

Abigail J. Lee

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APPOINTMENTS

NHFP Hubble Fellow , University of California, Berkeley	2025 – 2026
Miller Research Fellow , University of California, Berkeley	2026 – 2029

EDUCATION

University of Chicago Ph.D., Astronomy & Astrophysics Certificate in College Teaching Advisor: Wendy Freedman	May 2025
University of Pennsylvania B.A., Physics <i>summa cum laude</i> Graduated with Departmental Honors Minors: Classical Studies, Mathematics Advisor: Gary Bernstein	May 2019

AWARDS & FELLOWSHIPS

NHFP Hubble Fellowship	2025
Miller Research Fellowship , UC Berkeley Miller Institute	2025
CCAPP Price Prize	2024
AGB Stars Prize for Young Researchers , XIV Torino Workshop on AGB Stars	2024
Future Investigators in NASA Earth and Space Science and Tech. (FINESST)	2022
Illinois Space Grant Consortium Graduate Fellowship	2022
LSST Cooperation Data Science Fellowship	2021
Chambliss Astronomy Achievement Award , 237th Meeting of the AAS	2021
Elaine K. Bernstein Women in Science Award , University of Chicago	2019
McCormick Graduate Fellowship , University of Chicago	2019
NASA Pennsylvania Space Grant Undergraduate Scholarship	2018
University Scholar , Penn	2015

OBSERVING PROPOSALS & GRANTS

Summary: Awarded \$685,623 in competitive funding as PI

As Principal Investigator/Submitter

James Webb Space Telescope

- “J-Virgo: A JWST Treasury Survey of the Virgo Cluster”, co-PI with Daniel Weisz, 147 hours (NIRCam) / 67 hours (NIRISS), amount pending, 2025

Hubble Space Telescope

- “Quantifying Systematics in the JAGB Method Distance Scale in M33”, Archival, \$19,678, 2023

- “Quantifying Systematics in the JAGB Method Distance Scale in M31”, Archival, \$30,886, 2022

Full Stipendiary Grants

- NASA Hubble Fellowship, “AGB Stars in the Era of NIR Astronomy: New Probes of Cosmology and Galaxy Evolution”, \$148,059, 2025-2026
- Miller Research Fellowship, “AGB Stars in the Era of IR Astronomy: New Probes of Cosmology and Galaxy Evolution”, \$337,000, 2026-2029
- NASA FINESST, “Measuring the Hubble Constant with Carbon Stars”, \$150,000, 2022-2025

Magellan-Baade Telescope (FourStar)

- “JAGB and TRGB Distances to Three New Galaxies”, 3 nights, 2024B

As Co-Investigator

NASA Euclid General Investigator Program (PI: A. Savino), 2025
 James Webb Space Telescope GO-1995 (PI: W. Freedman), 2021
 UChicago Midway Research II Computing Allocation (PI: J. Frieman), 123k hours, 2021
 Hubble Space Telescope AR-16126 (PI: W. Freedman), 2020
 Hubble Space Telescope AR-16127 (PI: W. Freedman), 2020

PREVIOUS RESEARCH POSITIONS

UChicago , Graduate Research Assistant	2019 – 2025
Seoul National University , Summer Visiting Researcher	2023
Penn , Cosmology Undergraduate Research Assistant	2017 – 2019
Stanford KIPAC , Summer Undergraduate Research Assistant	2018
Max Planck Institute for Gravitational Physics , Undergraduate Researcher	2017
NASA Jet Propulsion Laboratory , Summer Intern	2017
Penn , Experimental Condensed Matter Undergraduate Research Assistant	2016 – 2017

TALKS

INVITED CONFERENCE TALKS

Plenary CosmoVerse@Naples: Observational Tensions in Cosmology, <i>Naples, Italy</i>	May 2025
Plenary CERN EuCAPT online Rapid Response Workshop on H_0 (virtual)	Sep 2024
Talk Giant Branch Distance Scale Workshop, <i>Baltimore, MD</i>	Nov 2023
Talk MIAPbP workshop on the distance scale, <i>Munich, Germany</i>	Jul 2023

INVITED SEMINARS AND TALKS

Seminar Florida State University Physics (virtual)	Apr 2025
Seminar Washington University in St. Louis Physics, <i>St. Louis, MO</i>	Jan 2025
Seminar LSST Dark Energy Science Collaboration (DESC) seminars (virtual)	Sep 2024
Price Prize Seminar The Ohio State University CCAPP, <i>Columbus, OH</i>	Aug 2024
Seminar SNU Physics & Astronomy, <i>Seoul, South Korea</i>	Sep 2023
Seminar University of Pennsylvania Physics & Astronomy, <i>Philadelphia, PA</i>	Oct 2022
Talk Argonne National Lab Cosmology Group Meeting (virtual)	Oct 2021

CONTRIBUTED TALKS

*Talk NASA Hubble Fellowship Program Symposium, <i>Baltimore, MD</i>	Oct 2025
Talk University of Chicago near-field cosmology group meeting, <i>Chicago, IL</i>	Apr 2025
Chalk Talk University of Chicago Astronomy, <i>Chicago, IL</i>	Feb 2025
Dissertation Talk 245th Meeting of the AAS, <i>National Harbor, MD</i>	Jan 2025
Talk XIV Torino Workshop on AGB stars, <i>Rome, Italy</i>	Jun 2024
Poster Science with HST and JWST VII, <i>Porto, Portugal</i>	Apr 2024
Talk 243rd Meeting of the AAS, <i>New Orleans, LA</i>	Jan 2024
Talk UC Berkeley Stellar Populations group meeting, <i>Berkeley, CA</i>	Apr 2023
Talk 241st Meeting of the AAS, <i>Seattle, WA</i>	Jan 2023
Talk 240th Meeting of the AAS, <i>Pasadena, CA</i>	Jun 2022
Talk University of Chicago Astronomy Lunch Talks (virtual)	Jan 2022
Poster 237th Meeting of the AAS (virtual)	Jan 2021
Talk 2017 Gulf Coast Undergraduate Research Symposium, <i>Houston, TX</i>	Nov 2017
Talk 2017 Emerging Researchers National Conference in STEM, <i>Washington D.C.</i>	Mar 2017

*Upcoming

PUBLICATIONS

FIRST AND SINGLE AUTHOR PUBLICATIONS

1. **Lee, A. J.**, Weisz, D. R., Ren, Y., Savino, A., Dolphin, A. *Measuring Star Formation Histories from Asymptotic Giant Branch Stars: A Demonstration in M31*, 2025b, [arXiv:2410.09256](#), submitted to ApJ
2. **Lee, A. J.**, Freedman, W. L., Madore, B. F., Jang, I. S., Owens, K. A., Hoyt, T. J. *The Chicago-Carnegie Hubble Program: The JWST J-region Asymptotic Giant Branch (JAGB) Extragalactic Distance Scale*, 2025a, [ApJ](#), **985**, 182
3. **Lee, A. J.**, Monson, A. J., Freedman, W. L., Madore, B. F., Owens, K. A., Beaton, R. L., Espinoza, C., Ren, T., Ren, Y. *Resolved Near-infrared Stellar Photometry from the Magellan Telescope for 13 Nearby Galaxies: JAGB Method Distances*, 2024b, [ApJ](#), **967**, 22
4. **Lee, A. J.**, Freedman, W. L., Jang, I. S., Madore, B. F., Owens, K. A. *First JWST Observations of JAGB Stars in the SN Ia host galaxies: NGC 7250, NGC 4536, NGC 3972*, 2024a, [ApJ](#), **961**, 132
5. **Lee, A. J.** *Carbon Stars as Standard Candles: An Empirical Test for the Metallicity, Age, and Reddening Sensitivity of the J-region Asymptotic Giant Branch (JAGB) Method*, 2023, [ApJ](#), **956**, 15
6. **Lee, A. J.**, Rousseau-Nepton, L., Freedman, W. L., Madore, B. F., Cioni, M.-R., Hoyt, T. J., Jang, I. S., Javadi, A., Owens, K. A. *The Astrophysical Distance Scale: V. A 2% Distance to the Local Group Spiral M33 via the JAGB Method, Tip of the Red Giant Branch, and Leavitt Law*, 2022, [ApJ](#), **933**, 201
7. **Lee, A. J.**, Freedman, W. L., Madore, B. F., Owens, K. A., Jang, I. S. *A Preliminary Calibration of the JAGB Method Using Gaia EDR3*, 2021b, [ApJ](#), **923**, 157

8. **Lee, A. J.**, Freedman, W. L., Madore, B. F., Owens, K. A., Monson, A. J., Hoyt, T. J. *The Astrophysical Distance Scale III: Distance to the Local Group Galaxy WLM using Multi-Wavelength Observations of the Tip of the Red Giant Branch, Cepheids, and JAGB Stars*. 2021a, [ApJ](#), **907**, 112

CO-AUTHOR PUBLICATIONS

1. Owens, K. A., Jang, I. S., Freedman, W. L., Hoyt, T. J., **Lee, A. J.**, Madore, B. F., Monson, A. J. *Investigating the Extragalactic Distance Scale with JWST: Cepheids in NGC 7250*, 2025, submitted to [ApJ](#)
2. Hoyt, T. J., Jang, I. S., Freedman, W. L., Madore, B. F., Owens, K. A., **Lee, A. J.** *The Chicago Carnegie Hubble Program: Improving the Calibration of SNe Ia with JWST Measurements of the Tip of the Red Giant Branch*, 2025, [arXiv:2503.11769](#), submitted to [ApJ](#)
3. Freedman, W. L., Madore, B. F., Jang, I. S., Hoyt, T. J., **Lee, A. J.**, Owens, K. A. *Status Report on the Chicago-Carnegie Hubble Program (CCHP): Measurement of the Hubble Constant Using the Hubble and James Webb Space Telescopes*, 2025, [ApJ](#), **985**, 203
4. Freedman, W. L., Madore, B. F., Hoyt, T. J., Jang, I. S., **Lee, A. J.**, Owens, K. A. *I-Band Asymptotic Giant Branch (IAGB) Stars: II. A First Estimate of their Precision and a Differential Zero Point*, 2025, [AJ](#), **169**, 247
5. Madore, B. F., Freedman, W. L., Hoyt, T. J., Jang, I. S., **Lee, A. J.**, Owens, K. A. *I-Band Asymptotic Giant Branch (IAGB) Stars: I. Exploring a New Standard Candle for the Extragalactic Distance Scale*, 2025, [AJ](#), **169**, 162
6. Hoyt, T. J., Jang, I. S., Freedman, W. L., Madore, B. F., **Lee, A. J.**, Owens, K. A. *Coordinated JWST Imaging of Three Distance Indicators in a SN Host Galaxy and an Estimate of the TRGB Color Dependence*, 2024, [ApJ](#), **975**, 111
7. Porth, L., Bernstein, G., Smith, R. E., **Lee, A. J.** *The Information Content of Projected Galaxy Fields*, 2022, [MNRAS](#), **518**, 3344
8. Madore, B. F., Freedman, W. L., **Lee, A. J.**, Owens, K. A. *Milky Way Zero-Point Calibration of the JAGB Method: Carbon Stars in Galactic Open Clusters*, 2022, [ApJ](#), **938**, 125
9. Owens, K. A., Freedman, W. L., Madore, B. F., **Lee, A. J.** *Current Challenges in Cepheid Distance Calibrations Using Gaia EDR3*, 2022, [ApJ](#), **927**, 8
10. Madore, B. F., Freedman, W. L., **Lee, A. J.** *Astrophysical Distance Scale IV. Preliminary Zero-Point Calibration of the JAGB Method in the HST/WFC3-IR Broad J-Band (F110W) Filter*. 2022, [ApJ](#), **926**, 153
11. Vishnubhotla, R., Ping. J., Gao, Z., **Lee, A.**, Saouaf, O., Vrudhula, A., Johnson, A. T. C. *Scalable Graphene Aptasensors for Drug Quantification* 2017, [AIP Advances](#) **7**, 115111

NON-REFEREED MANUSCRIPTS

1. Kraemer, K., et al. including **Lee, A. J.**, *Setting the Stage for Improving the Distance Ladder with Roman Core Community Surveys*, 2023, [White Paper](#) submitted to the Roman Core Community Survey
2. **Lee, A. J.**, et al. *Predicting Winners of the Reality TV Dating Show The Bachelor Using Machine Learning Algorithms*, 2022, [April Fools arXiv paper](#)

RESEARCH ADVISING

Coral Espinoza, Lake Forest College (LFC) undergraduate 2022 – 2023
Oversaw UChicago REU summer project and LFC senior thesis

TEACHING EXPERIENCE

Guest Lecturer, UChicago, *Physics of Stars* 2023
Guest Lecturer, UChicago, *Galaxies* 2020
Teaching Assistant, UChicago, *Galaxies* 2020
Teaching Assistant, UChicago, *Stars* 2019
Teaching Assistant, Penn, *Classical Mechanics* 2019
Observing Labs Teaching Assistant, Penn, *Survey of the Universe* 2018, 2019
Teaching Assistant, Penn, *E&M, Optics, and Modern Physics* 2018
Lab Teaching Assistant, Penn, *Classical Mechanics* 2017
Tutor, Penn Physics Department 2016, 2017

OBSERVING EXPERIENCE

Public data – significant experience with data from JWST, HST, Gaia, 2MASS, VMC
 Magellan-Baade FourStar near-infrared imaging - 20 nights
 Magellan-Baade IMACS optical imaging - 1 night
 Magellan-Baade IMACS optical spectroscopy - 1 night

PRESS

Expertise Interviews:

- PopSci, [Is the universe really infinite?](#)
- PopSci, [JWST takes a jab at the mystery of the universe's expansion rate](#)

Selected press featuring [Lee et al. 2024c](#):

- Quanta, [The Webb Telescope Further Deepens the Biggest Controversy in Cosmology](#)
- Dr. Becky YouTube Channel, [JWST turned the Crisis in Cosmology into a bigger problem](#)
- Dr. Becky YouTube Channel, [Has JWST SOLVED the crisis in cosmology?!](#)

Press featuring [Lee et al. 2021a](#):

- UChicago News, [Aging stars provide a new cosmological yardstick](#)

PROFESSIONAL SERVICE

Referee for ApJ, ApJL, A&A	
UChicago Graduate Admissions Committee Member , UChicago	2024 – 2025
Inclusion, Diversity and Equity in Astronomy Club , UChicago	2019 – 2025
Organizer (2022 – 2024)	
Mentor to NASA FINESST applicants , UChicago	2023 – 2025
Organized two workshops to help PhD students apply to the FINESST	
AAS 242 Chambliss Judge	2022
UChicago Empowerment/Emancipation of North Koreans	2022 – 2023
(ENoK), English tutor	
Climate Survey Committee Member , UChicago	2021 – 2024
Advising & Mentoring Program Organizer and Mentor , UChicago	2020 – 2023
Mentored three UChicago PhD students (2020 – 2025)	
Faculty Meeting Graduate Student Representative , UChicago	2019 – 2020
Society of Physics Students Board Member , Penn	2018 – 2019

OUTREACH

Writer , Astrobites (find my articles here)	2022 – 2025
Ombudsperson (2023 – 2025), Hiring Committee (2023 – 2024)	
Public Lectures & Outreach Talks	
Cosmology Talks Youtube, <i>Extragalactic distances from the JAGB method</i>	2024
Lake Forest College astronomy club, <i>The Expansion of the Universe</i>	2022
UChicago <i>Physics of Stars</i> summer HS class, <i>Mentorship in Academia</i>	2021
Space Explorers Winter Institute Instructor , UChicago	2020
Observing Nights Organizer , Penn	2018 – 2019
Astronomy Tutor for Veterans , Penn Veterans Upward Bound	2018 – 2019

OTHER ACTIVITIES

Languages: English (native), Spanish (intermediate), Korean (basic)	
Rec Soccer , play in several high-level (college experience) leagues 3x/week	2019 – Present
Semi-professional Women's Soccer (WPSL, WMLIS)	2023 – 2025
University of Pennsylvania Womens's Club Soccer Team	2015 – 2019
Treasurer (2015 – 2017)	
University of Pennsylvania Symphony Orchestra , first violin	2015 – 2019