Curriculum Vitae

Lindsey A. Kwok

NASA Hubble Fellow
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RESEARCH INTERESTS

I am an expert in Type Ia supernovae (exploding white dwarfs). I use panchromatic observations, with an emphasis on JWST mid-infrared spectroscopy, to reconstruct the progenitor systems and explosion physics of both normal and peculiar events.

EDUCATION

Ph.D., Physics and Astronomy | Rutgers University — Oct 2024
Advisor: Prof. Saurabh W. Jha

B.S., Physics | California Institute of Technology — June 2017
Advisors: Prof. Mansi M. Kasliwal & Dr. Ragnhild Lunnan

RESEARCH POSITIONS

NASA Hubble Fellow | Northwestern University — 2025 – present
CIERA Postdoctoral Fellow | Northwestern University — 2024 – 2025
NASA FINESST Fellow | Rutgers University — 2022 – 2024
Machine Learning × Science Summer School Intern | Flatiron Institute (CCA) — 2022
Research Assistant | Palomar Transient Factory (iPTF), Caltech — 2016 – 2017
Summer Undergraduate Research Fellow | LIGO, Caltech — 2015
Summer Undergraduate Research Fellow | JPL, Caltech — 2014

PROPOSALS & GRANTS as PI (total >$1.2M)

JWST Cycle 3+4 Program | 40 hours | GO 5232 | $138k + $253k
"Getting Late Early: Mid-Infrared Spectroscopy of White Dwarf Supernovae"

JWST Cycle 2 Program | 8 hours | DD 6591 | $50k
"Cracking the Cosmic Calcium Conundrum: discovering the origin of Ca-rich transient SN 2024uj with late-time infrared spectroscopy"

JWST Cycle 3 Program | 13.4 hours | DD 6811 | $50k
"So Close, Yet So Faint: NIR+MIR Spectroscopy of the Nearest SN Iax 2024vjm"

JWST Cycle 4 Program | 5.9 hours | DD 12490 | $35k
"The Afterlife of SN 2024pxl: JWST Late-Time Spectroscopy of a Surviving White Dwarf"

NASA Hubble Fellowship | 3 years | $317k
"Determining the Astrophysical Origins of White-Dwarf Supernovae with JWST Infrared Spectroscopy"

CIERA Postdoctoral Fellowship | 3 years | $276k
"Characterizing the Infrared Behavior and Evolution of White-Dwarf Supernovae"

NASA FINESST Fellowship | 3 years | $150k

(Co-PI; PI: H. Sears) JWST Cycle 4 Program | 6.9 hours | DD 12602 | $35k
"A z = 0.0343 Gold Rush: A Spectroscopic Infrared Study of SN 2026gzf"

ACCEPTED TELESCOPE PROPOSALS as PI

Keck 10 m Telescope, Northwestern | 1.5 nights — 2025B + 2026A
Constraining the Progenitors of Type Ia Supernovae with Near-Infrared Spectroscopy

Gemini 8 m Telescopes (North and South), NOIRLab | 20.5 hr — 2025B – 2026A
Panchromatic Spectroscopy of Exploding White Dwarfs to Determine their Origins

Very Large Telescope (VLT) 8 m, ESO | 5 hr — DD 2025A
Dust in SN Ia 2021aefx at 1000 days: follow-up with optical spectroscopy

Gemini 8 m Telescopes (South), NOIRLab | 4.44 hr — DD 2025A
Panchromatic evolution of SN Ia 2025cy with Gemini + JWST

JWST, STScI | 5.9 hr — DD Cycle 4
"The Afterlife of SN 2024pxl: JWST Late-Time Spectroscopy of a Surviving White Dwarf"

JWST, STScI | 40 hr — Cycle 3 + 4
"Getting Late Early: Mid-Infrared Spectroscopy of White Dwarf Supernovae"

JWST, STScI | 13.4 hr — DD Cycle 3
"So Close, Yet So Faint: NIR+MIR Spectroscopy of the Nearest SN Iax 2024vjm"

JWST, STScI | 8 hr — DD Cycle 2
"Cracking the Cosmic Calcium Conundrum: discovering the origin of Ca-rich transient SN 2024uj with late-time infrared spectroscopy"

Southern African Large Telescope 9 m, Rutgers | 36.7 hr — 2024A – 2024B
SALT Followup of JWST Supernovae

ADDITIONAL JWST PROGRAMS (Co-I, Major Role)

JWST, STScI | 60 hr | PI: *S. W. Jha* — Cycle 1 – 3
"See Through Supernovae: Nebular Spectroscopy of Exploding White Dwarfs"
Role: designed observations, reduced data, led analysis & publications

JWST, STScI | 2.9 hr | PI: *M. Shrestha* — DD Cycle 3
"NIR+MIR Spectroscopy of the Nearby Broad Line Type Ic SN 2024abup: r-process, Dust and Explosion Physics"
Role: designed observations, reduced data

JWST, STScI | 6.0 hr | PI: *W. Jacobson-Galán* — DD Cycle 4
"From Rags to Calcium-riches: Using JWST to Constrain Progenitor Identity and Dust Formation in the Calcium-strong Transient 2025coe"
Role: co-wrote proposal, reduced data

JWST, STScI | 6.9 hr | PI: *H. Sears* — DD Cycle 4
"A z = 0.0343 Gold Rush: A Spectroscopic Infrared Study of SN 2026gzf"
Role: co-PI; designed observations, reduced data

JWST, STScI | 6.3 hr | PI: *W. Jacobson-Galán* — DD Cycle 5
"Once in a Century: The First Panchromatic Picture of the Closest Type Ia-CSM Supernova"
Role: co-designed observations

AWARDS & HONORS

NASA Hubble Fellowship 2025
Richard J. Plano Dissertation Prize | Rutgers 2025
Richard J. Plano Outstanding Teaching Assistant Award | Rutgers 2024
CIERA Postdoctoral Fellowship 2024
Robert A. Schommer Prize | Rutgers 2023
for outstanding research in astrophysics
NASA FINESST Fellowship 2022
FI: L. Kwok, Admin-PI: S. W. Jha
NSF Graduate Research Fellowship Program Honorable Mention 2021

TEACHING EXPERIENCE

University Teaching

Independent Instructor | Rutgers University Summer 2023
PHY 110: Astronomy and Cosmology
introductory course on the structure of the universe and astronomical methods; online synchronous

Graduate Teaching Assistant | Rutgers University 2019 – 2022
Recitation Instructor: PHY 115/116 Extended Analytical Physics 2019 – 2020
introductory classical mechanics for engineering majors; in-person & online synchronous
Grader: PHY 341 Principles of Astrophysics Fall 2020 & 2021
Grader: PHY 272 Honors Physics II Spring 2022
Grader: PHY 441/541 Stars and Star Formation Spring 2022

Guest Lecturer
ASTRON 331: Astrophysics for ISP | Northwestern Spring 2025
PHY 441/541: Stars and Star Formation | Rutgers Spring 2022
PHY 116: Extended Analytical Physics | Rutgers Spring 2020

Teaching Development | Rutgers University
RASTL Fellow 2022 – 2024
Rutgers Academy for the Scholarship of Teaching and Learning
DELTA-P Seminar Course Fall 2019
Developing Educational Leaders among TAs in Physics

Undergraduate Teaching Assistant | Caltech Spring 2016
PHY 6: Intermediate Physics Laboratory Spring 2017

High School Teaching

Physics Teacher | The Westminster Schools | Atlanta, GA 2018 – 2019
9th grade Honors and regular Physics; coached FIRST Robotics team

Instructor in Physics | Phillips Academy, Andover | Andover, MA 2017 – 2018
11th & 12th grade PHY 400: College Physics and PHY 440: Astronomy

MENTORING EXPERIENCE

Research Mentoring

Research Mentor | Northwestern University

Saarah Hall *graduate student* 2025 – present
Paper: Hall, Kwok, et al. (2026)

Research Mentor | Rutgers University

Michaela Schwab 2023 – 2025
undergraduate honors thesis student & post-baccalaureate researcher; now a graduate student at UVA
Paper: Schwab, Kwok, et al. (2026)

Colin Macrie 2023 – 2024
undergraduate honors thesis student; now a graduate student at Purdue
Paper: Macrie, Larison, Sears, Kwok, et al. (2026)

Teresa Boland 2022 – 2023
undergraduate honors thesis student; now a graduate student at Purdue
Poster: Boland, Kwok, et al. (2023), 241st AAS Meeting, Seattle, WA

Additional Mentoring

REACH Further Mentor | Northwestern University Summer 2025
Zhiying Mei *high school student; 3-week project, daily meetings*

Co-Mentor | Google Summer of Code: TARDIS Collaboration Summer 2021
Jaladh Singhal *undergraduate student from India*

Teaching Assistant & Residential Mentor | Summer Science Program

CU Boulder | Boulder, CO *36 high school students* Summer 2016
New Mexico Tech | Socorro, NM *36 high school students* Summer 2017

PRESENTATIONS

Invited Colloquia & Seminars

Astrophysics Seminar | University of Notre Dame *(scheduled)* Dec 2026
Physics Colloquium | Loyola University Chicago Oct 2026
IReNA Online Seminar | Center for Nuclear Astrophysics across Messengers Sep 2026
Physics Colloquium | Brigham Young University Nov 2025
Physics & Astronomy Colloquium | Rutgers University Oct 2025
Theoretical Astrophysics Center (TAC) Seminar | UC Berkeley Sep 2025
Astrophysics Seminar | Purdue University Nov 2024
Astrophysics Seminar | Florida State University Feb 2023

Invited Conference & Meeting Talks

Next Decade of SN Science | Kyoto, Japan *(scheduled)* Nov 2026
Transient Tea Talk | Harvard & Smithsonian Center for Astrophysics May 2026
Workshop on the Physics of SN Ia | University of Connecticut May 2026

Nuclear Astrophysics Workshop | University of Arizona — Mar 2026
SuperNova Explosions (SNEx) Group Meeting | Technion University — Jan 2026
100 Years of Supernova Science | Stockholm, Sweden — Aug 2025
Astro-ph Coffee | Ohio State University — Nov 2024
European Astronomical Society (EAS) Meeting | Padova, Italy — July 2024
Observers Group Meeting | CIERA / Northwestern University — Nov 2023
"Big Boom" Science Discussion | University of Arizona — Nov 2023
SuperNova Explosions (SNEx) Group Meeting | Technion University — June 2023
Astro-ph Coffee | Princeton University — Nov 2022
Astro-ph Coffee | Michigan State University — Oct 2022

Contributed Talks & Posters

NHFP Symposium | Harvard & Smithsonian CfA | Cambridge, MA — Oct 2026
Rise_Time 2026 | Purdue University | West Lafayette, IN — Aug 2026
Future Landscape of Astrophysical Transients | Turku, Finland — May 2026
NHFP Symposium | STScI | Baltimore, MD — Oct 2026
Transients from Space | STScI | Baltimore, MD — Mar 2025
AAS Dissertation Talk | 243rd AAS Meeting | New Orleans, LA — Jan 2024
Improving JWST Data Products Workshop | STScI | Baltimore, MD — Nov 2023
Supernova Explosions: Theory and Observations | Haifa, Israel — Aug 2023
Transient and Variable Universe | UIUC | Urbana-Champaign, IL — June 2023
241st AAS Meeting | Seattle, WA — Jan 2023
First Science Results from JWST | STScI | Baltimore, MD *(poster)* — Dec 2022
SuperVirtual Science Meeting — Nov 2022
SuperVirtual Science Meeting *(poster)* — Nov 2021
229th AAS Meeting | Grapevine, TX *(poster)* — Jan 2017

SERVICE & OUTREACH

Professional Service

Panelist | JWST Cycle 5 TAC Discussion Panel — 2026
Practical Session Leader | Nuclear Astrophysics Workshop — Mar 2026
Referee | The Astrophysical Journal (ApJ) — 2024 – present
Contributing Author | GMT Science Book, Chapter 4 — 2026

Public Talks, Panels & Media

College + Career Panelist | Northwestern REACH/REU Program — 2025 – 2026
REU Research Seminar Speaker | Northwestern / CIERA — 2025 – 2026
Interview | CIERA Spotlight — Mar 2026
Podcast | *The Astrophysical Podcast* *Forensic Science of Supernovae* — Jan 2025
Public Talk | STAR Astronomy Club | Monmouth County, NJ — Nov 2023
Research Talk | Rutgers Upward Bound Program (virtual) — July 2022
program for first-generation and low-income college-bound students

K–12, Community & Inclusion

Astronomy Conversations Volunteer | Adler Planetarium — 2026

Research Experiences for Teachers (RET) | Northwestern / CIERA — 2025 – 2026
helped with middle- and high-school teachers' research projects

Physics Demonstrations | New Brunswick, NJ public schools — 2020 – 2024
minority-serving middle & high schools; 14 visits

ESL Instructor | local community, New Brunswick, NJ — 2019 – 2021
weekly English classes for 8 adult Hispanic immigrants

Volunteer | Caltech Stargazing and Lecture Series — 2017

Spectrograph-Building Workshop | iChicas at Caltech — Mar 2017
after-school program in Los Angeles for middle-school Latina girls

Member | Gender Studies Advisory Board, Phillips Academy — 2017 – 2018

Supervisor | Weekly STEM Study Sessions, Phillips Academy — 2017 – 2018

PUBLICATIONS

(ORCID: 0000-0003-3108-1328)

First-Author Publications (7):

**Whitesides is previous name*

7. **Kwok, L. A.** et al. (2026), "JWST Spectroscopy of Type Ia Supernova 2025rbs from Maximum Light to the Nebular Phase," arXiv:2608.10451
6. **Kwok, L. A.** et al. (2026), "JWST Spectroscopy of SN Ia 2022aaiq and 2024gy: Evidence for Enhanced Central Stable Ni Abundance and a Deflagration-to-Detonation Transition," ApJ, 1005, 52
5. **Kwok, L. A.** et al. (2025), "JWST and Ground-based Observations of the Type Iax Supernovae SN 2024pxl and SN 2024vjm: Evidence for Weak Deflagration Explosions," ApJL, 989, L33
4. **Kwok, L. A.** et al. (2024), "Ground-based and JWST Observations of SN 2022pul: II. Evidence from Nebular Spectroscopy for a Violent Merger in a Peculiar Type-Ia Supernova," ApJ, 966, 135
3. **Kwok, L. A.** et al. (2023), "A JWST Near- and Mid-infrared Nebular Spectrum of the Type Ia Supernova 2021aefx," ApJL, 944, L3
2. **Kwok, L. A.** et al. (2022), "UV Spectroscopy and TARDIS Models of Broad-lined Type-Ic Supernova 2014ad," ApJ, 937, 40
1. ***Whitesides, L.** et al. (2017), "iPTF 16asu: A Luminous, Rapidly Evolving, and High-velocity Supernova," ApJ, 851, 107

Co-Author Publications with Major Contribution (7):

**student mentored by L. Kwok*

7. Shrestha, M., **Kwok, L. A.**, et al. (2026), "JWST Observations of SN 2024abup: First Detection of CO in a Broad-lined Type Ic Supernova and Constraints on r-process Nucleosynthesis," ApJL, 1009, L53
6. * Macrie, C. W., Larison, C., Sears, H., **Kwok, L. A.**, et al. (2026), "JWST Nebular Spectroscopy of SN 2023qov: Circumstellar Dust Emission in a Normal Type Ia Supernova," ApJ, 1009, 241
5. * Hall, S., **Kwok, L. A.**, et al. (2026), "JWST Observations of Calcium-Strong Transients: I. Complex Nebular He Emission in SN 2024uj," arXiv:2607.00111
4. Singh, M., **Kwok, L. A.**, et al. (2026), "Photometry and Spectroscopy of SN 2024pxl: A Luminosity Link among Type Iax Supernovae," ApJ, 999, 227
3. * Schwab, M., **Kwok, L. A.**, et al. (2026), "The Remarkable Late-time Flux Excess in Hubble Space Telescope Observations of the Type Iax Supernova 2012Z," ApJ, 998, 240
2. Larison, C., Jha, S. W., **Kwok, L. A.**, Camacho-Neves, Y., (2024) "Environmental Dependence of Type Ia Supernovae in Rich, Low-redshift Galaxy Cluster," ApJ, 961, 185
1. Siebert, M. R., **Kwok, L. A.**, et al. (2024), "Ground-based and JWST Observations of SN 2022pul: I. Unusual Signatures of Carbon, Oxygen, and Circumstellar Interaction in a Peculiar Type Ia Supernova," ApJ, 960, 88

Other Co-Authored Publications (41):

41. Barna, B. et al. 2026, arXiv:2609.28712
Tomography analysis of the intermediate-luminosity Type Iax SN 2024pxl
40. Sand, D. J. et al. 2026, arXiv:2609.38304
Nearby Supernova Science in the Era of High Cadence, Deep Time Domain Surveys
39. Subrayan, B. M. et al. 2026, arXiv:2608.16979
A JWST/MIRI Study of Dust in a Sample of Normal Type IIP Core Collapse Supernovae
38. Ransome, C. L. et al. 2026, ApJ, 1006, 230
The Eye of Sauron in SN 2025ngs: A Short-plateau Cousin of SN 1998S with Evidence for a Ring-like Circumstellar Medium
37. Ravi, A. P. et al. 2026, arXiv:2608.13655
No Evidence for Nearby Circumstellar Material in the Type Ia Supernova 2025rbs
36. Kumar, S. et al. 2026, ApJ, 1005, 98
A Multiwavelength View of the Nearby Calcium-strong Transient SN 2025coe in the X-Ray, Near-infrared, and Radio Wavebands
35. Hsu, B. et al. 2026, arXiv:2607.02859
Evidence for Asymmetric Ejecta and Circumstellar Material in SN 2023ixf Inferred from Extensive Nebular-phase Observations
34. Barna, B. et al. 2026, A&A, 710, A72
The extremely low-luminosity Type Iax SNe 2022ywf and 2023zgx
33. Ransome, C. L. et al. 2026, arXiv:2606.23784
First Results from the LSST Shadow Survey: The Restless Luminous Blue Variable AT2017des in the Virgo-Cluster Galaxy, NGC4532
32. Bostroem, K. A. et al. 2026, ApJ, 1004, 23
Late-time Hubble Space Telescope Ultraviolet Spectra of SN 2023ixf and SN 2024ggi Show Ongoing Interaction with Circumstellar Material
31. Pollin, J. M. et al. 2026, MNRAS, 548, stag735
Multidimensional Nebular-Phase Calculations of Dynamically-Driven Double-Degenerate Double-Detonation Models for Type Ia Supernovae
30. Pollin, J. M. et al. 2026, arXiv:2605.29038
Nebular Fingerprints of a Violent White Dwarf Merger: 3D NLTE Modelling of Type Ia Supernovae
29. Ravi, A. P. et al. 2026, ApJ, 1003, 33
The Double-peaked Calcium-strong SN 2025coe: Progenitor Constraints from Early Interaction and Ejecta Asymmetries
28. Gerard, M. et al. 2026, ApJ, 1002, 70
SN 2024abfl: A Flat-plateau, Low-luminosity Type IIP Supernova with Early Circumstellar Matter Interaction
27. Kumar, S. et al. 2026, ApJ, 1000, 178
The Search for Stable Nickel: Investigating the Origins of Type Ia Supernovae with Late-time NIR Spectroscopy from the Carnegie Supernova Project-II
26. Zimmerman, E. A. et al. 2026, arXiv:2602.09096
A Faint Progenitor System for the Faint Supernova 2024vjm
25. Pakmor, R. et al. 2026, A&A, 706, A239
Violent mergers revisited: The origin of the fastest stars in the Galaxy
24. Coulter, D. A. et al. 2026, arXiv:2601.04156
A spectroscopically confirmed, strongly lensed, metal-poor Type II supernova at z = 5.13
23. Pearson, J. et al. 2025, ApJ, 993, 213
Mid-Infrared Dust Evolution and Late-time Circumstellar Medium Interaction in SN 2017eaw
22. Bánhidi, D. et al. 2025, A&A, 703, A64
SN 2022xlp: The second-known well-observed, intermediate-luminosity Iax supernova

21. Subrayan, B. M. et al. 2025, ApJL, 990, L68
Early Shock Cooling Observations and Progenitor Constraints of Type IIb Supernova SN 2024uwq
20. Miller, A. A. et al. 2025, PASP, 137, 094204
The La Silla Schmidt Southern Survey
19. Dong, Y. et al. 2024, ApJ, 974, 316
Characterizing the Rapid Hydrogen Disappearance in SN 2022crv: Evidence of a Continuum between Type Ib and IIb Supernova Properties
18. Shrestha, M. et al. 2024, ApJL, 972, L15
Extended Shock Breakout and Early Circumstellar Interaction in SN 2024ggi
17. Shrestha, M. et al. 2024, ApJ, 961, 247
Evidence of weak circumstellar medium interaction in the Type II SN 2023axu
16. Shahbandeh, M. et al. 2024, arXiv:2401.14474
JWST NIRSpec+MIRI Observations of the nearby Type IIP supernova 2022acko
15. Pearson, J. et al. 2024, ApJ, 960, 29
Strong Carbon Features and a Red Early Color in the Underluminous Type Ia SN 2022xkq
14. Tinyanont, S. et al. 2024, PASP, 136, 14201
Keck Infrared Transient Survey I: Survey Description and Data Release 1
13. Hosseinzadeh, G. et al. 2023, ApJL, 953, L15
The Early Light Curve of SN 2023bee: Constraining Type Ia Supernova Progenitors the Apian Way
12. Bostroem, K. A. et al. 2023, ApJL, 953, L18
SN 2022acko: the First Early Far-Ultraviolet Spectra of a Type IIP Supernova
11. Singh, M. et al. 2023, ApJ, 953, 93
Observational properties of a bright type Iax SN 2018cni and a faint type Iax SN 2020kyg
10. Davis, K. W. et al. 2023, MNRAS, 523, 2530
SN 2022ann: A type Icn supernova from a dwarf galaxy that reveals helium in its circumstellar environment
9. Camacho-Neves, Y. et al. 2023, ApJ, 951, 67
Over 500 Days in the Life of the Photosphere of the Type Iax Supernova SN 2014dt
8. DerKacy, J. M. et al. 2023, ApJL, 945, L2
JWST Low-resolution MIRI Spectral Observations of SN 2021aefx: High-density Burning in a Type Ia Supernova
7. Williamson, M. et al. 2023, ApJL, 944, L49
SN 2019ewu: A Peculiar Supernova with Early Strong Carbon and Weak Oxygen Features from a New Sample of Young SN Ic Spectra
6. Mayker Chen, N. et al. 2023, ApJL, 944, L28
Serendipitous Nebular-phase JWST Imaging of SN Ia SN 2021aefx: Testing the Confinement of ^{56}Co Decay Energy
5. Pierel, J. D. R. et al. 2022, ApJ, 939, 11
SALT3-NIR: Taking the Open-source Type Ia Supernova Model to Longer Wavelengths for Next-generation Cosmological Measurements
4. Hosseinzadeh, G. et al. 2022, ApJL, 933, L45
Constraining the Progenitor System of the Type Ia Supernova 2021aefx
3. Fraser, M. et al. 2021, arXiv:2108.07278
SN 2021csp – the explosion of a stripped envelope star within a H and He-poor circumstellar medium
2. Barna, B. et al. 2021, MNRAS, 501, 1078
SN 2019muj – a well-observed Type Iax supernova that bridges the luminosity gap of the class
1. Dong, Y. et al. 2021, ApJ, 906, 56
Supernova 2018cuf: A Type IIP Supernova with a Slow Fall from Plateau