

Chang Liu

GRADUATE STUDENT, ASTRONOMY

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“Explore the universe, benefit the society.”

Education

Graduate Student Department of Physics and Astronomy, Northwestern University

Sep 2021 –

- Advisor: Adam A. Miller

MASTER OF SCIENCE Department of Physics and Astronomy, Northwestern University

Sep 2021 – Jun 2023

BACHELOR OF SCIENCE (HON) Department of Astronomy, School of Physics, Peking University

Sep 2016 – Jun 2020

- Grades: GPA 3.83/4, Rank 1/28
- Thesis: *The Hydrodynamics of Binary Mass Transfer in Compact Binaries*
- Advisors: Enrico Ramirez-Ruiz & Xian Chen

Research Interests

- Exploring the transient sky with time-domain surveys (ZTF, and the incoming LS4 & LSST) and statistical/computational methods
- **Type Ia supernovae:** constraining the ignition mechanism and progenitor systems using both individual events of peculiarity and an unprecedented sample of the population
- **Tidal disruption events:** modeling bizarre repeaters near massive black holes using hydrodynamical simulations
- **Microlensing:** searching for wandering stellar-mass black holes in the Galactic plane

Research Positions

Research Assistant Peking University

Sep 2020 – Jul 2021

Undergraduate Research Intern University of California, Santa Cruz

Oct 2019 – Jan 2020

Summer Undergraduate Research Fellowship (SURF) California Institute of Technology

Jun 2019 – Aug 2019

Undergraduate Research Fellow Peking University

Jul 2018 – Jun 2020

Publications

- **C. Liu**, A. A. Miller, S. J. Boos, et al., SN 2022JOJ: A PECULIAR TYPE IA SUPERNOVA POSSIBLY DRIVEN BY AN ASYMMETRIC HELIUM-SHELL DOUBLE DETONATION, 2023, *submitted to ApJ*.
- **C. Liu**, A. A. Miller, A. Polin, et al., SN 2020JGB: A PECULIAR TYPE IA SUPERNOVA TRIGGERED BY A HELIUM-SHELL DETONATION IN A STAR-FORMING GALAXY, 2023, *ApJ*, 946, 83.
- **C. Liu**, B. Mockler, E. Ramirez-Ruiz, et al., TIDAL DISRUPTION EVENTS FROM ECCENTRIC ORBITS AND LESSONS LEARNED FROM THE NOTE-WORTHY ASASSN-14KO, 2023, *ApJ*, 944, 184.
- **C. Liu**, X. Chen, & F. Du, IMPACT OF AN ACTIVE SGR A* ON THE SYNTHESIS OF WATER AND ORGANIC MOLECULES THROUGHOUT THE MILKY WAY, 2020, *ApJ*, 899, 2.
- G. Dimitriadis, K. Maguire, V. R. Karambelkar, et al. (including **C. Liu**), SN 2021ZNY: AN EARLY FLUX EXCESS COMBINED WITH LATE-TIME OXYGEN EMISSION SUGGESTS A DOUBLE WHITE DWARF MERGER EVENT, 2023, *MNRAS*, 521, 1162.

Talks

Astro Seminar, Tsung-Dao Lee Institute

Shanghai, China

TYPE IA SUPERNOVAE FROM THE DETONATION OF A HELIUM SHELL – FROM RARE WEIRDOS TO THE POPULATION

Jun 2023

SPOKEN-WERRD 2022 Symposium

Virtual

SN 2020JGB: A PECULIAR TYPE IA SUPERNOVA TRIGGERED BY A HELIUM-SHELL DETONATION

Nov 2022

Student Lightning Talk, ZTF 3rd Science Meeting

Evanston, US

SN 2020JGB: A PECULIAR TYPE IA SUPERNOVA TRIGGERED BY A HELIUM-SHELL DETONATION

Oct 2022

Honors & Awards

Oct 2020	First prize & Lin-bridge Prize for Excellent Undergraduate Research (林桥奖学金) , 2020 PKU-DoA Undergraduate Astronomy Symposium (endowed by Prof. Douglas Lin)
May 2020	Outstanding graduate (北京市普通高校优秀毕业生) , College Graduate Excellence Award of Beijing
May 2020	Outstanding graduate (北京大学优秀毕业生) , College Graduate Excellence Award of Peking University
Oct 2019	Merit Student , Annual honor of 2018-2019, School of Physics, Peking University
Oct 2019	PKU Scholarship , Annual scholarship of 2018-2019, School of Physics, Peking University
Jun 2019	PKU Scholarship in Physics , School of Physics, Peking University
Oct 2018	Merit Student , Annual honor of 2017-2018, School of Physics, Peking University
Oct 2018	Wei Lin Scholarship , Annual scholarship of 2017-2018, School of Physics, Peking University
Oct 2017	Merit Student Pacesetter (the Utmost Annual Accolade at PKU) , Annual honor of 2016-2017, School of Life Sciences, Peking University
Oct 2017	Arawana Scholarship , Annual scholarship of 2016-2017, School of Life Sciences, Peking University

Skills

Languages	Chinese, English
Programming	Proficient: Python Experienced: Shell, Fortran, C/C++, HTML <ul style="list-style-type: none">sn_line_velocities (developer): fitting supernovae spectroscopic features with correlated Gaussian profilesSwift_ToO (developer): triggering and analyzing Swift UVOT follow-ups for interesting transients
Softwares	<ul style="list-style-type: none">Pyepit: optical/NIR spectrum reductionPhotoshop: as a shutterbug

Advising and Teaching

CIERA Scientist Mentor REACH Further (Independent Research Experience for REACH Students)	Aug 2023
• Mentee: Isabella Chen	
Teaching Assistant PHYSICS 333-2 (Advanced Electricity & Magnetism)	Sep 2022 – Dec 2022
Teaching Assistant PHYSICS 130-2 (College Physics)	Jan 2023 – Mar 2023
Teaching Assistant ASTRON 103-0-1 (Solar System)	Mar 2023 – Jun 2023

Professional Service

Referee Astrophysical Journal Letters

Outreach

Research Experience in Astronomy at CIERA for High School Students (REACH)	Evanston, US
PRESENTER	Jul 2023
Peking University Youth Astronomy Society (PKU-YAS)	Beijing, China
INVITED SPEAKER (<i>supernovae: from the past to the future</i>)	Apr 2021
Summer Camp of Astronomy for High School Students, Peking University	Beijing, China
VOLUNTEER	Jul 2018

References

Prof. Adam A. Miller	Evanston, US
✉ AMILLER@NORTHWESTERN.EDU	Department of Physics and Astronomy, Northwestern University
Prof. Enrico Ramirez-Ruiz	Santa Cruz, US
✉ ENRICO@UCOLICK.ORG	Department of Astronomy and Astrophysics, UC Santa Cruz

