



Yu Liu

Curriculum Vitae

You can also call me Mutian, which comes from the Chinese Wuxing of Wood (Mu) and Scorpio. Antares, the heart of the Scorpion, is a binary star system consisting of a red supergiant star and a blue-white main-sequence star.

Education

- 2012–2016 **B.S.**, *Changsha University of Science and Technology*, Changsha, China
Supervisor: Dr. Zhen-Hua Zhang
- 2016–2023 **Ph.D.**, *Huazhong University of Science and Technology*, Wuhan, China
Supervisor: Prof. Yuan-Chuan Zou
- 2019–2020 **Cooperation Research**, *Beijing Normal University*, Beijing, China
Supervisor: Prof. Zhoujian Cao and Prof. He Gao

Interests

- Kilonova Remnant** Kilonova remnants (KNR) are a new and fascinating field of astronomy. We found a KNR candidate G4.8+6.2 in our Galaxy through ancient records of the guest star in 1163, but still need more evidence to prove this association.
- Continuous Gravitational Wave** As a new observation window, continuous gravitational waves (CWs) can help us find non-pulsing neutron stars (NSs), known as "GW pulsars". CWs also provide insights into the physical properties of binary neutron star (BNS) merger remnants.
- Numerical Relativity** Numerical relativity simulations are the necessary tools to study the properties of the ejecta of BNS mergers and further predict the heavy-element abundances and morphology of KNRs. I am also interested in calculating accurate gravitational waveforms for TianQin using numerical relativity.
- Machine Learning** With the advent of new instruments, astronomy is entering the big data era. I am interested in the application of machine learning algorithms in astronomy.

Academic Meeting

- Oct 6, 2021 **1st HUST-UoM Joint Symposium in Physics Research**
<https://indico.hep.manchester.ac.uk/conferenceDisplay.py?confId=5920>
○ **Report:** Binary black hole merging with large eccentricity and orbital precession

July 26, 2021 **Einstein Toolkit workshop 2021**

○ Certificate for participating in the summer school lectures and hands-on exercises.

Computer Skills

GRMHD Einstein Toolkit, Lorene

Python emcee, scikit-learn, multiprocessing, CactusTool

Mathematica xAct

Publications

- [1] **Yu Liu** and Yuan-Chuan Zou. Directed search for continuous gravitational waves from the possible kilonova remnant G 4.8 +6.2. *Phys. Rev. D*, 106(12):123024, December 2022.
- [2] **Yu Liu**, Yuan-Chuan Zou, Bing Jiang, He Gao, Shuai-Bing Ma, and Bin Liao. G4.8+6.2, a possible kilonova remnant? *MNRAS*, 490(1):L21–L25, November 2019.
- [3] **Yu Liu** and Yuan-Chuan Zou. A Search for the Guest Star Associated with Swift J1818-5937. *Research Notes of the American Astronomical Society*, 4(9):164, September 2020.
- [4] **Y Liu**, CX Li, ZH Zhang, and CZ Wang. Electronic and transport features of zigzag boron nitride nanoribbons with nonmetallic atom terminations. *Organic Electronics*, 38:292–300, 2016.
- [5] Feifei Wang, Yuan-Chuan Zou, Fuxiang Liu, Bin Liao, **Yu Liu**, Yating Chai, and Lei Xia. A Comprehensive Statistical Study of Gamma-Ray Bursts. *ApJ*, 893(1):77, April 2020.
- [6] Shuai-Bing Ma, Wei Xie, Bin Liao, Bin-Bin Zhang, Hou-Jun Lü, **Yu Liu**, and Wei-Hua Lei. A Possible Kilonova Powered by Magnetic Wind from a Newborn Black Hole. *ApJ*, 911(2):97, April 2021.
- [7] Fei-Fei Wang, Yuan-Chuan Zou, **Yu Liu**, Bin Liao, and Reetanjali Moharana. Possible correlations between gamma-ray burst and its host galaxy offset. *Journal of High Energy Astrophysics*, 18:21–34, June 2018.
- [8] Shi-Ju Kang, Kerui Zhu, Jianchao Feng, Qingwen Wu, Bin-Bin Zhang, Yue Yin, Fei-Fei Wang, **Yu Liu**, and Tian-Yuan Zheng. An Empirical “High-confidence” Candidate Zone for Fermi BL Lacertae Objects. *ApJ*, 891(1):87, March 2020.
- [9] Bin Liao, Yuan-Chuan Zou, Fei-Fei Wang, **Yu Liu**, and Wei-Hua Lei. The correlations among variability, optical peak time and spectral time lag of long gamma-ray bursts. *Research in Astronomy and Astrophysics*, 20(11):172, November 2020.
- [10] Chao Yang, Yuan-Chuan Zou, Wei Chen, Bin Liao, Wei-Hua Lei, and **Yu Liu**. Revisiting gamma-ray burst afterglows with time-dependent parameters. *Research in Astronomy and Astrophysics*, 18(2):018, February 2018.