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Rice University

Dept. of Physics & Astronomy
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Lowell Observatory

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Education

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

Research Interests

- Planet formation: Searching for the youngest hot Jupiters using spectroscopic data.
- Stellar astrophysics: Star spots, star-disk interaction, and B field effect in young stellar objects.
- Stellar cluster: Membership identification, cluster dynamic, and chemical component studies.

Research Experience

- Jan. 2020 — Present | Graduate Research Assistant, Lowell Observatory
- July 2018 — Sep. 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*
- Sep. 2017 — June 2019 | Graduate Research Assistant, NCU, Astronomy Institute
- Jun. 2016 — Aug. 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*
- Jan. 2015 — Sep 2016 | Undergraduate Research Assistant, NCU, Astronomy Institute

Successful Proposals

- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, 14 nights (McD25-1-6)
- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, 10 nights (McD24-1-3)
- PI: McDonald Observatory 2.7m/Tull coudé spectrographs, 10 nights (McD23-3-5)
- Co-I: McDonald Observatory 2.7m/Tull coudé spectrographs, 3 nights (McD23-2-5)
- 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: IRTF/iSHELL, 14.5 hours (2022B060)
- Co-I: CFHT/SPIRou, 19.3 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*.
- 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://citu.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*

Invited Talks

- **2024**: Flagstaff Astronomy on Tap (AoT, July 23)
- **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

- ▶ **2024**:
 - 2024 NSBP-NSHP Joint Conference (Nov. 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 (Jan. 8-12 @ Seattle, USA) — **iPoster** [[iPoster link](#)]
- ▶ 2022:
 - 2022 Fall Flagstaff Astronomy Symposium (Oct. 26 @ Flagstaff, USA) — **Talk**
 - 2022 Sagan Exoplanet Summer Hybrid Workshop: Exoplanet Science in the Gaia Era (Jul 25-29 @ Pasadena, USA) — **Poster**
 - Exoplanets IV (May 1-6 @ Las Vegas, USA) — **Poster**
 - 2022 Spring Flagstaff Astronomy Symposium (Apr. 14 @ Flagstaff, USA) — **Talk**
- ▶ 2021:
 - The 6th Emerging Researchers in Exoplanet Science Symposium (May 24-26, online) — **Talk**
- ▶ 2020:
 - 2020 Flagstaff Astronomy Symposium (Mar. 4 @ Flagstaff, USA) — **Talk**
- ▶ 2019:
 - Micro-Workshop for Stellar Initial Mass Function and Molecular Core Mass Function (Nov. 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 (Sep. 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 (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/Fellowship

- 2025 Spring 2025 RSI Center for Planetary Origins to Habitability graduate fellowships (equiv ~30k)
- 2024 NSBP-NSHP Beth Brown Memorial Award for Best Graduate Poster Presentation
- 2023-24 Physics and Astronomy Department Graduate Student Travel Award (\$300.00)
- 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

First author citation count: 126

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 Blanco 1 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:

- 2024: 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.