Cheng-An, Hsieh

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Citizenship: Taiwan

Education

National Taiwan University — Taipei, Taiwan
Undergraduate in Department of Physics — *Sep. 2023 – Present*
Double major in Data Science and Applications in Planetary Science — *Sep. 2024 – Present*

Graduated level courses	Grades
• Data Analysis in Astronomy	A+
• Diffuse Interstellar Medium	A+
• Continental Lithosphere	A+
• Computational Astrophysics	A
• Advanced Astronomical Observation	2025-Fall

Publication

The Influence of Transport on Chemistry in the Middle Atmosphere of Venus
C.A. Hsieh; T.J. Liao; F.P. Mills; C.D. Parkinson; Y.L. Yung, AGU Fall Meeting (2025)

Obscured Cosmic Black Hole Accretion History from AGN Found by JWST/MIRI CEERS Survey
C.A. Hsieh, T. Goto, C.T. Ling, S.J. Kim, T. Hashimoto, C. C. Chien, Y. A. Chen, PASA (2025)

Research Experience

California Institute of Technology (Caltech) — Jun. 2025 – Present
Advisor: Yuk L. Yung — *GPS, Caltech*
The influence of transport on chemistry in the middle atmosphere of Venus

* Developed a 2D chemical transport model(CTM) and couple the dymanic and photochemistry to simulate the D/H vertical profile on Venus atmosphere.

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) — Sep. 2025 – Present
Advisor: Shang-Min Tsai — *ASIAA, Taiwan*
2D VULCAN Model Enhancement and Coupled Model Development

Modeling Atmospheric Chemistry of the Ultra Low Density Exoplanet WASP-193b

* Simulated the exoplanet's vertical chemical profile using the VULCAN code to predict how its ultra-low density creates unique observational signatures for telescopes like the JWST.

Taiwan Astronomical ObserVatories Alliance Summer Student Program(TAOvA) — Jul. 2024 – Jun. 2025
Advisor: Tomotsugu, Goto — *IOA, NTHU*
Inferring Obscured Cosmic Black Hole Accretion History from AGN Found by JWST/MIRI CEERS Survey

* This study use AGN candidates identified from the Cosmic Evolution Early Release Science (CEERS) Survey with the JWST to study the history of black hole accretion.

Academia Sinica Institute of Astronomy and Astrophysics(ASIAA) — Nov. 2023 – Jun. 2025
Advisor: Chan-Kao Chang — *ASIAA, Taiwan*
FOSSIL Survey: Identify the binary asteroid lightcurves in the main-belt by machine learning

* Developed a simulation model for asteroid light curves and applying machine learning techniques to identify the binary asteroids.

Research Interests

- Data analysis of Solar System objects, including asteroids, evolution of solar system and planetary characteristics.
- Optical and infrared astronomy for cosmic observations, focusing on AGN evolution and luminosity functions.
- The processes of planetary formation, evolution, geological characteristics, and atmosphere.

Conference

Oral Session Presenter

2025 Caltech SURF Summer Seminar *Aug. 2025*

Poster Session Presenter

2025 Annual Meeting of the Astronomical Society of Republic of China *May. 2025*

Identifying Binary Asteroids Using Machine Learning with Simulated Lightcurves and FOSSIL Survey Data.

2025 Annual Meeting of the Physical Society of Taiwan *Jan. 2025*

Inferring Obscured Cosmic Black Hole Accretion History from AGN Found by JWST/MIRI CEERS Survey.

Participant

CL2025: Entering a Golden Age of Galaxy Cluster Studies 1st East Asian Workshop on Galaxy Clusters *Sep. 2025*

33rd Meeting of the NASA Small Bodies Assessment Group (SBAG) *Jun. 2025*

Earth and Planetary Cloud Workshop 2025 *Jun. 2025*

TNO 2024 The Trans-Neptunian Solar System *Jun. 2024*

10th Galaxy Evolution Workshop *Aug. 2024*

Campus Activities

Astronomy Club Sep. 2020 – Present
President of Astronomy Club

Student Association of Physics Department Sep. 2023 – Jun. 2025
Vice President of Student Association

Science Writer & Short Story Author Sep. 2021 – Present

· Authored popular science articles on Science Monthly, the longest-standing popular science magazine in Taiwan.

· First Prize, NTU Literature Award Short Story Category.

Awards and Honors

High School Sep. 2020 – Jun. 2023

· **Silver Medal, International Earth Science Olympiad - Data Mining Test**
Personal ranked 25th.

· **Silver Medal, International Earth Science Olympiad - National Team Field Investigation**
Evaluating Human Impacts and Marine Environment by Listening to Snapping Shrimps.

· **Third Prize, Taiwan International Science Fair**
Investigating the Cause and Distribution of Binary Asteroids.

National Taiwan University Sep. 2023 – Present

- **Caltech Summer Undergraduate Research BaBar Fellow**
  Caltech SURF Fellow, awarded to NTU undergraduate. (Jun. 2025 – Aug. 2025)

- **Taiwan Astronomical ObserVatories Alliance**
  Summer Research Internship, awarded to Taiwanese undergraduate. (Jul. 2024 – Aug. 2024)

- **First Prize, Competition for Innovative Experiment in General Physics.**
  Designed experiment to investigating the phenomenon of a marble on a rotating track.

- **2023 NASA Hackathon SpaceApps Challenge**
  CAVES Cosmos Communicator Award(Taichung)

- **2025 Student Altruism Award**

Skills & Interests

Skills: Python, LaTeX, Observatory control

Interests:Photography, Writing, Gaming

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