

# Yong-Kun Zhang 张永坤

National Astronomical Observatories, Chinese Academy of Sciences, Beijing, 100101, China

✉ [ykzhang@escape.ac.cn](mailto:ykzhang@escape.ac.cn) | 📞 +86 158 1052 7079 | 🏠 [paris.escape.ac.cn](http://paris.escape.ac.cn)

🆔 0000-0002-8744-3546 | 🌐 [github.com/SukiYume](https://github.com/SukiYume)



## Fields of Interest

---

- Observational studies and time-domain analysis of fast radio bursts (FRBs) and other radio transients.
- Digital signal processing and real-time search pipelines for radio telescopes, aiming to uncover new astrophysical phenomena from large datasets.
- Applying statistical methods, machine learning, and deep learning techniques to problems in astrophysics, including signal classification and population studies.

## Skills

---

**Languages:** Chinese (native), English (fluent), Japanese (N2) | **Software:** Python, Pytorch, CUDA, Git, Linux/Shell, basic C/Go, web scraping (see Outreach and Other Experience)

## Working Experience

---

- **Postdoctoral Researcher** Sept 2024 –Now  
National Astronomical Observatories, Chinese Academy of Sciences (NAOC)

## Education

---

- **Doctor of Philosophy**, Astrophysics ([Link to PhD Thesis](#)) Sept 2019 –Jun 2024  
National Astronomical Observatories, Chinese Academy of Sciences (NAOC)
- **Bachelor of Science**, Physics Sept 2015 –Jun 2019  
University of Chinese Academy of Sciences (UCAS)

## References

---

- **Prof. Di Li** Tsinghua University  
✉ [dili@tsinghua.edu.cn](mailto:dili@tsinghua.edu.cn)
- **Prof. Chao-Wei Tsai** National Astronomical Observatories of China  
✉ [cwtsai@nao.cas.cn](mailto:cwtsai@nao.cas.cn)

## Approved Funding

---

- **National Natural Science Foundation of China** Participate / 2026 –2029  
General Program
- **China Postdoctoral Science Fund** Undertake / 2025 –2027  
National Postdoctoral Program for Innovative Talents / ¥ 880K / BX20250158
- **China Postdoctoral Science Fund** Undertake / 2025 - 2027  
General Program / ¥ 80K / Declined

## Honors and Awards

---

- Five-hundred-meter Aperture Spherical radio Telescope Outstanding User Top 5%, Sept 2025
- 2024 RAA Excellent Paper Award Top 0.5%, Jan 2025
- Chinese Academy of Sciences President Award - Special Prize Top 0.1%, Jul 2024
- Outstanding Graduate of Beijing Top 1%, Jul 2024

- National Scholarship for Graduate Student
- People's Choice Poster in ACAMAR 9
- Merit Student of UCAS

**Top 0.1%**, Dec 2023  
**Top 5%**, Aug 2023  
**Top 10%**, May 2021

## Academic Service

---

- Referee for The Astrophysical Journal 2025
- Referee for Monthly Notices of the Royal Astronomical Society 2024
- Referee for Nature Astronomy 2023





## Teaching Experience

---

- Teaching assistant for Advanced Astrophysics (070400M01003H) 2020-2022  
 Graduate course at UCAS by Prof. Ji-Feng Liu

## Selected Talks

---

- SWIFAR Lunch Talks, Yunnan, China Nov 2025  
 Efficient Search and Multi-Dimensional Analysis of Fast Radio Bursts
- The Second FAST Scientific Forum, Guiyang, China Sept 2025  
 Radiation Signatures of Fast Radio Bursts Revealed by FAST
- Chinese Fast Radio Burst Conference 2025, Beijing, China Jun 2025  
 DRAFTS / a Deep learning-based Radio Fast Transient Search pipeline | 
- NAOC Radio Department Lunchtime Meeting, Beijing Feb 2025  
 FAST Observations of Fast Radio Bursts: Search and Case Analysis | 
- FRB 2024, Thailand Nov 2024  
 DRAFTS & An Active Repeating FRB in a Clean Environment
- DSA Meeting, Online Dec 2023  
 The Stochastic Nature of Active Repeating Fast Radio Bursts
- FRB 2023, Online Nov 2023  
 The Stochastic Nature of Active Repeating Fast Radio Bursts | 
- FRB 2023, Online, **Invited** Nov 2023  
 FAST Observations of Fast Radio Burst | 
- ACAMAR 9, Perth, Australia, Poster Aug 2023  
 The Stochastic Nature of Repeating FRBs
- Chinese Fast Radio Burst Conference 2023, Hefei, China May 2023  
 The Stochastic Nature of Active Repeating FRBs
- ACAMAR/FRB, Online Sept 2021  
 Time Domain Analysis of two active repeating FRBs
- FAST/Future Pulsar Symposium 9, Jinan, China Jul 2021  
 Periodic Analysis of FRB 121102

## Approved PI Proposals





---

- FAST, PT2025\_0002 **17 hours**, 2025  
 Searching for Gravitationally Lensed High-Redshift FRBs in Galaxy Cluster Fields with FAST
- FAST, PT2025\_0042 **9 hours**, 2025  
 Monitoring FRB20220912A with FAST: Probing Polarization and Spectral Evolution in a Hyperactive Repeater
- FAST, PT2024\_0148 **9 hours**, 2024  
 Monitoring an active repeating FRB in a clean environment
- FAST, PT2024\_0263 **6 hours**, 2024  
 A Mini Survey for White Dwarf Pulsar

- FAST, PT2023\_0100 9 hours, 2023  
Do All Active Repeating FRBs Have Complex Magnetic Environments?
- GBT, GBT/22A-502 41 hours, 2022  
Monitoring FRB 20200120E in a Globular Cluster for Polarization Insights
- FAST, PT2022\_0067 24 hours, 2022  
Constrain the Relation between Fast Radio Bursts and Star Formation Rates
- FAST, PT2021\_0039 20 hours, 2021  
Do all fast radio bursts repeat?

## Outreach and Other Experience

---

-  [MSP](#) / This is a popular science project I built for converting radio data into audio. Based on this project, I created a video titled "[Sounds from the Depths of the Universe](#)", which was given as a gift to new students at UCAS in 2020. The video was widely shared by media outlets such as People's Daily and CCTV News, receiving widespread acclaim. See more examples, please visit the [sonify page](#).
-  [CHIME VOEvents](#) / This is the website I built to summarize CHIME VOEvents.
-  [DRAFTS](#) / This is a tool I built using deep learning for real-time searching of single pulses in radio data.
-  [XiaoQing](#) / Based on web scraping and large language models, I created my AI assistant, XiaoQing (小青).

## Publications

---

### First Author

- 一种识别快速射电暴的方法、装置、存储介质及电子设备 CN Patent, Nov 2025  
Zhang Yong-Kun, Guo Xue-Rong, Li Di, Chen Hua-Xi, Wang Pei, Feng Yi, Niu Chen-Hui, Wang Han, Jin Chen-Wu  
Grant No.: CN116010850B; Application No.: CN202310004618.4
- [DRAFTS: A Deep-learning-based Radio Fast Transient Search Pipeline](#) ApJS, Jan 2025  
Zhang Yong-Kun, Li Di, Feng Yi, Tsai Chao-Wei, Wang Pei, Niu Chen-Hui, Chen Hua-Xi, Zhu Yu-Hao
- [The arrival time and energy of FRBs traverse the time-energy bivariate space like a Brownian motion](#) SciBu, Apr 2024  
Zhang Yong-Kun, Li Di, Feng Yi, Wang Pei, Niu Chen-Hui, Dai Shi, Yao Ju-Mei, Tsai Chao-Wei
- [FAST Observations of FRB 20220912A: Burst Properties and Polarization Characteristics](#) ApJ, Oct 2023  
Zhang Yong-Kun, Li Di, Zhang Bing, Cao Shuo, Feng Yi, Wang Wei-Yang, Qu Yuanhong, Niu Jia-Rui, et al.
- [FAST Observations of an Extremely Active Episode of FRB 20201124A. II. Energy Distribution](#) RAA, Dec 2022  
Zhang Yong-Kun, Wang Pei, Feng Yi, Zhang Bing, Li Di, Tsai Chao-Wei, Niu Chen-Hui, Luo Rui, et al.
- [Circular polarization in two active repeating fast radio bursts](#) SciBu, Dec 2022  
Feng Yi, Zhang Yong-Kun (co-first), Li Di, Yang Yuan-Pei, Wang Pei, Niu Chen-Hui, Dai Shi, Yao Ju-Mei

### Co-Author

- [The energy structure function of fast radio bursts supports a stochastic origin model](#) MNRAS, Jan 2026  
Chen Yi-Nan, Zhang Yong-Kun, Dai Zi-Gao
- [Multiwavelength Observations of the Apparently Nonrepeating FRB 20250316A](#) ApJ, Dec 2025  
Li Ye, et al. (including Zhang Yong-Kun)
- [Towards DM-free search for Fast Radio Bursts with Machine Learning – I. An implementation on multibeam data](#) arXiv, Dec 2025  
Chen Yao, Luo Rui, Wang Chen, Zhang Yong-Kun, Zhao Shiqian, Lyu Chengbing, Zheng ZePeng, Lei Hai, et al.
- [Identifying Quasi-Periodic Micropulses in Pulsars with FAST Using Convolutional Neural Networks](#) arXiv, Dec 2025  
Wang Shidong, Liu Hui, Zhao Ru-Shuang, Lao Baoqiang, Zhang Yong-Kun, Xiao Y. F., Wang Pei, Li Di, et al.

- [A Persistently Active Fast Radio Burst source Embedded in an Expanding Supernova Remnant](#) arXiv, Dec 2025  
Niu Chen-Hui, Li Di, Yang Yuan-Pei, Zhu Yuhao, **Zhang Yongkun**, Zhang Jia-heng, Du Zexin, Yao Jumei, et al.
- [Statistical and Temporal Analysis of Multi-component Burst-clusters from the Repeating FRB 20190520B](#) arXiv, Dec 2025  
Zhang Jia-heng, et al. (including **Zhang Yong-Kun**)
- [A Practical Framework for Estimating the Repetition Likelihood of Fast Radio Bursts from Spectral Morphology](#) arXiv, Oct 2025  
Sun Wan-Peng, **Zhang Yong-Kun**, Zhang Ji-Guo, Liu Xiaohui, Li Yichao, Zhang Fu-Wen, Hou Wan-Ting, Zhang Jing-Fei, et al.
- [Revealing the Temporally Stable Bimodal Energy Distribution of FRB 20121102A with a Tripled Burst Set from AI Detections](#) arXiv, Oct 2025  
Wang Yidan, et al. (including **Zhang Yong-Kun**)
- [Accelerating the Fast Radio Burst Search: Data Set and Methods](#) ApJS, Sept 2025  
Guo Xuerong, et al. (including **Zhang Yong-Kun**)
- [BASSET: Bandpass-adaptive Single-pulse Search Toolkit-Optimized Subband Pulse Search Strategies for Faint Narrowband Fast Radio Bursts](#) ApJS, Sept 2025  
Cao J. H., Wang P., Li D., Pan Q. H., Mao K., Niu C. H., **Zhang Y. K.**, Qu Q. Y., et al.
- [Polarization Position Angle Swing and the Rotating Vector Model of Repeating Fast Radio Bursts](#) ApJ, Aug 2025  
Liu Xiaohui, Xu Heng, Niu Jiarui, **Zhang Yongkun**, Jiang Jinchun, Zhou Dejiang, Han Jinlin, Zhu Weiwei, et al.
- [The Flat Tail in the Burst Energy Distribution of FRB 20240114A](#) RAA, Aug 2025  
Huang Yu-Xiang, Zhang Jun-Shuo, Xu Heng, Hao Long-Fei, Lee Ke-Jia, **Zhang Yong-Kun**, Wang Tian-Cong, Cao Shuo, et al.
- [Multi-year polarimetric monitoring of four CHIME-discovered repeating fast radio bursts with FAST](#) SCPMA, Aug 2025  
Feng Yi, **Zhang Yong-Kun**, Xie Jintao, Yang Yuan-Pei, Qu Yuanhong, Zhou Dengke, Li Di, Zhang Bing, et al.
- [Decadal evolution of a repeating fast radio burst source](#) arXiv, Jul 2025  
Wang P., Zhang J. S., Yang Y. P., Zhou D. K., **Zhang Y. K.**, Feng Y., Zhao Z. Y., Fang J. H., et al.
- [A comprehensive search for Long and Short Periodic Features from an Extremely Active Cycle of FRB 20240114A](#) arXiv, Jul 2025  
Zhou Dengke, et al. (including **Zhang Yong-Kun**)
- [Investigating FRB 20240114A with FAST: Morphological Classification and Drifting Rate Measurements in a Burst-Cluster Framework](#) arXiv, Jul 2025  
Zhang Long-Xuan, et al. (including **Zhang Yong-Kun**)
- [Bright Bursts with Submillisecond Structures of FRB 20230607A in a Highly Magnetized Environment](#) ApJ, Jul 2025  
Zhou DeJiang, Han J. L., Zhang Bing, Zhu WeiWei, Wang Wei-yang, Yang Yuan-Pei, Qu Yuanhong, **Zhang Yong-Kun**, et al.
- [Why is the Star Formation Rate Proportional to Dense Gas Mass?](#) ApJ, Jul 2025  
Jiao Sihan, et al. (including **Zhang Yong-Kun**)
- [The magnetar model's energy crisis for a prolific repeating fast radio burst source](#) arXiv, Jul 2025  
Zhang Jun-Shuo, et al. (including **Zhang Yong-Kun**)
- [Hyperactive Repeating Fast Radio Bursts from Rotation-modulated Starquakes on Magnetars](#) ApJ, Jul 2025  
Luo Jia-Wei, Niu Jia-Rui, Wang Wei-Yang, **Zhang Yong-Kun**, De-Jiang Zhou, Xu Heng, Wang Pei, Niu Chen-Hui, et al.
- [PANCAKE: A Python-based Numerical Color-Magnitude Diagram Analysis Package](#) ApJS, Jul 2025  
Zheng Yun, Yang Yujiao, **Zhang Yong-Kun**, Zheng Zheng, Wang Jing, Staveley-Smith Lister, Tsai Chao-Wei, Li Di, et al.

- [Polarization Characteristics of the Hyperactive FRB 20240114A](#) ApJS, Jun 2025  
Xie Jin-Tao, Feng Yi, Li Di, **Zhang Yong-Kun**, Zhou Deng-Ke, Qu Yuanhong, Cui Xiang-han, Fang Jian-Hua, et al.
- [Probing globular cluster with MeerKAT and FAST: a pulsar polarization census](#) SciBu, May 2025  
Zhang Lei, et al. (including **Zhang Yong-Kun**)
- [An active repeating fast radio burst in a magnetized eruption environment](#) arXiv, Mar 2025  
Li Y., et al. (including **Zhang Yong-Kun**)
- [The Host Galaxy of the Hyperactive Repeating FRB 20240114A: Behind a Galaxy Cluster](#) ApJL, Feb 2025  
Chen Xiang-Lei, Tsai Chao-Wei, Li Di, Wang Pei, Feng Yi, Zhang Jun-Shuo, Li Guo-Dong, **Zhang Yong-Kun**, et al.
- [A Universal Break in Energy Functions of Three Hyperactive Repeating Fast Radio Bursts](#) ApJL, Feb 2025  
Wu Q., Wang F. Y., Zhao Z. Y., Wang P., Xu H., **Zhang Y. K.**, Zhou D. J., Niu J. R., et al.
- [The Variability of Persistent Radio Sources of Fast Radio Bursts](#) ApJ, Dec 2024  
Yang Ai Yuan, Feng Yi, Tsai Chao-Wei, Li Di, Shi Hui, Wang Pei, Yang Yuan-Pei, **Zhang Yong-Kun**, et al.
- [X-Ray Hardening Preceding the Onset of SGR 1935+2154's Radio Pulsar Phase](#) ApJS, Dec 2024  
Wang Pei, et al. (including **Zhang Yong-Kun**)
- [A 44-minute periodic radio transient in a supernova remnant](#) arXiv, Nov 2024  
Li Di, et al. (including **Zhang Yong-Kun**)
- [A Narrowband Burst from FRB 20190520B Simultaneously Observed by FAST and Parkes](#) ChPhL, Oct 2024  
Zhu Yuhao, Niu Chenhui, Dai Shi, Li Di, Wang Pei, Feng Yi, Wu Jingwen, **Zhang Yongkun**, et al.
- [An Extremely Active Repeating Fast Radio Burst Source in a Likely Nonmagneto-ionic Environment](#) ApJ, Oct 2024  
Feng Yi, Li Di, **Zhang Yong-Kun**, Tsai Chao-Wei, Qu Yuanhong, Wang Wei-Yang, Yang Yuan-Pei, Wang Pei, et al.
- [Sudden Polarization Angle Jumps of the Repeating Fast Radio Burst FRB 20201124A](#) ApJL, Sept 2024  
Niu J. R., et al. (including **Zhang Yong-Kun**)
- [Ninety percent circular polarization detected in a repeating fast radio burst](#) NSRev, Sept 2024  
Jiang J. C., et al. (including **Zhang Yong-Kun**)
- [Scintillation Velocity and Arc Observations of FRB 20201124A](#) ApJL, Jul 2024  
Wu Ziwei, et al. (including **Zhang Yong-Kun**)
- [The Relativistic Spin Precession in the Compact Double Neutron Star System PSR J1946+2052](#) ApJ, May 2024  
Meng Lingqi, et al. (including **Zhang Yong-Kun**)
- [Scintillation Arc from FRB 20220912A](#) SCPMA, Jan 2024  
Wu Zi-Wei, et al. (including **Zhang Yong-Kun**)
- [Discovery and Timing of Millisecond Pulsars in the Globular Cluster M5 with FAST and Arecibo](#) ApJS, Dec 2023  
Zhang Lei, et al. (including **Zhang Yong-Kun**)
- [Blinkverse: A Database of Fast Radio Bursts](#) Univ, Jul 2023  
Xu Jiaying, Feng Yi, Li Di, Wang Pei, **Zhang Yongkun**, Xie Jintao, Chen Huaxi, Wang Han, et al.
- [A radio pulsar phase from SGR J1935+2154 provides clues to the magnetar FRB mechanism](#) SciA, Jul 2023  
Zhu Weiwei, et al. (including **Zhang Yong-Kun**)
- [Do Multi-Structural One-Off FRBs Trace Similar Cosmology History with Repeaters?](#) Univ, May 2023  
Zhu Yuhao, Niu Chenhui, Cui Xianghan, Li Di, Feng Yi, Tsai Chaowei, Wang Pei, **Zhang Yongkun**, et al.
- [Magnetic field reversal in the turbulent environment around a repeating fast radio burst](#) Sci, May 2023  
Anna-Thomas Reshma, Connor Liam, Dai Shi, Feng Yi, Burke-Spolaor Sarah, Beniamini Paz, Yang Yuan-Pei,

Zhang Yong-Kun, et al.

- **Atlas of dynamic spectra of fast radio burst FRB 20201124A** ChPhB, Feb 2023  
Wang Bo-Jun, et al. (including Zhang Yong-Kun)
- **FAST Observations of an Extremely Active Episode of FRB 20201124A: I. Burst Morphology** RAA, Dec 2022  
Zhou D. J., et al. (including Zhang Yong-Kun)
- **FAST Observations of an Extremely Active Episode of FRB 20201124A. III. Polarimetry** RAA, Dec 2022  
Jiang Jin-Chen, Wang Wei-Yang, Xu Heng, Xu Jiang-Wei, Zhang Chun-Feng, Wang Bo-Jun, Zhou De-Jiang, Zhang Yong-Kun, et al.
- **FAST Observations of an Extremely Active Episode of FRB 20201124A. IV. Spin Period Search** RAA, Dec 2022  
Niu Jia-Rui, Zhu Wei-Wei, Zhang Bing, Yuan Mao, Zhou De-Jiang, Zhang Yong-Kun, Jiang Jin-Chen, Han J. L., et al.
- **A fast radio burst source at a complex magnetized site in a barred galaxy** Natur, Sept 2022  
Xu H., et al. (including Zhang Yong-Kun)
- **Radio Detection of an Elusive Millisecond Pulsar in the Globular Cluster NGC 6397** ApJL, Aug 2022  
Zhang Lei, et al. (including Zhang Yong-Kun)
- **A repeating fast radio burst associated with a persistent radio source** Natur, Jun 2022  
Niu C.-H., et al. (including Zhang Yong-Kun)
- **Frequency-dependent polarization of repeating fast radio bursts-implications for their origin** Sci, Mar 2022  
Feng Yi, Li Di, Yang Yuan-Pei, Zhang Yongkun, Zhu Weiwei, Zhang Bing, Lu Wenbin, Wang Pei, et al.
- **A bimodal burst energy distribution of a repeating fast radio burst source** Natur, Oct 2021  
Li D., Wang P., Zhu W. W., Zhang B., Zhang X. X., Duan R., Zhang Y. K., Feng Y., et al.
- **Shining on from the first light: The early sciences of FAST** ChSBu, Aug 2021  
Li Di, Wang Pei, Zhang Yongkun
- **CRAFTS for Fast Radio Bursts: Extending the Dispersion-Fluence Relation with New FRBs Detected by FAST** ApJL, Mar 2021  
Niu Chen-Hui, et al. (including Zhang Yong-Kun)
- **A Single-pulse Study of PSR J1022+1001 Using the FAST Radio Telescope** ApJ, Feb 2021  
Feng Yi, et al. (including Zhang Yong-Kun)