CARLY CYD KLEINSTERN

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EDUCATION

University of Chicago Expected

· Ph.D. in Physics

Brandeis University Aug 2015 - May 2019

· B.S. in Physics with highest departmental honors
· B.A. in Mathematics, Minor in Philosophy

RESEARCH EXPERIENCE

Atmospheric Science Research Assistant
Prof. Elisabeth Moyer, University of Chicago
Chicago Water Isotope Spectrometer (ChiWIS) flight instrument Jan 2021 -

· Performed a series of conduction tests to better understand flow limitations in the instrument
· Rewiring components of the instrument to save parameters important for later data analysis
· Creating a power back-up system to ensure the instrument is not left in a vulnerable position in the case of a power cut

Particle Astrophysics Research Assistant
Prof. Paolo Privitera, University of Chicago
Dark Matter in CCDs at Modane (DAMIC) Nov 2019 - Dec 2020

· Preparing apparatus for data-taking; minimizing noise through hardware installation
· Extending Compton scattering measurement to lowest energies yet explored
· Developing MCNP simulation, and crosschecking results with GEANT4 simulation
· Calculating UChicago's sensitivity to millicharge particle flux

Particle Astrophysics Research Assistant - Experiment (undergraduate thesis project)
Prof. Bjoern Penning, Brandeis University
LUX-ZEPLIN (LZ) Sept 2018 - May 2019

· Developed simulation for prototype outer detector's LED calibration and response to cosmic ray muons for upcoming underground LZ experiment
· Collected and analyzed muon and LED calibration data from water tank test stand

Particle Physics Research Assistant (DoE SULI)
Dr. Hugh Lippincott, Fermi National Accelerator Laboratory
Xenon Electron-recoil L-shell Discrimination Analyzer (XELDA) June - Aug 2018

· Optimized and installed hardware to keep our detector as free of impurities as possible
· Collected dual-phase Xe-127 data to study electron recoils and gaseous xenon data while opening to a thorium source to study radon decay chain products in detector
· Simulated dual-phase and gaseous detector to determine if data's resolution is physical
· Analyzed gas-phase data and identified Pb-212 decay (in radon decay chain)

Particle Astrophysics Research Assistant - Phenomenology
Prof. Bjoern Penning, Brandeis University Sept 2017 - May 2018

- Compared direct dark matter detection and collider results as functions of dark matter and mediator mass
- Used these representations to understand parameter space and sensitivity of different detection methods

Astrophysics Research Experience for Undergraduates (REU)
Prof. Jeyhan Kartaltepe, Rochester Institute of Technology June 2017 - Aug 2017

- Analyzed multiwavelength data from COSMOS collaboration
- Deduced close pair galaxy fraction to study evolution of galaxy merger rate over cosmic time

Astrophysics Research Assistant
Prof. David Roberts, Brandeis University June 2016 - May 2017

- Processed large amounts of radio astronomy data using specialized computer programs
- Created and analyzed intensity, polarization, and spectral index maps to further knowledge of complex properties of X-shaped radio galaxies

FIELD CAMPAIGNS

ACCLIP test flights at Ellington Field, Houston TX July - Aug 2021

- In preparation for ACCLIP science flights from Osan Air Base, South Korea in Summer 2022
- Performed instrument maintenance and upgrades in the field
- Integrated the instrument onto NASA's WB-57 with dedicated engineers
- Preliminary real-time data analysis to make improvements for subsequent flights

PUBLICATIONS

Roberts D., Saripalli L., Wang K., Rao M., Subrahmanyan R., **KleinStern C.**, Morii-Sciolla C., Simpson L., ***What Are 'X-Shaped' Radio Sources Telling Us? I. Very Large Array Imaging of a Large Sample of Low Axial Ratio Radio Sources"***. ApJ 852 47, arXiv: 1708.02306 Aug 2017

TALKS & POSTERS

International Partnership for Cirrus Studies
Talk: *In-Situ Measurements of Water Vapor Isotopologues in the UT/LS* 2021
DAMIC-M Winter School
Talk: *GEANT4/MCNP Simulation Validation* 2020
Brandeis Physics Department Senior Honors Thesis Presentation
Talk: *Simulation of the LUX-ZEPLIN Outer Detector Test Stand* 2019
American Physical Society, Conference for Undergraduate Women in Physics
Poster: *Investigating Backgrounds in Direct Dark Matter Detectors* 2019
Fermi National Accelerator Laboratory Poster Session
Poster: *Investigating Backgrounds in Direct Dark Matter Detectors* 2018
American Physical Society, Conference for Undergraduate Women in Physics
Talk: *Evolution of the Galaxy Merger Rate Out to z=3* 2018

Nat'l Sci. Foundation Conference for Undergraduate Research
Poster: *Evolution of the Galaxy Merger Rate Out to z=3* 2017
Rochester Institute of Technology Research Symposium
Talk: *Evolution of the Galaxy Merger Rate Out to z=3* 2017
Brandeis University SciFest
Poster: *JVLA Images of X-shaped Radio Galaxies. I* 2016

SKILLS

Language: Spanish (advanced)
Computer: Python, ROOT, Linux, Windows OS, Mac OS

HONORS

Plotnick Award for Graduate Research
University of Chicago, Department of Physics 2020
McCormick Fellowship for Graduate Research
University of Chicago 2020
Funding from the Provost of Brandeis University
for astrophysics research 2016

TEACHING EXPERIENCE

University of Chicago Physics Department Teaching Assistant Oct 2019 - present

- **PHYS 211** (Experimental Particle Physics laboratory): Remote instruction guiding 3rd and 4th year undergrads in data acquisition and analysis
- **PHYS 131/132** (introductory Classical Mechanics and Electricity and Magnetism sequence): Created and led discussion sections, held office hours, and guided students in labs

SCIENCE COMMUNICATION AND INCLUSIVITY WORK

Adopt-a-Physicist program 2021
Engaged with high school students in an online forum to answer questions about climate research
New Milford Rotary Club 2021
Presentation describing current research and experience as part of a NASA/NCAR mission
Chicago Rape Crisis Hotline 2021 - present
Completed 40-hr training on crisis intervention in order to assist survivors
Argonne National Laboratory "STEM chat" presenter 2020 - present
Present physics topics and research to K-12 students
Member of the UChicago Physics Working Group for Anti-Racism 2020 - present
Working with faculty to require anti-racist and inclusive pedagogy training for all department members
Member of the Planning Committee for UChicago APS CUWiP 2019-2020
Helped facilitate conference by organizing and executing audiovisual work
Judged undergraduate poster presentations
John J. McCarthy Observatory 2015
Guest lecture: *Solar System Secrets: Oort Cloud Comets*
Guest lecture: *What We Can Learn From the Rosetta Mission*