

HSIN-PEI CHEN

Second-Year Graduate Student at Department of Astronomy, UT Austin

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RESEARCH INTERESTS

Simulations in star formation & supernovae in binaries. Stellar evolution processes in general.

EDUCATION

The University of Texas at Austin (UT Austin) Graduate Program in Astronomy Advisor: Dr. Stella Offner	Aug. 2024 - Current TX, USA
National Tsing Hua University (NTHU) Master of Science in Astronomy Advisor: Dr. Kuo-Chuan Pan	Sep. 2020 - Jan. 2023 Hsinchu, Taiwan
National Kaohsiung Normal University (NKNU) Bachelor of Science in Physics	Sep. 2016 - Jun. 2020 Kaohsiung, Taiwan

ACADEMIC APPOINTMENTS

Graduate Research Assistant, Department of Astronomy, UT Austin	Aug. 2024 - Aug. 2025
Research Assistant, Institute of Astronomy, NTHU	Dec. 2023 - May 2024
Research Assistant, Center for Theory and Computation, NTHU	Mar. 2023 - Nov. 2023
TA, Stellar Astronomy (AST 352K), UT Austin, Prof. Harriet Dinerstein	Fall 2025
TA, Colloquium at Institute of Astronomy, NTHU, Prof. Daniel Harsono	Fall 2021 - Fall 2022
TA, Introduction to Astrophysics, NTHU, Prof. Daniel Harsono	Fall 2021
TA, Introduction to Astronomy, NKNU, Prof. Chien-Wen Hwang	Fall 2018

ACADEMIC EXPERIENCE

Synthetic Observations of Cosmic Rays in Star Forming Regions	Aug. 2024 - current
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- Conducting synthetic observations of cosmic ray ionization rates (CRIRs) in star-forming clouds using STARFORGE simulations that incorporate explicit cosmic ray transport ([Fitz Axen et al. 2024](#)).

Type Ia Supernova Progenitors and Surviving Companions within the Symbiotic Channel [1]	Feb. 2023 - Jul. 2025
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- A systematic numerical study of the symbiotic channel with stellar evolution code MESA. Explored four types of red giant & AGB companions in the progenitor systems; predicting a faint blue dwarf star or a companion similar to its pre-SN state as the surviving companion.

Exploring the Observability of Surviving Companions of Stripped-Envelope Supernovae: A Case Study of Type Ic SN 2020oi [2]	May 2021 - Jan. 2023
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- Numerical simulations of a core-collapse SN 2020oi from SN-companion interactions to post-SN evolution of companion using MESA and hydrodynamics simulation code FLASH. Concluded with a main-sequence companion of SN 2020oi possibly detectable in a decade.

University Consortium of ALMA–Taiwan (UCAT) Summer Student Program	Jul.-Aug. 2018
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- Analysis of ALMA SV data of M100 with CASA, advised by Dr. Huei-Ru Vivien Chen (NTHU)

PUBLICATION LIST

[1] Yu-Hui Wang¹, **Hsin-Pei Chen**¹, and Kuo-Chuan Pan, *Astrophysical Journal*, v. 989, p. 72, August 2025.
DOI: [10.3847/1538-4357/adeb71](https://doi.org/10.3847/1538-4357/adeb71)

[2] **Hsin-Pei Chen**, Shiau-Jie Rau, and Kuo-Chuan Pan, *Astrophysical Journal*, v. 949, p. 121, June 2023.
DOI: [10.3847/1538-4357/acc9af](https://doi.org/10.3847/1538-4357/acc9af)

HONORS

2024 Wu Chien-Shiung Scholarship (Master's Student/Graduate), The Physics Society of Taiwan

PRESENTATIONS & POSTERS

Oral, 2024 Fall Stars, Planets, and ISM Seminar at UT Austin	Oct. 2024
Oral, 2023 Astronomical Society of Republic of China (ASROC) Annual Meeting	May 2023
Oral, 9th Eastern Asian Numerical Astrophysics Meeting (EANAM9)	Sep. 2022
Poster, CraigFest 2024: Celebrating the Life & Career of J. Craig Wheeler	Oct. 2024
Poster, Poster Competition of the Physics Department at NTHU	Dec. 2022
Poster, 2022 Physical Society of Taiwan Annual Meeting	Jan. 2022

GRADUATE COURSES

Observing Techniques in Astronomy	Stellar Astrophysics
Order of Magnitude Astrophysics	Computational Astrophysics
Astrophysical Gas Dynamics	High Energy Astrophysics
Astrophysical Radiative Processes	Radio Astronomy
Survey of Interstellar Medium	Supervised Teaching in Astronomy

SKILLS

General Codes	Python, Fortran, Matlab
Astronomical/astrophysical Codes	UCLCHEM, RADMC-3D, FLASH, MESA, CASA
Systems	Windows, Linux, Slurm
Tools	Git, Github, L ^A T _E X

SERVICE & OUTREACH

Director, Astronomy Club Union of Universities in Taiwan (ACUUT)	Mar. 2021 - Mar. 2023
Popular Science Writer, ACUUT	2021 - 2022
General Coordinator, 3rd ACUUT Leadership Camp	Aug. 2022
General Coordinator, Taiwan Solar Eclipse Live-Streaming with Central Weather Bureau	Jun. 2020
President and Cofounder, Astronomy Club at NKNU	Jul. 2017-Jun. 2018

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¹These authors contributed equally to this work.