Curriculum Vitae: Yubo Su

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Education

May 2022	Ph.D. Cornell University (Astrophysics)
Dec 2019	M.S. Cornell University
Jun 2016	B.S. California Institute of Technology (Physics, Computer Science)

Positions

Sept 2025 -	Postdoctoral Research Fellow Canadian Institute for Theoretical Astrophysics
Sept 2022 - Aug 2025	Lyman Spitzer Jr. Postdoctoral Fellow Princeton University
Sept 2019 - Aug 2022	NASA FINESST Fellow Cornell University
Aug 2017 - Aug 2019	Graduate Research Assistant Cornell University

First/Second Author Publications

- **Su, Y.** (2024)., A Possible Mass Ratio and Spin-Orbit Misalignment Correlation for Mergers of Binary Black Holes in Nuclear Star Clusters. *To be submitted. arXiv preprint arXiv:2501.16258*
- **Su, Y.,** & Lai, D. (2024)., Stellar Obliquity Excitation via Disk Dispersal-Driven Resonances in Binaries. *Submitted. arXiv preprint arXiv:2411.08094*
- *Yuan, H., **Su, Y.,** & Goodman, J. (2024). Surprising Spin-orbit Resonances of Rocky Planets. *ApJ, 987 (1), 9.*
- Sur, A., **Su, Y.**, Arevalo, R. T., Chen, Y. X., & Burrows, A. (2024). APPLE: An Evolution Code for Modeling Giant Planets. *ApJ, 971*(1), 104.
- Arevalo, R. T., **Su, Y.**, Sur, A., & Burrows, A. (2024). Equations of State, Thermodynamics, and Miscibility Curves for Jovian Planet and Giant Exoplanet Evolutionary Models. *ApJS 274 (2), 34*
- **Su, Y.,** Liu, B., & Xu, S. (2024). Revisiting the Tertiary-induced Binary Black Hole Mergers:

the Role of Superthermal Wide Tertiary Eccentricity Distributions. *ApJ 971 (2), 139.*

- Vick, M., **Su, Y.**, & Lai, D. (2023). High-eccentricity Migration with Disk-induced Spin–Orbit Misalignment: A Preference for Perpendicular Hot Jupiters. *ApJL, 943(2), L13.*
- **Su, Y.,** & Lai, D. (2022). Dynamics of Colombo's Top: non-trivial oblique spin equilibria of super-Earths in multiplanetary systems. *MNRAS*, *513*(3)*, 3302-3316.*
- **Su, Y.,** & Lai, D. (2022). Dynamical tides in eccentric binaries containing massive main-sequence stars: analytical expressions. *MNRAS, 510(4), 4943-495*1.
- **Su Y.** & Lai D. (2021). Dynamics of Colombo's Top: Tidal Dissipation and Resonance Capture, With Applications to Oblique Super-Earths, Ultra-Short-Period Planets and Inspiraling Hot Jupiters. *MNRAS, 509(3), 3301-3320.*
- **Su, Y.**, Liu, B., & Lai, D. (2021). The Mass Ratio Distribution of Tertiary Induced Binary Black Hole Mergers. *MNRAS, 505 (3), 3681-3697.*
- Rodet, L., **Su, Y.**, & Lai, D. (2021). On the Correlation between Hot Jupiters and Stellar Clustering: High-Eccentricity Migration Induced by Stellar Flybys. *ApJ 913 (2), 104.*
- **Su, Y.**, Lai, D., & Liu, B. (2020). Spin-Orbit Misalignments in Tertiary-Induced Black-Hole Binary Mergers: Theoretical Analysis. *Phys. Rev. D 103 (6), 063040.*
- **Su, Y.**, & Lai, D. (2020). Dynamics of Colombo's Top: Generating Exoplanet Obliquities from Planet–Disk Interactions. *ApJ, 903(1), 7*.
- **Su, Y.**, Lecoanet, D., & Lai, D. (2020). Physics of tidal dissipation in early-type stars and white dwarfs: hydrodynamical simulations of internal gravity wave breaking in stellar envelopes. *MNRAS, 495(1), 1239-1251*.

* - Led by student

Select Other Publications

- Arevalo, R. T., Sur, A., Su, Y., & Burrows, A. (2024). Jupiter Evolutionary Models Incorporating Stably Stratified Regions. *Submitted, arXiv:2410.12899.*
- Marcussen, M. L., Albrecht, S. H., Winn, J. N., **Su, Y.**, Lundkvist, M. S., & Schlaufman, K. C. (2024). The BANANA Project. VII. High Eccentricity Predicts Spin-Orbit Misalignment in Binaries. *In Press*.
- Guerrero, N. M., Ballard, S. A., **Su, Y.** (2024). Plausibility of Capture into High-Obliquity States for Exoplanets in the M Dwarf Habitable Zone. *In Press.*
- Guerrero, N. M., Ballard, S. A., & **Su, Y.** (2024). Plausibility of Capture into High-obliquity States for Exoplanets in the M Dwarf Habitable Zone. *ApJ*, *975*(2), 256.

Invited Talks

- *Two Tales of Hot Jupiter Formation*. May 2025, SHAO Exoplanets Seminar
- *Dynamics across scales: Three Fun Instances of Dynamically-Induced Orbital Coalescence*. Mar 2025, Cornell Astrophysics Lunch
- *The Spins of Merging Binary Black Holes: What They Tell Us About Their Formation*. Dec 2024, CIERA Theory Group Meeting
- *Resonant Spin Dynamics of Close-In Exoplanets: Avoiding Tidal Locking*. July 2024,

Tsung-Dao Lee Institute

- *Tilted Exoplanets: the Combined Effect of Secular Spin-Orbit Resonances and Tidal Dissipation*. Feb 2024, IMCCE
- *A Beginner's Guide to Tilted Stars and Exoplanets with Secular Spin-orbit Resonances.* May 2023, CITA Seminar
- *Tilted Planets and Stars: The Dynamics of Spin-Orbit Resonances*. Jan 2023, Yale Exoplanets & Stars Seminar
- *Tilted Planets and Black Holes: The Effect of Resonances in Astrophysical Systems.* Sep 2022, Georgia Tech CDSNS Colloquium
- *Tilted Planets: Exciting Super Earth Obliquities via Spin-Orbit Resonances.* Aug 2022, Georgia Tech CRA Seminar
- *Dissipation via dynamical tides in stellar binaries & the curious case of PSR J0045-7319*. Feb 2022, Cambridge DAMTP Astro Seminar
- *Oblique Exoplanets: The Evolution of Planetary Obliquities in Exoplanetary Systems*. Sep 2021, Penn State CEHW Seminar Series.
- *The von Zeipel-Lidov Kozai Effect and Merging Binary Black Holes.* April 2021, MIT Kavli Institute lunch talk.
- *Tilting Planets and Keeping Them There: Generating Planetary Obliquities with Cassini State Resonances*. May 2020, Princeton lunch talk.

Contributed Talks

- *The Old and Simple: Can the Signatures of Triple-induced Mergers be Reconciled with LVK Measurements?* Aug 2024, Niels Bohr Institute Workshop
- *The Obliquities of Planets Orbiting Close to Their Host Stars*. June 2024, Exoplanets V.
- *Spin-orbit Resonances and Tidal Synchronization of Close-in Rocky Planets*. June 2024, New York Area Exoplanets Meeting
- *Long-lived Planetary Obliquities of Close-in Exoplanets: The Tricky Story for Rocky Bodies*. May 2024, AAS Division on Dynamical Astronomy 55th meeting.
- *Observational Signatures of Tertiary-Induced BH Mergers*. Dec 2023, 32nd Texas Symposium on Relativistic Astrophysics.
- *The Effect of Protoplanetary Disk Photoevaporation on Disk-Driven Resonantly Excited Stellar Obliquities*. May 2023, AAS Division on Dynamical Astronomy 54th meeting.
- *Dynamics of Colombo's Top: Non-Trivial Oblique Spin Equilibria of Super-Earths in Multi-planetary Systems*. May 2022, AAS Division on Dynamical Astronomy 53rd meeting.
- *Observational Signatures of Tertiary-Induced Binary Black Hole Mergers*. Jan 2022, 2022 Aspen Winter Conference: Dynamical Formation of Gravitational Wave Sources.
- *Spin-Orbit Misalignments in Tertiary-Induced Black-Hole Binary Mergers: Theoretical Analysis*. May 2021, AAS Division on Dynamical Astronomy 52nd meeting.
- *The Mass Ratio Distribution of Tertiary Induced Binary Black Hole Mergers*. Mar 2021, TRENDY-3 conference.

- *Dynamics of Colombo's Top: Generating Exoplanet Obliquities from Planet-Disc Interactions*. Aug 2020, AAS Division on Dynamical Astronomy meeting.
- Syn*thetic White-light Imagery for the Wide-field Imager for Solar Probe Plus (WISPR)*. Dec 2014, AGU Fall Meeting, poster.
- Misc. Cornell University Seminars 2019-2022, Princeton University Seminars 2022-2024

Advising

- Qing (Eritas) Yang (with Joshua Winn), Princeton Graduate Student, 2024-
- Luke Stockless (with Eliot Quataert), Princeton Undergraduate Senior Thesis, 2024-2025.
- Taeho Kim, Princeton Undergraduate Junior Paper, Spring 2025.
- Masayuki Inai (with Ankan Sur), Princeton University of Tokyo Exchange Program, Summer 2024. *ApJ publication in prep.*
- Mariana Ordonez (with Akash Gupta), Princeton Undergraduate Summer Research Program, 2024
- Henry Yuan (with Jeremy Goodman), Princeton Undergraduate Senior Thesis, 2022-2023, *ApJ publication submitted.*
- Jupiter Ding (with Jeremy Goodman), Princeton Junior Paper, Spring 2023.
- Stephon Qian (with Dong Lai), Cornell REU, Summer 2022.

Honors and Awards

- Cornell 2022 Hsien Wu and Daisy Yen Wu Scholarship, Feb 2022
- AAS Division on Dynamical Astronomy Raynor L. Duncombe Student Research Prize. Aug 2020.
- NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST) award. Aug 2019–Jul 2022.
- NSF Science Foundation Graduate Research Fellowship Program Honorable Mention. Apr 2016.

- Caltech outstanding teaching award. June 2016.
- Caltech teaching feedback survey 1st place. June 2016.

- Citadel 2020 Data Open Championship (international) 3rd place team. Apr 2020.
- Citadel 2019 Cornell Datathon 2nd place team. Oct 2019.

Teaching

- Guest Lecturer AST 513, Dynamics of Stellar and Planetary Systems.
- Guest Lecturer ASTRO3302, The Life of Stars: From Birth to Death.
- Cornell REU Programming Workshop, 2021
- The History of the Universe. (Part of the Knight Institute Writing in the Majors series). Cornell, Jan 2019–Jun 2019.
- From Black Holes to Undiscovered Worlds. Cornell, Aug 2018–Dec 2018.

- Complex Analysis, Ordinary and Partial Differential Equations. Caltech, Jan 2016–Jun 2016.
- C++ Language Workshop. Caltech, Oct 2015–Dec 2015.
- Introductory Physics Laboratory. Caltech, Jan 2014–Jun 2015.

Community & Outreach

- Organizer-Emerging Researchers in Exoplanet Science (ERES) 2024-2025
- Division for Dynamical Astronomy Scientific Organizing Committee Member 2024-25.
- Organizer of Princeton Astronomy Biweekly Dynamics Meetings
- Princeton Astronomy Postdoc Council---Social Officer
- Cornell 4-H Youth Development Workshop. June 2021 & June 2019.
- AAS Cornell Virtual Booth Volunteer 2020 & 2021.
- Cornell REU Application Panelist. Feb 2021.
- Cornell Graduate Student Fair Volunteer, Jan 2021.
- Cornell Expand Your Horizons (Science workshop for 7th-9th grade girls). June 2019.
- Cornell FIRST LEGO League Jr. Reviewer. Jan 2019.
- Cornell NASA Student Spaceflight Experiments Program proposal reviewer. Oct 2018.
- Cornell Ask an Astronomer co-administrator. Aug 2017–Present.
- Cornell International *Observe the Moon Night* volunteer. Oct 2017.
- Reviewer for: ApJL, ApJ, AJ, PSJ, Icarus
- Proposal panelist for: NASA XRP, NSF A&A grants

Workshops

- Modules for Experiments in Stellar Astrophysics (MESA) summer school. Aug 2019.

Other Employment

- Software Engineer, Blend Labs. Jul 2016–Aug 2017.