

SARA SUSSMAN

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EDUCATION

Princeton University , Physics Ph.D. Candidate	9/2018-
Boston University , Physics B.A. Summa Cum Laude	5/2018

PUBLICATIONS

View all on [arXiv](#)

RESEARCH EXPERIENCE

Graduate Researcher, Prof. Houck Group, Princeton University	2/2019-
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Experimental Project: Qubit Data Acquisition with FPGAs

Implementing on-chip computation and feedback into the lab's qubit measurement routines.

Undergraduate Researcher, Prof. Kearns Group, Boston University	9/2016 - 9/2018
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Super-Kamiokande (SK) and Hyper-Kamiokande (HK) Collaborations

Senior Research Project: Dinucleon and Nucleon Decay into Two-Body Final States with No Hadrons

Searched for 10 dinucleon and nucleon decay modes using the entire SK dataset.

SK Event Reconstruction Software Developer: APFIT

Located and solved a set of Cherenkov-ring-counting issues.

HK Front-end Electronics Developer: Prototype QTC-TDC Board

Wrote DAQ software, tested QTC/TDC performance, FPGA programming to improve performance.

SK Outer Detector High Voltage Expert

Developed remote control software for new HV crates, integrated and installed new crates in SK.

Undergraduate Researcher, Prof. Franklin Group, Harvard University	12/2015 - 9/2016
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ATLAS Collaboration

Website: Find Problematic Muon Spectrometer Detector Elements: <http://cern.ch/muons/>

Users upload eta-phi histograms and learn which elements overlay spatial coordinates in question.

DAQ Software for Prototype Micromegas Apparatus

Wrote and tested geometry and track reconstruction library for ATLAS muon upgrade prototype.

AWARDS

Van Zandt Williams, Sr., *41 Fellowship , Princeton University	2018-2019
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Joseph Henry Merit Prize , Princeton University	2018
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College Prize in Physics , Boston University	2018
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International Neutrino Summer School (INSS), Poster Competition , 3rd Prize	Fermilab, 8/2017
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INSS Group Tutorial, Oral Presentation Competition , 2nd Prize	Fermilab, 8/2017
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Undergraduate Research Opportunities Program Fellowship , Boston University	2017, 2018
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RECENT PRESENTATIONS

Dinucleon and Nucleon Decay into Two-Body Final States with No Hadrons	APS April Meeting Columbus OH, 4/14/18
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Prototype Front-End Electronics for Hyper-Kamiokande QTC-TDC Board	BU Advanced Lab Seminar Boston MA, 10/15/2017
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Multi-GeV Multi-Ring Event Reconstruction in Super-Kamiokande (Poster)	INSS, Fermilab Batavia IL, 8/17/2017
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Side By Side By Side: ν Event Simulation in Super-K, NOvA and ArgoNeuT	INSS, Fermilab Batavia IL, 8/17/2017
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GRADUATE COURSES COMPLETED

Physics: Quantum Information; Advanced Particle Physics I; Introduction to Particle Physics; Cosmology

Engineering/Design: Electronics for Scientists; Advanced Laboratory

Math: Mathematical Physics

TEACHING/MENTORING EXPERIENCE

Lab Instructor, Foundations of Engineering (EGR 150)

Developed accelerometer-based labs working under Prof. Claire Gmachl.

Princeton Freshman Scholars Institute

Princeton NJ, 2019

Mentor, Undergraduate Women in Physics Mentorship Program

Academic/research mentor to several female physics undergraduates.

Princeton Physics Dept.

Princeton NJ, 2018-

Student-Teacher and Volunteer

Taught high school juniors and seniors calculus and precalculus.

Charlestown High School

Boston MA, 2015

Corps Member

Tutored and mentored K-8 students in math in a bilingual Dorchester school.

City Year Boston

Boston MA, 2013-2014

LEADERSHIP

Organizer, Princeton Women in Physics

Plan events that promote diversity and outreach, fundraised to include women from the Astrophysics and Plasma Physics departments. Maintain group [website](#).

Princeton NJ, 2018-

Director, Junction

Redesigned summer program where 41 high school students do independent research with 1:1 mentoring. See more at [this link](#).

MIT, Cambridge MA, 2015

Director, Spring High School Studies Program (HSSP)

Led six week Saturday program where 500 high school students take courses taught by undergraduates.

MIT, Cambridge MA, 2015

Director, The Checkmate Club

Created a weekly math, logic and chess program for local teenagers.

Dorchester MA, 2013-2014

SKILLS

Programming: C/C++, Python, FORTRAN, ROOT, Mathematica, MATLAB, Verilog, VHDL, JavaScript, HTML/CSS

Software: Intel Quartus Prime, Xilinx Vivado Design Suite, ExpressPCB

Hardware: Cherenkov detectors, high voltage systems, gaseous ionization detectors, data acquisition and timing systems, digital and analog circuits, lab equipment such as NIM modules, multichannel analyzers and oscilloscopes, basic machining with mills and laser cutters (plastic and steel)