Claire Shi Ye

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Education

Northwestern University, USA August 2022
Ph.D. Astronomy, Advisor: Frederic A. Rasio

Northwestern University, USA 2016
M.Sc. Physics, Advisor: Melville P. Ulmer

Zhejiang University, China 2015
B.Sc. Physics · GPA: 3.82

Honors & Awards

CITA Postdoctoral Fellowship 2022-present

IOP Publishing Top Cited Paper Award 2023
For the article 'On the Rate of Neutron Star Binary Mergers from Globular Clusters', Ye, C. S., et al. 2020, ApJL, 888, L10-22. One of the most cited papers from North America published across the entire IOP Publishing journal portfolio for 2020-2022. Top 1% of most cited articles in the Astronomy and Astrophysics subject category.

IOP Publishing Top Cited Paper Award 2023
For the article 'Modeling Dense Star Clusters in the Milky Way and Beyond with the CMC Cluster Catalog', Kremer, K., Ye, C. S., et al. 2020, ApJS, 247, 48. One of the most cited papers from North America published across the entire IOP Publishing journal portfolio for 2020-2022. Top 1% of most cited articles in the Astronomy and Astrophysics subject category.

Reach for the Stars Fellowship 2018-2019 & Summer 2020
GK-12 Program · Collaborated with a K-12 science classroom teacher to bring more inquiry-based teaching methods into the classroom; Developed interactive Python programs for astronomy classroom activities; Co-organized a CIERA high school astronomy summer camp

Publications

34 total publications (ADS Library), including 7 first-author and 4 second-author.

FIRST- AND SECOND-AUTHOR PAPERS

11. **The Redshift Evolution of the Binary Black Hole Mass Distribution from Dense Star Clusters**
Ye, C. S. & Fishbach, M. 2024, ApJ, 967, 62

10. **The Dominant Mechanism(s) for Populating the Outskirts of Star Clusters with Neutron Star Binaries**
Leigh, N. W., Ye, C. S., Grondin, S. M. et al. 2024, MNRAS, 527, 6913

9. **Single Millisecond Pulsars from Dynamical Interaction Processes in Dense Star Clusters**
Ye, C. S., Kremer, K., Ransom, S. et al. 2024, ApJ, 961, 98

8. **On the Tidal Capture of White Dwarfs by Intermediate-mass Black Holes in Dense Stellar Environments**
Ye, C. S., Fragione, G., & Perna, R. 2023, ApJ, 953, 141

7. **Millisecond Pulsars in Dense Star Clusters: Evolution, Scaling Relations, and the Galactic-Center Gamma-ray Excess**
Ye, C. S. & Fragione, G. 2022, ApJ, 940, 162

6. **Formation of Low-mass Black Holes and Single Millisecond Pulsars in Globular Clusters**
Kremer, K., **Ye, C. S.**, Kıroğlu, F., et al. 2022, ApJL, 934, L1

5. **Compact Object Modeling in the Globular Cluster 47 Tucanae**
Ye, C. S., Kremer, K., Rodriguez, C. L., et al. 2022, ApJ, 931, 84

4. **Modeling Dense Star Clusters in the Milky Way and Beyond with the CMC Cluster Catalog**
Kremer, K., **Ye, C. S.**, Rui, N. Z., et al. 2020, ApJS, 247, 48-91

3. **On the Rate of Neutron Star Binary Mergers from Globular Clusters**
Ye, C. S., Fong, W-f., Kremer, K., et al. 2020, ApJL, 888, L10-22

2. **Millisecond Pulsars and Black Holes in Globular Clusters**
Ye, C. S., Kremer, K., Chatterjee, S., et al. 2019, ApJ, 877, 122-131

1. **How Black Holes Shape Globular Clusters: Modeling NGC 3201**
Kremer, K., **Ye, C. S.**, Chatterjee, S., et al. 2018, ApJL, 855, L15-21

REFEREED CO-AUTHOR PAPERS

17. **Gravitational Microlensing Rates in Milky Way Globular Clusters**
Kıroğlu, F., Weatherford, N., Kremer, K., **Ye, C. S.**, et al. 2022, ApJ, 928, 181

16. **Modeling Dense Star Clusters in the Milky Way and Beyond with the Cluster Monte Carlo Code**
Rodriguez, C. L., et al. (including **Ye, C. S.**) 2022, ApJS, 258, 22

15. **White Dwarf Subsystems in Core-Collapsed Globular Clusters**
Kremer, K., et al. (including **Ye, C. S.**) 2021, ApJ, 917, 28-46

14. **Matching Globular Cluster Models to Observations**
Rui, N. Z., et al. (including **Ye, C. S.**) 2021, ApJ, 912, 102-118

13. **Fast Optical Transients from Stellar-Mass Black Hole Tidal Disruption Events in Young Star Clusters**
Kremer, K., Lu, W., Piro, A. L., Chatterjee, S., Rasio, F. A., **Ye, C. S.** 2021, ApJ, 911, 104-116

12. **Intermediate-mass Black Holes from High Massive-star Binary Fractions in Young Star Clusters**
González, E., et al. (including **Ye, C. S.**) 2021, ApJL, 908, L29-35

11. **Black Hole Mergers from Star Clusters with Top-Heavy Initial Mass Functions**
Weatherford, N. C., Fragione, G., Kremer, K., Chatterjee, S., **Ye, C. S.**, et al. 2021, ApJL, 907, L25-32

10. **Black Hole Mergers from Hierarchical Triples in Dense Star Clusters**
Martinez, M. A. S., et al. (including **Ye, C. S.**) 2020, ApJ, 903, 67-83

9. **Populating the Upper Black Hole Mass Gap through Stellar Collisions in Young Star Clusters**
Kremer, K., et al. (including **Ye, C. S.**) 2020, ApJ, 903, 45-62

8. **Demographics of Triple Systems in Dense Star Clusters**
Fragione, G., Martinez, M. A. S., Kremer, K., Chatterjee, S., Rodriguez, C. L., **Ye, C. S.**, et al. 2020, ApJ, 900, 16-38

7. **COSMIC Variance in Binary Population Synthesis**
Breivik, K., Coughlin, S. C., Zevin, M., Rodriguez, C. L., Kremer, K., **Ye, C. S.**, et al. 2020, ApJ, 898, 71-84

6. **GW190412 as a Third-generation Black Hole Merger from a Super Star Cluster**
Rodriguez, C. L., et al. (including **Ye, C. S.**) 2020, ApJL, 896, L10-16

5. **The Optical Afterglow of GW170817: An Off-axis Structured Jet and Deep Constraints on a Globular Cluster Origin**
   Fong, W-f., et al. (including **Ye, C. S.**) 2019, ApJL, 883, L1-9
4. **Black holes: The next generation-repeated mergers in dense star clusters and their gravitational-wave properties**
   Rodriguez, C. L., et al. (including **Ye, C. S.**) 2019, Phys. Rev. D, 100, 043027:1-15
3. **Post-Newtonian dynamics in dense star clusters: Binary black holes in the LISA band**
   Kremer, K., et al. (including **Ye, C. S.**) 2019, Phys. Rev. D, 99, 063003:1-12
2. **How Initial Size Governs Core Collapse in Globular Clusters**
   Kremer, K., Chatterjee, S., **Ye, C. S.**, et al. 2019, ApJ, 871, 38-49
1. **Post-Newtonian dynamics in dense star clusters: Formation, masses, and merger rates of highly-eccentric black hole binaries**
   Rodriguez, C. L., et al. (including **Ye, C. S.**) 2018, Phys. Rev. D, 98, 123005:1-16

CONFERENCE PROCEEDINGS/RESEARCH NOTES

6. **No Black Holes in NGC 6397**
   Rui, N. Z., et al. (including **Ye, C. S.**) 2021, RNAAS, 5, 47
5. **The Observed Rate of Binary Black Hole Mergers can be Entirely Explained by Globular Clusters**
   Rodriguez, C. L., et al. (including **Ye, C. S.**) 2021, RNAAS, 5, 19
4. **The Role of "Black Hole Burning" in the Evolution of Dense Star Clusters**
   Kremer, K., **Ye, C. S.**, Chatterjee, S., et al. 2020, IAU proceedings, 351, 357
3. **Shaping Si, NiCo, and glass substrates via stresses in the coatings**
   Wang, X., Yao, Y., **Ye, C. S.**, et al. 2016, SPIE Conference Series, 9965, 99650D:1-9
2. **Toward large-area sub-arcsecond x-ray telescopes II**
   O'Dell, S. L., et al. (including **Ye, C. S.**) 2016, SPIE Conference Series, 9965, 996507:1-17
1. **APERTURE: a precise extremely large reflective telescope using re-configurable elements**
   Ulmer, M. P., et al. (including **Ye, C. S.**) 2016, SPIE Conference Series, 9904, 99041I:1-12

Professional Service

Conference/Workshop Organizer

- Globular Clusters and Their Tidal Tails–From the Milky Way to the Local Group: Week-long conference Toronto 2024
- CITA Postdoc Advance Workshop: Annual workshops focusing on skill development for CITA/CITA National fellows across Canada 2022-present
- CIERA Pulsar Workshop: A three-day workshop of pulsar physics and dynamics in globular clusters Northwestern 2019

Peer Reviewer

The Astrophysical Journal, the Astrophysical Journal Letters, and the Monthly Notices of the Royal Astronomical Society

Outreach/Departmental Service

DEPARTMENTAL SERVICE

Northwestern Physics and Astronomy Graduate Student Council 2021-2022
Master's Student Committee Chair · Supported Master's students by ensuring awareness of policies, deadlines, and other information pertinent to Master's students success both at Northwestern and in the future, and provided the department with authentic feedback as the Master's program develops from its infancy

CIERA K-12 Task Force Northwestern 2021-2022
Committee · Developed a framework for creating and sustaining K-12 outreach initiatives at CIERA with the goal of ensuring that CIERA K-12 outreach has a social justice impact

OUTREACH

CIERA Astronomer Evening 2018-2022
Monthly conversations with the public in Dearborn Observatory including open Q & A sessions and interactive activities

Astronomy on Tap Chicago 2017-2022
Engage the public at local venues with professional astronomy talks, trivia, and prizes once per quarter as part of a national outreach effort

Letters to a Pre-Scientist 2018-2019
Exchanged letters with middle school students in high-poverty areas to demystify STEM career and inspire future scientists

Northwestern Seven Minutes of Science 2017
TED-style public symposium on Pulsars in the Snow Globes

Helix Magazine 2017
Outreach article on the story of two camps of astronomers behind the discovery of the first binary black hole merger: Astronomy Fugato: Two Approaches, One Vast Field of Discovery

Teaching Experience

Northwestern University 2016-2017 & Fall 2020
Teaching assistant · Taught weekly discussions or lab sessions for four different undergraduate General/College Physics courses and a graduate course on Methods of Theoretical Physics

CIERA High School Summer Camp 2019
Co-organizer · Co-organized the high school summer camp with team-style learning, hands-on training, real astronomy research experiences and introductory lectures
Lecturer · Taught multiple lectures ranging from astronomy to computer programming

Niles North High School 2018-2019
Teaching assistant in astronomy classes · GK-12 Program

Student Mentoring

Aryamann Rao University of Toronto 2023-present
Astro class project: Estimating the formation rates of fast radio burst sources in globular clusters by utilizing cluster formation rates inferred from black hole gravitational wave data

Rachel Zhang Northwestern 2022-2024
PhD project: Studying the effects of dynamics on idealized binary populations

Workshops & Skills

- **Python**
- **C/C++**
- **Fortran**

Stellar Interactions and the Transients They Cause Aspen 2023
Three-week workshop at the Aspen Center for Physics

Black Hole Dynamics in Clusters Northwestern 2018
One-week workshop on black hole dynamics

Heidelberg Summer School University of Heidelberg 2017
One-week summer school on compact objects & gravitational waves

MESA Summer School UC Santa Barbara 2017
One-week summer school on the stellar evolution code MESA

Research Communication Training Program Northwestern 2017
Ten-week courses on science communication and presentation skills, culminated in a TED-style presentation

Presentations

CONFERENCES

1. Globular Clusters and Their Tidal Tails Conference, Toronto, Canada — May 2024
2. AAS Division of Dynamical Astronomy Meeting, Toronto, Canada — May 2024
3. MODEST-23, Evanston, IL — August 2023
4. Intermediate-mass Black Holes Meeting, San Juan, PR — May 2022
5. AAS HEAD Meeting (stellar/compact object session), Pittsburgh, PA — March 2022
6. Dynamical Formation of Gravitational Wave Sources, Aspen, CO — January 2022
7. 16th Marcel Grossmann Meeting — July 2021
8. EAS Annual Meeting (session 'Where are the BH-NS binaries') — June 2021
9. IAU Symposium 351 & MODEST-19, Bologna, Italy — May 2019
10. Midwest Relativity Meeting, Milwauke, WI — October 2018
11. MODEST-18, Santorini, Greece — June 2018

SEMINARS AND COLLOQUIUMS

1. Perimeter Institute Strong Gravity Seminar — November 2023
2. McMaster University Astro Group Talk — May 2023
3. McGill Space Institute Seminar — February 2023
4. UC-Santa Cruz FLASH Seminar — December 2021
5. Carnegie Observatories Lunch Talk — November 2021
6. UCLA Lunch Talk — November 2021
7. Caltech TAPIR Seminar — November 2021
8. Princeton University Galread Seminar — October 2021
9. Columbia University Astro Seminar — October 2021
10. Carnegie Mellon University & University of Pittsburgh Astro Lunch Seminar — October 2021
11. National Radio Astronomy Observatory TUNA Lunch Talk — May 2021
12. Texas Tech University Summer Astro Seminar — May 2021
13. CCA Stars & Compact Objects Meeting — May 2021
14. Brown Bag Seminar, Northwestern University — April 2019