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 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

- **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

- **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

- **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

- 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

- `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

- 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://cjtu.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

- 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

- 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

- 2023:
  - 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) — i**Poster** *[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 6th Emerging Researchers in Exoplanet Science Symposium (May 24-26, 2021, 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 (Apr. 2019 @ 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 (Jul. 2018 @ 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

- 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: 8 | 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, Accepted.

- 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.