

# Abigail LEE

## PERSONAL DATA

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ADDRESS: UChicago Astronomy & Astrophysics, Chicago, IL 60615  
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## EDUCATION

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2019 – PRESENT Ph.D. Student, ASTRONOMY & ASTROPHYSICS, **University of Chicago**  
Advisor: Prof. Wendy Freedman  
2019 B.A., PHYSICS, **University of Pennsylvania**, *summa cum laude*  
Thesis: “Reconstructing Log-normal Dark Matter Density Fields using Hamiltonian Monte Carlo Techniques” | Advisor: Prof. Gary Bernstein  
MINORS: Mathematics, Classical Studies

## RESEARCH

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OCT 2019 – PRESENT	Measuring the Hubble Constant based on the TRGB <i>Advisor: Wendy Freedman</i> Measuring distances to galaxies using the TRGB method to improve measurements of the Hubble Constant
AUG 2017 – JULY 2019	Reconstructing Dark Matter Distributions <i>Advisor: Gary Bernstein</i> Reconstructed dark matter density maps from simulated galaxy catalogs using Hamiltonian Monte Carlo techniques Used machine learning techniques to model a halo abundance relationship in dark matter simulations
SUMMER 2018	Dark Matter Subhalo Dynamics in Galaxy Clusters <i>Advisor: Risa Wechsler</i>   Stanford University KIPAC Modeled dark matter subhalo disruption in high-resolution simulations and showed that there are universal features that predict whether a subhalo will disrupt or survive
JUL 2017 – AUG 2017	Analyzing Glitches in LIGO GW detectors Max Planck Institute for Gravitational Physics Used gravitational-wave parameter estimation tools of LIGO collaboration to analyze and quantify effects of known “glitches,” instrumental or environmental artifacts not of astrophysical origin present in data of LIGO gravitational-wave detectors
SUMMER 2017	Characterizing temporal variability of L-band backscatter Summer Intern, NASA Jet Propulsion Laboratory Developed statistical models for terrestrial remote sensing with focus on biomass and vegetation parameter estimation Executed radar processing software to create time series estimates of backscatter variability using <a href="#">UAVSAR</a> data to refine <a href="#">NISAR</a> performance models

MAY 2016 – MAY 2017	<p>Improving Graphene Field-Effect Transistors</p> <p><i>Advisor: A.T. Charlie Johnson</i></p> <p>Studied effects of using boron nitride as a protectant layer for graphene field-effect transistors</p> <p>Assisted in bio-sensing and chemical-sensing for detection of drugs and diseases using ssDNA</p>
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## FELLOWSHIPS & AWARDS

2019 – 2021	McCormick Fellowship, UChicago
2019	Elaine K. Bernstein Women in Science Award, UChicago
2019	Graduated with Departmental Honors, Penn
2018	NASA Pennsylvania Space Grant Undergraduate Scholarship, NASA
2016 – 2018	University Scholar Research Grant, Penn

## TEACHING EXPERIENCE

### Guest Lecturer

<i>Galaxies</i>	Feb 20
Guest lectured on the expansion of the universe and different types of distance measurements for application in measuring the Hubble Constant	

### Teaching Assistant

University of Chicago	
• ASTR 12710, <i>Galaxies</i>	Winter 20
• ASTR 12700, <i>Stars</i>	Fall 19
University of Pennsylvania	
• PHYS 150, <i>Principles of Physics I</i>	Spring 19
• ASTR 001 Observing Lab, <i>Survey of the Universe</i>	Fall 18, Spring 19
• PHYS 102, <i>E&amp;M, Optics, and Modern Physics</i>	Spring 18
• PHYS 101 Lab, <i>General Physics</i>	Fall 17
Physics Tutor, Penn	Fall 16 – Spring 17

## OUTREACH

Mentor, Society of Women in Physics Peer Mentorship Program, UChicago	2019 – Present
Instructor, <a href="#">Space Explorers Winter Institute</a> , UChicago	Jan 2020
Astronomy Observing Nights Organizer, Penn	2018 – 2019
Astronomy Tutor, <a href="#">Veterans Upward Bound Training</a> , Penn	2018 – 2019

## SERVICE

Marathon Charity Runner, Lupus Society of Illinois	2019 – Present
Faculty Meeting Representative, UChicago	2019 – Present
Social Chair, Society of Physics Students, Penn	2018 – 2019

## PUBLICATIONS

R. Vishnubhotla, J. Ping, Z. Gao, A. Lee, O. Saouaf, A. Vrudhula, A. T. Johnson. *Scalable Graphene Aptasensors for Drug Quantification*. 2017, [AIP Advances 7, 115111](#).

## TALKS & POSTER PRESENTATIONS

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<b>Dark Matter Subhalo Disruption</b>	2018
Stanford University, Stanford Summer Research Program Undergraduate Talks	
<b>Characterizing Backscatter Variability using UAVSAR</b>	2017
<a href="#">Accepted</a> at 2017 AGU Fall Meeting (could not attend)	
Rice University, 2017 Gulf Coast Undergraduate Research Symposium	
NASA JPL, NASA JPL Final Summer Intern Presentation	
<b>Improved Performance in Graphene &amp; MoS<sub>2</sub> FETs using a BN Isolation Layer</b>	2017
2017 Emerging Researchers National Conference in STEM	

## SKILLS

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Computer Languages:	PYTHON, MATHEMATICA, SQL, $\text{\LaTeX}$ , bash, git
Data Analysis:	DAOPhot, ALLFrame, TOPCAT
Language:	English (native), Spanish (conversational)

## MEDIA

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<b>Penn Today</b>	2019
<a href="#">WiP Group inspires the next generation of physicists and astronomers</a>	