Isabelle Goldstein, Sc.M.

ORCID: 0000-0001-9247-9474
Email: isabelle_goldstein@brown.edu

Education

Brown University — Providence, RI USA
Doctor of Philosophy, Physics — 2018–Present
Master of Science, Physics — 2020

- Advisor: Savvas Koushiappas, PhD

Carnegie Mellon University — Pittsburgh, PA USA
Bachelor of Science, Physics — 2014–2018

Publications

1. "Viability of ultralight bosonic dark matter in dwarf galaxies"
   Isabelle S. Goldstein, Savvas M. Koushiappas, and Matthew G. Walker
   Phys. Rev. D 106, 063010 (2022)

2. "Could the 2.6 $M_\odot$ object in GW190814 be a primordial black hole?"
   Kyriakos Vattis, Isabelle S. Goldstein, and Savvas M. Koushiappas
   Phys. Rev. D 102, 061301(R) (2020)

Research Experience

Brown University
Graduate Student Research Assistant — 2018–Present

- Experience in cosmology, astroparticle physics, axion-like dark matter, dwarf galaxy dynamics and primordial black holes.
- Coding fluency in Python, Fortran 90, C++, and Cluster high performance computing.

Carnegie Mellon University
Undergraduate Research Assistant with Dr. Matthew Walker — 2017–2018

- Examined the strength of standard dwarf galaxy detection methods using gamma ray data with stellar data from the Sloan Digital Sky Survey and Pan-STARRS.

Lawrence Berkeley National Labs
Assistant Researcher with the DESI and BOSS collaborations — Summer 2016

- Tested ultra faint spectra sky subtraction by integrating the Spectroperfectionism method into DESI and BOSS data analysis pipelines.

Carnegie Mellon University
Undergraduate Student Research Assistant with Dr. Shirley Ho — 2015–2016

- Dark matter and galaxy cross correlation bias for redshift dependance.

Research Interests

My research interests lie in astrophysics and cosmology, particularly in the intersection between theory and observation. My previous work has focused on dark matter searches, as well as the large scale structure of dark matter in contrast to baryonic matter. I am interested in studying local group astrophysics to learn about the dark and light sector.

Teaching Experience

Brown University

Lab Instructor, PHYS 0470 Electricity and Magnetism — Fall 2018, 2019, 2020

- Course Instructor: Dr. Savvas Koushiappas
  Number supervised: 22, 24, 32

Lab Instructor, PHYS 0060 & 0160 — Spring 2019

- Course Instructor: Dr. Meenakshi Narain
  Number supervised: 15

Lab Instructor, PHYS 0220 Astronomy — Spring 2020

- Course Instructor: Dr. Jonathan Pober
  Number of students: 200

Course Teaching Assistant, PHYS 0070 Analytical Mechanics — Spring 2021

- Course Instructor: Dr. James Valles
  Number of students: 85

Scholarships and Awards

- Physics Merit Fellowship
  Brown University Department of Physics — 2022-2023
- Award of Excellence as a Graduate Teaching Assistant
  Brown University Department of Physics, PHYS 0070 — 2021
- RI Space Grant Graduate Fellow with the NASA RI Space Grant Consortium — 2021
- National Science Foundation Graduate Research Fellowship Program Honorable Mention — 2020
- Associate Member of Sigma Xi Scientific Research Honors Society
  Brown University Chapter, Elected to Membership — 2020
- Award of Excellence as a Graduate Teaching Assistant
  Brown University Department of Physics, PHYS 0470 — 2018
- Senior Leadership Recognition Award
  Carnegie Mellon University Department of Physics — 2018
- NASA Pennsylvania Space Grant
  Investigating the CMB lensing potential: stacking with galaxies and gamma radiation density — 2015
- H. Joseph Gerber Medal of Excellence
  Connecticut Academy of Science and Engineering — 2014
- CERN Special Award at the Intel International Science and Engineering Fair
  European Organization for Nuclear Research — 2014

Conference Presentations

Workshop Papers or Presentations

Title: *The Viability Of Ultralight Bosonic Dark Matter In Dwarf Galaxies* 2022
Presented at the Mitchell Conference on Collider, Dark Matter, and Neutrino Physics

Title: *Cross correlations of the CMB lensing potential and Sloan Digital Sky Survey galaxies* 2016
Presented at Essential Cosmology for the Next Generation

Conferences Organized

Local committee graduate student organizer for the Conference for Undergraduate Women in Physics 2022
Cancelled due to Covid-19

Conferences Attended

LSST Dark Matter Workshop, Kavli Institute for Cosmological Physics at the University of Chicago 2019

Summer School on Cosmology, International Centre for Theoretical Physics 2016

Additional Experience

Community outreach

- Guest speaker at the Urban Assembly School for Emergency Management (NYC, NY) 2022
  Pursuing STEM in undergraduate and graduate level education
- Pittsburgh Glass Center teaching assistant for community glassblowing classes and demonstrations 2015–2018

Additional Scholarships

- Pittsburgh Glass Center scholarship for advanced summer intensive 2018
  Fictional Sculpting
- Corning Museum of Glass scholarship for advanced summer intensive 2020
  Finding Your Voice: Glass Sculpting with Shelley Muzylowski Allen
  Cancelled due to Covid-19

COVID Impact

The Covid-19 pandemic had a significant impact on the progression of my graduate career. The pandemic began right at the time I was finishing courses and would have begun attending conferences with regularity while commencing research. Additionally, strain from the pandemic delayed the completion of ongoing research.