

CHENGHAN HSIEH

AWARDS

- 2017 **NTHU Academy Award** (Awarded to **top 5%** of students in academics, based on GPA)
- 2015 NTHU Chinese Writing Center Essay Competition **Merit Award**
- **Best Design Award**
2014 Scientific and Cultural Exchanges of University Students Across the Taiwan Strait **Physics Experimental Exploration Competition** (representing NTHU, award given by Sun Yat-sen University, Guangzhou China)
- 2014 Sinarmas World Academy Learner Profile Award: Knowledgeable
- 2013 The Duke of Edinburgh's International Award for Yong People Bronze Award

EDUCATION

2014-2018 expected National Tsing Hua University bachelor of physics
 2015.8-2015-12 Hong Kong University of Science and Technology exchange student
 2011-2014 Sinarmas World Academy, Jakarta (Indonesia)
 International Baccalaureate Diploma holder
 2011 North Jakarta International School (NJIS)

PUBLICATIONS

- **"Flared Disk Vertical Structure modelling of VLA1623 protoplanetary disks"**
First Author Paper in progress

POSTERS

- **2017 Annual Meeting of the Astronomical Society of the Republic of China**
Poster Presentation

OBSERVATION

PROPOSALS

- **Principle Investigator (PI)** of Submillimeter Array (SMA) filler proposal
 "End in sight: Detection of the disk like structure in the Yellow Hypergiant HR8752".
Accepted and Observed
- **Co-PI** of Atacama Large Millimeter Array (ALMA) proposal
 "Disk formation in extremely young protostars VLA 1623: from the accretion flows to the disk"

UNDERGRADUATE	<ul style="list-style-type: none"> ● “Astrophysical S factor by Monte Carlo Simulations of Photon Transport in Simple Stellar Models”
CAPSTONE PROJECT	<ul style="list-style-type: none"> ● Completed a research paper (unpublished) and an oral presentation in HKUST

RESEARCH	HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (HKUST) 2015 Fall Semester Capstone Project “Astrophysical S factor by Monte Carlo Simulations of Photon Transport in Simple Stellar Models”. <ul style="list-style-type: none"> ● Collaborated with Professor Leung-Pak Wo (Associate Dean of Science) on the radiative transport of photons inside stars. ● Developed a new method which can give a rough theoretical estimate on the Astrophysical S factor.
EXPERIENCE	ACADEMY SINICA INSTITUTE OF ASTRONOMY (ASIAA) 2016 Summer Student “Numerical Simulations of Protoplanetary Disks Using the Antares Code” <ul style="list-style-type: none"> ● Conducted research as a summer student with supporting scientists Dr. Chun-Fan Liu, Dr. Wing-Kit Lee, Dr. Hsien Shang, and Dr. Chien-Chang Yen in ASIAA in Taiwan. ● Computed numerical simulations of the Protoplanetary Disks using the Antares Code. Completed development of my own python code to show 13CO J1-0 and 13CO J2-1 line profiles from simulation data. ● Discovered that the 13CO line spectrum for protoplanetary disks with planets would deviate from Keplerian disk features due to planet induced spirals. The results are yet to be confirmed by observation.
	NATIONAL TSING HUA UNIVERSITY (NTHU) 2016 Fall semester –present: Undergraduate Researcher <ul style="list-style-type: none"> ● Joined the Interstellar Magnetic Fields Research Group lead by Prof. Shih-Ping Lai.
	“Determine the Vertical Structure of VLA1623A protoplanetary disks” <ul style="list-style-type: none"> ● Developed Flat and Flared disk model to determine the scale height of VLA1623A protoplanetary disk using ALMA data.
	“Validating the A. Lazarian’s new method to determine magnetic fields in turbulent medium” <ul style="list-style-type: none"> ● Developed my own 13CO,18CO channel maps code to process ZeusTW simulation data. ● Introduced parallel computing techniques for python to ensure high resolution quality of the data and minimized computing time. Enhance the reliability of the channel maps by considering the optical depth and line width. ● Presented the findings using A. Lazarian’s method in disk geometry in the poster presentation in 2017 Scientific Assembly of the Astronomical Society of the Republic of China (ASROC) conference.

- Helped to install Simulation Package for Astronomical Radiative Xfer (SPARX) on NTHU workstation
- Collaborated with Prof. Alexandre Lazarian (UW-Madison), Dr. Sheng-Yuan Liu (ASIAA Associate Research Fellow), I-Ta Hsieh (ASIAA supporting engineer) to use SPARX radiative code to create synthetic images to test Lazarian's theory with observation

**"Detection of the disk like structure in the Yellow Hypergiant HR8752
SMA project"**

- Became PI of the SMA project. Proposal accepted and observed by SMA committee
- Collaborating with Co-PI Yuejia Zhai, a graduate student in Leiden University on data reduction

NATIONAL TSING HUA UNIVERSITY (NTHU)

2014 Fall Semester

- Launched a student led undergraduate research group, and conduct experimental research on small disturbances on chain fountain.
- Represented National Tsing Hua University to attend 2014 Scientific and Cultural Exchanges of University Students Across the Taiwan Strait Physics Experimental Exploration Competition in Sun Yat-sen University, Guangzhou China. Achieved Best Design Award.
- Represented NTHU to give a speech at the opening ceremony in Sun Yat-sen University.

RESEARCH

Theoretical/Observational study of evolution or formation of stars and planets.

INTERESTS

COMPUTATIONAL

PYTHON – VERY CONFIDENT

SKILLS

Parallel computation, Neural Network, Convolution Neural Network for picture recognition, Discrete Fourier Transform, Fast Fourier Transform, Compression and Error Coding, Shortest Path, Dynamic Programming, Sorting

Monte Carlo Simulation for Particle Transport in python

LINUX SYSTEM – VERY CONFIDENT

CASA, DS9, IRAF, MIR – CONFIDENT

MATHEMATICA – CONFIDENT

LABVIEW – CONFIDENT

FORTTRAN – BASIC LEVEL

CONFERENCE ATTENDED	2017 Theoretical Institute for Advanced Research in Astrophysics (TIARA) Summer School on Astrostatistics and Big Data	Participant
	2017 Asia Pacific Regional IAU Meeting	Participant
	2017 Annual Meeting of the Astronomical Society of the Republic of China	Poster Presenter
	2017 East-Asian ALMA Science Workshop	Participant
	2016 TIARA/CHARMS Mini-Workshop on Disks in the Protoplanetary Systems	Participant
	2016 Annual Meeting of the Physical Society of the Republic of China	Participant

VOLUNTEER WORKS	<ul style="list-style-type: none"> ● 2017 Main Organizer of NTHU 1st NGO Fair (setup the first NGO fair in NTHU) ● 2015 Chun-Lin English service program tutor (teaching English to local students) ● 2014 Naluo tribe math program tutor (teaching aboriginal children in the deep mountains) ● 2011 ~ 2014 Riveria English Program (teaching English in elementary school in the Indonesian village) head tutor / tutor ● 2012 ~ 2014 Funder and President of Earth Club (environment club in school) ● 2013~2014 On Campus Organic Garden organizer ● 2013 Main Organizer of Clean Up Jakarta event cooperated with NGO ● 2013 Main Organizer of the fundraise event for on-campus concrete/ bamboo compost site ● 2013 Volunteered work at Taichung Armed Forces General Hospital (summer)
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EXTRACURRICULAR ACTIVITIES	<ul style="list-style-type: none"> ● 2016-2017 Astronomy Club member ● 2014-2015 Archery Club member
	<p>Arts and Performances:</p> <ul style="list-style-type: none"> ● 2013 Spoken Poetry performer at Global Issue Network Indonesia Conference ● 2013 Spoken Poetry performer at Sinarmas World Academy Literacy week ● 2012 Global Issue Network Indonesia Conference participant ● 2012 Violin performance in school assembly <p>Model United Nations:</p> <ul style="list-style-type: none"> ● 2015 HKUST Model United Nations Delegate ● 2013 2nd JAAC Model United Nations Chair of the environment committee ● 2012 Amman Model United Nations Delegate in Jordan ● 2012 South East Asia Student Activity Conference Model United Nations Delegate ● 2012 1st JAAC Model United Nations Delegate <p>(Documentation for above information is available for access.)</p>
