

Ian Hunt-Isaak

Education	Harvard University SEAS: PhD. Candidate in Applied Physics Oberlin College: B.A. with High Honors, May 2017 <i>Major:</i> Physics, <i>Minor:</i> Mathematics	
Relevant Graduate Coursework	Statistical Mechanics - Physics Stochastic Processes and Disordered Systems - Applied Math Advanced Machine Learning - Computer Science Evolutionary Dynamics - Math	Fall 2017 Spring 2018 Fall 2018 Spring 2019
Publications	<ul style="list-style-type: none">Y. Ijiri, K. L. Krycka, I. Hunt-Isaak, et al. "Correlated spin canting in ordered core-shell $\text{Fe}_3\text{O}_4/\text{Mn}_x\text{Fe}_{3-x}\text{O}_4$ nanoparticle assemblies." <i>Phys. Rev. B</i> (Under revision)Oberdick, S. D. et al. "Spin canting across core/shell $\text{Fe}_3\text{O}_4/\text{Mn}_x\text{Fe}_{3-x}\text{O}_4$ nanoparticles." <i>Scientific Reports</i> 8, 3425 (2018).	
Research Experience	Harvard University - Hekstra lab Graduate Student	August 2017 - Present
	<p>This is an interdisciplinary lab focused on understanding the dynamics of biological systems and how information flows in biology. Members come from Molecular and Cellular Biology, Chemistry, and Applied Physics.</p> <ul style="list-style-type: none">Research Equipment purchases to set up a new labDeveloping a method for the measurement of nanosecond electric field pulses inside a protein crystalDeveloping Raman Spectroscopy as a probe of cell state to investigate the stress responses of Bacteria and Yeast	
	Oberlin College - Ijiri Lab Researcher	Jan. 2015 - May 2017
	<ul style="list-style-type: none">Investigated the magnetic structure of Manganese Ferrite Nanoparticles with the cutting edge technique of Polarization Analyzed Small Angle Neutron ScatteringExtended the NIST SANS macros enabling faster data analysisWrote Scripts to increase speed of analysisDeveloped python analysis scripts for systematic fitting of hundreds of data files<ul style="list-style-type: none"><code>github.com/ianhi/OC_SANS_MACROS</code>Completed an Honors thesis<ul style="list-style-type: none">Unusual Magnetic Spin Arrangements in Manganese Ferrite Nanoparticle Assemblies<code>oberlin.edu/arts-and-sciences/departments/physics-and-astronomy/honors</code>	
	National Institute of Standards and Technology Summer Undergraduate Research Fellow	Summer 2016
	<ul style="list-style-type: none">Designed and developed an X-Ray and Neutron scattering calculator for protein simulations with periodic boundary conditionsReduced computation time of scattering calculation and analysis algorithm on multi-million atom systems 5-6x using NumPy and C++	

- Improved the SASSIE and SASMOL projects code developed and utilized by research for analysis and modeling of biological macromolecules

Rutgers University - Relativistic Heavy Ion Group

Summer 2015

REU Student

- Studied the Quark Gluon Plasma through Monte Carlo Simulation
- Improved a framework to run Monte Carlo Simulations - github.com/ianhi/GeneratorInterface
- Investigated the 3/2 Jet Ratio in Lead Ion Collisions with C++ using the ROOT framework

Posters and Presentations

APS Division of Nuclear Physics

Oct. 2015

Monte Carlo Investigations of Quark Gluon Plasma

- Presented a research from Summer 2015 as a poster

Celebration of Undergraduate Research Oberlin College

Sept. 2015

Monte Carlo Investigations of Quark Gluon Plasma

Presented as a poster and 15 minute talk

Work and Teaching Experience

Teaching Fellow Applied Math 50, Harvard University

Spring 2019

- Helped develop a significant portion of the Homeworks and in class labs
- I hold section and office hours weekly to convey ideas in programming and applied math

ExCo Instructor 3D Printing & Design

Fall 2015[6,7] Spring 2016/2017

At Oberlin the ExCo program is a student-run, for-credit Experimental College with courses taught by students or community members.

- Developed a Course centered on 3D printing technologies
- Themes included building using and maintaining printers and basic electronics

Science Outreach Oberlin Boys and Girls Club

Sept. 2014 - May 2015

- Co-Founded Science program for Boys and Girls Club
- Developed and ran interactive science demos for 3rd-5th grade students

Tutoring Oberlin College

Fall 2014-Present

- Personal Tutor for High School IB math student
- Hired by Oberlin College to tutor
 - Introductory Calculus
 - Multivariate Calculus
 - Introductory Economics
 - Modern Physics
 - Drop In Calculus

Counselor Riverbend Environment Education Center

Summer 2014

- Led groups of children in a team with a co-counselor
- Designed and implemented lesson plans

Distinctions

- Member Sigma Xi
- Member Phi Beta Kappa
- One of four Oberlin nominees for Goldwater Scholarship in 2016
- John F. Oberlin Scholarship recipient

**Leadership
Activities**

Treasurer and Director OC3D Oberlin College 3D Printing

Sept. 2015-Present

- Manage Club Accounts
- Increase Club Membership
- Organize Club Projects
- Involved in developing the OC3D space since Jan. 2014

Online Presence

- Stackoverflow: stackoverflow.com/users/835607/ianhi
- Personal Website: ianhi.github.io
- Github: github.com/ianhi