Jie Li(李杰)

Research Interests: Exoplanet; Direct Imaging; Astrometry; Radial Velocity; AGN

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Education

The University of Texas at San Antonio Aug. 2025 – Present

Ph.D. in Physics

Yunnan University Sep. 2018 – Jun. 2022

B.S. in Astronomy

Publications

- **Jie Li**, Zhong-Xiang Wang, Dong Zheng, 2023. ***Three cases of optical periodic modulation in Active Galactic Nuclei***. Monthly Notices of the Royal Astronomical Society, doi: 10.1093/mnras/stad1168.
- **Jie Li**, Zhong-Xiang Wang, Dong Zheng, Ju-Jia Zhang, Li-Tao Zhu, Zhang-Yi Chen, 2023. ***AT2021acak: a Candidate Tidal Disruption Event Found in the Zwicky Transient Facility Survey***. Research in Astronomy and Astrophysics, doi: 10.1088/1674-4527/acae6f.
- Li-Tao Zhu, **Jie Li**, Zhong-Xiang Wang, Ju-Jia Zhang, 2024. ***Four changing look active galactic nuclei found from optical variations***. Monthly Notices of the Royal Astronomical Society, doi: 10.1093/mnras/stae1044.
- Yi Xing, Zhong-Xiang Wang, Dong Zheng, **Jie Li**, 2023. ***On the Gamma-Ray Emission of the Andromeda Galaxy M31***. The Astrophysical Journal Letters, doi: 10.3847/2041-8213/acbf4f.
- Li-Tao Zhu, Zhong-Xiang Wang, P. U. Devanand, Alok C. Gupta, Karan Dogra, **Jie Li**, Ju-Jia Zhang, Shun-Hao Ji, Si-Si Sun, 2024. ***Testing Colour-magnitude Pattern as A Method in the Search for Changing-Look AGNs***. Monthly Notices of the Royal Astronomical Society, doi: 10.1093/mnras/stae2774.

Research Experiences

Project: Using Astrometry and RV to Identify New Exoplanets and Brown Dwarfs Amenable to High-Contrast Imaging From the Ground and Space 2025 – Present

Main contributor

Advisor: Dr. Thayne Currie

- Searched for stars exhibiting significant astrometric accelerations using the Hipparcos–Gaia Catalogue of Accelerations (HGCA).
- Identified systems with both astrometric acceleration signals and long-term radial-velocity trends.
- Jointly modeled radial-velocity measurements and precision astrometry from HGCA using the orbit-fitting code orvara, constraining the dynamical masses and orbital parameters of the companions.
- Evaluated the detectability of these companions with current and future direct imaging facilities, including ground-based extreme adaptive optics systems and space-based high-contrast imaging missions.

Project: Understanding Long-Term Large Flux Variations Seen in AGNs 2021 – 2025

Main contributor

Advisor: Dr. Zhongxiang Wang

- Identified Fermi-LAT blazars counterparts based on the correlation of gamma and optical light curves.
- Discovered three AGNs with optical periodic modulation based on ZTF and CRTS light curves, suggesting merging supermassive black hole binary. One of the AGNs even showed potential periodic modulation in X-rays.

- Identified a rare candidate AGN TDE based on the light curves from ZTF, ATLAS, and NEOWISE, which exhibited the emergence of coronal lines after optical flare.
- Identified four changing-look AGNs. Several of them were previously classified as type 2 AGNs in SDSS spectra but exhibited bluer-when-brighter behavior in recent light curves, which is the characteristic of type 1 AGNs.
- Proposed a new method to identify changing-look AGNs by searching for type 2 AGNs in SDSS spectra that exhibit bluer-when-brighter behavior in recent light curves (Color-magnitude Pattern). Follow-up observations demonstrated its high efficiency.

Project: Systematic Searching for Dual AGNs 2020 – 2022

Main contributor
Advisor: Dr. Yang Huang
15,000 CNY, Funded by College Student Innovation and Entrepreneurship Training Program Project

- Searched for optical dual-core objects accompanied by radio or X-ray radiation as dual AGNs candidates.
- Applied the Lijiang 2.4m telescope to obtain two-dimensional spectra of dual AGNs candidates.
- Identified three new dual AGNs.

Project: Development of LHAASO-WFCTA Camera 2020 – 2022

Research Assistant
Advisor: Dr. Maomao Ge

- Tested SiPM linearity and assembled the LHAASO-WFCTA camera.
- Proposed the potential impact of skylight background on SiPM linearity.
- Constructed SiPM linearity function under varying skylight background conditions.

TEACHING EXPERIENCES

Undergraduate Course: Introduction to High Energy Astrophysics Fall 2021

- Yunnan University
- Teaching Assistant
- Supervisor: Dr. Zhongxiang Wang

Undergraduate Course: Algebra-based Physics I Laboratory Fall 2025

- The University of Texas at San Antonio
- Graduate Teaching Assistant
- Supervisor: Mr. Christopher Dunn

ACADEMIC CONFERENCES

- HXMT Workshop on Satellite Data Processing, Kunming, China Oct. 2020
- Light Curve Research Symposium on Active Galactic Nuclei, Xiamen, China Mar. 2023
- The 1st LHAASO Symposium, Chengdu, China May 2023
- Changing-look Active Galactic Nucleus Symposium, Hangzhou, China Dec. 2023
- Multi-Messenger Astronomy Frontier Symposium, Kunming, China Dec. 2023

AWARDS AND HONORS

- Excellent Student Scholarship, Yunnan University 2019 – 2021
- "Xiong Qinglai" Astronomy Special Scholarship, Yunnan University 2022

SKILLS

- Language: Mandarin, English
- Astronomical tool: ORVARA, Linux, LaTeX, IRAF, HEASoft, CIAO, Fermi, CLOUDY, TOPCAT, DS9
- Programming Language: Python, SQL, Docker