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Curriculum Vitae

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Research Interests

■ Identifications of X-ray counterparts to neutron stars, millisecond pulsars (MSPs), etc., and understanding the nature of X-ray emission from these systems;
■ General studies of MSPs in the Galactic globular clusters;
■ Phenomena that might be related to pulsars, such as the Galactic Center gamma-ray excess, magnetars, long-period transients, and fast radio bursts.

Education

- **Ph.D. in Astrophysics**, University of Alberta, Canada **August 2025**
  Thesis Title: "The Fascinating Neutron Stars in X-rays: Millisecond Pulsars, Globular Clusters, and Beyond"
  Supervisor: Prof. Craig Heinke

- **M.Sc. in Physics**, University of Alberta, Canada **September 2021**
  Thesis Title:"X-ray Millisecond Pulsars in the Galactic Globular Cluster"
  Supervisor: Prof. Craig Heinke

- **B.Sc. in Physics**, Southwest University, China **June 2018**
  Advisor: Prof. Xiaopeng You

Employment

- **Shuimu Postdoctoral Fellow** October 2025 – Present
  Department of Astronomy, Tsinghua University Beijing, China

- **Teaching Assistant** September, 2019 – December, 2021
  Department of Physics, University of Alberta Edmonton, AB, Canada
  Teaching assistant of *Physics of Energy*, *Modern Physics*, *Galactic & Extragalactic Astrophysics*, etc.

Publications

(with my name in bold and supervisor's name underlined)

1. **Zhao, J.**, Heinke, C. O., Shternin, P. S., Ho, W. C., Ofengeim, D. D., & Patnaude, D. (2025). Verification of Cas A neutron star cooling rate using Chandra HRC-S observations. *The Astrophysical Journal*, 991(2), 136. doi: 10.3847/1538-4357/adfdcf. arXiv: 2508.15161.

2. Kumawat, G., Heinke, C. O., **Zhao, J.**, Bahramian, A., Cohn, H. N., & Lugger, P. M. (2025). A Comprehensive Analysis of X-Ray Sources in Terzan 5 Using Chandra Observations. *The Astrophysical Journal*, 990(2), 218. doi: 10.3847/1538-4357/adf724. arXiv: 2508.02526.

3. **Zhao, J.**, Heinke, C. O., & Fu, S. (2025). A deep Chandra study confirms diffuse non-thermal X-ray emission from the globular cluster Terzan 5. *Astronomy & Astrophysics*, 693, A107. doi: 10.1051/0004-6361/202451217. arXiv: 2412.03788.

4. Zhao, Y., D' Antona, F., Milone, A. P., Heinke, C., **Zhao, J.**, Lugger, P., & Cohn, H. (2024). Exploration of faint X-ray and radio sources in the massive globular cluster M14: A UV-bright counterpart to Nova Ophiuchus 1938. *Monthly Notices of the Royal Astronomical Society*, 527(4), 11491-11506. doi: 10.1093/mnras/stad3980. arXiv: 2401.02854.

5. Zhang, L., Freire, P. C., Ridolfi, A., Pan, Z., **Zhao, J.**, Heinke, C. O., ... & Li, D. (2023). Discovery and Timing of Millisecond Pulsars in the Globular Cluster M5 with FAST and Arecibo. *The Astrophysical Journal Supplement Series*, 269(2), 56. doi: 10.3847/1538-4365/acfb03. arXiv: 2312.05835.

6. **Zhao, J.**, & Heinke, C. O. (2023). A Chandra X-ray study of millisecond pulsars in the globular cluster Omega Centauri: a correlation between spider pulsar companion mass and X-ray luminosity. *Monthly Notices of the Royal Astronomical Society*, 526(2), 2736-2753. doi: 10.1093/mnras/stad2930. arXiv: 2309.13189.

7. Lugger, P. M., Cohn, H. N., Heinke, C. O., **Zhao, J.**, Zhao, Y., & Anderson, J. (2023). Exotica in the Globular Cluster M4, Studied with Chandra, HST, and the VLA. *Monthly Notices of the Royal Astronomical Society*, doi: 10.1093/mnras/stad1887. arXiv: 2306.11770.

8. **Zhao, J.**, & Heinke, C. O. (2022). A census of X-ray millisecond pulsars in globular clusters. *Monthly Notices of the Royal Astronomical Society*, 511(4), 5964-5983. doi: 10.1093/mnras/stac442. arXiv: 2202.07040.

9. **Zhao, J.**, Zhao, Y., & Heinke, C. O. (2021). Chandra and HST studies of six millisecond pulsars in the globular cluster M13. *Monthly Notices of the Royal Astronomical Society*, 502(2), 1596-1604. doi: 10.1093/mnras/stab117. arXiv: 2101.07986.

Seminars & Conference Presentations

- "Verification of Cas A neutron star cooling rate Using Chandra HRC-S observations" (poster), CASCA Annual General Meeting, Halifax, NS, Canada (June 2025) / European Astronomical Society Annual General Meeting, Cork, Ireland (June 2025)
- "Chandra X-ray study of millisecond pulsars in the globular cluster Omega Centaur" (poster), CASCA Annual General Meeting, Penticton, BC, Canada (June 2023)

- "X-ray millisecond pulsars in globular clusters" (30-minute talk), Clusters Workshop at McMaster University, Hamilton, ON, Canada (August, 2022)
- "A census of X-ray millisecond pulsars in globular clusters" (poster), CASCA Annual General Meeting, Online (May 2022)
- "Chandra X-ray observations of 6 millisecond pulsars in the globular cluster M13" (poster), CASCA Annual General Meeting, Online (May 2020)

Awards and Fellowships

- **China Scholarship Council Scholarship**, China Scholarship Council (September 2021–August 2025), 26,400 CAD stipend per year plus tuition costs
- **Hanhong Scholarship**, Hanhong College, Southwest University (2020), 5,000 RMB
- **University of Alberta Graduate Fellowship**, University of Alberta (September 2019–August 2020), 8,000 CAD

Skills

- **Programming**: Python, HTML
- **Software**: CIAO, SHERPA, ds9, BXA, TOPCAT, etc.