HSIN-PEI CHEN

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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) — Aug. 2024 - Current
Graduate Program in Astronomy — TX, USA
Advisor: Dr. Stella S. R. Offner

National Tsing Hua University (NTHU) — Sep. 2020 - Jan. 2023
Master of Science in Astronomy — Hsinchu, Taiwan
Advisor: Dr. Kuo-Chuan Pan

National Kaohsiung Normal University (NKNU) — Sep. 2016 - Jun. 2020
Bachelor of Science in Physics — Kaohsiung, Taiwan

ACADEMIC APPOINTMENTS

Graduate Research Assistant, Department of Astronomy, UT Austin	Spring 2026 (current)
Graduate Research Assistant, Department of Astronomy, UT Austin	Fall 2024 - Spring 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

Probing Cosmic-Ray Ionization Rates in Star-Forming Clouds: A Synthetic Observation with the STARFORGE Simulations — Aug. 2024 - Current

- Utilizing STARFORGE simulations and UCLCHEM chemical code to produce synthetic observations of star-forming regions, in order to probe the direct relationship between cosmic-ray ionization rates and tracer molecules, aiming to resolve current discrepancies between direct and indirect CRIR measurements.

Type Ia Supernova Progenitors and Surviving Companions within the Symbiotic Channel [1] — Feb. 2023 - Jul. 2025

- A systematic numerical study of the symbiotic channel with stellar evolution code MESA. Explored four types of reg 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

- 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.

PUBLICATION LIST

[1] Yu-Hui Wang[1], **Hsin-Pei Chen**[1], and Kuo-Chuan Pan, *Astrophysical Journal*, v. 989, p. 72, August 2025. DOI: 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

HONORS

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

PRESENTATIONS & POSTERS

Oral, 2025 Star and Planet Formation in the Southwest Conference	Dec. 2025
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, 2025 Texas Advanced Computing Center Symposium (TACCSTER)	Sep. 2025
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, LaTeX

SERVICE & OUTREACH

Activity Coordinator, Taiwanese Student Association at UT Austin	Aug. 2025 - current
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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[1]These authors contributed equally to this work.