Jyotirmai Singh

Department of Physics
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EDUCATION

Stanford University September 2019-Present
M.S. & Ph.D. Physics
Advisor: Kent Irwin

University of California, Berkeley May 2019
B.A. Physics
GPA: 3.99/4.00
Departmental Honours and Highest Distinction in General Scholarship

PUBLICATIONS

Measurement of neutron production in atmospheric neutrino interactions at the Sudbury Neutrino Observatory
B. Aharmim *et al.* (SNO Collaboration), Phys. Rev. D **99** 112007 (2019).

SKILLS

Programming Languages Python, C++, Java, HTML/CSS
Natural Languages English, Hindi, Persian, French
Tools Git, ROOT, LabVIEW, LaTeX, SolidWorks, Vector Network Analyser

AWARDS AND HONOURS

Phi Beta Kappa UC Berkeley 2018
Isidore Pomerantz Scholarship Department of Physics, UC Berkeley 2018
Undergraduate Research Scholar Department of Physics, UC Berkeley 2017
Kraft Award for Freshmen UC Berkeley 2015

EXPERIENCE

Graduate Research Assistant January 2020-Present
Stanford University
Advisor: Kent Irwin

- Constructing Y-Factor stage to analyse JPA amplifiers in Adiabatic Demagnetisation Refrigerator.
- Designing high Q ($\sim 10^6$) LC resonator for DM Radio 50L experiment.

Graduate Research Assistant September 2019-December 2019
Stanford University
Advisor: Giorgio Gratta

- Constructed a helium enclosure to mitigate optical noise caused by laser refraction due to air currents in output optics of microsphere optical trap.
- Formulated new experimental approaches to search for non-Newtonian gravity-like forces at ~ 1Å length scales using neutron diffraction.

Undergraduate Research Assistant May 2018-May 2019
Lawrence Berkeley National Laboratory/UC Berkeley
Advisor: Gabriel Orebi Gann

- 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.

- Created Monte Carlo simulation for experiment to model optical properties of TPB, such as reflectivity and wavelength shifting.

Undergraduate Research Assistant June 2018-May 2019
UC Berkeley
Advisor: Matt Pyle

- Developed algorithms to simulate new phonon physics in the SuperCDMS Monte Carlo, such as surface reflection downconversion.
- 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.