JOSEPH MITTELSTAEDT

jam943@cornell.edu
956-739-8948

CURRENT ADDRESS:
314 University Ave
Apt 7
Ithaca, NY 14850

PERMANENT ADDRESS:
2011 Daffodil Ave
McAllen, TX 78501

EDUCATION

Cornell University, College of Arts and Sciences, Ithaca NY, expected May 2023
Candidate for Doctor of Philosophy in Experimental Physics

University of Chicago, Chiciago IL, graduated June 2017
Bachelor of Arts in Physics; Bachelor of Arts in Mathematics
Dean's List 2013-2017 • Phi Beta Kappa Honor Society • 2016 David W. Grainger Senior Scholarship (outstanding junior in the physics department showing promise for future physics research) • 2015 Walter and Fay Selove Prize (Research funding for a promising undergraduate physics student) • 2015 James Franck Institute Undergraduate Summer Support Award (Summer research funding for a promising student working in the James Franck Institute)
Cumulative GPA 3.89

Science Academy of South Texas, Weslaco, TX, graduated June 2013
5th in class

RESEARCH EXPERIENCE

Cornell University Ithaca, NY — April 2018 - Present
Graduate Research Assistant

- Developed and investigated research questions at the forefront of spintronics research with Prof. Dan Ralph
- Grew metallic heterostructures and fabricated them into micron scale devices
- Performed electrical transport measurements on a variety of materials to probe spin-to-charge and charge-to-spin transduction

Princeton Plasma Physics Laboratory Princeton, NJ — June - August 2016
DOE Science Undergraduate Laboratory Intern

- Developed code to model the flow of plasma in a stellarator fusion reactor, working under Dr. Sam Lazerson
- Tested the performance of this code on data from the Wendelstein 7-X stellarator

University of Chicago Chicago, IL — February 2015 - February 2016
Undergraduate Research Assistant

- Investigated instabilities in vortex rings by developing computer vision code to track their position and shape
- Quantified the effect of polymer drag reduction on vortex flow
- Under Prof. William Irvine

University of Texas at Brownsville Brownsville, TX — June-August 2014
NSF REU Intern

- Analyzed methods of enhancing supernova gravitational waves with Prof. Soma Mukherjee

University of Texas-Pan American Edinburg, Texas — June-September 2013
Research Assistant

- Developed novel composite nanofibers with Prof. Karen Lozano

WORK EXPERIENCE

Cornell University Ithaca, NY — September 2017 - May 2018
Graduate Teaching Assistant

- Led discussion and lab sections for introductory physics courses
- Mentored students to ensure success in the course
- Created course material to facilitate learning of core concepts

SKILLS AND COMPETENCIES

Python programming, including the scientific Python stack • Linux operating system • Sputter deposition • Optical lithography techniques • Atomic Force Microscopy • X-Ray Reflectometry • Electrical transport measurement techniques

PRESENTATIONS AND PAPERS

Magnetization-Independent Spin Hall Effect in Ferromagnets March 6, 2020
Talk given at the 2020 March Meeting of the American Physical Society (Cancelled due to COVID-19)

STELLTRANS: A Transport Analysis Suite for Steallarators November 1, 2016
Poster presented at the 58th Annual Meeting of the American Physical Society Division of Plasma Physics

RELEVANT COURSEWORK

Physics:
Solid State Physics (Ashcroft & Mermin) • Quantum Mechanics (Sakurai) • Electromagnetism (Jackson) • Statistical Mechanics (Sethna)

Mathematics:
Real Analysis (Rudin) • Complex Analysis (Marsden & Hoffman) • Ordinary Differential Equations (Hirsch, Smale, Devaney) • Partial Differential Equations (Shearer & Levy) • Point-Set Topology (Munkres) • Algebra (Gallian)

Statistics & Machine Learning:
Bayesian Data Analysis (Gelman) • Machine Learning for Data Science (unsupervised algorithms)