Yuexin ZHANG

Date of birth: 13 November 1996
Citizenship: Chinese (Passport)
Contact details: Center for Astrophysics, Harvard & Smithsonian,
60 Garden St, Cambridge, MA 02138, USA
Tel (+1) 3392429190 — E-mail yuexin.zhang@cfa.harvard.edu

Employment

Center for Astrophysics, Harvard & Smithsonian, US Nov 2023–present
NWO Rubicon Fellow
Kapteyn Astro. Institute, University of Groningen, NL Oct 2023–present
NWO Rubicon Fellow

Education

Kapteyn Astro. Institute, University of Groningen, NL Oct 2019–Sep 2023
PhD 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 ($\sim$ 150k EUR) 2023–2025
"New light on the origin of X-ray variability in Galactic accreting black holes"
CSC and UoG Scholarship ($\sim$ 100k 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 (10k CNY) 2018–2019
"Testing general relativity using X-ray reflection spectroscopy"

Member

IXPE Science Team 2024–present
NICER Science Team 2023–present

Insight-HXMT Science Team 2021–2022

Professional Service

Panelist for NASA proposals 2024

Observation

[1] Co-I, *IXPE* Cycle 1, *"Evolving slim-disk polarization with LMC X-3"*, PI: Steiner, 1.2 ms

[2] PI, *Insight*-HXMT AO–6, *"Unravelling the origin of fast time variability in X-ray binaries with Insight-HXMT"*, 3.6 ms

[3] PI, *Insight*-HXMT AO–5, *"On the QPO properties of a black-hole X-ray binary"*, 10 ks

Publications

[1] Jin, P., Zhang, G., **Zhang, Y.** et al. (2024). *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.

[2] Zhao, S., Tao, L., Li, P., **incl. Zhang, Y.** et al. (2024). *The bright black hole X-ray binary 4U 1543−47 during 2021 outburst: a thick accretion disk inflated by high luminosity*. Accepted by A&A.

[3] **Zhang, Y.**, Méndez, M., Motta, S. et al. (2024). *A systematic study of the high-frequency bump in the black-hole low-mass X-ray binary GX 339−4*. Monthly Notices of the Royal Astronomical Society, 527(3), 5638-5648

[4] Zhang, L., Méndez, M., García, F. et al., **incl. Zhang, Y.** (2023). *Type-A quasi-periodic oscillation in the black hole transient MAXI J1348−630*. Monthly Notices of the Royal Astronomical Society, 526(3), 3944-3950

[5] 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

[6] 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

[7] **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

[8] **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

[9] 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.

[10] 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.

[11] 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.

[12] **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.

[13] 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.

[14] 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.

[15] Tripathi, A., **Zhang, Y.**, Abdikamalov, A. B. et al. (2021). T*esting general relativity with NuSTAR data of galactic black holes.* The Astrophysical Journal, 913(2), 79.

[16] 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.

[17] 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.

[18] **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.

[19] **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.

[20] **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

[1] Seminar, Wuhan, CN — 8 Oct 2023
"The accretion-ejection coupling in Galactic accreting balck holes"

[2] Seminar, Amsterdam, NL — 13 Sep 2023
"The accretion-ejection coupling in Galactic accreting balck holes"

[3] Seminar, Kunming, CN — 14 Aug 2023
"The accretion-ejection coupling in Galactic accreting balck holes"

[4] Seminar, Shanghai, CN — 1 Aug 2023
"The accretion-ejection coupling in Galactic accreting balck holes"

[5] Seminar, Beijing, CN — 27 Jul 2023
"The accretion-ejection coupling in Galactic accreting balck holes"

[6] The First Vasto Accretion Meeting, Vasto, IT — 19–23 Jun 2023
"The corona-jet evolution of black-hole X-ray transients MAXI J1535−571 and MAXI J1820+070 (Poster)"

[7] 10th Microquasar Workshop, Crete, GR — 22–26 May 2023
"The jet-like corona of black-hole X-ray transient from the HIMS to the SIMS"

[8] Nederlandse Astronomen Conferentie 2023, Leeuwarden, NL — 15–17 May 2023

"Corona as the energy reservoir for radio jet: a case study of GRS 1915+105 (Poster)"

[9] NOVA Network NW3, Amsterdam, NL 19 Jan 2023
"The jet-like corona of black-hole X-ray transients from the HIMS to the SIMS"

[10] 44th COSPAR Scientific Assembly, Athens, GR 16–24 Jul 2022
"Corona evolution of MAXI J1535−571 revealed by type-C quasi-periodic oscillations observed with Insight-HXMT"
"The evolution of the high-frequency variability in GRS 1915+105 as seen by RXTE (Poster)"

[11] Black Hole Accretion under the X-ray Microscope, Madrid, ES 14–17 Jun 2022
"The evolution of the corona in MAXI J1535−571 through type-C quasi-periodic oscillations with Insight-HXMT (Poster)"

[12] China Astronomy Annual Meeting (online), Nanchong, CN 2–6 Dec 2021
"Mapping the Comptonization region of black holes up to 100 keV through quasi-periodic oscillations in the intermediate state with Insight-HXMT"

[13] The future of X-ray timing, Amsterdam, NL 21–25 Oct 2019

[14] Recent progress in relativistic astrophysics, Shanghai, CN 6–8 May 2019

References

Prof. Mariano Méndez: mariano@astro.rug.nl
Dr. James ("Jack") Steiner: james.steiner@cfa.harvard.edu
Prof. Diego Altamirano: d.altamirano@soton.ac.uk
Prof. Shuang-Nan Zhang: zhangsn@ihep.ac.cn
Prof. Cosimo Bambi: bambi@fudan.edu.cn