

Chang Liu

GRADUATE STUDENT, ASTRONOMY

Department of Physics and Astronomy, Northwestern University, 2145 Sheridan Road, Evanston, IL 60208, US

✉ ptg.cliu@u.northwestern.edu | 🌐 <https://slowdiveptg.github.io> | 📱 slowdivePTG

“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 Noteworthy 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 • Swift_ToO (developer): triggering and analyzing Swift UVOT follow-ups for interesting transients
Softwares	• Pyepit: optical/NIR spectrum reduction • Photoshop: 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 ✉ AMILLER@NORTHWESTERN.EDU	Evanston, US Department of Physics and Astronomy, Northwestern University
Prof. Enrico Ramirez-Ruiz ✉ ENRICO@UCOLICK.ORG	Santa Cruz, US Department of Astronomy and Astrophysics, UC Santa Cruz
Prof. Xian Chen ✉ XIAN.CHEN@PKU.EDU.CN	Beijing, China Department of Astronomy, School of Physics, Peking University