TONG BAO

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I am a fifth-year (final year) PhD. candidate at Nanjing University under the supervision of Prof. Zhiyuan Li (2019-2024 expected). Before that, I achieved the B.S. degree from Nanjing University. My research interest primarily lie in the (quasi-) **periodic variations of X-ray sources**, such as X-ray binaries, cataclysmic variables, AGNs. I look for the time-varying characteristics of these objects and study their populations through X-ray observations. I am also interested in stellar dynamics in dense environments (e.g., Globular clusters). I study effects of cluster environment on formation and evolution of close binaries based on observational evidence. In addition to astrophysical research, I am also interested in development and deployment of methods in data-intensive research, particularly in the time domains.

Education

- 2019-: PhD, Nanjing University
  - Major: High Energy Astrophysics
  - Thesis: Time-varying Characteristics of X-ray Source
  - Advisor: Professor Zhiyuan Li
- 2015-2019: Bachelors of Science, Nanjing University,
  - Major: Astronomy

Research Interests

- Periodic variations of X-ray sources (X-ray binaries, cataclysmic variables, etc)
- Quasi-periodic oscillations/eruptions of AGNs
- Stellar dynamics in dense environments
- X-ray Instrumentation

Publications

[1] **Bao, T.**, Li, Z., & Cheng, Z. 2023, MNRAS, 521, 4257, "Periodic X-ray sources in the massive globular cluster 47 Tucanae: Evidence for dynamically formed cataclysmic variables" [ADS]

[2] **Bao, T.**, & Li, Z. 2022, MNRAS, 509, 3504, "Searching for quasi-periodic oscillations in active galactic nuclei of the Chandra Deep Field South" [ADS]

[3] **Bao, T.**, & Li, Z. 2020, MNRAS, 498, 3513, "Periodic X-ray sources in the Galactic bulge: application of the Gregory-Loredo algorithm" [ADS]

[4] Yu, Z.-l., Xu, X.-j., Li, X.-D., **Bao, T.**, et al. 2018, ApJ, 853, 182, "An Empirical Correlation of T_{max}-M_{WD} of Dwarf Novae and the Average White Dwarf Mass in Cataclysmic Variables in the Galactic Bulge" [ADS]

Seminars and Conference Oral Presentations

- The 20th Meeting of the High Energy Astrophysics Division of the AAS, Waikōloa, Hawaii, 2023. Title: "Periodic X-ray sources in globular clusters : diagnosing dynamical formation and evolution of cataclysmic variables" (Talk)
- Department Colloquium, Columbia University, Department of Physics, New York, NY (2023). Title: "Periodicities in X-ray sources: diagnosing the nature and evolution for exotic binaries in dense environment" (Talk)
- Chandra Data Science: Novel Methods in Computing and Statistics for X-ray Astronomy, 2021. Title: "Searching for Quasi-periodic Oscillations of Active Galactic Nuclei in the Chandra Deep Field South" (Talk)
- Chandra Frontiers in Time-Domain Science, 2020. Title: "Periodic X-ray Sources in the Galactic Center/Bulge – Application of the Gregory-Loredo Algorithm" (Talk)
- Research on the Variations of Active Galactic Nuclei, Xiamen, China, 2023. Title: "Searching for Quasi-periodic Oscillations in Active Galactic Nuclei of the Chandra Deep Field South" (Talk)
- Structure, Formation, and Evolution of Star Clusters, Zhuhai, China, 2023. Title: "Periodic X-ray sources in globular clusters : diagnosing dynamical formation and evolution of cataclysmic variables" (Talk & Poster)
- The 60th Anniversary of X-Ray Astronomy: X-ray Astronomy in the Time-domain & Multi-messenger Era, Beijing, China, 2022. Title: "Searching for Quasi-periodic Oscillations in Active Galactic Nuclei of the Chandra Deep Field South" (Talk)
- 2021-2022 Academic Annual Meeting of Jiangsu Astronomical Society, Nanjing, China, 2022. Title: "Periodic X-ray sources: Diagnosing dynamical origin of exotic binaries in the massive globular cluster 47 Tucanae" (Talk)
- The 4th X-ray binary Multi-Band research Symposium, Kunming, China, 2021. Title: "Periodic X-ray sources: Diagnosing dynamical origin of exotic binaries in the massive globular cluster 47 Tucanae" (Talk)
- The 3rd X-ray binary Multi-Band research Symposium, Jinan, China, 2020. Title: "Periodic X-ray Sources in dense environment" (Talk)

Teaching

- **Teaching Assistant.** "An Introduction to X-ray Astronomy", 2022 spring, 2021 spring and 2020 spring.
  In this class, I led the X-ray data processing training project[1]. I taught students how to reduce the X-ray data, analyze the spectrum and light curves of CVs, X-ray binaries, ULXs, AGNs, etc.
- **Peer mentor** of Nanjing university during 2015-2018. I assist the classmates and freshmen with Calculus and Physics Courses.

[1] https://github.com/baotong6/xray_astronomy

Awards

- The Principal Special Scholarship for PhD students of Nanjing University in 2019
- The annual scholarship of National Astronomical Observatory, Chinese Academy of Sciences, in 2017
- The second-Class People's Scholarship in 2017
- The Third-Class People's Scholarship in 2016

Scientific Collaborations and Outreach

- Member of the The High Energy X-ray Probe (HEX-P) Collaboration (2023-present)
- Visitor in the Columbia Astrophysics Laboratory at Columbia University, New York. (April 2023)
- Research Assistant in the Columbia Astrophysics Laboratory at Columbia University, New York. (June 2018 - September 2018)

Public Outreach

- Volunteer for the Summer Camp for High School Students at the School of Astronomy and Space Science, 2022
- Volunteer for Undergraduate Summer Camp at the School of Astronomy and Space Science, 2021
- Speaker for astronomy lectures in Zuo Dijiang Observatory Open Day Activities, 2020
- Volunteer for Zuo Dijiang Observatory Open Day Activities, 2023
- Volunteer for "Astronomical Night for Public" Activity of Zuo Dijiang Observatory, Nanjing university, 2021-2023

Declaration

I hereby declare that the above written particulars are true to my knowledge and belief.

Place : Nanjing BAO TONG
Date :2023.7.3