

Abigail J. Lee

Email: abbyl@uchicago.edu • Website: abiglee7.github.io

EDUCATION

University of Chicago <i>Ph.D. Candidate, Astronomy & Astrophysics</i> Advisor: Wendy Freedman	Chicago, IL <i>Expected 2025</i>
University of Pennsylvania <i>B.A., Physics (with Departmental Honors), summa cum laude</i> Minors in Mathematics and Classical Studies Senior Thesis: Reconstructing Lognormal Density Fields using Hamiltonian Monte Carlo Techniques Advisor: Gary Bernstein	Philadelphia, PA <i>May 2019</i>

FELLOWSHIPS

Future Investigators in NASA Earth and Space Science and Technology (FINESST)	2022 – 2025
Illinois Space Grant Consortium Graduate Fellowship	2022
LSST Cooperation Data Science Fellowship	2021 – 2023
McCormick Graduate Fellowship , University of Chicago <i>Awarded to highly-rated applicants to the Ph.D. program</i>	2019 – 2021

SELECTED AWARDS & GRANTS

Hubble Space Telescope (HST) Cycle 30 AR Program, Principal Investigator	2022
Chambliss Astronomy Achievement Award , 237th Meeting of the AAS	2021
Elaine K. Bernstein Women in Science Award , University of Chicago <i>Awarded to highly-rated women applicants to the Ph.D. program</i>	2019
NASA Pennsylvania Space Grant Undergraduate Scholarship University Scholar , Penn	2018 2015

RESEARCH POSITIONS

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

TALKS

INVITED SEMINARS & TALKS

Talk UC Berkeley Stellar Populations group meeting	Apr 2023
Seminar University of Pennsylvania Physics & Astronomy	Oct 2022
Talk University of Chicago Astronomy Lunch Talks (virtual)	Jan 2022
Talk Argonne National Lab Cosmology Group Meeting (virtual)	Oct 2021

CONTRIBUTED CONFERENCE TALKS

Talk 241st Meeting of the AAS	Jan 2023
Talk 240th Meeting of the AAS	Jun 2022
Poster 237th Meeting of the AAS (virtual), Winner of Chambliss Astronomy Achievement Award	Jan 2021
Talk 2017 Gulf Coast Undergraduate Research Symposium	Nov 2017
Talk 2017 Emerging Researchers National Conference in STEM	Mar 2017

PUBLICATIONS

FIRST AND SINGLE AUTHOR PUBLICATIONS

1. **Lee, A. J.** *An Empirical Test for the Metallicity, Age, and Reddening Sensitivity of the J-region Asymptotic Giant Branch (JAGB) Method*, 2023, submitted to ApJ
2. **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](#)
3. **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](#)
4. **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](#)

NTH AUTHOR PUBLICATIONS

1. Porth, L., Bernstein, G., Smith, R. E., **Lee, A. J.** *The Information Content of Projected Galaxy Fields*, 2022, [MNRAS, 518, 3344](#)
2. 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](#)
3. 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](#)
4. 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](#)
5. 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](#)

TEACHING EXPERIENCE

Primary science mentor for Coral Espinoza (Lake Forest College)	2022 – Present
<ul style="list-style-type: none">• Project: Measuring the Distance to NGC 6822 using Observations from the Magellan Telescope• Oversaw REU summer project and senior thesis	
Guest Lecturer , UChicago, <i>Galaxies</i>	2020
Teaching Assistant , UChicago, <i>Galaxies</i>	2020
Teaching Assistant , UChicago, <i>Stars</i>	2019
Teaching Assistant , Penn, <i>Classical Mechanics</i>	2019
Observing Labs Teaching Assistant , Penn, <i>Survey of the Universe</i>	2018, 2019
Teaching Assistant , Penn, <i>E&M, Optics, and Modern Physics</i>	2018
Lab Teaching Assistant , Penn, <i>Classical Mechanics</i>	2017
Tutor , Penn Physics Department	2016, 2017

TELESCOPE & COMPUTING ALLOCATIONS

PI : HST AR (PID: 17052), Cycle 30	2022
Co-I : JWST GO (PID: 1995), Cycle 1	2021
Co-I : Midway Research II Computing Allocation, 123k hours	2021
Co-I : HST AR (PID: 16126), Cycle 28	2020
Co-I : HST AR (PID: 16127), Cycle 28	2020

OBSERVING EXPERIENCE

Public data – significant experience with data from JWST, HST, Gaia, 2MASS
Magellan-Baade FourStar Near-Infrared imaging - 16 nights
Magellan-Baade IMACS Optical imaging - 1 night

PRESS

UChicago News, *Aging stars provide a new cosmological yardstick* 2021
Penn Today, *Women in Physics Group inspires the next generation of physicists and astronomers* 2019

PROFESSIONAL SERVICE

Science Referee for ApJ
UChicago Empowerment/Emancipation of North Koreans (ENoK), English tutor 2022 – 2023
Climate Survey Committee Member, UChicago 2021 – Present
Advising & Mentoring Program Organizer, UChicago 2020 – Present
Inclusion, Diversity and Equity in Astronomy Club Member, UChicago 2019 – Present
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 – Present
Public Talks & Lectures
Lake Forest College astronomy club, *The Expansion of the Universe* 2022
UChicago *Physics of Stars* summer HS class, *Mentorship in Academia* 2021
Space Explorers Winter Institute Instructor, UChicago 2020
Observing Nights Organizer, Penn 2018 – 2019
Astronomy Tutor for Veterans, Penn Veterans Upward Bound 2018 – 2019

WORKSHOPS & SUMMER SCHOOLS

The Extragalactic Distance Scale and Cosmic Expansion in the era of JWST 2023
Munich Institute for Astro, Particle, and BioPhysics
Fundamental cosmology from the ELT and space 2021
4th Azores School on Observational Cosmology (attended virtually due to COVID-19)
Gaia Early DR3 Early Science and Best Practices 2021
Virtual

EXTRACURRICULARS & PERSONAL INFORMATION

Languages: English (native), Spanish (intermediate), Korean (basic)
Professional Memberships: AAS, KSEA (Korean-American Scientists and Engineers Association)
Chicago KICS FC, WPSL Semi-professional Women's Soccer League 2023 – Present
Author of *The Bachelor* arXiv april fools paper, [link here](#) 2022
University of Pennsylvania Womens's Club Soccer Team, treasurer (2015 – 2017) 2015 – 2019
University of Pennsylvania Symphony Orchestra, first violin 2015 – 2019