

# Abigail J. Lee

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## EDUCATION

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### University of Chicago

*Ph.D. Candidate, Astronomy & Astrophysics*

Advisor: Wendy Freedman

Chicago, IL

*Expected 2024*

### University of Pennsylvania

*B.A., Physics (with Honors); Minors in Mathematics and Classical Studies, summa cum laude*

Senior Thesis: Reconstructing Lognormal Density Fields using Hamiltonian Monte Carlo Techniques

Advisor: Gary Bernstein

Philadelphia, PA

*May 2019*

## AWARDS & FELLOWSHIPS

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### LSST Coorporation Data Science Fellowship

*LSST Corporation*

2021 – 2023

### Chambliss Astronomy Achievement Award

*237th Meeting of the American Astronomical Society*

2021

### McCormick Fellowship

*University of Chicago*

2019 – 2021

### Elaine K. Bernstein Women in Science Award

*University of Chicago*

2019

### NASA Pennsylvania Space Grant Undergraduate Scholarship

*NASA*

2018

### University Scholars Research Grant

*University of Pennsylvania*

2016, 2017

## RESEARCH POSITIONS

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**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

## PUBLICATIONS

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- Owens, K. A., Freedman, W. L., Madore, B. F., **Lee, A. J.** *Calibration of the Multi-Wavelength Cepheid Period-Luminosity Relations using Gaia EDR3: Applications to the Large and Small Magellanic Clouds*, 2021, submitted to ApJ.
- 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.
- Lee, A. J.**, Freedman, W. L., Madore, B. F., Owens, K. A., Jang, I. S. *Calibration of the JAGB Method Using Gaia EDR3*, 2021, accepted to ApJ. [arXiv:2110.04576](https://arxiv.org/abs/2110.04576).
- 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.
- 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 AND GRANTS

Co-I: <b>Midway</b> Research II Allocation (PI: Josh Frieman), 123k hours <i>Constraining dark energy's equation of state parameter <math>w</math> from strong lensing</i>	2021
PI: <b>UChicago Grad Council</b> Research Grant, \$250	2021
Co-I: <b>JWST</b> Cycle 1 GO (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: <b>HST</b> Cycle 28 AR (PI: Wendy Freedman) <i>An Independent Appraisal of the Cepheid Distance Scale</i>	2020
Co-I: <b>HST</b> Cycle 28 AR (PI: Wendy Freedman) <i>Absolute Magnitude Calibration of SNe Ia at 1%: Doubling the Sample of TRGB Host-Galaxy SN Calibrators</i>	2020
PI: <b>Penn University Scholars</b> Fund, \$14k	2016, 2018

## TEACHING EXPERIENCE

<b>Guest Lecturer</b> , UChicago, <i>Galaxies</i>	2020
<b>Teaching Assistant</b> , UChicago, <i>Galaxies</i>	2020
<b>Teaching Assistant</b> , UChicago, <i>Stars</i>	2019
<b>Teaching Assistant</b> , Penn, <i>Classical Mechanics</i>	2019
<b>Observing Labs Teaching Assistant</b> , Penn, <i>Survey of the Universe</i>	2018, 2019
<b>Teaching Assistant</b> , Penn, <i>E&amp;M, Optics, and Modern Physics</i>	2018
<b>Lab Teaching Assistant</b> , Penn, <i>Classical Mechanics</i>	2017
<b>Tutor</b> , Penn Physics Department	2016, 2017

## OBSERVING EXPERIENCE

Public data – significant experience with data from HST, Gaia, 2MASS Magellan-Baade Fourstar - 4 nights (virtual due to COVID-19)	2021
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## PRESS

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

## TALKS

\* Denotes invited

<b>*The JAGB Method: Using Carbon Stars as Standard Candles</b> <i>Argonne National Lab-UChicago Joint Cosmology Meeting</i>	2021
<b>Distance to WLM Using Observations of the TRGB, Cepheids, and JAGB Stars</b> <i>237th Meeting of the American Astronomical Society</i>	2021
<b>Characterizing the temporal variability of backscatter in prep. for the NISAR mission</b> <i>2017 AGU Fall Meeting</i>	2017
<b>Characterizing Backscatter Variability using UAVSAR</b> <i>2017 Gulf Coast Undergraduate Research Symposium</i>	2017
<b>Improved Performance in Graphene &amp; MoS<sub>2</sub> FETs using a BN Isolation Layer</b> <i>2017 Emerging Researchers National Conference in STEM</i>	2017

## PROFESSIONAL SERVICE

<b>Climate Survey Committee Member</b> , UChicago	2021 – Present
<b>Graduate Student Peer Mentorship Program Organizer</b> , UChicago	2019 – Present
<b>Advising &amp; Mentoring Working Group Member</b> , UChicago	2020 – Present
<b>Inclusion, Diversity and Equity in Astronomy Club Member</b> , UChicago	2019 – Present
<b>Faculty Meeting Graduate Student Representative</b> , UChicago	2019 – 2020
<b>Society of Physics Students Board Member</b> , Penn	2018 – 2019

## OUTREACH

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

## WORKSHOPS & SUMMER SCHOOLS

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<b>Fundamental cosmology from the ELT and space</b>	2021
<i>4th Azores School on Observational Cosmology (attended virtually due to COVID-19)</i>	
<b>Gaia Early DR3 Early Science and Best Practices</b>	2021
<i>Virtual</i>	