

EDUCATION

National Tsing Hua University (NTHU)

Hsin-Chu, Taiwan

Master in Astronomy

2021–Present

- GPA: 4.25/4.30

National Taiwan University (NTU)

Taipei, Taiwan

Bachelor of Science in Bioengineering

2016–2021

- GPA 3.77/4.3; ranked 6th of 37; won Presidential Award (top 5% of the class) 1 time.

ACADEMIC EXPERIENCE

Institute of Astronomy, NTHU

Hsin-Chu, Taiwan

Master student, Supervisors: Dr. Yen-Ting Lin, Dr. Hsiang-Yi Karen Yang

Summer 2021–Present

- Developed a new abundance matching scheme which outperforms previous research in the prediction of stellar mass and galaxy two point correlation function. (First author of paper [3], submitted to ApJ)
- Collaborate with Cosmology X Data Science Group, Center for Computational Astrophysics, Flatiron Institute. Developed a deep learning model that is able to predict baryonic properties of galaxies from dark matter properties extracted from halos along the full assembly history of the galaxies. (First author of paper [4], in preparation)

Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA)

Taipei, Taiwan

Research assistant, Supervisors: Dr. Naomi Hirano, Dr. Yusuke Aso

Winter 2021–Summer 2021

- Pioneered a deconvolution method based on deep learning for radio interferometry.
- Submitted two Atacama Large Millimeter Array (ALMA) proposals.

C4Lab (bioinformatic laboratory), Department of Bioengineering, NTU

Taipei, Taiwan

Undergraduate student, Supervisor: Dr. Chien-Yu Chen

Summer 2019–Winter 2021

- Applied deep learning algorithms to predict protein structures and transcription factor binding sites on DNA.
- Cooperated with faculties and students from Graduate Institute of Medical Genomics and Proteomics to inspect the autism spectrum disorder from DNA sequence by algorithm programs such as GATK, GO, KEGG, etc.

Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA)

Taipei, Taiwan

Undergraduate student, Supervisors: Dr. Naomi Hirano, Dr. Yusuke Aso

Summer 2018–Winter 2021

- Conducted research on star formation and molecular line observation. (First author of paper [1], published by ApJ)
- Chosen as a 2019 ALMA observation proposal

PUBLICATIONS

- [1] **Chen-Yu Chuang**, Yusuke Aso, Naomi Hirano, S. Hirano, and M.N. Machida, “ALMA Observations toward the S-shaped Outflow and the Envelope around NGC 1333 IRAS 4A2”, *The Astrophysical Journal*, vol. 916, no. 2, p. 82, Aug. 2021. arXiv: 2105.04224 [astro-ph.SR].

- [2] Chuan-Jui Li, You-Hua Chu, **Chen-Yu Chuang** and Guan-Hong Li, “The Shellless Supernova Remnant B0532-67.5 in the Large Magellanic Cloud”, *The Astronomical Journal*, vol. 163, no. 1, p. 30, Jan. 2022, arXiv: 2111.02900 [astro-ph.GA].
- [3] **Chen-Yu Chuang** and Yen-Ting Lin, “A New Stellar Mass Proxy for Subhalo Abundance Matching”, submitted to *The Astrophysical Journal*, Nov. 2022., arXiv: 2211.09136 [astro-ph.GA].
- [4] **Chen-Yu Chuang**, Christian Jespersen, Yen-Ting Lin and Shirley Ho, “Leaving no branches behind: An accurate model for predicting galaxy properties from full sets of merger trees of host dark matter halos”, in prep.
- [5] You-Hua Chu, **Chen-Yu Chuang** and Chuan-Jui Li, “A Comprehensive Anatomy of the Superbubble NGC 1014 (N57) in the Large Magellanic Cloud”, in prep.

RECENT SCIENTIFIC TALKS & POSTERS

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| 1. <i>(Invited)</i> Lecture, Bioinformatics Algorithms (Course held by Prof. Chien-Yu Chen)
Special Topic on Protein Structure Prediction | 08/11 2021 |
| 2. Talk, JCMT SCUBA2 Transient Project Meeting
Data Analysis of the JCMT Observation on S255 Molecular Cloud Complex | 07/20 2021 |
| 3. <i>(Invited)</i> Talk, Journal Club, Max Planck Institute for Extraterrestrial Physics
ALMA Observations toward the S-shaped Outflow and the Envelope around NGC1333 IRAS4A2 | 05/19 2021 |
| 4. <i>(Invited)</i> Talk, ASIAA Paul’s Meeting
ALMA Observations toward the S-shaped Outflow and the Envelope around NGC1333 IRAS4A2 | 11/02 2020 |
| 5. <i>(Awarded)</i> Poster & Talk, ASROC Annual Meeting 2020
ALMA Observations toward the S-shaped Outflow and the Envelope around NGC1333 IRAS4A2
– Awarded the winner of the student poster competition | 09/03 2020 |
| 6. Talk, East-Asian ALMA Science Workshop 2019
ALMA Observations toward the S-shaped Outflow and the Envelope around NGC1333 IRAS4A2 | 02/21 2020 |
| 7. Talk, ASROC Annual Meeting 2019
ALMA Observations toward the S-shaped Outflow and the Envelope around NGC1333 IRAS4A2 | 05/19 2019 |
| 8. Talk, ASIAA Summer Student Program Presentation
ALMA Observation of Two SO Transitions –The Case of NGC1333 IRAS4A | 08/31 2018 |

ASTROPHYSICAL COURSES

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| • Advanced Astronomical Observation: A+
– Final project: Reimplement deconvolution algorithm for interferometry (<i>CLEAN</i>) from scratch in Python | NTU |
| • Galaxy Formation and Evolution: A+
– Final: Debate upon whether planes of satellite galaxies exist (I read over 30 relevant papers for the debate) | NTU |
| • General Astronomy: A+ | NTU |
| • Interstellar Medium: Audit
– Selected to give a presentation in the JCMT SCUBA2 Transient Project Meeting
– Complete paper [2] with Professor You-Hua Chu | NTU |
| • Introduction to Astrophysics: A+
– Final report: The Planes of Satellite Galaxies | NTU |
| • Computational Astrophysics: A+
– Final project: Build a graph neural network from scratch in Julia code | NTHU |

- **Cosmology: A+** NTHU
 - Final essay: Review of Millennium simulations
- **Interstellar Medium: A+** NTHU
 - Final project: How different ISM model effects the SED fitting result of galaxies in the *IllustrisTNG* simulation
- **Observational Astronomy: A** NTHU
 - Final observation proposal: “Searching for the Jet H α and [S II] Line Emission Scattered by Dust in the HH2 Region”
- **Stellar Astrophysics: A+** NTHU
- **Special Topic: Scientific Writing and Short Talks: TBD** NTHU

EXTRACURRICULAR ACTIVITIES

Astronomy Club of University Union in Taiwan (ACUUT) Taipei, Taiwan
Lecturer in Stargazing Guide Division 2021–Present

- Design teaching materials about Chinese constellations and give lectures on how to guide the audience in a star gazing event.

International Companions for Learning Taichung, Taiwan
Lecturer at Cheng-Kung Elementary School Summer 2020–Winter 2021

- Collaborate with a Vietnamese exchange student to teach Vietnamese culture in English to a class of 10 students in Cheng-Kung Elementary School voluntarily for one semester, one hour per week.

NTU Azalea Festival Taipei, Taiwan
Project member Summer 2019

- Cooperated with 6 team members to design a magic cube-solving robot and present a working prototype at the festival, attracting hundreds of attendees to visit the booth.
- Designed a program to identify the colors of magic cube through web camera using python and JAVA.

ASIAA Paul’s Meeting Taipei, Taiwan
Meeting organizer 2018–2019

- Designed agenda for the year-long speech series at Academia Sinica and invited 17 researchers to give total 17 speeches with total 450+ attendees.
- Increased the total number of attendees from 6 to 30 per speech through marketing campaigns.

NTU Astronomy Club Taipei, Taiwan
Chief of General Affairs 2017–2018

- Organized 4 three-day-observation camps with 8 partners and each event attracted over 40 participants.
- Led and designed observation activities in constrained environment (in a mountain over 2000 meters high), including coaching participants on operating telescopes, recognizing stars and identifying nebulae in the sky.
- Managed the club budget (~NTD 400,000) for club events and year-round operation with positive net profits.

National Museum of Natural Science – Kenting Observatory Pingtung, Taiwan
Winter intern Winter 2018

- Selected to join the 2018 KTO observation training to operate a professional telescope.
- Identified observation target, automated telescope operation and processed data through programming.

COMPUTER SCIENCE

- **Language:** Python, Julia, C/C++, Linux shell, JAVA, Fortran, L^AT_EX(advanced); assembly, SQL (basic)
- **Software:** TOPCAT, CASA, RADMC-3D, vis_sample, DS9, CARTA, IRAF, APT, ParaView, SolidWorks
- **Domain Knowledge:** Data Structures and Algorithms, Numerical Analysis, Deep Learning, Robotics