Claire Shi Ye

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Education

Northwestern University, USA *exp.* 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

Presentations and Posters

Lunch Talk Carnegie Observatories 2021
Invited talk, Neutron Star Dynamics and Radio Pulsars in Globular Clusters

Lunch Talk UCLA 2021
Invited talk, Neutron Star Dynamics and Radio Pulsars in Globular Clusters

TAPIR Seminar Caltech 2021
Invited talk, Neutron Star Dynamics and Radio Pulsars in Globular Clusters

Galread Seminar Princeton University 2021
Invited talk, Compact Object Modeling in the Globular Cluster 47 Tucanae

Astro Seminar Columbia University 2021
Invited talk, Neutron Star Dynamics and Radio Pulsars in Globular Clusters

Astro Lunch Seminar Carnegie Mellon University & University of Pittsburgh 2021
Invited talk, Neutron Star Dynamics and Radio Pulsars in Globular Clusters

Journal Club Johns Hopkins University 2021
Invited talk, Modeling 47 Tucanae with the Cluster Monte Carlo Code

16th Marcel Grossmann Meeting Rome 2021
Invited talk, On the Rate of Neutron Star Binary Mergers from Globular Clusters

EAS Annual Meeting Leiden 2021
Contributed talk, On the Rate of Neutron Star Binary Mergers from Globular Clusters

TUNA Lunch Talk National Radio Astronomy Observatory 2021
Invited talk, Dynamics of Neutron Stars and Pulsars in Globular Clusters

Summer Astro Seminar Texas Tech University 2021
Invited talk, Dynamics of Neutron Stars and Pulsars in Globular Clusters

Stars & Compact Objects Meeting Center for Computational Astrophysics 2021
Invited talk, Dynamics of Neutron Stars and Pulsars in Globular Clusters

FLASH Seminar UC Santa Cruz 2021
Invited talk, The Dynamics of Neutron Stars and Pulsars in Globular Clusters

IAU Symposium 351 & MODEST-19 Bologna, Italy 2019
Contributed talk, Millisecond Pulsars and Black Holes in Globular Clusters

Brown Bag Seminar Northwestern 2019
Invited talk, Modeling Millisecond Pulsars in Globular Clusters

Midwest Relativity Meeting Milwauke 2018
Contributed talk, Modeling Millisecond Pulsars in Globular Clusters

MODEST-18 Santorini, Greece 2018
Contributed talk, Modeling Millisecond Pulsars in Globular Clusters

Computational Research Day Northwestern 2018
Poster, How Black Holes Shape Globular Clusters

Honors & Awards

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

Professional Service

Conference/Workshop Organizer
CIERA Pulsar Workshop: A three-day workshop of pulsar physics and dynamics in globular clusters Evanston 2019

Peer Reviewer
The Astrophysical Journal and The Astrophysical Journal Letters

Outreach/Departmental Service

DEPARTMENTAL SERVICE

Physics and Astronomy Graduate Student Council 2021-
Master's Student Committee Chair · Support 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 providing the department with authentic feedback as the Master's program develops from its infancy

CIERA K-12 Task Force 2021-
Committee · The K-12 outreach task force is developing 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

ONGOING OUTREACH

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

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

PAST/ONE-TIME

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

Workshops & Skills

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

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

Publications

28 total publications (ADS Library), including 3 first-author and 2 second-author.

REFEREED FIRST- AND SECOND-AUTHOR PAPERS

1. **Compact Object Modeling in the Globular Cluster 47 Tucanae**
   Ye, C. S., Kremer, K., Rodriguez, C. L., et al. 2021, arXiv:2110.05495
2. **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
4. **Millisecond Pulsars and Black Holes in Globular Clusters**
   Ye, C. S., Kremer, K., Chatterjee, S., et al. 2019, ApJ, 877, 122-131
5. **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

1. **Gravitational Microlensing Rates in Milky Way Globular Clusters**
   Kıroğlu, F., Weatherford, N., Kremer, K., **Ye, C. S.**, et al. 2021, arXiv:2111.14866
2. **White Dwarf Subsystems in Core-Collapsed Globular Clusters**
   Kremer, K., et al. (including **Ye, C. S.**) 2021, ApJ, 917, 28-46
3. **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.**) 2021, arXiv:2106.02643
4. **Matching Globular Cluster Models to Observations**
   Rui, N. Z., et al. (including **Ye, C. S.**) 2021, ApJ, 912, 102-118
5. **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
6. **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
7. **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

8. **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
10. **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
11. **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
12. **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
13. **The Optical Afterglow of GW170817: An Off-axis Structured Jet and Deep Constraints on a Globular Cluster Origin**
    Fong, W-f., Blanchard, P. K., Alexander, K. D., Strader, J., Margutti, R., Hajela, A., Villar, V. A., Wu, Y., **Ye, C. S.**, et al. 2019, ApJL, 883, L1-9
14. **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
15. **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
16. **How Initial Size Governs Core Collapse in Globular Clusters**
    Kremer, K., Chatterjee, S., **Ye, C. S.**, et al. 2019, ApJ, 871, 38-49
17. **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

1. **No Black Holes in NGC 6397**
   Rui, N. Z., et al. (including **Ye, C. S.**) 2021, RNAAS, 5, 47
2. **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
3. **The Role of "Black Hole Burning" in the Evolution of Dense Star Clusters**
   Kremer, K., **Ye, C. S.**, Chatterjee, S., et al. 2019, arXiv:1907.12564
4. **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
5. **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
6. **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