

Haowen Zhong, Ph.D. Candidate

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Education

University of Minnesota, Ph.D. in Physics, Data Science in Astrophysics (Minor)	Sept 2021 – May 2026 (Expected)
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- Advisor: Vuk Mandic

Huazhong University of Science and Technology, B.Sc. in Physics	Sept 2017 – May 2021
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- Thesis title: *Gravitational waves from bubble collisions in FLRW spacetime.*
- Advisor: Biping Gong

Selected Publications and Preprints

Refereed Journal Articles

- **H. Zhong**, L. Reali, B. Zhou, E. Berti, and V. Mandic, “Two-step procedure to detect cosmological gravitational wave backgrounds with next-generation terrestrial gravitational-wave detectors,” **Phys. Rev. Lett.** 135 (2025) 11, 111401
- **H. Zhong**, M. Isi, K. Chatziioannou, and W. M. Farr, “Multidimensional hierarchical tests of general relativity with gravitational waves,” **Phys. Rev. D** 110 (2024) 4, 044053
- **H. Zhong**, B. Zhou, L. Reali, E. Berti, and V. Mandic, “Searching for cosmological stochastic backgrounds by notching out resolvable compact binary foregrounds with next-generation gravitational-wave detectors,” **Phys. Rev. D** 110 (2024) 6, 064047
- A. I. Renzini, ..., **H. Zhong**, “pygwb: A Python-based Library for Gravitational-wave Background Searches,” **Astrophys. J.** 952 (2023) 1, 25
- **H. Zhong**, R. Ormiston, and V. Mandic, “Detecting cosmological gravitational wave background after removal of compact binary coalescences in future gravitational wave detectors,” **Phys. Rev. D** 107 (2023) 6, 064048, **Phys. Rev. D** 108 (2023) 8, 089902 (erratum)
- **H. Zhong**, B. Gong, and T. Qiu, “Gravitational waves from bubble collisions in FLRW spacetime,” **JHEP** 02 (2022) 077

Preprints and Articles in Preparation

- **H. Zhong** and V. Mandic, "Importance of Shot Noise in the Search for an Isotropic Stochastic Gravitational-Wave Background with Next Generation Detectors", arXiv: **2509.15014**
- **H. Zhong**, J. D. Romano, V. Mandic, S. Kandhasamy, and A. I. Renzini (in prep), A Thorough Investigation of the Frequency Domain Cross-Correlation Method in the Search of a Stochastic Gravitational-Wave Background

Teaching Experience as a Teaching Assistant

1. Kinematics&Mechanics:

- **PHYS 1301:** Fall 2021
- **PHYS 1101:** Spring 2025

2. E&M:

- **PHYS 1302:** Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024

Talks&Presentations

Seminars/Telecons

- 2025 **Importance of Shot Noise in the Search for an Isotropic Stochastic Gravitational-Wave Background with Next Generation Detectors**, August, LIGO stochastic subgroup telecon
- 2024 **Searching for cosmological stochastic backgrounds by notching out resolvable compact binary foregrounds with next-generation gravitational-wave detectors**, August, Sun Yat-Sen University, (Guangdong) [China]
- 2024 **Generalizing hierarchical tests of general relativity with gravitational waves to arbitrary dimensions**, May, LIGO TGR telecon
- 2023 **Removing the Astrophysical Stochastic Gravitational Wave Foreground in Next-Generation Gravitational Wave Detectors & Arbitrary-Dimensional Hierarchical Test of GR with Gravitational Waves**, November, Johns Hopkins University, Baltimore (MD)
- 2022 **Detecting cosmological gravitational waves background after removal of compact binary coalescences in future gravitational wave detectors**, October, CE telecon

Conferences/LVK Meetings

- 2025 **Detecting a Cosmological Gravitational-Wave Background with Next-Generation Detectors**, Fundamental Physics Across the Gravitational Wave Spectrum, August, Chicago (IL)
- 2024 **Bypassing the Unresolvable Binary Neutron Star Foreground to Dig into Cosmological Background by Combining Notching Procedure and Joint Analysis**, LVK Meeting, September, Online
- 2024 **Updates on Detecting Cosmological Gravitational Wave Background by Notching Astrophysical Foreground out in t-f space**, LVK Meeting, March, Baton Rouge (LA)
- 2023 **Detecting cosmological gravitational waves background after removal of compact binary coalescences in future gravitational wave detectors**, APS Meeting, April, Minneapolis (MN)
- 2023 **Detecting cosmological gravitational waves background after removal of compact binary coalescences in future gravitational wave detectors**, LVK Meeting, March, Online
- 2022 **Dive into SGWB by Notching Out CBC Foreground For 3G Detector e.g (Cosmic Explorer)**, LVK Meeting, March, Evanston (IL)

Professional Organizations

- 2022-Present **Member**, Cosmic Explorer Consortium
- 2021-Present **Student Member**, American Physical Society
- 2021-Present **Member**, LIGO-Virgo-KAGRA Scientific Collaboration

Referee

Physical Review D

Awards and Achievements

1. **National Scholarship (2 out of 170)**, 2020
2. **Merit Student Scholarship (10 out of 170)**, 2020
3. **National Astronomical Observatory Scholarship (2 out of 340)**, 2020
4. **National Astronomical Observatory Scholarship (2 out of 317)**, 2019
5. **Scholarship of Academic Excellence in school of Physics (8 out of 170)**, 2019
6. **Scholarship of Self-Improvement for freshman (2 out of 22)** , 2018
7. **Scholarship of Academic Excellence for freshman (11 out of 155)**, 2018