

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

## Skills

<b>Languages</b>	Chinese, English
<b>Programming</b>	<b>Proficient:</b> Python <b>Experienced:</b> Fortran, C/C++, HTML • Swift_ToO ( <b>developer</b> ): triggering and analyzing Swift UVOT follow-ups for interesting transients.
<b>Softwares</b>	• Pyepit: optical/NIR spectrum reduction • Photoshop: as a shutterbug

## Advising and Teaching

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

## Professional Service

<b>Referee</b>	Astrophysical Journal Letters
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## Outreach

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

## References

<b>Prof. Adam A. Miller</b>	Evanston, US
✉ AMILLER@NORTHWESTERN.EDU	Department of Physics and Astronomy, Northwestern University
<b>Prof. Enrico Ramirez-Ruiz</b>	Santa Cruz, US
✉ ENRICO@UCOLICK.ORG	Department of Astronomy and Astrophysics, UC Santa Cruz
<b>Prof. Xian Chen</b>	Beijing, China
✉ XIAN.CHEN@PKU.EDU.CN	Department of Astronomy, School of Physics, Peking University