

# Kevin Singh

Department of Physics  
The Ohio State University  
191 W Woodruff Ave, Columbus, OH 43210

kevinsingh@physics.osu.edu  
1-(253)-275-7111  
www.singhgrouposu.com

EMPLOYMENT	<b>Assistant Professor</b> <b>John W. Wilkins Endowed Professorship of Physics</b> Department of Physics, The Ohio State University	2025 - Present
	<b>Postdoctoral Fellow</b> Pritzker School of Molecular Engineering, University of Chicago	2019 - 2024
	<b>Intelligence Community Postdoctoral Research Fellow</b> Pritzker School of Molecular Engineering, University of Chicago	2020 - 2022
EDUCATION	<b>Ph.D. in Physics, University of California, Santa Barbara</b> Thesis: <i>Floquet Engineering with Ultracold Lithium in Optical Lattices</i> Thesis Advisor: Dr. David Weld	March 2019
	<b>M.A. in Physics, University of California, Santa Barbara</b>	June 2016
	<b>S.B. in Physics, Massachusetts Institute of Technology</b> Thesis: <i>Search for the standard model Higgs boson in the Z gamma channel</i> Thesis Advisor: Dr. Christoph Paus	June 2013
AWARDS AND HONORS	<b>Quantum Creators Prize</b> (Chicago Quantum Exchange)	2023
	<b>The Maria Lastra Excellence in Mentoring Award</b> (Pritzker School of Molecular Engineering, University of Chicago)	2021
	<b>Best Poster Award: MPQ 2021</b> (Machine Learning for Quantum 2021)	2021
	<b>Intelligence Community Postdoctoral Fellowship</b> (Office of the Director of National Intelligence)	2020
	<b>Philip and Aida Siff Educational Foundation Scholarship</b> (The Philip and Aida Siff Educational Foundation)	2015
	<b>MIT Joel Matthew Orloff Award in Service</b> (MIT Department of Physics)	2013
	<b>MIT QuestBridge Scholar</b> (Massachusetts Institute of Technology)	2009 - 2013
PUBLICATIONS	12. S. Anand, C. E. Bradley, R. White, V. Ramesh, K. Singh, and H. Bernien. <i>A dual-species Rydberg array</i> . Nat. Phys. <b>20</b> , 1744–1750 (2024)	
	11. K. Singh, C. E. Bradley, S. Anand, V. Ramesh, R. White, and H. Bernien. <i>Mid-circuit correction of correlated phase errors using an array of spectator qubits</i> . Science <b>380</b> , 1265-1269 (2023)	
	10. K. Singh, S. Anand, A. Pocklington, J. T. Kemp, and H. Bernien. <i>A dual-element, two-dimensional atom array with continuous mode operation</i> . Phys. Rev. X. <b>12</b> , 011040 (2022) <b>(Featured in APS Physics Magazine)</b>	
	9. S. Menon, K. Singh, J. Borregaard, and H. Bernien. <i>Nanophotonic quantum network node with neutral atoms and an integrated telecom interface</i> . New Journal of Physics <b>22</b> , 073033 (2020)	
	8. K. Singh, C. J. Fujiwara, Z. A. Geiger, E. Q. Simmons, M. Lipatov, A. Cao, P. Dotti, S. V. Rajagopal, R. Senaratne, T. Shimasaki, M. Heyl, A. Eckardt, and D. M. Weld. <i>Quantifying and Controlling Prethermal Nonergodicity in Interacting Floquet Matter</i> . Phys. Rev. X. <b>9</b> , 041021 (2019)	
	7. K. M. Fujiwara, K. Singh, Z.A. Geiger, R. Senaratne, S. V. Rajagopal, M. Lipatov, and D.M. Weld. <i>Transport in Floquet-Bloch bands</i> . Phys. Rev. Lett. <b>122</b> , 010402 (2019)	
	6. Z. Geiger, K. M. Fujiwara, K. Singh, R. Senaratne, S. V. Rajagopal, M. Lipatov, T. Shimasaki, R. Driben, V. V. Konotop, T. Meier, and D. M. Weld. <i>Observation and Uses of Position-space Bloch Oscillations in an Ultracold Gas</i> . Phys. Rev. Lett. <b>120</b> , 213201 (2018) <b>(Featured in APS Physics Magazine and selected for an Editor's Viewpoint)</b>	

5. R. Senaratne, S. V. Rajagopal, T. Shimasaki, P. E. Dotti, K. M. Fujiwara, K. Singh, Z.A. Geiger, and D.M. Weld. *Quantum Simulation of Ultrafast Dynamics Using Trapped Ultracold Atoms*. Nature Communications **9**, 2065 (2018)
4. K.M. Fujiwara, Z.A. Geiger, K. Singh, R. Senaratne, S.V. Rajagopal, M. Lipatov, T. Shimasaki, and D.M. Weld. *Experimental Realization of a Relativistic Harmonic Oscillator*. New J. Phys. **20**, 063027 (2018)
3. S.V. Rajagopal, K.M. Fujiwara, R. Senaratne, K. Singh, Z.A. Geiger, and D.M. Weld. *Quantum Emulation of Extreme Non-equilibrium Phenomena with Trapped Atoms*. Annalen Der Physik. **529**, 1700008 (2017)
2. K. Singh, K. Saha, S.A. Parameswaran, and D. M. Weld. *Fibonacci Optical Lattices for Tunable Quantum Quasicrystals*. Phys. Rev. A **92**, 063426 (2015)
1. Bornheim, A. et al. *Search for a Light Higgs boson in the Z boson plus a Photon Decay Channel*. CMS Physics Analysis Summary, CMS PAS HIG-12-049 (2012)

INVITED TALKS	<p><i>“Dual-Species Neutral Atom Quantum Processors”</i> SQUInT 2024 Annual Workshop, Boulder, CO</p> <p><i>“The Future of Quantum Computing” Panel Speaker</i> 8<sup>th</sup> Annual US-Japan Digital Innovation Hub and Advanced Tech. Workshop, Columbus, OH</p> <p><i>“A dual-species Rydberg array”</i> Physics Department Colloquium, OSU, Columbus, OH</p> <p><i>“A dual-species Rydberg array”</i> Physics Department Seminar, UC Berkeley, Berkeley, CA</p> <p><i>“A dual-species Rydberg array”</i> Physics Department Colloquium, Univ. of Pitt., Pittsburgh, PA</p> <p><i>“A dual-species Rydberg array”</i> Physics Department Colloquium, USC, Los Angeles, CA</p> <p><i>“QRAM with Dual-Species Atom Arrays”</i> AFOSR Quantum Random Access Memory MURI Meeting, Austin, TX</p> <p><i>“A dual-species Rydberg array of rubidium and cesium atoms.”</i> 54<sup>th</sup> Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Spokane, WA</p> <p><i>“Dual-species Rydberg array of rubidium and cesium atoms.”</i> APS March Meeting 2023, Las Vegas, NV</p> <p><i>“Mid-circuit correction of correlated phase errors using an array of spectator qubits.”</i> 8<sup>th</sup> Annual Intelligence Community Academic Research Symposium</p> <p><i>“A Dual-Element, Two-Dimensional Atom Array with Continuous-Mode Operation.”</i> NSF Quantum Leap Challenge Institute: HQAN Coordination Meeting, Chicago, IL</p> <p><i>“A dual-element, two-dimensional atom array with continuous-mode operation.”</i> Programmable Quantum Materials Seminar, Columbia University, New York, NY</p> <p><i>“Engineering and Control of Large-Scale Rydberg Atom Based Quantum Simulators.”</i> 7<sup>th</sup> Annual Intelligence Community Academic Research Symposium</p> <p><i>“Floquet engineering and prethermalization in driven optical lattices.”</i> Quantum Seminar, PME, University of Chicago, IL</p> <p><i>“Floquet engineering and prethermalization in driven optical lattices.”</i> JILA Seminar, University of Colorado Boulder, Boulder, CO</p> <p><i>“Floquet engineering and prethermalization in driven optical lattices.”</i></p>	<p>Oct 2024</p> <p>Sept 2024</p> <p>Feb 2024</p> <p>Feb 2024</p> <p>Feb 2024</p> <p>Jan 2024</p> <p>Oct 2023</p> <p>June 2023</p> <p>March 2023</p> <p>Sept 2022</p> <p>March 2022</p> <p>Feb 2022</p> <p>Sept 2021</p> <p>Dec 2018</p> <p>Nov 2018</p> <p>Nov 2018</p>
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Group Seminar, Quantum Sciences and Technology Group, NASA JPL, Pasadena, CA

CONTRIBUTED TALKS	<i>“A dual-element, two-dimensional atom array with continuous-mode operation.”</i> APS March Meeting 2022, Chicago, IL	March 2022
	<i>“A dual-element, two-dimensional atom array with continuous-mode operation.”</i> Midwest Cold Atom Workshop 2021, Purdue University, West Lafayette, IN	Nov 2021
	<i>“Improving Rydberg Atom Quantum Sensors with Machine Learning Techniques.”</i> Machine Learning for Quantum 2021 (Virtual Conference, <b>Corresponding poster awarded Best Poster Award</b> )	March 2021
	<i>“A Dual Species Atom Array for Quantum Simulation and Quantum Information.”</i> PME Quantum Information Science and Engineering Seminar, University of Chicago, Chicago, IL	Feb 2021
	<i>“Quantum Emulation with Ultracold Lithium and Strontium.”</i> California Institute for Quantum Emulation (CAIQe) collaboration meeting, Santa Barbara, CA	July 2018
	<i>“Exploration of a Floquet phase diagram in a driven optical lattice.”</i> 49 <sup>th</sup> Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Ft. Lauderdale, FL	May 2018
CONTRIBUTED POSTERS	<i>“Fibonacci Optical Lattices.”</i> 46 <sup>th</sup> Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Columbus, OH	July 2015
	<i>“A dual-element, two-dimensional atom array with continuous-mode operation.”</i> 53 <sup>rd</sup> Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Orlando, Florida	June 2021
	<i>“Exploring extreme nonequilibrium dynamics with ultracold atoms.”</i> 26 <sup>th</sup> International Conference on Atomic Physics, Barcelona, Spain,	July 2018
	<i>“Cold-atom Quantum Emulation of Floquet States, Non-linear Bloch Oscillations, and Quasicrystals.”</i> APS March Meeting 2018, LA, CA	March 2018
TEACHING EXPERIENCE	Physics 8820: Architectures for Quantum Information Processing	Spring 2025
	Nominated in 2014 and in 2017 for Graduate Student Association Excellence in Teaching Award (UCSB)	
	<u>Teaching Assistant</u>	
	Lead TA for UCSB Physics 20 (classical mechanics for physics majors) <i>Coordinated homework, reviews, and activities of all TAs and graders.</i>	Fall 2016
	UCSB Physics 210A (graduate electromagnetic theory)	Winter 2015
	<u>Laboratory Instructor and Teaching Assistant:</u>	
	UCSB Physics 127AL (analog electronics)	Summer 2014
	UCSB Physics 6C (optics)	Spring 2014
UCSB Physics 6A (classical mechanics for life-science majors)	Winter 2014	
UCSB Physics 3 (waves and vibrations)	Fall 2013	
MENTORSHIP PROGRAMS	<i>EUREKA Summer Internship</i>	Summer 2018
	Max Pritchard, UCSB undergraduate student → PhD student at Princeton	
	<i>Worster Summer Research Fellowship</i>	Fall 2016
	Morgan Brubaker, UCSB undergraduate student → PhD student at Stanford	
LEADERSHIP AND OUTREACH	<i>Panelist for “Navigating the Faculty Job Search” Event</i>	Nov 2024
	Pritzker School of Molecular Engineering, UChicago	

<i>Member of PME Equity, Diversity, and Inclusion Committee</i>	2022- 2024
Engage with EDI issues at all levels. Personal efforts include design and staffing of science demos for annual UChicago South Side Science Festival and outreach events for first-generation college students	
<i>Condensed Matters Seminar Series</i>	2019 - 2020
Created and organized a monthly seminar series to bring together and encourage collaboration among the various physical science departments at UChicago	
<i>Educational Outreach with UCSB Women in Physics</i>	2014 - 2016
Visited local high schools with the UCSB Women in Physics program to teach students about superfluidity, Bose-Einstein condensation, and pursuing careers in physics	
<i>President of MIT Society of Physics Students</i>	2012 - 2013
<i>MIT-China Development Initiative – Service Leadership Program</i>	2012
Mentored Chinese middle school and high school students on subjects of leadership, service, and educational opportunities in the US – Shenzhen, CN	
<i>Boston Let's Get Ready Program</i>	2011
Taught free SAT prep class for high school students in the Boston area, targeting students from low-income areas	

PROFESSIONAL  
SERVICE

*Referee*  
Physical Review Letters, Physical Review X

*Conference Session Chair/Lead Abstract Sorter*  
APS March Meeting, APS Division of Atomic, Molecular, and Optical Physics, APS DQI