

Han-Lin Song

Peking University
Institute of Theoretical Physics
hanlin@stu.pku.edu.cn

- EDUCATION**
- Peking University*** 2021 – present
PhD in Theoretical Physics
Mentor Prof. Bo-Qiang Ma
- Jilin University*** 2017 – 2021
B.S. in Tang Aoqing Honors Program in Science (Physics)
- Georgia Institute of Technology*** 2020
Visitor
- MEMBERSHIP** ***KAGRA Scientific Collaboration*** 2024 – present
LIGO-Virgo-KAGRA collaboration for KAGRA member
- RESEARCH INTEREST** *Lorentz invariance violation*
Gravitational wave physics
Modified gravity theories
- TEACHING**
- *Teaching Assistant* for General Relativity & Astrophysics (PKU), 2024
 - *Teaching Assistant* for Mathematical Methods in Physics (PKU), 2024
 - *Teaching Assistant* for Electrodynamics (A) (PKU), 2023
 - *Teaching Assistant* for Theoretical Mechanics (A) (PKU), 2022, (* Excellent Teaching Assistant Award)
- HONORS AND AWARDS**
- *Best Oral Presentation Award*, 23rd Graduate Academic Forum of the “Zhong Shengbiao Physics Education Fund”, Peking University, Jun. 2025
 - *Second Prize*, 23rd Graduate Academic Forum of the “Zhong Shengbiao Physics Education Fund”, Peking University, Jun. 2025
 - *Award for Outstanding Scientific Research*, Peking University, Dec. 2024
 - *Lee Wai Wing Scholarship*, Peking University, Dec. 2024
 - *Excellent Teaching Assistant Award*, Peking University, April. 2024
 - *Outstanding Graduates of Jilin University*, April. 2021
 - *Excellent Camper for 2020 Physics Summer School*, Peking University, Jun. 2020
 - *Dean’s Scholarship*, Jilin University, School of Physics, the highest honor and price for undergraduate students enrolled the college. May. 2020
 - *Undergraduate Student Scholarship*, University of Chinese Academy of Sciences, Nov. 2019
 - *Yan Jici Honor Student Class Scholarship*, Chinese Academy of Science, Institute of Physics, Nov. 2019

- *Chinese Government Scholarship*, China Scholarship Council, Honor student exchange program founding with Georgia Institute of Technology, Oct. 2019
- *National Scholarship*, Ministry of Education of China, Oct. 2019
- *DongRong Scholarship*, JiLin University, Jun. 2019

SEMINARS AND TALKS

- Talk, “Generalized Learning of Quasi-Normal Modes via Physics-Informed Neural Networks”, Chongqing University, Chongqing, Jul. 2025
- Talk, “Searching the Stochastic Gravitational-wave Background with Next-generation Detectors”, 2024 Annual Meeting of the Gravitational and Relativistic Astrophysics Branch of the Chinese Physical Society, Hengyang, Apr. 2024
- Group Meeting Talk, “Brief Introduction to Fisher Information Matrix”, KIAA, Peking University, Feb. 2023
- Seminar, General Symmetry in Theoretical Physics, Peking University, Feb.2023
- Speech, Giving a speech to first-year university students at a convocation ceremony, JiLin University, Sep.2022
- Talk, “New non-Hermitian Operators Inspired by Conformal Group”, The 16th Annual Conference of the National Group Theory Society, Jul.2021
- Talk, “An Introduction of K_μ Operator for Non-Relativity Quantum Mechanics Inspired by Conformal Group ”, Center for Theoretical Physics, Jilin University, May.2021
- Talk, “Brief Introduction about the stability of Trappist-1 System” Harbin Institute of Technology-Jilin University Honor students Academic Forum, Dec.2020
- Speech, Giving a speech to first-year university students at a convocation ceremony, JiLin University, Sep.2020
- Seminar, Oxford Academic Program, Oxford University, Oct, 2019
- Seminar, Joint Russia-China School on Modern Physics, Tomsk State University, Sep.2019
- Summer School, Nagoya University–Jilin University Tang Ao-Qing Honor Students Program, Nagoya University, Jul.2019

PUBLICATIONS

1. **Hanlin Song**, and Bo-Qiang Ma. “Monte Carlo simulation of GRB data to test Lorentz-invariance violation”. **Physical Review D** 111 (2025) 10, 103015.
2. **Hanlin Song**, and Bo-Qiang Ma. “Lorentz invariance violation from gamma-ray bursts”. **The Astrophysical Journal** 983 (2025) 1,9.
3. **Hanlin Song**, Han Yan, Yacheng Kang, Xian Chen, Junjie Zhao, and Lijing Shao. “Probing intermediate-mass black hole binaries with the Lunar Gravitational-wave Antenna”. **npj Space Exploration** (2025)
4. **Hanlin Song**, and Bo-Qiang Ma. “Examining Lorentz invariance violation with three remarkable GRB photons”. **Physics of Dark Universe** 47 (2025): 101808.
5. Qing Liu, **Hanlin Song**, and Bo-Qiang Ma. “Direct Evidence for Preburst Stage of Gamma-Ray Burst from GRB 221009A Data”. **Research Notes of AAS** 8 (2024): 10,263.
6. **Hanlin Song**, and Bo-Qiang Ma. “Energy-dependent intrinsic time delay of gamma-ray bursts on testing Lorentz invariance violation”. **Physics Letters B** 865 (2024) 138951.

7. **Hanlin Song**, Dicong Liang, Ziming Wang, and Lijing Shao. “Impact of spin in compact binary foreground subtraction for estimating the residual stochastic gravitational-wave background in ground-based detectors”. **Physical Review D** 109 (2024) 12, 123014.