

# Jyotirmai Singh

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Department of Physics  
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EDUCATION	<b>Stanford University</b> M.S. & Ph.D. Physics Advisor: Kent Irwin	September 2019-Present
	<b>University of California, Berkeley</b> B.A. Physics GPA: 3.99/4.00 <i>Departmental Honours and Highest Distinction in General Scholarship</i>	May 2019
PUBLICATIONS	<b>Measurement of neutron production in atmospheric neutrino interactions at the Sudbury Neutrino Observatory</b> B. Aharmim <i>et al.</i> (SNO Collaboration), Phys. Rev. D <b>99</b> 112007 (2019).	
SKILLS	<b>Programming Languages</b> Python, C++, Java, HTML/CSS <b>Natural Languages</b> English, Hindi, Persian, French <b>Tools</b> Git, ROOT, LabVIEW, L <sup>A</sup> T <sub>E</sub> X, SolidWorks	
AWARDS AND HONOURS	<b>Phi Beta Kappa</b> (inducted as junior) UC Berkeley	2018
	<b>Isidore Pomerantz Scholarship</b> Department of Physics, UC Berkeley	2018
	<b>Undergraduate Research Scholar</b> Department of Physics, UC Berkeley	2017
	<b>Kraft Award for Freshmen</b> UC Berkeley	2015
EXPERIENCE	<b>Graduate Research Assistant</b> <i>Stanford University</i> Advisor: Giorgio Gratta	September 2019-Present
	<ul style="list-style-type: none"><li>Constructed a helium enclosure to mitigate optical noise caused by laser refraction due to air currents in output optics of microsphere optical trap.</li><li>Formulated new experimental approaches to search for non-Newtonian gravity-like forces at <math>\sim 1\text{\AA}</math> length scales using neutron diffraction.</li></ul>	
	<b>Undergraduate Research Assistant</b> <i>Lawrence Berkeley National Laboratory/UC Berkeley</i> Advisor: Gabriel Orebi Gann	May 2018-May 2019
	<ul style="list-style-type: none"><li>Studied the optical properties of Tetraphenyl Butadiene (TPB) to better understand its behaviour in the VUV spectrum in vacuum and liquid argon (LAr) scintillator for senior thesis.</li><li>Created Monte Carlo simulation for experiment to model optical properties of TPB, such as reflectivity and wavelength shifting.</li></ul>	
	<b>Undergraduate Research Assistant</b> <i>UC Berkeley</i> Advisor: Matt Pyle	June 2018-May 2019
	<ul style="list-style-type: none"><li>Developed algorithms to simulate new phonon physics in the SuperCDMS Monte Carlo, such as surface reflection downconversion.</li></ul>	

- Analysed acoustic and optical phonon behaviour as part of preliminary work concerning new nuclear-recoil detection based dark matter detector designs with higher sensitivity.

**Undergraduate Research Assistant** June 2016-May 2018  
*Lawrence Berkeley National Laboratory/UC Berkeley (SNO Collaboration)*

Advisor: Gabriel Orebi Gann

- Measured neutron production from atmospheric neutrino interactions at the Sudbury Neutrino Observatory.
- Investigated efficiency of energy fitters and propagated low energy systematic uncertainties through the atmospheric event analysis.
- Combined low and high energy systematic uncertainty propagation to create new analysis code that enables simultaneous propagation of uncertainties in position/energy resolutions for low and high regimes.

## OUTREACH

**VP, Communication** February 2018- December 2018  
*Quantum Computing at Berkeley*

Edited content on QCB's website which aimed at conveying the latest advances in quantum computing to a lay audience.

**Research Mentor – Particle Physics** February 2017-May 2017  
*Undergraduate Lab at Berkeley*

Advised students on an independent project titled *Designing an Electromagnetic Shield to Block Secondary Cosmic Rays*, giving them support with detector design and manufacture.

## TEACHING EXPERIENCE

**Grader** June 2016-May 2018  
*PHYS 5B: Introductory Electromagnetism, Waves, and Optics, UC Berkeley*

Graded problem sets for Physics 5B, taught by Prof. Jonathan Wurtele.

**Tutor** June 2016-May 2018  
*CS 61B: Data Structures, Computer Science Mentors at Berkeley*

Held weekly sessions which involved presenting course topics and helping students with problems while answering conceptual questions. Given a 4.7/5 average rating by students.