

Claire Shi Ye

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Education

Northwestern University, USA Ph.D. Astronomy, Advisor: Frederic A. Rasio	August 2022
Northwestern University, USA M.Sc. Physics, Advisor: Melville P. Ulmer	2016
Zhejiang University, China B.Sc. Physics · GPA: 3.82	2015

Honors & Awards

CITA Postdoctoral Fellowship	2022-present
IOP Publishing Top Cited Paper Award For the article 'On the Rate of Neutron Star Binary Mergers from Globular Clusters', Ye, C. S., et al. 2020, <i>ApJL</i> , 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.	2023
Reach for the Stars Fellowship 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	2018-2019 & Summer 2020

Publications

33 total publications ([ADS Library](#)), including 6 first-author and 4 second-author.

FIRST- AND SECOND-AUTHOR PAPERS

- 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. 2023, [arXiv:2309.13122](#) (Accepted for publication in MNRAS)
- Single Millisecond Pulsars from Dynamical Interaction Processes in Dense Star Clusters**
[Ye, C. S.](#), Kremer, K., Ransom, S. et al. 2023, [arXiv:2307.15740](#) (Accepted for publication in ApJ)
- 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
- 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
- Formation of Low-mass Black Holes and Single Millisecond Pulsars in Globular Clusters**
Kremer, K., [Ye, C. S.](#), Kiroğlu, F., et al. 2022, [ApJL](#), 934, L1
- Compact Object Modeling in the Globular Cluster 47 Tucanae**
[Ye, C. S.](#), Kremer, K., Rodriguez, C. L., et al. 2022, [ApJ](#), 931, 84
- 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**
Kiroğlu, 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

- 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-present

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. MODEST-23, Evanston, IL August 2023
2. Intermediate-mass Black Holes Meeting, San Juan, PR May 2022
3. AAS HEAD Meeting (stellar/compact object session), Pittsburgh, PA March 2022

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| 4. Dynamical Formation of Gravitational Wave Sources, Aspen, CO | January 2022 |
| 5. 16th Marcel Grossmann Meeting | July 2021 |
| 6. EAS Annual Meeting (session 'Where are the BH-NS binaries') | June 2021 |
| 7. IAU Symposium 351 & MODEST-19, Bologna, Italy | May 2019 |
| 8. Midwest Relativity Meeting, Milwaukee, WI | October 2018 |
| 9. MODEST-18, Santorini, Greece | June 2018 |

SEMINARS AND COLLOQUIUMS

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| 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 |