Hui-Yu ZHU Postdoc.

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Current Position

Senior Researcher in Institute for Basic Science 2024.11 -
Cosmology, Gravity and Astroparticle Physics Group
- **Address:** Institute for Basic Science (IBS), 55, Expo-ro, Yuseong-gu, Daejeon, Korea.

Education

Hong Kong University of Science and Technology (HKUST)
Ph.D. in Physics 2019 - 2024
- **Supervisor:** Prof. George Smoot and Prof. Yi Wang

Southern University of Science and Technology (SUSTech)
B.S. in Physics 2015 - 2019
- **Supervisor:** Prof. Leonardo Modesto

Awards and Scholarship

- **Postgraduate Scholarship**, HKUST 2019 - 2024
- **The Graduation Design Excellence Award**, SUSTech 2019
- **National Encouragement Scholarship**, China 2018
- **Bronze Medal**, University Physics Competition 2017
- **National Encouragement Scholarship**, China 2017
- **Second Prize**, Chinese Undergraduate Physics Tournament 2017
- **Third Prize**, Outstanding Student Scholarship, SUSTech 2016
- **Bronze Medal**, Musical Instrument Competition In Guangdong 2015

Teaching Experience

Teaching Assistant in the HKUST
Physics Department
- General Physics I with Calculus 2022
- Introduction of Stellar Astrophysics 2022
- Methods of Experimental Physics I 2021
- Methods of Experimental Physics I 2020

Teaching Assistant in the SUSTech
Physics Department
- Introduction to Quantum Field Theory 2019
- General Relativity: From Black Hole to Cosmology 2018

Services

Organizer for: International Workshop on QNM and BH Perturbation, IBS
Assistant for: International Conference on High Energy Physics, HKUST
Assistant for: International Conference on Quantum Gravity, SUSTech

Skills

Languages: Chinese (Native), English (Fluent), Japanese (Beginner), Italian(Beginner).
Programming: `Python`, `Mathematica`.

Invited Talks & Seminars

- Seminar at **Sapienza Università di Roma**, Rome, Italy 2025.11
- **Summer School and Workshop for HEP and Cosmology**, Jeonju, South Korea 2025.07
- **Workshop on QNM and BH Perturbation**, IBS, Daejeon, Korea 2025.05
- Seminar at **Niels Bohr Institute**, Copenhagen , Denmark 2025.04
- **Workshop on Cosmology, Gravitation and Particle Physics**, FZU, Czech 2025.04
- Seminar at **École normale supérieure de Lyon**, France 2025.04
- Seminar at **HKUST**, Hong Kong, China 2024.12
- **Workshop on Cosmology, Gravity, Particle Physics**, CAS-IBS-IST, Japan 2024.10
- Seminar at **Yangzhou University**, China 2024.04
- Seminar at **Shanghai Jiao Tong University**, China 2024.03
- Seminar at **SUSTech**, China 2023.10
- Seminar at **Kyoto University**, Japan 2023.06
- Seminar at **RIKEN iTHEMS**, Japan 2023.06
- Seminar at **Kavli IPMU**, Japan 2023.06

Contributed Talks & Poster

- **CosPA**, IBS, Daejeon, Korea 2025.07
- **New Horizon of Black Hole Physics**, YITP, Kyoto, Japan 2025.01
- **High1 Workshop on Particle, String and Cosmology**, KAIST & IBS, Korea 2025.01
- **COSMO24**, Kyoto University, Japan (Poster) 2024.10
- **Workshop on cosmology, Gravity, and Particle physics**, USTC-IBS-IST, Japan 2024.09
- **New horizons for Psi school & workshop**, IST, Lisbon, Portugal (Poster) 2024.07
- **YITP Long Term Workshop on Gravity and Cosmology**, Kyoto, Japan 2024.01
- **International Symposium on Cosmology and Particle Astrophysics**, Hong Kong 2023.11
- **Joint Annual Conference of Physical Societies**, Hong Kong, China 2023.07
- **Conference on String theory, Gravity and Cosmology**, APCPT (Online) 2022.06
- **Conference on Gravity and Cosmology**, YITP (Online) 2022.06

Schools

- LPTHE Advanced Summer School in **QFT and QG**, Vietnam 2024
- Summer School on **String Theory, Field Theory and Holographic Theory**, China 2021
- Winter School on **X-ray Data Analysis**, Fudan University, China 2018
- Xinjiang Astronomical Observatory Summer Camp, China 2017

Academic Visiting

- **Sapienza Università di Roma**, 1 week (Host: Paolo Pani) 2025
- **Niels Bohr Institute**, 1 week (Host: Vitor Cardoso) 2025
- **Lyon ENS**, 1 week (Host: Etera Livine) 2025
- **HKUST**, 1 week (Host: Yi Wang) 2025
- **Yangzhou University**, 1 week (Host: Yen Chin Ong) 2024
- **Shanghai Jiaotong University**, 1 week (Host: Yucheng Qiu) 2024
- **Kyoto University**, 2 weeks (Host: Takahiro Tanaka) 2023
- **Kavli IPMU**, 1 week (Host: Misao Sasaki) 2023
- **University of Science and Technology of China**, 4 months (Host: Yifu Cai) 2023

References

[1] Q. Ding, M. He and H. Y. Zhu, "Extracting Properties of Dark Dense Environment Around Black Holes From Gravitational Waves," [arXiv:2510.27424 [gr-qc]].

[2] Q. Ding, M. He, V. Takhistov and H. Y. Zhu, "Dark Matter-Independent Orbital Decay Bounds on Ultralight Bosons from OJ287," Accepted by Phys. Rev. D. [arXiv:2505.09696 [hep-ph]].

[3] H. Y. Zhu, X. Tong, G. Manzoni and Y. Ma, "Survival of the Fittest: Testing Superradiance Termination with Simulated Binary Black Hole Statistics," Astrophys. J. **981**, no.2, 165 (2025) doi:10.3847/1538-4357/adb1db [arXiv:2409.14159 [gr-qc]].

[4] K. Fan, X. Tong, Y. Wang and H. Y. Zhu, "Modulating binary dynamics via the termination of black hole superradiance," Phys. Rev. D **109**, no.2, 024059 (2024) doi:10.1103/PhysRevD.109.024059 [arXiv:2311.17013 [gr-qc]].

[5] C. Chen, A. Ota, H. Y. Zhu and Y. Zhu, "Missing one-loop contributions in secondary gravitational waves," Phys. Rev. D **107**, no.8, 083518 (2023) doi:10.1103/PhysRevD.107.083518 [arXiv:2210.17176 [astro-ph.CO]].

[6] X. Tong, Y. Wang and H. Y. Zhu, "Termination of superradiance from a binary companion," Phys. Rev. D **106** (2022) no.4, 043002 doi:10.1103/PhysRevD.106.043002 [arXiv:2205.10527 [gr-qc]].

[7] Y. C. Qiu and H. Y. Zhu, "Probing neutrino sector via a statistical approach," Int. J. Mod. Phys. A **37** (2022) no.10, 2250055 doi:10.1142/S0217751X22500555 [arXiv:2110.10462 [hep-ph]].

[8] X. Tong, Y. Wang and H. Y. Zhu, "Gravitational Collider Physics via Pulsar–Black Hole Binaries II: Fine and Hyperfine Structures Are Favored," Astrophys. J. **924** (2022) no.2, 99 doi:10.3847/1538-4357/ac36db [arXiv:2106.13484 [astro-ph.HE]].

[9] L. Modesto, H. Y. Zhu and J. Y. Zhang, Int. J. Mod. Phys. D **34**, no.13, 2550050 (2025) doi:10.1142/S0218271825500506 [arXiv:1906.09043 [gr-qc]].

Note: Except [3] & [9], the author's name is listed in the sequence of the surname's first character, among which I am the only corresponding author for [1], [2], and [4]. In other works, I am one of the corresponding authors and contribute equally with my collaborators.