

Yuexin ZHANG

Date of birth: 13 November 1996

Citizenship: Chinese (Passport), Dutch (Residence Permit)

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Education

Kapteyn Astronomical Institute, University of Groningen, NL Oct 2019–Sep 2023

PhD Candidate in Astronomy. Advisor: Mariano Méndez and Diego Altamirano

Department of Physics, Fudan University, CN Sep 2015–June 2019

B.S. (*Honor*) in Physics. Advisor: Cosimo Bambi

Hamburg University, DE Jul 2018

Summer Exchange Student

Previous Academic Positions

University of Southampton, UK Feb 2023

Visiting Researcher. PI: Diego Altamirano

Institute of High-Energy Physics, CAS, CN Mar 2021–Mar 2022

Visiting Researcher. PI: Shuang-Nan Zhang and Jin-Lu Qu

Shanghai Astronomical Observatory, CAS, CN Jun 2019–Sep 2019

Summer Visiting Student. PI: Wenfei Yu

Honors and Awards

NWO Rubicon Fellowship ($\sim 150,000$ EUR) 2023–2025

“New light on the origin of X-ray variability in Galactic accreting black holes”

CSC and UoG Joint Scholarship ($\sim 100,000$ EUR) 2019–2023

“Spectral variability of compact X-ray sources”

Shanghai Outstanding Graduate 2019

Wangdao Scholar (named after the former president of Fudan) 2019

Fudan’s Undergraduate Research Opportunities Program (10,000 CNY) 2018–2019

“Testing general relativity using X-ray reflection spectroscopy”

Member

Insight-HXMT Team 2021–Present

Observation

[1] *Insight-HXMT*, PI: Zhang, > 3 ms

Publications

[1] **Zhang, Y.**, Méndez, M., Motta, S. et al. (2023). A systematic study of the high-frequency bump in the black-hole low-mass X-ray binary GX 339–4. *About to submit*.

- [2] Jin, P., Zhang, G., **Zhang, Y.** et al. (2023). The bright black hole X-ray binary 4U 1543–47 during 2021 outburst - I. A clear state transition from super-Eddington to sub-Eddington accretion revealed by Insight-HXMT. *Submitted to MNRAS*.
- [3] Ma, R., Méndez, M., García, F. et al., **incl. Zhang, Y.** (2023). Variable corona during the transition from type-C to type-B quasi-periodic oscillations in the black hole X-ray binary MAXI J1820+070. *Monthly Notices of the Royal Astronomical Society*, 525(1), 854-875
- [4] Yang, Z. X., Zhang, L., Zhang S. N., **incl. Zhang, Y.** (2023). Fast transitions of X-ray variability in the black hole transient GX 339–4: comparison with MAXI J1820+070 and MAXI J1348–630. *Monthly Notices of the Royal Astronomical Society*, 521(3), 3570-3584
- [5] **Zhang, Y.**, Méndez, M., García, F. et al. (2023). A NICER look at the jet-like corona of MAXI J1535–571 through type-B quasi-periodic oscillation. *Monthly Notices of the Royal Astronomical Society*, 520(4), 5144-5156
- [6] **Zhang, Y.**, Méndez, M., García, F. et al. (2022). The evolution of the high-frequency variability in the black hole candidate GRS 1915+105 as seen by RXTE. *Monthly Notices of the Royal Astronomical Society*, 514(2), 2891-2901
- [7] García, F., Karpouzas, K., Méndez, M. et al., **incl. Zhang, Y.** (2022). The evolving properties of the corona of GRS 1915+105: a spectral-timing perspective through variable-Comptonization modelling. *Monthly Notices of the Royal Astronomical Society*, 513(3), 4196-4207.
- [8] Liu, H., Fu, Y., Bambi, C. et al., **incl. Zhang, Y.** (2022). The disk wind in GRS 1915+105 as seen by Insight-HXMT. *The Astrophysical Journal*, 933(2), 122.
- [9] Yang, Z. X., Liang, Z., Bu, Q. C. et al., **incl. Zhang, Y.** (2022). The accretion flow geometry of MAXI J1820+070 through broadband noise research with Insight-HXMT. *The Astrophysical Journal*, 932(1), 7.
- [10] **Zhang, Y.**, Méndez, M., García, F. et al. (2022). The evolution of the corona in MAXI J1535-571 through type-C quasi-periodic oscillations with Insight-HXMT. *Monthly Notices of the Royal Astronomical Society*, 512(2), 2686-2696.
- [11] Méndez, M., Karpouzas, K., García, F. et al., **incl. Zhang, Y.** (2022). Coupling between the accreting corona and the relativistic jet in the microquasar GRS 1915+105. *Nature Astronomy*, 6(5), 577-583.
- [12] Karpouzas, K., Méndez, M., García, F. et al., **incl. Zhang, Y.** (2021). A variable corona for GRS 1915+105. *Monthly Notices of the Royal Astronomical Society*, 503(4), 5522-5533.
- [13] Tripathi, A., **Zhang, Y.**, Abdikamalov, A. B. et al. (2021). Testing general relativity with NuSTAR data of galactic black holes. *The Astrophysical Journal*, 913(2), 79.
- [14] Abdikamalov, A. B., Ayzenberg, D., Bambi, C. et al. **incl. Zhang, Y.** (2021). Implementation of a radial disk ionization profile in the relxill_nk model. *Physical Review D*, 103(10), 103023.
- [15] Liu, H., Ji, L., Bambi, C. et al., **incl. Zhang, Y.** (2021). Testing evolution of LFQPOs with mass accretion rate in GRS 1915+105 with Insight-HXMT. *The Astrophysical Journal*, 909(1), 63.
- [16] **Zhang, Y.**, Abdikamalov, A. B., Ayzenberg, D. et al. (2019). Tests of the Kerr hypothesis with GRS 1915+105 using different RELXILL flavors. *The Astrophysical Journal*, 884(2), 147.
- [17] **Zhang, Y.**, Abdikamalov, A., Ayzenberg, D. et al. (2019). About the Kerr nature

of the stellar-mass black hole in GRS 1915+105, *The Astrophysical Journal*, 875 (1), 41.

- [18] **Zhang, Y.**, Zhou, M., & Bambi, C. (2018). Iron line spectroscopy of black holes in asymptotically safe gravity. *The European Physical Journal C*, 78 (5), 376.

Conferences and Talks

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|------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| [1] | The first Vasto accretion meeting, Vasto, IT | 19–23 Jun 2023 |
| | <i>“The corona-jet evolution of black-hole X-ray transients MAXI J1535–571 and MAXI J1820+070 (Poster)”</i> | |
| [2] | 10th microquasar workshop, Crete, GR | 22–26 May 2023 |
| | <i>“The jet-like corona of black-hole X-ray transient from the HIMS to the SIMS”</i> | |
| [3] | Nederlandse Astronomen Conferentie 2023, Leeuwarden, NL | 15–17 May 2023 |
| | <i>“Corona as the energy reservoir for radio jet: a case study of GRS 1915+105 (Poster)”</i> | |
| [4] | NOVA network NW3, Amsterdam, NL | 19 Jan 2023 |
| | <i>“The jet-like corona of black-hole X-ray transients from the HIMS to the SIMS”</i> | |
| [5] | 44th COSPAR scientific assembly, Athens, GR | 16–24 Jul 2022 |
| | <i>“Corona evolution of MAXI J1535–571 revealed by type-C quasi-periodic oscillations observed with Insight-HXMT”</i> | |
| | <i>“The evolution of the high-frequency variability in GRS 1915+105 as seen by RXTE (Poster)”</i> | |
| [6] | Black hole accretion under the X-ray microscope, Madrid, ES | 14–17 Jun 2022 |
| | <i>“The evolution of the corona in MAXI J1535–571 through type-C quasi-periodic oscillations with Insight-HXMT (Poster)”</i> | |
| [7] | China astronomy annual meeting (online), Nanchong, CN | 2–6 Dec 2021 |
| | <i>“Mapping the Comptonization region of black holes up to 100 keV through quasi-periodic oscillations in the intermediate state with Insight-HXMT”</i> | |
| [8] | 9th China-EU Insight-HXMT video meeting (online), Beijing, CN | 11–12 Oct 2021 |
| [9] | The future of X-ray timing, Amsterdam, NL | 21–25 Oct 2019 |
| [10] | Recent progress in relativistic astrophysics, Shanghai, CN | 6–8 May 2019 |