhu, ..., **Xianghan Cui**, et al., 2024, Chinese Physics Letters
   A narrowband burst from FRB 20190520B simultaneously observed by FAST and Parkes
3. Yangyi Yan, ..., **Xianghan Cui**, et al., 2023, MNRAS
   Investigating the distribution of double neutron stars and unconventional component mass
4. Jianwei Zhang, ..., **Xianghan Cui**, et al., 2022, PASP
   Revisiting the magnetic field distribution of normal pulsars: implications for the multiple origins for neutron stars
5. Jianwei Zhang, ..., **Xianghan Cui**, et al., 2021, PRD
   Gaussian mixture models of the total mass distribution of stellar black holes from LIGO-Virgo GWTC-2: Implications on the origin of GW190521
6. Jianwei Zhang, ..., **Xianghan Cui**, et al., 2021, Chinese Physics B
   Simulation of the gravitational wave frequency distribution of neutron star-black hole mergers

Referees

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National Astronomical Observatories, Chinese Academy of Sciences

Professor Chengmin Zhang: zhangcm@bao.ac.cn
National Astronomical Observatories, Chinese Academy of Sciences

Doctor Clancy James: clancy.james@curtin.edu.au
International Centre for Radio Astronomy Research, Curtin Institute of Radio Astronomy