Sara Sussman

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Education

2018-present	**Ph.D, Physics,** Princeton University.
2018	**B.A.** Summa Cum Laude, **Physics,** Boston University.

Selected Publications

See all on the arXiv here

2020

New material platform for superconducting transmon qubits with coherence times exceeding 0.3 milliseconds
A. P. M. Place, L. V. H. Rodgers, ..., S. Sussman, et al.
arXiv, 2003.00024

2018

Dinucleon and Nucleon Decay to Two-Body Final States with no Hadrons in Super-Kamiokande
Super-Kamiokande Collaboration: S. Sussman, et al.
arXiv, 1811.12430

Experience

Professional

2019-present	**Graduate Researcher,** Princeton University. Work on the fabrication and control of superconducting qubits under the supervision of Andrew Houck, specializing in FPGA/SoC-based control.
2019-present	**Lab Instructor and Teaching Assistant,** Princeton University.
2016-2018	**Undergraduate Researcher,** Boston University. Worked on prototyping FPGA-based front-end electronics and upgrading the high voltage system of the Super-Kamiokande neutrino detector under the supervision of Ed Kearns.
2016	**Undergraduate Researcher,** Harvard University. Created a website and algorithms for ATLAS collaborators to find potentially malfunctioning hardware in the muon spectrometer under the supervision of Melissa Franklin.

Miscellaneous

2018-present	**Organizer,** Princeton Women in Physics, Princeton University.

Awards

2019-2020	Physics Department Teaching Award, Princeton University
2020	National Defense Science and Engineering Graduate Fellowship, Department of Defense
2020	Graduate Research Fellowship, National Science Foundation (Declined)
2018-2019	Van Zandt Williams, Sr., *41 Fellowship, Princeton University
2018	Joseph Henry Merit Prize, Princeton University
2018	College Prize in Physics, Boston University
2017	3rd Prize at the International Neutrino Summer School Poster Competition, Fermilab
2017	2nd Prize at the International Neutrino Summer School Oral Presentations, Fermilab

Presentations

2020 Nov	**Talk,** *FPGA-based Control of a High-Coherence Superconducting Qubit* Arizona State University Engineering Coffee Hour
2019 Nov	**Talk,** *Towards FPGA-based Optimal Control of Superconducting Qubits* Princeton Physics Ph.D. Experimental Project Seminar
2018 Apr	**Talk,** *Dinucleon and Nucleon Decay into Two-Body Final States with No Hadrons* APS April Meeting
2017 Oct	**Talk,** *Prototype Front-End Electronics for Hyper-Kamiokande QTC-TDC Board*

Boston University Advanced Lab Seminar

2017 Aug   **Poster,** *Multi-GeV Multi-Ring Event Reconstruction in Super-Kamiokande*
International Neutrino Summer School at Fermilab

2017 Aug   **Talk,** *Side By Side By Side: ν Event Simulation in Super-K, NOvA and ArgoNeuT*
International Neutrino Summer School at Fermilab

Skills

Hardware: RF data acquisition and timing systems, digital and analog circuits, high voltage systems.

Programming: C/C++, Python, Verilog, VHDL, Mathematica, MATLAB.

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

Microfab: Photolithography (photomask and direct write), wet/dry etching, metal deposition, surface metrology (profilometer), imaging (x-ray photoelectron spectroscopy, scanning electron microscopy).

Courses Taught

2020 Spring   Princeton PHY 109: Mechanics and Electromagnetism - TA

2019 Fall   Princeton ELE 308: Electronic and Photonic Devices - TA

2019 Summer Princeton EGR 150: Foundations of Engineering - Lab Instructor (link)

Student Projects Mentored

2020 Spring   Connie Miao, "Developing A Serial Port FIFO on an iCE40 FPGA to Prototype Superconducting Qubit Control Feedback Loops"

2019 Summer Petru Cotrut, "FPGA-based Hardware Averaging and Active Reset with the Keysight M9010A PXI Chassis"