

Hanyuan Zhang

PHD STUDENT · ASTRONOMY

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Education

Institute of Astronomy, University of Cambridge / Churchill College

PHD IN ASTRONOMY

Cambridge, UK

Oct. 2023 - Present

- Supervisor: Prof. Vasily Belokurov and Prof. Wyn Evans
- Thesis (TBD): Dynamical evolution in the Milky Way's disc and bar

Institute of Astronomy, University of Cambridge / King's College

MAST IN ASTROPHYSICS

Cambridge, UK

Oct. 2022 - Jul. 2023

- Distinction (88% overall), Top of cohort
- Thesis: A pristine view of the Milky Way with very metal-poor stars

Imperial College London

BSC IN PHYSICS WITH THEORETICAL PHYSICS

London, UK

Oct. 2019 - Jul. 2022

- First Class Honours (84.93% overall)
- Year 3 Module (85.46%)
- Year 2 Module (84.07%)
- Year 1 Module (78.29%)

Awards & Scholarships

2025	Murdin Prize , Institute of Astronomy, University of Cambridge For the best published journal paper produced by a current Ph.D. student	£250
	MNRAS Student Prize , Royal Astronomical Society (link) For the best paper published in the <i>Monthly Notices of the Royal Astronomical Society</i> by a student scientist	£500
2023	STFC PhD Doctoral Training Partnership studentship , UKRI Funding for the PhD studentship at the Institute of Astronomy for 3.5 years	£50000/year
2022	Dean's List , Imperial College London For students who are in the top 10% of their program	
2021	Dean's List , Imperial College London For students who are in the top 10% of their program	

Publications

- 8 first-author publications (2023-2025), 148 citations until December 2025
- 7 co-author publications (2024-2025), 160 citations until December 2025
- H-index of 10
- The full publication list is [here](#).

SELECTED PUBLICATION HIGHLIGHTS

Observational Constraints of Radial Migration in the Galactic Disk Driven by the Slowing Bar, 2025, *ApJL*, 983, 10., HanYuan Zhang, Vasily Belokurov, N. Wyn Evans, Jason L. Sanders, Yuxi L. Lu, Chengye Cao, GyuChul Myeong, *et al.*

Kinematics and dynamics of the Galactic bar revealed by *Gaia* long period variables, 2024, *MNRAS*, 533, 3395
HanYuan Zhang, Vasily Belokurov, N. Wyn Evans, Sarah G. Kane, Jason L. Sanders

A kinematic calibration of the Mira variable period–age relation, 2023, *MNRAS*, 521, 1462
Hanyuan Zhang, Jason L. Sanders

Conference & Talks

- 1 invited talks, 7 contributed talks, and 2 contributed posters at international conferences
- 9 invited seminar talks at university around the world

CONFERENCE TALKS

2025	Invited talk: Stellar migration in a gas-rich galactic disc , ALMA, JWST, Gaia – the Milky Way connection	Paris, France
	Contributed talk: Signatures of bar-driven radial migration in the Milky Way's disc , National Astronomy Meeting: Revealing the Galactic dynamics with Gaia	Durham, UK
	Contributed talk: Origin of the disc's α-bimodality and the bar-driven radial migration , National Astronomy Meeting: Evolution of Barred Galaxies	Durham, UK
	Contributed talk: Radial migration in the Galactic disc with a decelerating bar , Gravity in the Local Group	Pittsburgh, US
2024	Contributed talk: A panoramic photograph of the Galactic bar from long-period variables , Waves in the Milky Way Disk	ShangHai, China
	Contributed talk: A panoramic photograph of the Galactic bar from long-period variables , NAM: Revealing the Galactic Ecosystems of the Milky Way with Gaia and GaiaNIR	Hull, UK
	Contributed talk: What is rotating in the very metal-poor Milky Way: a disc or a halo , The Milky Way Assembly Tale conference	Bologna, Italy
2023	Contributed talk: Do we have an early disc in the Milky Way , The Milky Way and its high-redshift progenitors in theory and observations	Cambridge, UK

SELECTED SEMINAR TALKS

2026	Secular evolution of the Galactic disc , Institute of Cosmos Sciences of the University of Barcelona (ICCUB)	Barcelona, Spain
2025	Modelling the secular evolution of the Galactic disc , National Astronomical Observatories of China (NAOC)	Beijing, China
2025	Secular evolution of the Milky Way's disc , University of Surrey	Guildford, UK
	A time-resolved kinematic map of the inner Milky Way , Durham University	Durham, UK
	Formation time of the Galactic disc from bar chrono-kinematics , Insitute of Astronomy	Cambridge, UK
2024	A panoramic photograph of the inner Milky Way , Shanghai JiaoTong University	ShangHai, China

Teaching & Leadership

PROJECT SUPERVISION:

- PartIII (master's) project: Revealing phase-space chevrons with RR Lyrae: the Galactic bar and its interaction with the dark matter halo (Oct. 2025– Jul. 2026)
- PartIII (master's) project: Uncovering the origin of the azimuthal metallicity variations in the Galactic disc (Oct. 2024– Jul. 2025)

CONFERENCE ORGANISATION:

- LOC member, BeyondHubble: Revisiting the Hubble Sequence Across Cosmic Time, Kavli Institute for Cosmology, Cambridge, April 2026

Memberships & Collaborations

- Member of the DESI collaboration (Milky Way Survey working group)
- Member of the international Pristine collaboration
- Member of the international Synergy collaboration
- Co-I of 3 successful ESO/VLT proposal

Outreach & Services

- Reviewer for A&A and AAS journals
- Local host for summer students visiting Cambridge and the Institute of Astronomy
- Institute of Astronomy's Open Day 2024, co-host of the astronomy sonification session

Publication list

Publication summary: 15 publications in various peer-reviewed journals including Monthly Notices of the Royal Astronomical Society (MNRAS), Astronomy & Astrophysics (A&A), and The Astrophysical Journal Letter (ApJL).

FIRST AUTHORED PUBLICATIONS

- 2025 | **H. Zhang**, V. Belokurov, J. L. Sanders *et al.* — *Orbital migration and heating history of the Galactic disc: a transition between the bimodal discs*, 2025, MNRAS submitted ([arxiv:2512.09987](#))
- H. Zhang**, T. Tepper-García, V. Belokurov, *et al.* — *Enhanced rates of stellar radial migration in gas-rich discs at high redshift*, 2025, MNRAS submitted ([arxiv:2512.09030](#))
- H. Zhang**, G. Iorio, V. Belokurov, *et al.* — *Revealing the ages of metal-rich RR Lyrae via kinematic label transfer*, 2025, MNRAS in press.
- H. Zhang**, V. Belokurov, N.W. Evans, *et al.* — *Observational Constraints of Radial Migration in the Galactic Disk Driven by the Slowing Bar*, 2025, ApJL, 983, 10.
- 2024 | **H. Zhang**, V. Belokurov, N.W. Evans, Z.-Y. Li, J. Sanders, A. Arentsen — *Deciphering the Milky Way disc formation time encrypted in the chrono-kinematics of the bar*, 2024, MNRAS, 535, 2873
- H. Zhang**, V. Belokurov, N.W. Evans, S. Kane, J. Sanders — *Kinematics and dynamics of the Galactic bar revealed by Gaia long period variables*, 2024, MNRAS, 533, 3395
- H. Zhang**, A. Arentsen, V. Belokurov — *On the existence of a very metal-poor disc in the Milky Way*, 2024, MNRAS, 533, 889
- 2023 | **H. Zhang**, J. L. Sanders — *A kinematic calibration of the Mira variable period–age relation*, 2023, MNRAS, 521, 1462

CO-AUTHORED PUBLICATIONS

- 2025 | S. Kane, V. Belokurov, *et al.* (incl. **H. Zhang**) — *On the connection between nitrogen-enhanced field stars and the Galactic globular clusters*, 2025, MNRAS submitted ([arxiv:2509.04659](#)).
- E. Sola, V. Belokurov, *et al.* (incl. **H. Zhang**) — *STRRINGS: STReams in Residual Images of Nearby Galaxies*, 2025, MNRAS in press
- N. Funakoshi, D., Kawata, *et al.* (incl. **H. Zhang**) — *Thick-to-thin disc transition and gas disc shrinking induced by the Gaia-Sausage-Enceladus merger*, 2025, MNRAS in press.
- A. Dillamore, J. L. Sanders, V. Belokurov, **H. Zhang** — *Dynamical streams in the local stellar halo*, 2025, MNRAS, 541, 214
- S. Kane, V. Belokurov *et al.* (incl. **H. Zhang**) — *The Ones That Got Away: Chemical Tagging of Globular Cluster-Origin Stars with Gaia BP/RP Spectra*, 2025, MNRAS, 536, 2507
- 2024 | N. Martin, E. Starkenburg *et al.* (incl. **H. Zhang**) — *The Pristine survey – XXIII. Data Release 1 and an all-sky metallicity catalogue based on Gaia DR3 BP/RP spectro-photometry*, 2024, A&A 692, 115
- A. Arentsen, G. Monari *et al.* (incl. **H. Zhang**) — *The Pristine Inner Galaxy Survey - VIII. Characterizing the orbital properties of the ancient, very metal-poor inner Milky Way*, 2024, MNRAS, 530, 3391