Han Wang 王晗

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Education

Sun Yat-sen University (SYSU) **Zhuhai, China**
Ph.D. Candidate in Astronomy (Expected graduation: Jun 2025) *Sep 2020 - present*

- Thesis: Space-based Gravitational Wave Data Analysis of Stellar-mass Binary Black Holes: A Multi-band View
- Supervisor: Yi-Ming Hu

This thesis focuses on the challenge of detecting gravitational waves from stellar-mass binary black holes in space-based detectors, and uses the idea of archival searches to implement an end-to-end data analysis routine, i.e. from simulated data to detection to parameter estimation. Additionally, the inclusion of eccentricity makes it beneficial to unveil the formation mechanisms of such systems.

University of Portsmouth **Portsmouth, UK**
Visiting Ph.D. Student *Oct 2023 - Oct 2024*

- Supervisor: Ian Harry

Huazhong University of Science and Technology (HUST) **Wuhan, China**
B.S. in Physics *Sep 2016 - Jun 2020*

- Thesis: Analyses of Laser Propagation Noises for TianQin Gravitational Wave Observatory
- Supervisors: Yan Wang and Wei Su

This thesis focuses on how global magnetosphere will introduces additional noise to the TianQin Gravitational Wave Observatory and estimates its impact using MHD simulation data.

University of California, Berkeley **Berkeley, USA**
Berkeley International Study Program *Jan 2019 - May 2019*

Selected Awards and Scholarships

State Scholarship Fund, China Scholarship Council — Oct 2023 - Oct 2024
To fund overseas study (in this case, a visit to the University of Portsmouth) for awardees selected through a rigorous academic evaluation process

TianQin *Jianxing* Outstanding Postgraduate Scholarship — 2022 & 2023 & 2024
Endowed scholarship for outstanding postgraduates who were involved in the TianQin Gravitational Wave Detection Mission

The Postgraduate Skills Competition of TianQin Research Center — 1st in 2021 & 2nd in 2022
For postgraduates who made an excellent scientific outreach video on topics related to gravitational waves

Outstanding Graduate of HUST — 2020
Top honor for undergraduates who would be graduating from HUST that year

National Astronomical Observatories Scholarship, Chinese Academy of Sciences — 2017 & 2019
For nationwide outstanding undergraduates who had chosen astronomy as their research direction

Merit Student of HUST — 2019
For undergraduates who were recognized for excellence in both academic performance and public service

Outstanding Student Cadre of HUST — 2017 & 2018
For outstanding undergraduate leaders who were involved actively in student associations or organizations

Conferences and Presentations

Conferences:

2024 Annual Meeting of the Chinese Astronomical Society, *Zhejiang University*, Hangzhou, China - poster	Oct 2024
15th LISA Symposium, *University College Dublin*, Dublin, Ireland - poster	Jul 2024
Faculty of Technology Research and Innovation Conference, *University of Portsmouth*, Portsmouth, UK - poster	Jun 2024
24th BritGrav meeting, *Queen Mary University of London*, London, UK - talk	Apr 2024
1st Symposium on Gravitational Wave Astronomy in the Audio Band, *Beijing Normal University*, Zhuhai, China - remote talk	Mar 2024
2023 Annual Meeting of the Gravity and Relativistic Astrophysics Division of the Chinese Physical Society, *Chongqing University*, Chongqing, China - talk	Apr 2023

Selected Seminars:

LISA Ground Segment Meet Up, *University of Birmingham*, Birmingham, UK	Jan 2024
SYSU-PKU Bilateral Seminar on Gravitational Wave Astronomy, *TianQin Research Center*, Zhuhai, China	Mar 2023
Research Tools and Techniques Seminar, *TianQin Research Center*, Zhuhai, China	Dec 2021

Outreach and Services

Lead developer of `TianQinSYSU/GWSpace`

Illustration development of TianQin Gravitational Wave Detection Mission

Outreach videos on gravitational waves [In Chinese] link1 link2

Volunteer of *Stargazing at Portsmouth Historic Dockyard* — Jan 2024

Leader of Astronomy Enthusiasts Group of TianQin Research Center — 2020 - 2022
Organizing sidewalk astronomy observation and other outreach events.

Lab manager of the Innovative Base for Physics Experiment (IBPE) of HUST — 2017 - 2018
Responsible for lab planning, procurement, daily maintenance, public outreach, etc. IBPE is a free platform that encourages undergraduates to engage in physics-related self-study and self-research.

Vice President of the Astronomy Enthusiasts Association of HUST — 2017 - 2018

Core management of the Astronomy Enthusiasts Association of HUST — 2016 - 2019
Organizing sidewalk astronomy observation and camping & stargazing trips, inviting talks by astronomy experts, writing scientific outreach content for members, live-streaming astronomical events (e.g., total lunar eclipses), giving astronomy outreach lectures at local high schools, etc.

Teaching

Teaching Assistant of

Methods in Mathematical Physics	Fall 2022
Fundamentals of Physics II	Fall 2021
Thermodynamics and Statistical Physics	Spring 2020

Publications

Han Wang , Michael J. Williams , Ian Harry , Yi-Ming Hu. “Archival Search and Property Inference of Stellar-Mass Binary Black Holes in Space-Based Gravitational Wave Observations”. In: *In prep* ().

Hong-Yu Chen , **Han Wang** , En-Kun Li , Yi-Ming Hu. “Signal-to-noise Ratio Analytic Formulae of the Inspiral Massive Black Hole Binaries in TianQin”. In: *arXiv e-prints*, arXiv:2410.19401 (Oct. 2024), arXiv:2410.19401. DOI: 10.48550/arXiv.2410.19401. arXiv: 2410.19401 [astro-ph.GA].

En-Kun Li , Hong-Yu Chen , Ya-Nan Li , Zhi-Yuan Li , **Han Wang** , Tian-Xiao Wang , Chang-Qing Ye , Xue-Ting Zhang , Yiming Hu. “Data Analysis of Space-borne Gravitational Wave Missions (in Chinese)”. In: *Sci.China Phys.Mech.Astron. (Submitted)* (2024).

Han Wang , Ian Harry , Alexander Nitz , Yi-Ming Hu. “Space-based gravitational wave observatories will be able to use eccentricity to unveil stellar-mass binary black hole formation”. In: *Phys. Rev. D* 109.6, 063029 (Mar. 2024), p. 063029. DOI: 10.1103/PhysRevD.109.063029. arXiv: 2304.10340 [astro-ph.HE].

En-Kun Li* , **Han Wang*** , Hong-Yu Chen , Huimin Fan , Ya-Nan Li , Zhi-Yuan Li , Zheng-Cheng Liang , Xiang-Yu Lyu , Tian-Xiao Wang , Zheng Wu , Chang-Qing Ye , Xue-Ting Zhang , Yiming Hu , Jianwei Mei. “GWSpace: a multi-mission science data simulator for space-based gravitational wave detection”. In: *arXiv e-prints*, arXiv:2309.15020 (Sept. 2023), arXiv:2309.15020. DOI: 10.48550/arXiv.2309.15020. arXiv: 2309.15020 [gr-qc].

Wei Su , Yan Wang , Chen Zhou , Lingfeng Lu , Ze-Bing Zhou , T. M. Li , Tong Shi , Xin-Chun Hu , Ming-Yue Zhou , Ming Wang , Hsien-Chi Yeh , **Han Wang** , P. F. Chen. “Analyses of Laser Propagation Noises for TianQin Gravitational Wave Observatory Based on the Global Magnetosphere MHD Simulations”. In: *Astrophys. J.* 914.2, 139 (June 2021), p. 139. DOI: 10.3847/1538-4357/abfc49. arXiv: 2102.10574 [astro-ph.SR].