Yi-Han Iris Yin

Also known as Yihan Yin

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I am currently a second-year graduate student at Nanjing University majoring in astrophysics. My primary interest is gamma-ray burst (GRB) central engine and its associated astrophysical phenomena. The focus of my recent researches has been on analyzing and interpreting GRB observations, and understanding different astrophysical phenomena associated with its central engine, especially of the peculiar ones, such as GRB 211211A, GRB 230307A and GRB 231115A.

EDUCATION

2023 – PRESENT **Graduate student in Astronomy**
School of Astronomy and Space Science
Nanjing University

2019 – 2023 **B.S. in Physics**
School of Physics
Nanjing University

RESEARCH EXPERIENCE

JAN 2022 – PRESENT

NJU GRB Group
Member

As a member of Professor Bin-Bin Zhang's GRB research team, I have participated in several research projects and am keen to discover new and exciting GRB events. Specifically, I have been deeply involved with the data analysis and follow-up research of GRB 211211A (Yin et al., 2023, ApJL), which is a peculiar long-duration burst with kilonova emission (Yang et al., 2022, Nature). Moreover, I led a project to analyze MGF GRB 231115A and interpret it using a Comptonized fireball model (Yin et al., 2024, accepted by ApJL).

DEC 2023 – PRESENT

Einstein Probe Mission
Associate STP Member

The Einstein Probe is a mission of the Chinese Academy of Sciences dedicated to time-domain high-energy astrophysics. Its first detection of a bright X-ray transient, EP240219a, is confirmed to be an untriggered GRB (Yin et al., 2024, submitted). I led the data analysis of this burst, and will serve as the Transient Advocate in the coming new cycle of observation.

DEC 2020 – PRESENT

GRID Project
Member

Named Gamma-Ray Integrated Detectors (GRID), the mission forms a full-time all-sky one gamma-ray detection network that monitors the transient gamma-ray sky in the multi-messenger astronomy era. Since 2021, I have been leading the simulation team to build response matrices by calibrating and modeling the satellite condition using Geant4. So far, two improved versions of missions developed by our NJU team have been successfully launched in Jan 2023. Additionally, as a member of scientific data analysis team, I co-led two projects to analyze GRID detected bursts GRB 220408B (Zhang et al., 2023, RAA) and GRB 230812B (Wang et al., 2024, in preparation).

RESEARCH INTEREST

Progenitors and central engines of GRBs
Gravitational waves and related astrophysics
Data and observation-oriented research on GRBs

FIRST-AUTHOR PUBLICATIONS

2024 **Triggering the Untriggered: The First Einstein Probe-Detected Gamma-Ray Burst GRB 240219A and Its Implications.** Y.-H. I. Yin, B.-B. Zhang, J. Yang, et al., Submitted to ApJL, arxiv: 2407.10156

- **A Componized Fireball Bubble Fits the Second Extragalactic Magnetar Giant Flare GRB 231115A.** Y.-H. I. Yin, Z. J. Zhang, J. Yang, et al., ApJL, 963 L10, doi: 10.3847/2041-8213/ad2839

2023 **GRB 211211A-like Events and How Gravitational Waves May Tell Their Origins.** Y.-H. I. Yin, B.-B. Zhang, H. Sun, et al., ApJL, 954 L17, doi: 10.3847/2041-8213/acf04a

CO-AUTHORED PUBLICATIONS

2024 **Soft X-ray prompt emission from a high-redshift gamma-ray burst EP240315a** Y. Liu, H. Sun, D. Xu, et al., arxiv: 2404.16425

- **Prospects for detecting neutron star-white dwarf mergers: early warnings from decihertz gravitational-wave observatories.** Y. Kang, C. Liu, J.-P. Zhu, et al. MNRAS, Volume 528, Issue 3, March 2024, Pages 5309–5322, doi: 10.1093/mnras/stae340

2023 **Magnetar emergence in a peculiar gamma-ray burst from a compact star merger.** H. Sun, C.-W. Wang, J. Yang, et al., Submitted, arxiv: 2307.05689

- **Synchrotron Radiation Dominates the Extremely Bright GRB 221009A.** J. Yang, X.-H. Zhao, Z. Yan, et al., ApJL, 947 L11, doi: 10.3847/2041-8213/acc84b
- **GRB 220408B: A Three-Episode Burst from a Precessing Jet.** Z. Zhang, Y.-H. I. Yin, C. Wang, et al., RAA, 23 115023, doi: 10.1088/1674-4527/acfa59

2022 **A long-duration gamma-ray burst with a peculiar origin.** J. Yang, S. Ai, B.-B. Zhang, et al, Nature, 612,232-235, doi: 10.1038/s41586-022-05403-8

2021 **GRB 210121A: A Typical Fireball Burst Detected by Two Small Missions.** X. I. Wang, X. Zheng, S. Xiao, et al., ApJ, 922 237, doi: 10.3847/1538-4357/ac29bd

SCHOLARSHIPS AND HONORS

2023 **First Class Academic Scholarship (Master)**
Nanjing University

2023 **Outstanding Graduate**
Nanjing University

2021, 2022 **The People's Scholarship of China**
Nanjing University

PROFESSIONAL EXPERIENCE/ACTIVITIES

2024 **Oral Talk,** COSPAR 2024, Busan, Korea

- **Volunteer/Oral Talk/Poster/Ice-breaking Organizer,** The Third Nanjing GRB Conference, Suzhou, China
- **Teaching Assistant,** Gravitational Wave and Related Astrophysics, Nanjing University

LANGUAGE

NATIVE Chinese
PROFICIENCT English (CET4:639, CET6:548, IELTS:7.5)