

Ruichong Hu

CURRICULUM VITAE

Ph.D. candidate in Astronomy

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Research interests

Stellar and binary evolution; the formation and properties of neutron stars, magnetars, and black holes; compact-object binaries; gravitational-wave sources and electromagnetic transients. I combine detailed stellar and binary evolution modeling with population synthesis to connect compact-object populations and transient observations with their underlying formation physics.

Education

Ph.D. in Astronomy University of Nevada, Las Vegas, USA <i>Advisor: Prof. Bing Zhang</i>	2023–present
M.S. in Physics Guangxi University, Nanning, China <i>Advisor: Prof. En-Wei Liang</i>	2020–2023
B.S. in Physics Central China Normal University, Wuhan, China	2014–2018

Publications

[ADS library](#) | [Google Scholar](#)

First or co-lead author

5. Mass-Ratio Reversal as an Alternative to Hierarchical Mergers for GW241011.
Hu, R.-C., Qin, Y., and Zhang, B. 2026. *ApJL*, accepted. arXiv:2606.27852.
4. Formation Channels of Magnetars.
Hu, R.-C. and Zhang, B. 2026. *ApJ* 999, 102.
3. Formation of GW230529 from Isolated Binary Evolution.
Zhu, J.-P., **Hu, R.-C.**, Kang, Y., Zhang, B., Tong, H., Shao, L., and Qin, Y. 2024. *ApJ* 974, 211.
2. Formation of Fast-spinning Neutron Stars in Close Binaries and Magnetar-driven Stripped-envelope Supernovae.
Hu, R.-C., Zhu, J.-P., Qin, Y., Shao, Y., Zhang, B., Yu, Y.-W., Liang, E.-W., Liu, L.-D., Wang, B., Shu, X.-W., and Liu, J.-F. 2023. Under review. arXiv:2301.06402.
1. A Channel to Form Fast-spinning Black Hole-Neutron Star Binary Mergers as Multimessenger Sources.
Hu, R.-C., Zhu, J.-P., Qin, Y., Zhang, B., Liang, E.-W., and Shao, Y. 2022. *ApJ* 928, 163.

Co-authored

16. Reassessing the spin of second-born black holes in coalescing binary black holes and its connection to the $\chi_{\text{eff}}-q$ correlation.
Wang, Z.-Y., Qin, Y., **Hu, R.-C.**, Wang, Y.-Z., Meynet, G., and Song, H.-F. 2026. *A&A* 708, A62.
15. Magnetars in Binaries as the Engine of Actively Repeating Fast Radio Bursts.
Zhang, B. and **Hu, R.-C.** 2025. *ApJL* 994, L20.

14. Event Rate Density and Luminosity Function of Newborn-magnetar-driven X-Ray Transients from Neutron Star Binary Mergers.
Zou, L., Cheng, J.-G., **Hu, R.-C.**, Xie, W.-J., and Liang, E.-W. 2025. *ApJ* 986, 28.
13. Neutron star mergers as the dominant contributor to the production of heavy r-process elements.
Chen, M.-H., Li, L.-X., Chen, Q.-H., **Hu, R.-C.**, and Liang, E.-W. 2024. *MNRAS* 529, 1154–1160.
12. Origin of the black hole spin in lower-mass-gap black hole-neutron star binaries.
Qin, Y., Wang, Z.-H.-T., Meynet, G., **Hu, R.-C.**, Fu, C., Shu, X.-W., Wang, Z.-Y., Yi, S.-X., Tang, Q.-W., Song, H.-F., and Liang, E.-W. 2024. *A&A* 691, L19.
11. Stable case BB/BC mass transfer to form GW190425-like massive binary neutron star mergers.
Qin, Y., Zhu, J.-P., Meynet, G., Zhang, B., Wang, F.-Y., Shu, X.-W., Song, H.-F., Wang, Y.-Z., Yuan, L., Wang, Z.-H.-T., **Hu, R.-C.**, Wu, D.-H., Yi, S.-X., Tang, Q.-W., Wei, J.-J., Wu, X.-F., and Liang, E.-W. 2024. *A&A* 691, A214.
10. A Channel to Form Fast-spinning Black Hole–Neutron Star Binary Mergers as Multimessenger Sources. II. Accretion-induced Spin-up.
Wang, Z.-H.-T., **Hu, R.-C.**, Qin, Y., Zhu, J.-P., Zhang, B., Yi, S.-X., Tang, Q.-W., Shu, X.-W., Lyu, F., and Liang, E.-W. 2024. *ApJ* 965, 177.
9. Formation of lower mass-gap black hole-neutron star binary mergers through super-Eddington stable mass transfer.
Zhu, J.-P., Qin, Y., Wang, Z.-H.-T., **Hu, R.-C.**, Zhang, B., and Wu, S. 2024. *MNRAS* 529, 4554–4564.
8. MeV neutrino flash from neutron star mergers via r-process nucleosynthesis.
Chen, M.-H., **Hu, R.-C.**, and Liang, E.-W. 2023. *MNRAS* 520, 2806–2812.
7. Event Rate of Fast Radio Bursts from Binary Neutron Star Mergers.
Chen, Z.-L., **Hu, R.-C.**, Lin, D.-B., and Liang, E.-W. 2023. *ApJ* 953, 108.
6. Revisiting the properties of GW190814 and its formation history.
Lyu, F., Yuan, L., Wu, D. H., Guo, W. H., Wang, Y. Z., Yi, S. X., Tang, Q. W., **Hu, R.-C.**, Zhu, J.-P., Shu, X. W., Qin, Y., and Liang, E. W. 2023. *MNRAS* 525, 4321–4328.
5. Merging binary black holes formed through double-core evolution.
Qin, Y., **Hu, R.-C.**, Meynet, G., Wang, Y. Z., Zhu, J.-P., Song, H. F., Shu, X. W., and Wu, S. C. 2023. *A&A* 671, A62.
4. Super-Eddington accretion as a possible scenario to form GW190425.
Zhang, W. T., Wang, Z. H. T., Zhu, J.-P., **Hu, R.-C.**, Shu, X. W., Tang, Q. W., Yi, S. X., Lyu, F., Liang, E. W., and Qin, Y. 2023. *MNRAS* 526, 854–861.
3. Radioactively Powered Gamma-Ray Transient Associated with a Kilonova from Neutron Star Merger.
Chen, M.-H., **Hu, R.-C.**, and Liang, E.-W. 2022. *ApJL* 932, L7.
2. Searching for Candidates of Coalescing Binary Black Holes Formed through Chemically Homogeneous Evolution in GWTC-3.
Qin, Y., Wang, Y.-Z., Bavera, S. S., Wu, S., Meynet, G., Wang, Y.-Y., **Hu, R.-C.**, Zhu, J.-P., Wu, D.-H., Shu, X.-W., Peng, F.-K., Song, H.-F., and Wei, D.-M. 2022. *ApJ* 941, 179.
1. Long-duration Gamma-Ray Burst and Associated Kilonova Emission from Fast-spinning Black Hole–Neutron Star Mergers.
Zhu, J.-P., Wang, X. I., Sun, H., Yang, Y.-P., Li, Z., **Hu, R.-C.**, Qin, Y., and Wu, S. 2022. *ApJL* 936, L10.

Computing allocations

ACCESS–SDSC | 750,000 CPU hours
Project: The Origin of Fast Radio Bursts

2025–present

Talks & posters

• Graduate Seminar, HKIAA, The University of Hong Kong	May 2026
• NCfA Symposium, University of Nevada, Las Vegas	Apr. 2026
• 22nd AAS High Energy Astrophysics Division (HEAD) Meeting, St. Louis (poster)	Oct. 2025
• 3rd Fast Radio Bursts Workshop, Beijing	Jun. 2025
• Fast Radio Burst Frontiers: Unveiling Their Origins with Multi-Wavelength and Multi-Messenger Synergy, Pittsburgh	Mar. 2025
• NCfA Symposium, University of Nevada, Las Vegas	Feb. 2025
• NCfA Symposium, University of Nevada, Las Vegas (poster)	Mar. 2024

Teaching

Laboratory Instructor, PHYS 151L: General Physics I Lab	Fall 2023–Spring 2026
Laboratory Instructor, PHYS 195L: Physics for Scientists and Engineers Lab A	Fall 2023–Spring 2026

Awards & assistantships

UNLV Top-Tier Doctoral Graduate Research Assistantship	2024–2025
National Scholarship for Graduate Students	2022
First-Class Graduate Academic Scholarship	2021–2022
First Prize, Huazhong District Undergraduate Mathematical Modeling Invitational Contest	2017
First Prize, China Undergraduate Mathematical Contest in Modeling (CUMCM), Hubei	2016

References

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University of Nevada, Las Vegas
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Prof. En-Wei Liang (M.S. advisor)
Guangxi University
Email: lew@gxu.edu.cn

Prof. Yun-Wei Yu
Central China Normal University
Email: yuyw@mail.ccnu.edu.cn