

# Shih-Yun Tang

湯士昀

*Interested in searching for the youngest exoplanet around T Tauri stars with the radial velocity technique, exploring brown dwarf/free-floating planets' atmosphere with 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>

## Northern Arizona University

Dept. of Astronomy & Planetary Science  
Flagstaff, AZ 86011, USA

## Lowell Observatory

1400 West Mars Hill Road  
Flagstaff, AZ 86001, USA

## Education

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- **Ph.D., Astronomy and Planetary Sciences**, Northern Arizona University, Flagstaff, AZ, USA  
Jan. 2020 — Present
  - Advisors: Dr. Lisa Prato and Prof. Tyler Robinson
- **M.S., Physics**, National Central University, Taiwan — (GPA 3.88/4.0)  
Sep. 2017 — June 2019
  - Advisor: Prof. Wen-Ping Chen
- **B.A., Physics**, National Central University, Taiwan — (GPA 3.80/4.0)  
Sep. 2013 — June 2017
  - Advisor: Prof. Wen-Ping Chen

## Awards/Scholarship

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- 2018 The Physics Society of Taiwan, Undergraduate Excellent Thesis Award
- 2018 Scholarship for Outstanding Student
- 2018 Fellowship of MPIA summer internship (full financial support)
- 2018 Taiwan Physics Society Annual Meeting Poster Award
- 2017 The ICT Solution Provider scholarship
- 2016 Fellowship for Exchange Student
- 2016 Astronomy Society R.O.C. Annual Meeting Poster Award

## Research Experience

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- **Graduate Research Assistant**, Lowell Observatory (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

## Internship

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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: Gemini, Fast Turnaround/GNIRS, 1.5 hours, program ID: GN-2017B-FT-18
- Co-I: CFHT, SPIRou, 19 hours, program ID: 20BH33

## Open Source Projects | GitHub

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

## Teaching & Outreach & Undergraduate Student Project Mentor/Supervision

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- Co-supervise (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*
- Two guest lectures @ Dept. Astronomy and Planetary Science, NAU for AST 391 — *Astrophysics: stars*, **Fall 2021**
- SPIRL: Python programming co-instructor (with Christian J. Tai Udovicic) @ Dept. Astronomy and Planetary Science, NAU, **Fall 2021**.  
Course web site: [https://cjt.u.github.io/spirl/f21\\_about.html](https://cjt.u.github.io/spirl/f21_about.html)

## Publications | 7/13 1<sup>st</sup> & 2<sup>nd</sup> author papers | h-index: 8 | See more on

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### 1<sup>st</sup> & 2<sup>nd</sup> author papers:

- 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*, in press.
- ☆ 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:

- 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.

### Conference/WorkShop

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- 2022: Exoplanets IV (May 1-6, 2022 @ Las Vegas, USA) — **Poster**: IGRINS RV: A Precision RV Pipeline for IGRINS Using Modified Forward-Modeling in the Near-Infrared and Its Early Science Results
- 2021: 2021 Sagan Exoplanet Summer Virtual Workshop (online): Circumstellar Disks and Young Planets — **Helper on leading hands-on session**
- 2021: The 6<sup>th</sup> Emerging Researchers in Exoplanet Science Symposium (May 24-26, 2021, online) — **Talk (contribute)**
  - Topic: *Impact of Water Latent Heat for Ultra-cool Object's Thermal Structures: Brown Dwarfs and Free-Floating Planets*
- 2020: 2020 Fall Flagstaff Astronomy Symposium — **Talk (contribute)**: *Disrupting Open Clusters with Tails in the Solar Neighborhood*
- 2019: Micro-Workshop for Stellar Initial Mass Function and Molecular Core Mass Function (Nov. 2019 @ Taipei, Taiwan) — **Talk (contribute)**: *Mass Function in the Nearby Open Clusters*
- 2019: The Astronomical Society of the Republic of China (Taiwan) annual meeting — **Talk (contribute)**
- 2019: Star Cluster Workshop (Apr. 2019 @ Kunming, China) — **Talk (contribute)**: *Discovery of Tidal Tails in Disrupting Open Clusters: Coma Berenices and a Neighbor Stellar Group*
- 2018: ESO Workshop: A revolution in stellar physics with Gaia and large surveys (Sep. 2018 @Warsaw, Poland) — **Poster**: *Multi-dimensional Parameterization of Members in Nearby Star Clusters: Gaia DR2 and Photometric Distancing*
- 2018: Star Cluster Workshop (Jul. 2018 @ Xinjiang, China) — **Talk (contribute)**: *Characterization of Stellar and Substellar Members in the Coma Berenices Star Cluster*
- 2018: The Astronomical Society of the Republic of China (Taiwan) annual meeting — **Talk (contribute)**