

JIAXUAN LI

PERSONAL INFORMATION

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RESEARCH INTERESTS

- Dwarf galaxies across different environments: satellite galaxies, field dwarfs, ultra-diffuse (puffy) galaxies.
- Dark matter physics: observational tests for dark matter models.
- Low surface brightness astronomy: galaxy outskirts, tidal debris, data reduction, and instrumentation.
- Stellar population: star formation history, surface brightness fluctuation, initial mass function, photo- z .
- Galaxy evolution: quenching, scaling relations, galaxy–halo connection.
- Statistical methods and machine learning in astrophysics.

EDUCATION

PhD Candidate, Department of Astrophysical Sciences, Princeton University Aug 2021 – July 2026
Advisor: [Jenny E. Greene](#)
Thesis: *ELVES-Dwarf Survey: Probing Satellite Populations of Isolated Dwarf Galaxies in the Local Volume*

MASTER OF ARTS, Department of Astrophysical Sciences, Princeton University Aug 2021 – May 2023

BACHELOR OF SCIENCE (highest honor), Peking University, China Sept 2016 – July 2020
Major: Astrophysics GPA: 3.80/4.00 Rank: 2 / 28
Advisors: [Pieter van Dokkum](#) (Yale) & [Luis C. Ho](#) (Peking)

PRESS COVERAGE

- AAS Nova: [Satellite Surplus Around Dwarf Galaxy DDO 161](#)
- AAS Nova: [Discovery of a Lonely Galactic Hedgehog](#)
- The New York Times: [Scientists Say They've Found a Dwarf Planet Very Far From the Sun](#)
- Reuters: [Possible new dwarf planet spotted near the edge of the solar system](#)
- Sky & Telescope: [Another Dwarf Planet in Our Solar System?](#)
- Princeton University: [Princeton Astronomers Discover Extraordinary Distant Object at Solar System's Edge](#)

HONORS AND AWARDS

[Brinson Prize Postdoctoral Fellowship](#) Feb 2026
KIPAC Postdoctoral Fellowship, Stanford University Feb 2026
American Astronomical Society's Rodger Doxsey Travel Prize Honorary Winner Jan 2026
Charlotte Elizabeth Procter Fellowship, Princeton University Apr 2025
The fellowship recognizes final-year graduate students for outstanding academic performance and professional promise.

American Astronomical Society’s Chambliss Astronomy Achievement Student Award	Jan 2024
<i>Awarded to the top graduate student posters at the AAS meeting.</i>	
Outstanding Undergraduate Thesis Award in Beijing (北京市本科优秀毕业论文)	Sept 2020
Inaugural PKU Junior Scholar (“未名学士” 称号), Peking University	June 2020
Outstanding Graduate of Universities in Beijing (北京市普通高校优秀毕业生)	June 2020
Outstanding Graduate of Peking University (北京大学优秀毕业生)	June 2020
PKU Scholar in Physics (未名物理学子)	2017 – 2020
Tang Li-Xin Scholarship (10,000 RMB per year, most competitive scholarship in PKU)	May 2019
AEON Scholarship , Peking University (10,000 RMB, 2/202)	Sept 2018
Leo KoGuan Scholarship , Peking University (10,000 RMB, 4/202)	Oct 2017
Lin-bridge Prize for Excellent Undergraduate Research (2,800 RMB, endowed by Douglas Lin)	Sept 2018
Merit Student , Peking University	2017, 2018
First Prize , 8 th China Undergraduate Physicists Tournament	Aug 2017
Meritorious Winner in Mathematical Contest In Modeling (MCM/ICM)	Apr 2018
Silver Medal , 9 th International Olympiad on Astronomy and Astrophysics (IOAA)	Aug 2015
Gold Medal & Best Result , China National Astronomy Olympiad	2014, 2015
Gold Medal (3 rd place), 1 st Princeton University Physics Competition	Jan 2015

PUBLICATIONS

Total citations: 525; first-author citations: 110; h-index: 14 [ADS Library](#)

1. **Li J.**, Greene J. E., Danieli S., Carlsten S. G., Geha M., [A Possible “Too-many-satellites” Problem in the Isolated Dwarf Galaxy DDO 161](#), *ApJL* 998, L24 (2026).
2. **Li J.**, Greene J. E., Danieli S., Carlsten S. G., Geha M., Jiang F., Tanaka M., [ELVES-Dwarf I: Satellites Systems of Eight Isolated Dwarf Galaxies in the Local Volume](#), *ApJ* accepted, arXiv:2504.08030.
3. **Li J.**, Greene J. E., Carlsten S. G., Danieli S., [Hedgehog: An Isolated Quiescent Dwarf Galaxy at 2.4 Mpc](#), *ApJL* 975, L23 (2024).
4. **Li J.**, Melchior P., Hahn C., Huang S., [PopSED: Population-level Inference for Galaxy Properties from Broadband Photometry with Neural Density Estimation](#), *AJ* 167, 16 (2024).
5. **Li J.**, Greene J. E., Greco J. P., Huang S., Melchior P., Beaton R., Casey K., Danieli S., Goulding A., Joseph R., Kado-Fong E., Kim J. H., MacArthur L. A., [Beyond Ultra-diffuse Galaxies. I. Mass-Size Outliers among the Satellites of Milky Way Analogs](#), *ApJ* 955, 1 (2023).
6. **Li J.**, Greene J. E., Greco J., Beaton R., Danieli S., Goulding A., Huang S., Kado-Fong E., [Beyond Ultra-diffuse Galaxies. II. Environmental Quenching of Mass-Size Outliers among the Satellites of Milky Way Analogs](#), *ApJ* 955, 2 (2023).
7. **Li J.**, Huang S., Leauthaud A., Moustakas J., Danieli S., Greene J. E., Abraham R., Ardila F., Kado-Fong E., Lokhorst D., Lupton R., Price P., [Reaching for the Edge I: probing the outskirts of massive galaxies with HSC, DECaLS, SDSS, and Dragonfly](#), *MNRAS* 515, 5335 (2022).
8. Cheng S., **Li J.**, Yang E., [Discovery of a Dwarf Planet Candidate in an Extremely Wide Orbit: 2017 OF201](#), *ApJL* 998, L6 (2026).

9. Carlsten S., **Li J.**, Greene J., Drlica-Wagner A., Danieli S., [A Sample of Nearby Isolated Dwarf Galaxies: A First Look at the Mass Function of Field Dwarfs](#), arXiv:2602.16766.
10. Carlsten S., **Li J.**, Greene J., Drlica-Wagner A., Danieli S., [ELVES-Field: Isolated Dwarf Galaxy Quenched Fractions Rise Below \$M_* \approx 10^7 M_\odot\$](#) , arXiv:2602.16778.
11. Wei L., Huang S., **Li J.**, Sun Z., Li M., Tang J., [Zangetsu: A Candidate Isolated, Quiescent, and Backsplash Ultra-diffuse Galaxy in the COSMOS Field](#), *ApJ* 997, 32 (2026).
12. Nemer A., Hahn C., **Li J.**, Melchior P., Goodman J., [Constraining Protoplanetary Disk Winds from Forbidden Line Profiles with Simulation-based Inference](#), *ApJ* 965, 157 (2024).
13. Ma Y., Greene J. E., Setton D. J., Goulding A. D. et al. (including **Li J.**), [Counting Little Red Dots at \$z < 4\$ with Ground-based Surveys and Spectroscopic Follow-up](#), *ApJ* 1000, 59 (2026).
14. Zimmerman E. A., Gal-Yam A., Groot P. J., Ofek E. O. et al. (including **Li J.**), [A Faint Progenitor System for the Faint Supernova 2024vjm](#), arXiv:2602.09096.
15. Garcia A. M., Rose J. C., Torrey P., Caputo A. et al. (including **Li J.**), [The DREAMS Project: Disentangling the Impact of Halo-to-Halo Variance and Baryonic Feedback on Milky Way Dark Matter Density Profiles](#), arXiv:2512.03132.
16. Lilie E., Rose J. C., Lisanti M., Garcia A. M. et al. (including **Li J.**), [The DREAMS Project: Disentangling the Impact of Halo-to-Halo Variance and Baryonic Feedback on Milky Way Dark Matter Speed Distributions](#), arXiv:2512.04157.
17. Rose J. C., Lisanti M., Torrey P., Villaescusa-Navarro F. et al. (including **Li J.**), [The DREAMS Project: Disentangling the Impact of Halo-to-Halo Variance and Baryonic Feedback on Milky Way Satellite Galaxies](#), arXiv:2512.02095.
18. Pan Y., Danieli S., Greene J. E., **Li J.**, Leauthaud A., Kado-Fong E., Luo Y., Mintz A., Brooks A., Huang S., Peter A. H., Bhattacharyya J., Kelvin L. S., [The Merian Survey: A Statistical Census of Bright Satellites of Milky Way Analogs](#), arXiv:2512.12846.
19. Danieli S., Kado-Fong E., Huang S., Luo Y. et al. (including **Li J.**), [First Data Release of the Merian Survey: A Wide-field Imaging Survey of Dwarf Galaxies at \$z \sim 0.06\text{--}0.10\$](#) , *ApJ* 993, 110 (2025).
20. Luo Y., Wick J., Leauthaud A., Wetzel A. et al. (including **Li J.**), [Testing the Stellar Feedback-driven Breathing Mode in Low-mass Galaxies with Gas Kinematics](#), arXiv:2510.17996.
21. Zeng Z. C., Peter A. H., Du X., Benson A., **Li J.**, Mace C., Yang S., [Diversity and universality: Evolution of dwarf galaxies with self-interacting dark matter](#), *Phys. Rev. D* 112, 063008 (2025).
22. Srinivasaragavan G. P., Hamidani H., Schroeder G., Sarin N. et al. (including **Li J.**), [EP250108a/SN 2025kg: A Jet-driven Stellar Explosion Interacting with Circumstellar Material](#), *ApJL* 988, L60 (2025).
23. Mintz A., Greene J. E., Kado-Fong E., Danieli S., **Li J.**, Luo Y., Leauthaud A., Baldassare V., Huang S., Peter A. H., Bhattacharyya J., Li M., Pan Y., [A Nonparametric Morphological Analysis of \$H\alpha\$ Emission in Bright Dwarfs Using the Merian Survey](#), *ApJ* 974, 273 (2024).
24. Dou J., Peng Y., Gu Q., Renzini A. et al. (including **Li J.**), [The H I Reservoir in Central Spiral Galaxies and the Implied Star Formation Process](#), *ApJL* 973, L23 (2024).

25. Luo Y., Leauthaud A., Greene J., Huang S. et al. (including **Li J.**), [The Merian survey: design, construction, and characterization of a filter set optimized to find dwarf galaxies and measure their dark matter halo properties with weak lensing](#), *MNRAS* 530, 4988 (2024).
26. Greene J. E., Danieli S., Carlsten S., Beaton R. et al. (including **Li J.**), [ELVES. III. Environmental Quenching by Milky Way-mass Hosts](#), *ApJ* 949, 94 (2023).
27. Keim M. A., van Dokkum P., Danieli S., Lokhorst D., **Li J.**, Shen Z., Abraham R., Chen S., Gilhuly C., Liu Q., Merritt A., Miller T. B., Pasha I., Polzin A., [Tidal Distortions in NGC1052-DF2 and NGC1052-DF4: Independent Evidence for a Lack of Dark Matter](#), *ApJ* 935, 160 (2022).
28. Greene J. E., Greco J. P., Goulding A. D., Huang S. et al. (including **Li J.**), [The Nature of Low-surface-brightness Galaxies in the Hyper Suprime-Cam Survey](#), *ApJ* 933, 150 (2022).
29. Shi J., Peng Y., Diemer B., Stevens A. R. et al. (including **Li J.**), [Cold Gas in Massive Galaxies as a Critical Test of Black Hole Feedback Models](#), *ApJ* 927, 189 (2022).
30. Danieli S., van Dokkum P., Trujillo-Gomez S., Kruijssen J. D. et al. (including **Li J.**), [NGC 5846-UDG1: A Galaxy Formed Mostly by Star Formation in Massive, Extremely Dense Clumps of Gas](#), *ApJL* 927, L28 (2022).
31. Liu Q., Abraham R., Gilhuly C., van Dokkum P. et al. (including **Li J.**), [A Method to Characterize the Wide-angle Point-Spread Function of Astronomical Images](#), *ApJ* 925, 219 (2022).
32. Miller T. B., van Dokkum P., Danieli S., **Li J.**, Abraham R., Conroy C., Gilhuly C., Greco J. P., Liu Q., Lokhorst D., Merritt A., [The Dragonfly Wide Field Survey. II. Accurate Total Luminosities and Colors of Nearby Massive Galaxies and Implications for the Galaxy Stellar-mass Function](#), *ApJ* 909, 74 (2021).
33. van Dokkum P., Lokhorst D., Danieli S., **Li J.**, Merritt A., Abraham R., Gilhuly C., Greco J. P., Liu Q., [Multi-resolution Filtering: An Empirical Method for Isolating Faint, Extended Emission in Dragonfly Data and Other Low Resolution Images](#), *PASP* 132, 074503 (2020).
34. Danieli S., Lokhorst D., Zhang J., Merritt A. et al. (including **Li J.**), [The Dragonfly Wide Field Survey. I. Telescope, Survey Design, and Data Characterization](#), *ApJ* 894, 119 (2020).

Conference papers, proposals, white papers, and software

1. Han J. J., Chiti A., Chen K., Bechtol K. et al. (including **Li J.**), [A Path to an All-Sky Survey with Roman](#), white paper for the Roman Cycle 1 observation, arXiv:2602.21280.
2. **Li J.**, Greene J., Danieli S., Carlsten S., Geha M., [ELVES-Dwarf Survey: Probing Satellite Population of Isolated Dwarf Galaxies in the Local Volume](#), AAS abstract (2026).
3. **Li J.**, Carlsten S., Danieli S., Greene J. E., Lin X., Savino A., Telford G., [Testing the Mass Threshold of Reionization-Quenching with Isolated Dwarf Galaxy Hedgehog](#), HST Proposal (2025).
4. Cheng S., Li J., [2017 OF201](#), Minor Planet Electronic Circulars (2025).
5. **Li J.**, Melchior P., Hahn C., Huang S., [PopSED: Population-Level Inference for Galaxy Properties from Broad-band Photometry with Neural Density Estimation](#), AAS abstract (2024).
6. Greene J. E., [Mapping the 3D structure of the nearby Universe with Roman+Surface Brightness Fluctuations](#), NASA Roman Proposal (2024).

7. **Li J.**, [smploplib: A Matplotlib template for SuperMongo style](#), software.
8. **Li J.**, Melchior P. M., Hahn C., Huang S., [Population-Level Inference for Galaxy Properties from Broadband Photometry](#), ICML ML4Astro workshop (2023).
9. Han J. J., Dey A., Price-Whelan A. M., Najita J. et al. (including **Li J.**), [NANCY: Next-generation All-sky Near-infrared Community survey](#), white paper for the Roman Core Community Survey, arXiv:2306.11784.

OBSERVATIONAL PROGRAMS

30 orbits on the Hubble Space Telescope, 15 nights on the 6.5 m Magellan telescopes, 3 nights on the 8 m Subaru telescope, 2 nights on the 8 m Gemini telescope, 10 nights on the 3.5 m WIYN telescope, plus various other observational programs.

PI:

Hubble Space Telescope Cycle 33: WFC3/UVIS imaging (30 orbits)	2025
Magellan Telescope: 11 dark nights, imaging with Baade/IMACS	2024–2025
Subaru Telescope: 25 hours dark time, imaging with Hyper-Suprime Camera	2025A
Green Bank Telescope: 84.5 hours	2025A, 2026A
Gemini-North telescope: 28.5 hours dark time imaging with GMOS	2024B, 2025B, 2026A
WIYN telescope: 10 dark nights, imaging with ODI	2024A, 2024B
Magellan Telescope: 1 dark night with Clay/IFUM	2025A
Magellan Telescope: 1 dark night, spectroscopy with Clay/LDSS3	2022B

Co-I:

Magellan Telescope: 4 dark nights, spectroscopy with Baade/MagE	2024–2025
HST Cycle 32: SNAP program for Local Volume Satellite Galaxies	2024
HST Cycle 32: Fulfilling the UV Legacy of the Hubble and Webb Deep Public Frontier Field	2024
Magellan Telescope: 3 dark nights, spectroscopy with Clay/IFUM	2023–2024
Merian Survey using the Dark Energy Camera on the Blanco telescope: 12 nights	2021–2024
Shane 3-m Telescope, UCO Lick Observatory: 2 nights observing	2019

REFERENCES

Prof. Jenny Greene	Princeton University
Prof. Marla Geha	Yale University
Prof. Shany Danieli	Tel Aviv University
Prof. Pieter van Dokkum	Yale University
Prof. Song Huang	Tsinghua University
Prof. Yingjie Peng	Kavli Institute for Astronomy and Astrophysics, Peking University

SOFTWARE

- [smploplib](#): A Matplotlib template for the [SuperMongo](#) style.
It has 130+ stars on GitHub and is used in 30+ published papers.
- [RoSESim](#): Roman SEmi-resolved galaxy Simulator (Li+ in prep)
- [mrf](#): Multi-Resolution Filtering – a method for isolating faint extended emission in Dragonfly data and other low-resolution images ([van Dokkum et al. 2020](#))
- [bib2cv](#): Convert a BibTeX file of publications into LaTeX entries for an academic CV.
- More work can be found on my GitHub: [@AstroJacobLi](#)

COLLABORATION, TEACHING, ADVISING, SERVICE, AND OUTREACH

- Core member of the [Merian Survey](#) collaboration 2021 – now
- Contributor to LSST System Integration, Test, and Commissioning 2024 – now
- Reviewer for the *Astronomical Journal* (AJ), *Astronomy & Astrophysics* (A&A) 2023 – now
- Course Designer of [AST 207 \(Observational Astronomy\)](#) at Princeton 2025 Spring
- Teaching Assistant of AST 303 (Research Methods in Astrophysics) at Princeton 2022 Fall
- Co-advising Princeton graduate student: Lucas Mandacaru Guerra
- Co-advising Princeton undergraduate students: Sufia Birmingham, Vivek Vijayakumar
- Organizer of the [Survey Science Discussion](#) at Princeton 2022 – 2025
- Organizer of tea time for colloquium speakers at Princeton 2021 – 2022
- President of Peking University [Youth Astronomy Society](#) (largest academic student association at PKU).
- Problem designer for the [2018 International Olympiad on Astronomy and Astrophysics \(IOAA\)](#)
- Invited to a popular Chinese science TV show “Voice” (开讲啦) and talked about astronomy outreach

TALKS AND PRESENTATIONS

Thesis Talk, AAS 247, Phoenix, Arizona	Jan 2026
Invited Talk, NASA Hyperwall at AAS 247, Phoenix, Arizona	Jan 2026
<i>Revealing the Smallest Galaxies in the Nearby Universe with Roman</i>	
Invited Talk, Amateur Astronomers Association of Princeton (AAAP), Princeton, New Jersey	Dec 2026
Invited Talk, KICP Seminar, University of Chicago	Nov 2025
Talk, Observer Group Meeting, Northwestern University	Oct 2025
Invited Talk, Galaxy Seminar, University of Michigan	Oct 2025
Talk, ITC Luncheon, Harvard University	Oct 2025
Invited Talk, Journal Club, Rutgers University	Sept 2025
Talk, Near field science with the Roman High Latitude Wide Area Survey, Caltech	Aug 2025
<i>How to characterize semi-resolved dwarf galaxies in Roman HLWAS</i>	
Invited Talk, KIPAC Tea Talk, Stanford University, California	Aug 2025
<i>Dwarfs: Near and Far</i>	
Tea Talk, Carnegie Observatories, California	Aug 2025

Talk, Santa Cruz Galaxy Workshop, Santa Cruz, California	Aug 2025
<i>ELVES-Dwarf Survey: Probing Satellite Population of Isolated Dwarf Galaxies in the Local Volume</i>	
Talk, Galactic Frontiers II: Dwarf Galaxies in the Local Volume and Beyond, Dartmouth	June 2025
<i>ELVES-Dwarf Survey: Probing Satellite Population of Isolated Dwarf Galaxies in the Local Volume</i>	
Invited Talk, DREAMS collaboration meeting, New York City	May 2025
Invited Talk, Yale Galaxy Lunch	May 2025
Talk, Magellan Science Meeting, Washington D.C.	May 2025
Talk, Yale's Astro × Data Science seminar	Nov 2024
<i>PopSED: Population-level inference for galaxy properties from broadband photometry</i>	
Talk, "Small Galaxies, Cosmic Questions. II", Durham, UK	Aug 2024
Poster, "Dwarf Galaxies, Star Clusters, and Streams in the LSST Era", Chicago, Illinois	July 2024
<i>Hedgehog: An Isolated Quiescent Dwarf Galaxy at 2.4 Mpc</i>	
Talk, the 243rd meeting of the American Astronomical Society, New Orleans, Louisiana	Jan 2024
<i>The Merian Survey: Mapping Classical Dwarf Galaxies at $z = 0.05 - 0.1$ with HSC-SSP + Blanco/DECam</i>	
Poster, the 243rd meeting of the American Astronomical Society, New Orleans, Louisiana	Jan 2024
<i>PopSED: Population-level inference for galaxy properties from broadband photometry</i>	
Invited Talk, Tsinghua DoA Machine Learning Seminar	Nov 2023
Poster, ML for Astrophysics, International Conference on Machine Learning, Hawaii	July 2023
Talk, "Galactic Frontiers: Dwarf Galaxies in the Local Volume and Beyond", New York City	July 2023
Talk, Kavli Institute for Astronomy and Astrophysics, Peking University, Beijing	June 2023
<i>Ultra-puffy galaxies among satellites of Milky Way analogs: from definition to environmental quenching</i>	
Talk, Department of Astronomy, Tsinghua University, Beijing	June 2023