Charles Daryl Brown II
Curriculum Vitae

Department of Physics, UC Berkeley
366 Physics North
Berkeley, CA 94720-7300

Cell: +1 (702) 460-2776
Email: charles.d.brown@berkeley.edu

EDUCATION

2019 — Ph.D., Physics
Yale University
Thesis: Optical, Mechanical and Thermal Properties of Superfluid Liquid Helium Drops Magnetically Levitated in Vacuum
Advisor: Professor Jack G. E. Harris

2013 — B.S. *cum laude*, Physics
The University of Minnesota

EMPLOYMENT

Oct 2019 – — Postdoctoral Associate, UC Berkeley
Advisor: Professor Dan M. Stamper-Kurn

2013–2019 — Research Assistant, Yale University

TECHNICAL PUBLICATIONS

2021 — **C. D. Brown**, S. W. Chang, M. N. Schwarz, V. Kozii, A. Avdoshkin, T. H. Leung, J. E. Moore, D. M. Stamper-Kurn, "A Direct Geometric Probe of Singularities in Band Structure" arXiv:2109.03354

2021 — **C. D. Brown**, Y. Wang, M. Namazi, G. I. Harris, M. Uysal, J. G. E. Harris, "Characterization of Levitated Superfluid Helium Drops in High Vacuum" (In preparation for *P.R.L.*)

2020 — T. H. Leung, M. N. Schwarz, S. W. Chang, **C. D. Brown**, G. Unnikrishnan, D. Stamper-Kurn, "Interaction-Enhanced Group Velocity of Bosons in the Flat Band of an Optical Kagome Lattice", Phys. Rev. Lett. **125**, 133001 (2020)

2019 — A. B. Shkarin, A. D. Kashkanova, **C. D. Brown**, S. Garcia, K. Ott, J. Reichel, J. G. E. Harris, "Quantum optomechanics in a liquid" Phys. Rev. Lett **122** 153601 (2019)

2017 L. Childress, M. P. Schmidt, A. D. Kashkanova, **C. D. Brown**, G.I. Harris, A. Aiello, F. Marquardt, J.G.E. Harris, "Cavity Optomechanics in a Levitated Helium Droplet" Phys. Rev. A **96**, 063842 (2017)

2017 A. D. Kashkanova, A. B. Shkarin, **C. D. Brown**, N. E. Flowers-Jacobs, L. Childress, S. W. Hoch, L. Hohmann, K. Ott, J. Reichel, J. G. E. Harris. "Superfluid Brillouin Optomechanics" Nature Physics **13**, 74-79 (2017)

2017 A. D. Kashkanova, A. B. Shkarin, **C. D. Brown**, N. E. Flowers-Jacobs, L. Childress, S. W. Hoch, L. Hohmann, K. Ott, J. Reichel, J. G. E. Harris. "Optomechanics in superfluid helium coupled to a fiber-based cavity" Journal of Optics **19**, 034001 (2017)

NON-TECHNICAL PUBLICATIONS

2021 **C. D. Brown** and E. Gonzales, "Excellence and power in the Black physics community" Nature Physics 17, 3–4 (2021)

2020 J. Esquivel and **C. D. Brown**, "Part of the Revolution: Black Representation in AI and Quantum Information" Physics Today DOI:10.1063/PT.6.4.20201030b

2020 **C. D. Brown**, "Disentangling Anti-Blackness from Physics", Physics Today DOI:10.1063/PT.6.3.20200720a

AWARDS AND HONORS

2021 Quantum Creators Prize
2020 National Academies Ford Foundation Postdoctoral Fellowship
2020 University of California President's Postdoctoral Fellowship Finalist
2018 National Academies Ford Foundation Dissertation Fellowship
2017 Loyde & William C.G. Ortel Fellowship in Physics
2016 D. Allan Bromley Fellowship for Graduate Physics Research
2016 Bouchet Graduate Honor Society Inductee
2014 National Science Foundation Graduate Research Fellowship
2013 Leigh Page Prize
2012 NASA Minnesota Space Grant Consortium Scholarship
2011 The Erwin Marquit and Doris Grieser Marquit Undergradute Scholarship for Physics

INVITED TALKS

2022 "TBD"

Harvard University, Quantum Materials and Devices Seminar Series (virtual)

2022 "TBD"
AAAS Annual Conference, Quantum Information Science, Culture and Society Panel (virtual)

2021 "Disentangling Anti-Blackness from Physics: Perspectives from an AMO Researcher"
APS DAMOP 2021 Annual Conference (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
University of Oklahoma, Condensed Matter Physics Seminar (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
Case Western Reserve University, Condensed Matter Physics Seminar (virtual)

2021 "Ultracold Atoms in an Optical Kagome Lattice"
Cal Poly Pomona, College of Science Lecture Series (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
Ohio State University, Condensed Matter Physics Seminar (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
Pennsylvania State University, Condensed Matter Physics Seminar (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
Trent University, Department of Physics Colloquium (virtual)

2021 "Non-Equilibrium Phenomena of Ultracold Quantum Gasses Trapped in Optical Lattice Potentials"
IBM Qiskit Virtual Seminar Series

2020 "Interacting Bosons in the Flat Band of an Optical Kagome Lattice"
National Society of Black Physicists Annual Conference (virtual)

2020 "Ultracold atoms in an optical lattice and insights on equity in the physics discipline"
Colgate University, Department of Physics Colloquium (virtual)

2020 "Isolated Superfluid Liquid Helium Drops Levitated in a Magneto-Gravitational Trap"

Department of Physics Colloquium (virtual), University of Virginia, Virginia

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
Seminar on Levitated Optomechanics, Bad Honnef, Germany

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
Seminar, University of Vienna, Austria

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
Center for Fundamental Physics Seminar, Northwestern University, Illinois

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
IME Seminar, The University of Chicago, Illinois

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
Seminar, NIST Boulder, Colorado

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
JILA Seminar, JILA, Colorado

2019 "Optical, Mechanical and Thermal Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
AMOQI Seminar, UC Berkeley, California

2018 "Quantum Acoustics with Superfluid Helium Density Waves"
Quantum Fluids and Solids Conference, University of Tokyo, Tokyo, Japan

CONFERENCE ACTIVITY

Contributed Talks

2021 "Wave Function Geometry of Singular Band-Touching Points in a 2D Quantum Simulator"
APS DAMOP 2021 Annual Conference (virtual)

2019 "Properties of a Superfluid Helium Drop Magnetically Levitated in Vacuum"
Conference of Ford Fellows, San Juan, Puerto Rico

2018 "Cavity Optomechanics in a Levitated Superfluid Helium Drop"
National Society of Black Physicists Annual Conference, Columbus, OH

2018 "Stable levitation of superfluid helium: towards quantum optomechanics with drops"
APS March Meeting, Los Angeles, CA

2018 "Stable levitation of superfluid helium: towards quantum optomechanics with drops"
Gordon Research Seminar: Mechanical Systems in the Quantum Regime, Venture, CA

2017 "Optomechanics in a Levitated Drop of Superfluid Helium"
APS DAMOP Conference, Sacramento, CA

Poster Presentations

2018 "Cavity Optomechanics in a Levitated Superfluid Helium Drop"
National Society of Black Physicists Annual Conference, (received best AMO Physics poster award)
Columbus, OH

2018 "Levitated Optomechanics with a Magneto-Gravitationally Trapped Superfluid Helium Drop"
Quantum Engineering of Levitated Systems Conference, Bensaque, Spain

2018 "Stable levitation of superfluid helium: towards quantum optomechanics with drops"
Gordon Research Conference: Mechanical Systems in the Quantum Regime, Venture, CA

2017 "Optomechanics in a Levitated Drop of Superfluid Helium"
Foundations and Applications of Nanomechanics Workshop, International Centre for Theoretical Physics, Trieste, Italy

2017 "Optomechanics in a Levitated Drop of Superfluid Helium"
Advanced School on Foundations and Applications of Nanomechanics, International Centre for Theoretical Physics, Trieste, Italy

2016 "Quantum Optomechanical Interactions in Superfluid Helium"
National Society of Black Physicists Fall Workshop, Fermilab, Batavia, IL

2016 "Superfluid Brillouin Optomechanics in a Fiber Cavity"
Gordon Research Conference: Mechanical Systems in the Quantum Regime, Ventura, CA

TEACHING EXPERIENCE

Yale University
Instructor, Quantum Mechanics Boot Camp Summer 2019

T.A., Introductory Physics	Summer 2016
T.A., University Physics II	Spring 2015
T.A., University Physics I	Fall 2014
T.A., Modern Physical Measurement	Fall 2013, Spring 2014

The University of Minnesota

T.A., Thermodynamics/Statistical Mechanics	Spring 2012
T.A., Introductory Physics for Scientists/Engineers I	Fall 2011

ACADEMIC SERVICE

2022	Chair, Gordon Research Seminar: Mechanical Systems in the Quantum Regime Hong Kong, China *Rescheduled from 2020 due to SARS-CoV-2 pandemic*
2021	Invited Panelist/Speaker, Expanding Access and Acceptance in Science UC Berkeley Basic Science Lights the Way Seminar Series
2020	Co-author, "Part of the Revolution: Black Representation in AI and Quantum Information" https://physicstoday.scitation.org/do/10.1063/PT.6.4.20201030b/full/
2020	Lead organizer, #BlackinPhysicsWeek https://physicstoday.scitation.org/do/10.1063/PT.6.4.20201026a/full/
2020	Author, "Disentangling anti-Blackness from physics", Physics Today Magazine DOI:10.1063/PT.6.3.20200720a
2019	Invited Speaker, APS National Mentoring Community Conference
2019	Quantum Mechanics Instructor for Physics Department Boot camp (Instructor for week-long intensive (20 hours) review of quantum mechanics to prepare incoming graduate students for graduate quantum mechanics at Yale) Department of Physics, Yale University https://physics.yale.edu/academics/graduate-studies/bootcamp-physics-fundamentals-2019
2016–2018	National Student Representative, National Society of Black Physicists [NSBP], (selected abstracts for posters and talks at annual conference and workshop, organized conference sections, spearheaded creation of first NSBP institutional chapter – at Hampton University), Arlington, VA
2015–2018	Graduate Student Representative, Climate and Diversity Committee Department of Physics, Yale University https://physics.yale.edu/climate-and-diversity-committee

2015–2018 President and Co-Founder, Yale League of Black Scientists
Yale University, New Haven, CT
ylbs.sites.yale.edu

2015–2016 Co-Organizer, DiversiTeas Talk Series (speaker series on diversity in STEM)
Yale University, New Haven, CT
https://poorvucenter.yale.edu/diversiteas

OUTREACH

Talks

2020 Invited Speaker, Cal-Bridge Seminar Series: Science by Diverse Scientists
"A Quantum Physicist's Classical Trajectory"

2017–2019 Speaker, Ophthalmology Day
"Optics in Ophthalmology"
Department of Ophthalmology, Yale Medical School, New Haven, CT

2016 Speaker, Science in the News Speaker Series
"Quantum Uncertainty"
New Haven Free and Public Library, Milford Library, Branford Library
New Haven, CT & Milford, CT & Branford, CT

2016 Speaker, Open Labs Science Café
"Quantum Uncertainty"
Yale University, New Haven, CT

2016 Speaker, EVOLUTIONS Afterschool Program
"Life as a Scientist"
Yale Peabody Museum, New Haven, CT

Panel Discussions

2020 Panelist, Lawrence Berkeley National Laboratory Next – STEM Career Talks
"Keeping up with Quantum"

2018–2019 Co-Organizer and Panelist, Yale Pathways to Science Eye Day Panel Discussion
"How to be a Successful College Student in STEM"
Yale University, New Haven, CT

2017 Panelist, S.T.A.R.S. Panel Discussion
"Career Paths in Science and Engineering"
Yale University, New Haven, CT

2017 Panelist, UConn Learning Community ScHOLA^{2}RS Panel Discussion
"Achieving Success as a Graduate Student in STEM"
Yale University, New Haven, CT

2017 Organizer and Panelist, P.A.C.E. Panel Discussion with NASA Astronaut Christopher Cassidy
"Life as a Graduate Student in Science and Engineering"
Yale School of Engineering and Applied Science, New Haven, CT

2016 Co-Organizer and Panelist, Yale Pathways to Science Eye Day Panel Discussion
"How to Get Into College"
Yale University, New Haven, CT

2016 Panelist, Black Arts Festival
"Pursuing Careers in STEM"
Afro-American Cultural Center, Yale University, New Haven, CT

Scientific Demonstrations, Hands-On Activities and Miscellaneous

2018 Activity Leader, Yale Pathways to Science – Science Saturdays
"Discover the Invisible Universe"
Wright Laboratory, New Haven, CT

2018 Activity Leader, Yale Pathways to Science – Eye Day
"Optics in Ophthalmology"
Yale University, New Haven, CT

2017 Activity Leader, Yale Pathways to Science Summer Scholars – Ophthalmology Enrichment Session
"Optics in Ophthalmology"
Yale University, New Haven, CT

2017 Judge, ESUMS STEM Expo
New Haven, CT

2016 Co-Organizer, City-Wide S.T.E.M. Career fair
Wilbur Cross High School, New Haven, CT

2016 Activity Leader, Yale Pathways to Science – Eye Day
"Optics in Ophthalmology"
Yale University, New Haven, CT