Shih-Yun Tang 湯士昀

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Rice University
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Education

- January 2023 — Present | **Ph.D. expected December 2025, Physics and Astronomy**, Rice University, Houston, TX, USA (transferred from Northern Arizona University, December 2022)
  - Advisors: Professor Christopher Johns-Krull (Rice) & Dr. Lisa Prato (Lowell Observatory)
- January 2020 — December 2022 | **Ph.D., Astronomy and Planetary Science**, Northern Arizona University (NAU), Flagstaff, AZ, USA
  - Advisors: Dr. Lisa Prato (Lowell Observatory) & Professor Tyler Robinson (NAU)
- September 2017 — June 2019 | **M.S., Physics**, National Central University (NCU), Taiwan
  - Advisor: Professor Wen-Ping Chen
- September 2013 — June 2017 | **B.S., Physics**, National Central University (NCU), Taiwan
  - Advisor: Professor Wen-Ping Chen

Research Interests

- Planet formation: Spectroscopic searches for the youngest hot Jupiters
- Stellar astrophysics: Star spots, star-disk interaction, and B field effect in young stellar objects
- Stellar cluster: Membership identification, cluster dynamics, and chemical component studies

Research Experience

- January 2020 — Present | Graduate Research Assistant, Lowell Observatory
- July 2018 — September 2018 | Summer Intern, Max-Planck-Institute for Astronomy, Germany
  - Advisors: Dr. Bertrand Goldman & Dr. Chien-Cheng Lin
  - Topic: *Multi-dimensional parameterization of members in nearby star clusters: Gaia DR2 and photometric distancing*
- September 2017 — June 2019 | Graduate Research Assistant, NCU, Astronomy Institute
- June 2016 — August 2016 | Summer Intern @ The Chinese University of Hong Kong
  - Advisor: Prof. Li, Hua-bai
  - Topic: *Optical performance testing of the ASTE polarimeter for the ASTE telescope*
- January 2015 — September 2016 | Undergraduate Research Assistant, NCU, Astronomy Institute

Awards/Scholarship/Fellowship

- 2024-2025 William & Elva Gordon Fellowship
- 2025 Spring 2025 RSI Center for Planetary Origins to Habitability graduate fellowships (**equiv. to about 30k**)
- 2024 NSBP-NSHP Beth Brown Memorial Award for Best Graduate Poster Presentation
- 2023-24 Physics and Astronomy Department Graduate Student Travel Award
- 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 students
- 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 | 9/20 1st & 2nd author papers | h-index: 11 | See more on

First author citation count: 134

1st & 2nd author papers:

- ☆ 2024: **Tang, Shih-Yun**; Johns-Krull, Christopher M.; Prato, L. et al., *Measuring the Spot Variability of T Tauri Stars Using Near-IR Atomic Fe and Molecular OH Lines,* The Astrophysical Journal, 973:124
- ☆ 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:

- 2025: Kutra, Taylor; Prato, Lisa; Tofflemire, Benjamin M, et al. (including **Tang, Shih-Yun**), *Sites of Planet Formation in Binary Systems. II. Double the Disks in DF Tau,* The Astronomical Journal, 169:20
- 2024: Brooks, Hunter; Caselden, Dan; Kirkpatrick, J. Davy, et al. (including **Tang, Shih-Yun**), *Discovery of 118 New Ultracool Dwarf Candidates Using Machine Learning Techniques,* The Astronomical Journal, 168:211
- 2024: Pang, Xiao-Ying; Liao, Siqi; Li, Jiadong, et al. (including **Tang, Shih-Yun**), *The Present-Day Mass Function of Star Clusters in the Solar Neighborhood,* The Astronomical Journal, 966:169
- 2023: Pang, Xiao-Ying; Wang, Yifan; **Tang, Shih-Yun**, et al., *Binary Star Evolution in Different Environments: Filamentary, Fractal, Halo and Tidal-tail Clusters,* The Astronomical Journal, 166:110
- 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

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

- 2025:
  - The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 16-18 @ Yunlin, Taiwan) — **Talk**
- 2024:
  - 2024 NSBP-NSHP Joint Conference (November 13-16 @ Houston, USA) — **Poster**
  - The 9th Emerging Researchers in Exoplanet Science Symposium (July 10-12 @ Cornell University, USA) — **Talk**
  - Cool Stars, Stellar Systems, and the Sun Conference (Cool Stars 22, June 24-28 @ San Diego University, USA) — **Poster**
- 2023:
  - The 8th Emerging Researchers in Exoplanet Science Symposium (June 19-20 @ Yale University, 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**
  - 241st AAS meeting (January 8-12 @ Seattle, USA) — i**Poster** *[iPoster link]*
- 2022:
  - 2022 Fall Flagstaff Astronomy Symposium (October 26 @ Flagstaff, USA) — **Talk**
  - 2022 Sagan Exoplanet Summer Hybrid Workshop: Exoplanet Science in the Gaia Era (July 25-29 @ Pasadena, USA) — **Poster**
  - Exoplanets IV (May 1-6 @ Las Vegas, USA) — **Poster**
  - 2022 Spring Flagstaff Astronomy Symposium (April 14 @ Flagstaff, USA) — **Talk**
- 2021:
  - The 6th Emerging Researchers in Exoplanet Science Symposium (May 24-26, online) — **Talk**
- 2020:
  - 2020 Flagstaff Astronomy Symposium (March 4 @ Flagstaff, USA) — **Talk**
- 2019:
  - Micro-Workshop for Stellar Initial Mass Function and Molecular Core Mass Function (November 2019 @ Taipei, Taiwan) — **Talk**
  - The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 17-19 @ Taichung, Taiwan) — **Talk**
  - Star Cluster Workshop (April @ Kunming, China) — **Talk**
- 2018:
  - ESO Workshop: A revolution in stellar physics with Gaia and large surveys (September 2018 @Warsaw, Poland) — **Poster**
  - Star Cluster Workshop (July @ Xinjiang, China) — **Talk**

- The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 18-20 @ Kinmen, Taiwan) — **Talk**
- The Taiwan Physics Society Annual Meeting (June 24-26 @ Taipei, Taiwan) — **Poster**

▸ 2016:

- The Astronomical Society of the Republic of China (Taiwan) annual meeting (May 13-15 @ Tainan, Taiwan) — **Poster**

Successful Proposals

- PI: McDonald Observatory 2.7m/IGRINS spectrographs, a total of **26 nights** from 2024 - 2025 (McD25-1-6, McD25-3-11)
- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, a total of **38 nights** from 2022-2024 (McD22-3-8, McD23-1-7, McD23-3-5, and McD24-1-3)
- PI: Gemini North, Fast Turnaround/GNIRS, 1.5 hours (GN-2017B-FT-18)
- Co-I: McDonald Observatory 2.7m/Tull coudé spectrographs, 3 nights (McD23-2-5)
- Co-I: IRTF/iSHELL, 14.5 hours (2022B060)
- Co-I: CFHT/SPIRou, 19.3 hours (20BH33)

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

Outreach & Media

- Rice University, Wiess School of Natural Sciences — Featured interview: "Shih-Yun Tang: Decoding the Cosmos", **August 2025** https://naturalsciences.rice.edu/news/shih-yun-tang-decoding-cosmos
- Flagstaff Astronomy on Tap, **July 2024**

Teaching

- Guest lecture @ Dept. Astronomy and Planetary Science, NAU, **Spring 2023**
  AST 210 — Celebrating Diversity in Astronomy
- 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
- Leading hands-on sessions helper @ Sagan Exoplanet Summer Workshop, Pasadena, USA: Exoplanet Science in the Gaia Era, **Summer 2022**
- 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
- Leading hands-on sessions helper @ Sagan Exoplanet Summer Virtual Workshop (online): Circumstellar Disks and Young Planets, **Summer 2021**
- 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*