

JYOTIRMAI SINGH

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EDUCATION

Stanford University	2019 – Present
Ph.D. Physics	
M.S. Physics	2022
University of California, Berkeley	2015 – 2019
B.A. Physics	GPA 3.99/4.00
<i>Highest Honors in Physics, Highest Distinction in General Scholarship, 2018 Phi Beta Kappa</i>	

RESEARCH EXPERIENCE

Graduate Student Researcher, Stanford University	09/2019 – Present
<i>Advisor: Kent Irwin</i>	<i>Stanford, CA</i>

- Developing high Q ($\sim 10^6$) LC resonators in the MHz range for the DM Radio Experiment.
- Fabricating novel quantum sensors for electromagnetic signals below 300 MHz.

Undergraduate Researcher, Lawrence Berkeley National Laboratory	11/2015 – 05/2019
<i>Advisor: Gabriel Orebi Gann</i>	<i>Berkeley, CA</i>

- Studied the optical properties of Tetraphenyl Butadiene (TPB) in the VUV spectrum in liquid argon (LAr) scintillator for future LArTPC experiments in Honours Thesis.
- Measured neutron production from atmospheric neutrino interactions at the Sudbury Neutrino Observatory.
- Produced new analysis code that enabled simultaneous propagation of uncertainties in position/energy resolutions for low and high energy regimes.

Undergraduate Researcher, SuperCDMS Collaboration, UC Berkeley	06/2018 – 05/2019
<i>Advisor: Matt Pyle</i>	<i>Berkeley, CA</i>

- Developed algorithms to simulate new phonon physics in the SuperCDMS Monte Carlo, such as surface reflection downconversion.
- Optimised SuperCDMS Monte Carlo by implementing diffusive propagation of phonons to achieve substantial speedup.

AWARDS/HONOURS

Quad Fellowship	2023-24
Student Presentation Award - APS Group on Instrument & Measurement Science	2021
Isidore Pomerantz Scholarship - Department of Physics, UC Berkeley	2018
Berkeley Physics Undergraduate Research Scholar - Department of Physics, UC Berkeley	2017
Dean's Honours List - UC Berkeley	2015-18
Kraft Award for Freshmen - UC Berkeley	2015

PEER-REVIEWED PUBLICATIONS

1. **G4CMP: Condensed Matter Physics Simulation Using the Geant4 Toolkit**
M. H. Kelsey et al. [arXiv:2302.05998](https://arxiv.org/abs/2302.05998) (2023)
2. **Quantum metrology of low frequency electromagnetic modes with frequency upconverters**
S. E. Kuenstner, E. C. van Assendelft, S. Chaudhuri, H. M. Cho, J. Corbin, S.W. Henderson, F. Kadribasic, D. Li, A. Phipps, N.M. Rapidis, M. Simanovskaia, J. Singh, C. Yu, K. D. Irwin, [arXiv:2210.05576](https://arxiv.org/abs/2210.05576) (2022)

3. **Projected Sensitivity of DMRadio-m³: A Search for the QCD Axion Below 1 μeV**
L. Brouwer *et al.* (DMRadio Collaboration), [Phys. Rev. D 106, 103008 \(2022\)](#)
4. **Proposal for a definitive search for GUT-scale QCD axions**
L. Brouwer *et al.* (DMRadio Collaboration), [Phys. Rev. D 106, 112003 \(2022\)](#)
5. **Measurement of neutron production in atmospheric neutrino interactions at the Sudbury Neutrino Observatory**
B. Aharmim *et al.* (SNO Collaboration), [Phys. Rev. D 99, 112007 \(2019\)](#)

SCIENTIFIC TALKS

- | | |
|--|---------|
| 1. LC Resonators in the DM Radio 50L Experiment
APS April Meeting 2021 | 04/2021 |
| 2. Precision Metrology with Radiofrequency Quantum Upconverters
APS March Meeting 2021 | 03/2021 |

OTHER PUBLICATIONS

1. **Investing in the future of Indian Science**
J. Singh, P. Shah, [Observer Research Foundation \(2022\)](#)

PROFESSIONAL AFFILIATIONS

- | | |
|---|----------------|
| 1. Q-NEXT National Quantum Information Science Research Center | 2021 – Present |
| 2. Kavli Institute for Particle Astrophysics and Cosmology | 2021 – Present |

SKILLS

Programming Languages	Python, Java, C++, HTML/CSS
Natural Languages	Native: English, Hindi Intermediate Proficiency: French
Tools	Git, Vim, ROOT, Mathematica, LabVIEW, \LaTeX , SolidWorks

SERVICE

Mentorship Chair <i>Phi Beta Kappa Northern California Chapter</i>	08/2022 – Present Stanford, CA
· Established the first ever mentorship program for PBK's Northern CA chapter, helping young professionals expand their networks and get guidance from experienced PBK members.	
Councilor, Natural Sciences Representative <i>Stanford Graduate Student Council</i>	05/2021 – 04/2022 Stanford, CA
· Advocated for the interests of natural sciences and international graduate students.	
· Achieved significant concessions on affordability, including fully subsidised health insurance for PhD students across all departments.	

TEACHING EXPERIENCE

Teaching Assistant, Stanford University Department of Physics <i>PHYS 43: Electricity and Magnetism</i>	03/2020 – 06/2020 Stanford, CA
· Teaching Assistant for PHYS 43 taught by Prof. Mark Kasevich.	
Grader, UC Berkeley Department of Physics <i>PHYS 5B: Introductory Electromagnetism, Waves, and Optics</i>	03/2018 – 05/2018 Berkeley, CA
· Graded problem sets for Physics 5B, taught by Prof. Jonathan Wurtele.	

Tutor, Computer Science Mentors at Berkeley

02/2017 – 05/2017

CS 61B: Data Structures

Berkeley, CA

- Tutor for UC Berkeley's introductory Data Structures class, taught by Prof. Josh Hug.
- Held weekly sessions which involved presenting course topics and helping students with problems and conceptual questions.