

Abigail J. Lee

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EDUCATION

University of Chicago <i>Ph.D. Student, Astronomy & Astrophysics</i> Advisor: Wendy Freedman	Chicago, IL <i>Expected 2024</i>
University of Pennsylvania <i>B.A., Physics (with Honors); Minors in Mathematics and Classical Studies, summa cum laude</i> Senior Thesis: Reconstructing Lognormal Density Fields using Hamiltonian Monte Carlo Techniques Advisor: Gary Bernstein	Philadelphia, PA <i>May 2019</i>

AWARDS & FELLOWSHIPS

LSST Coorporation Data Science Fellowship <i>LSST Corporation</i>	2021
Chambliss Astronomy Achievement Award <i>237th Meeting of the American Astronomical Society</i>	2021
McCormick Fellowship <i>University of Chicago</i>	2019 – 2021
Elaine K. Bernstein Women in Science Award <i>University of Chicago</i>	2019
NASA Pennsylvania Space Grant Undergraduate Scholarship <i>NASA</i>	2018
University Scholars Research Grant <i>University of Pennsylvania</i>	2016, 2017

RESEARCH POSITIONS

UChicago , Graduate Research Assistant	2019 – Present
<ul style="list-style-type: none">Developed a new local distance indicator, the JAGB method	
Penn , Cosmology Undergraduate Research Assistant	2017 – 2019
<ul style="list-style-type: none">Developed code to reconstruct dark matter density fields from galaxy fields using Hamiltonian Monte Carlo Techniques for applications in next-generation galaxy surveys	
Stanford KIPAC , Summer Undergraduate Research Assistant	2018
<ul style="list-style-type: none">Identified main catalysts for subhalo disruption in galaxy clusters using zoom-in simulations	
Max Planck Institute for Gravitational Physics , Summer Undergraduate Research Assistant	2017
<ul style="list-style-type: none">Modeled noise artifacts in LIGO data using gravitational wave parameter estimation techniques	
NASA Jet Propulsion Laboratory , Summer Intern	2017
<ul style="list-style-type: none">Developed statistical models for a terrestrial remote sensing mission by quantifying the effects of seasonality and precipitation levels on radio backscatter	
Penn , Experimental Condensed Matter Undergraduate Research Assistant	2016 – 2017
<ul style="list-style-type: none">Fabricated graphene field-effect transistors for bio-sensing applications	

PUBLICATIONS

1. **Lee, A. J.**, Freedman, W. L., Madore, B. F., Owens, K. A., Jang, I. S., *Calibration of the JAGB Method Using Gaia EDR3*, 2021, submitted to ApJ.
2. Freedman, W. L., Madore, B. F., **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*. 2021, submitted to ApJ.
3. **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*. 2021, [ApJ](#), **907** 112.
4. 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.

SUCCESSFUL PROPOSALS

Co-I: JWST Cycle 1 (PI: Wendy Freedman & Barry Madore) <i>Answering the Most Important Problem in Cosmology Today: Is the Tension in the Hubble Constant Real?</i>	2021
Co-I: HST Cycle 28 (PI: Wendy Freedman) <i>An Independent Appraisal of the Cepheid Distance Scale</i>	2020
Co-I: HST Cycle 28 (PI: Wendy Freedman) <i>Absolute Magnitude Calibration of SNe Ia at 1%: Doubling the Sample of TRGB Host-Galaxy SN Calibrators</i>	2020

TEACHING EXPERIENCE

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

OBSERVING EXPERIENCE

Public data – significant experience with data from HST, Gaia, 2MASS Magellan-Baade Fourstar - 1 night (virtual due to COVID-19)	2021
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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

CONTRIBUTED TALKS

Distance to WLM Using Observations of the TRGB, Cepheids, and JAGB Stars <i>237th Meeting of the American Astronomical Society</i>	2021
Characterizing the temporal variability of backscatter in prep. for the NISAR mission <i>2017 AGU Fall Meeting</i>	2017
Characterizing Backscatter Variability using UAVSAR <i>2017 Gulf Coast Undergraduate Research Symposium</i>	2017
Improved Performance in Graphene & MoS₂ FETs using a BN Isolation Layer <i>2017 Emerging Researchers National Conference in STEM</i>	2017

PROFESSIONAL SERVICE

Climate Survey Committee Member, UChicago	2021 – Present
Graduate Student Peer Mentorship Program Organizer, UChicago	2019 – Present
Advising & Mentoring Working Group Member, 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

Guest Lecturer on “Mentorship in Academia”, UChicago Physics of Stars class	2021
Space Explorers Winter Institute Instructor, UChicago	2020
Observing Nights Organizer, Penn	2018 – 2019
Astronomy Tutor for Veterans, Penn Veterans Upward Bound	2018 – 2019