

# Shih-Yun Tang 湯士昀

*I am interested in searching for the youngest exoplanet around T Tauri stars with the radial velocity technique, exploring brown dwarf/free-floating planets' atmosphere with the 1D radiative-convective model, and studying stellar groups in the Solar neighborhood with Gaia data.*



[sytang@lowell.edu](mailto:sytang@lowell.edu)



<https://shihyuntang.github.io>

## Rice University

Dept. of Physics & Astronomy  
Houston, TX 77005, USA

## Lowell Observatory

1400 West Mars Hill Road  
Flagstaff, AZ 86001, USA

## Education

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- **Ph.D., Physics and Astronomy**, Rice University, Houston, TX, USA  
(Jan. 2023 — Present)
  - Advisors: Prof. Christopher Johns-Krull (Rice) & Dr. Lisa Prato (Lowell Obs.)
- **Ph.D., Astronomy and Planetary Science**, Northern Arizona University (NAU), Flagstaff, AZ, USA — (GPA 4.0/4.0)  
(Jan. 2020 — Dec. 2022)
  - Advisor: Dr. Lisa Prato (Lowell Obs.)
- **M.S., Physics**, National Central University (NCU), Taiwan — (GPA 3.88/4.0)  
(Sep. 2017 — June 2019)
  - Advisor: Prof. Wen-Ping Chen
- **B.A., Physics**, National Central University (NCU), Taiwan — (GPA 3.80/4.0)  
(Sep. 2013 — June 2017)
  - Advisor: Prof. Wen-Ping Chen

## Research Experience

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- **Graduate Research Assistant**, Lowell Observatory, Flagstaff, AZ, USA  
(Jan. 2020 — Present)
  - Advisor: Dr. Lisa Prato
- **Graduate Research Assistant**, National Central University, Astronomy Institute, Taiwan  
(Sep. 2017 — June 2019)
  - Advisor: Prof. Wen-Ping Chen
- **Undergraduate Research Assistant**, National Central University, Astronomy Institute, Taiwan  
(Jan. 2015 — Sep 2016)
  - Advisor: Prof. Wen-Ping Chen

## Internships

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- **Max-Planck-Institute for Astronomy**, Germany  
(July 2018 – Sep. 2018)
  - Advisor: Dr. Bertrand Goldman & Dr. Chien-Cheng Lin
  - Topic: *Multi-dimensional parameterization of members in nearby star clusters: Gaia DR2 and photometric distancing*
- **The Chinese University of Hong Kong**  
(Jun. 2016 – Aug. 2016)
  - Advisor: Prof. Li, Hua-bai
  - Topic: *Optical performance testing of the ASTE polarimeter for the ASTE telescope*

## Successful Proposals

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- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, 8 nights (McD23-1-7)
- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, 10 nights (McD22-3-8)
- Co-I: CFHT/SPIRou, 19 hours (20BH33)
- PI: Gemini North, Fast Turnaround/GNIRS, 1.5 hours (GN-2017B-FT-18)

### Open Source Projects | GitHub

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- IGRINS RV: [https://github.com/shihyuntang/igrins\\_rv](https://github.com/shihyuntang/igrins_rv)  
An open-source Python pipeline for extracting radial velocity (RV) for the Immersion GRating Infrared Spectrometer (IGRINS) instrument.

### Teaching & Outreach

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- Guest lecture @ Dept. Astronomy and Planetary Science, NAU, **Spring 2023**.  
AST 210 — *Celebrating Diversity in Astronomy (EDIJ topics)*.
- Guest lecture @ Dept. Astronomy and Planetary Science, NAU, **Fall 2022**.  
AST 391 — *Astrophysics: stars*.
- Teaching Assistant @ Dept. Astronomy and Planetary Science, NAU, **Fall 2022**.  
AST 401L — *Observational Astronomy Laboratory*.
- Lab Instructor @ Dept. Astronomy and Planetary Science, NAU, **Fall 2022**.  
AST 190L — *The Planets Laboratory*.
- Guest lectures @ Dept. Astronomy and Planetary Science, NAU, **Fall 2021**.  
AST 391 — *Astrophysics: stars*.
- Co-instructor (with Christian J. Tai Udovicic) on programming course  
@ Dept. Astronomy and Planetary Science, NAU, **Fall 2021**.  
Course website: [https://cjt.u.github.io/spirl/f21\\_about.html](https://cjt.u.github.io/spirl/f21_about.html)
- Teaching Assistant @ Department of Physics, NCU, **Spring 2018**.  
PH 1024 — *General Physics Laboratory*.
- Teaching Assistant @ Department of Physics, NCU, **Fall 2018**.  
PH 1023 — *General Physics Laboratory*.

### Student Project Mentor/Supervision

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- Co-supervised (with Dr. Xiaoying Pang) undergrad final year project on data visualization using Plotly Dash App — Jiayu Li, XJTLU, **Fall 2021 — Spring 2022**.  
Project web page: <http://3doc-morphology.lowell.edu>
- Mentoring undergraduate research — Hunter Brooks, NAU, **Fall 2021**. Project: *Discovery of New Low-Mass Objects and Brown Dwarfs in Blanco 1's Tidal Tails*

### Invited Talks

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- 2023: Colloquium, Institute of Astronomy at National Central University  
(May 26 @ Zhongli, Taiwan)
- 2023: Seminar, Center of Astronomy and Gravitation (CAG) at National Taiwan Normal University (May 25 @ Taipei, Taiwan)

### Conferences/Workshops

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- ▶ 2023:
  - The 8<sup>th</sup> Emerging Researchers in Exoplanet Science Symposium  
(June 19-20 @ Yale, USA) — **Poster**

- The 2023 Gordon Research Conference/Seminar on Origins of Solar Systems (June 10-16 @ South Hadley, USA) — **Poster**
- The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 19-21 @ Kaohsiung, Taiwan) — **Poster**
- IGRINS YSO meeting (May 3-4 @ Austin, USA) — **Talk (contributed)**
- 241st AAS meeting (Jan. 8-12 @ Seattle, USA) — **iPoster** [[iPoster link](#)]
- ▶ 2022:
  - 2022 Fall Flagstaff Astronomy Symposium (Oct. 26 @ Flagstaff, USA) — **Talk (contributed)**
  - 2022 Sagan Exoplanet Summer Hybrid Workshop: Exoplanet Science in the Gaia Era (Jul 25-29 @ Pasadena, USA) — **Poster & Hands-on sessions Helper**
  - Exoplanets IV (May 1-6 @ Las Vegas, USA) — **Poster**
  - 2022 Spring Flagstaff Astronomy Symposium (Apr. 14 @ Flagstaff, USA) — **Talk (contributed)**
- ▶ 2021:
  - Sagan Exoplanet Summer Virtual Workshop (online): Circumstellar Disks and Young Planets — **Helper on leading hands-on sessions**
  - The 6<sup>th</sup> Emerging Researchers in Exoplanet Science Symposium (May 24-26, online) — **Talk (contributed)**
- ▶ 2020:
  - 2020 Flagstaff Astronomy Symposium (Mar. 4 @ Flagstaff, USA) — **Talk (contributed)**
- ▶ 2019:
  - Micro-Workshop for Stellar Initial Mass Function and Molecular Core Mass Function (Nov. 2019 @ Taipei, Taiwan) — **Talk (contributed)**
  - The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 17-19 @ Taichung, Taiwan) — **Talk (contributed)**
  - Star Cluster Workshop (April @ Kunming, China) — **Talk (contributed)**
- ▶ 2018:
  - ESO Workshop: A revolution in stellar physics with Gaia and large surveys (Sep. 2018 @ Warsaw, Poland) — **Poster**
  - Star Cluster Workshop (July @ Xinjiang, China) — **Talk (contributed)**
  - The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 18-20 @ Kinmen, Taiwan) — **Talk (contributed)**
  - The Taiwan physics society annual meeting (Jun. 24-26 @ Taipei, Taiwan) — **Poster**
- ▶ 2016:
  - The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 13-15 @ Tainan, Taiwan) — **Poster**

### **Awards/Scholarship**

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- 2019 Best Presentation (oral) Award for the Astronomical Society of the Republic of China (Taiwan) annual meeting

- 2018 The physics society of Taiwan, undergraduate excellent thesis award
- 2018 NCU scholarship for outstanding student
- 2018 Fellowship of MPIA summer internship (full financial support)
- 2018 Best poster award for the Taiwan physics society annual meeting
- 2017 NCU, The ICT Solution Provider scholarship
- 2016 NCU, Fellowship for Exchange Student to Niigata University, Japan
- 2016 best presentation (poster) award for the Astronomical Society of the Republic of China (Taiwan) annual meeting

**Publications | 8/15 1st & 2nd author papers | h-index: 9 | See more on**



### 1st & 2nd author papers:

- ☆ 2023: **Tang, Shih-Yun**; Stahl, Asa G.; Prato, L. et al., *Star-Crossed Lovers DI Tau A and B: Orbit Characterization and Physical Properties Determination*, [The Astrophysical Journal](#), 950:92.
- 2022: Pang, Xiao-Ying; **Tang, Shih-Yun**; Li, Yuqian et al., *3D Morphology of Open Clusters in the Solar Neighborhood with Gaia EDR3 II: Hierarchical Star Formation Revealed by Spatial and Kinematic Substructures*, [The Astrophysical Journal](#), 931:156.
- ☆ 2021: **Tang, Shih-Yun**; Robinson, Tyler D.; Marley, Mark S. et al., *Impacts of Water Latent Heat on the Thermal Structure of Ultra-Cool Objects: Brown Dwarfs and Free-Floating Planets*, [The Astrophysical Journal](#), 922:26.
- 2021: Stahl, Asa G.; **Tang, Shih-Yun**; Johns-Krull, Christopher M. et al., *IGRINS RV: A Precision RV Pipeline for IGRINS Using Modified Forward-Modeling in the Near-Infrared*, [The Astronomical Journal](#), 161:283.
- ☆ 2021: **Tang, Shih-Yun**; Stahl, Asa G.; Johns-Krull, Christopher M. et al., *IGRINS RV: A Python package for precision radial velocities with Near-Infrared Spectra*, [The Journal of Open Source Software](#), 6:62.
- 2020: Zhang, Yu; Tang, Shih-Yun\*; Chen, W. P. et al., *Diagnosing the Stellar Population and Tidal Structure of the Blanco1 Star Cluster*, [The Astrophysical Journal](#), 889:99.
- ☆ 2019: **Tang, Shih-Yun**; Pang, Xiao-Ying; Yuan, Zhen et al., *Disrupted Open Clusters with tidal tails: Coma Berenices and its neighboring group*, [The Astrophysical Journal](#), 877:12.
- ☆ 2018: **Tang, Shih-Yun**; Chen, W. P.; Chiang, P. S. et al., *Characterization of Stellar and Substellar Members in the Coma Berenices Star Cluster*, [The Astrophysical Journal](#), 862:106.

### Co-author Papers:

- 2022: Pang, Xiao-Ying; Li, Yuqian; **Tang, Shih-Yun**, et al., *Dynamical Origin for the Collinder 132-Gulliver 21 Stream: A Mixture of three Co-Moving Populations with an Age Difference of 250 Myr*, [The Astrophysical Journal Letters](#), 937:L7.
- 2021: Mann, Andrew W.; Wood, Mackenna L.; Schmidt, Stephen P. et al. (including **Tang, Shih-Yun**), *TESS Hunt for Young and Maturing Exoplanets (THYME) VI: an 11 Myr giant planet transiting a very low-mass star in Lower Centaurus Crux*, [The Astronomical Journal](#), 163, 156.
- 2021: Lee, Yong-Hee; Johnstone, Doug; Lee, Jeong-Eun et al. (including **Tang, Shih-Yun**), *The JCMT Transient Survey: Four Year Summary of Monitoring the Submillimeter Variability of Protostars*, [The Astrophysical Journal](#), 920:119.
- 2021: Li, Yezhang; Pang, Xiao-Ying; **Tang, Shih-Yun** et al., *Evidence of Early-stage Tidal Structures of Open Clusters Revealed by Kinematics with Gaia EDR3*, [Research Notes of the AAS](#), 5:173.

- 2021: Pang, Xiao-Ying; Yu, Zeqiu; **Tang, Shih-Yun** et al., *Disruption of Hierarchical Clustering in the Vela OB2 Complex and the Cluster Pair Collinder 135 and UBC7 with Gaia EDR3: Evidence of Supernova Quenching*, [The Astrophysical Journal](#), 923:20.
- 2021: Pang, Xiao-Ying; Li, Yuqian; Yu, Zeqiu; **Tang, Shih-Yun** et al., *3D Morphology of Open Clusters in the Solar Neighborhood with Gaia EDR 3: Its Relation to Cluster Dynamics*, [The Astrophysical Journal](#), 912:162.
- 2020: Pang, Xiao-Ying; Li, Yuqian; **Tang, Shih-Yun** et al., *Different Fates of Young Star Clusters after Gas Expulsion*, [The Astrophysical Journal Letters](#), 900:L4.