Olumakinde Ogunnaike

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MAIN INTERESTS

Physics: Quantum Many-Body Systems and Quantum Dynamics

Non-equilibriun quantum dynamics (operator spreading, measurement, decoherence)

Strongly correlated electronic systems (e.g. bilayer, multi-layer, and twisted graphene)

Topological phases and critical phenomena (e.g. spin liquids, SPT Phases)

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA 2018 - 2024

Ph.D. in Physics
Advisors: Leonid Levitov, Jong-Yeon Lee

Oxford University Merton College, Oxford, UK 2017 - 2018

MSt. in Philosophy of Physics
Advisor: Simon Saunders

Harvard University Cambridge, MA 2013 - 2017

B.S. in Physics and Mathematics (Magna Cum Laude, GPA 3.94/4)
Advisor: Cumrun Vafa

AWARDS and HONORS

MIT Physics Graduate Service Award 2021

– *Awarded to 1-3 graduate students for outstanding service for the department*

MIT Lester Wolfe and Kendall Fellowship 2018 - 2021

Harvard Henry Knox Fellowship 2017 - 2018

– *Granted to two exceptional graduating seniors for masters study in the UK*

Rhodes Fellowship Finalist 2016

William H. and Mary Lee Bossert Prize 2016

–*Three juniors, for "Exceptional academic ability and commitment to a broad range of the sciences"*

Harvard College Summer Research Fellowships 2016

Harvard Program for Research in Science and Engineering 2015

American Physical Society Minority Scholarship 2013 - 2017

– *Harvard Representative at National Society of Black Physicists Conference 2015*

American Chemical Society Scholar Scholarship 2013-2015

REFERENCES

Ph.D. Advisor

Leonid Levitov, Massachusetts Institute of Technology
182 Memorial Dr, Cambridge, MA 02139, USA
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Ph.D. Co-Advisor, Collaborator
Jong Yeon Lee, University of Illinois Urbana-Champaign
1110 West Green Street, Champaign, IL 61801, USA
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Collaborator
Soonwon Choi, Massachusetts Institute of Technology
182 Memorial Dr, Cambridge, MA 02139, USA
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LEADERSHIP and SERVICE

UC Berkeley Physics Equity & Inclusion Committee- Postdoctoral representative 2024-Present

Quantum Noir Conference at Harvard University- Organizing Committee 2024

Harvard-MIT National Society for Black Physicists Chapter, Founder & Co-President 2020 -2024

MIT PhysREFS (Resources for Easing Friction and Stress) 2019 - 2014

– *Offered individual counseling for struggling graduate students*

MIT Summer Research Program, Dept. Committee (2020-21), Application Reviewer 2019 - 2024

– *Helped re-structure evaluation and admission to program for underserved undergraduates*

MIT Graduates Advising Graduate Admissions (GAGA), Founding Member 2020 - 2021

MIT Physics Working Group, Founding Member 2020 - 2021

– *Surveyed student opinions on DEI, Mentorship, and Advising. Worked with Graduate Student Council to publish a list of recommended changes and departmental scorecard* (here)

TEACHING EXPERIENCE

EDGEx Summer Lab-Based Projects Course, Head Instructor (MIT) 2023-2024

HSSP S15662, High School Course: General Relativity and Black Holes (MIT) Summer 2023

Teaching Assistant for 8.06 - Quantum Mechanics III (MIT) 2021

Teaching Assistant for 8.02 - Electricity and Magnetism (MIT) 2020

Harvard Summer School Physics Tutor 2016-2017

Bureau of Study Counsel Physics Tutor (Harvard) 2015-2017

Teaching Assistant for Phys 143a - Quantum Mechanics I (Harvard) 2014-2015

MENTORING EXPERIENCE

Undergraduate Research Mentorship 2019-2024

– *Oversaw the research progress of two undergraduate students: Sophie Fisher (2019-2020) – Ultracold Quantum Gases (arXiv:1912.06128) , and Albert Qin (2022-2024) – Quantum Hall Systems*

Harvard College Resident Tutor 2018-2024

– *Oversaw undergraduates in a Harvard College dormitory; planned study breaks and outings; academically advised students; provided support on issues of Race, Fellowships, and IM sports.*

MIT Physics Directed Reading Program 2019-2024

– *Co-organized and administered program pairing graduate mentors and undergraduate mentees to complete a "reading project" and subsequent presentation over winter term.*

MIT Laureates and Leaders Program 2020-2024

Harvard Physics Polaris Mentor 2020-2022

Harvard College Peer Advising Fellow 2014-2017

PUBLICATIONS Google Scholar (* **is for corresponding author.)**

1. **O. Ogunnaike** , J. Feldmeier, J.Y. Lee
   Unifying Emergent Hydrodynamics and Lindbladian Low Energy Spectra across Symmetries, Constraints, and Long-Range Interactions , Phys. Rev. Lett. 131, 220403
2. Z. Dong, **O. Ogunnaike**, L. Levitov
   Collective excitations in chiral Stoner magnets,Phys. Rev. Lett. 130 (20), 206701, Editor's Suggestion
3. Z. Dong, M. Davydova, **O. Ogunnaike**, L. Levitov
   Isospin-and momentum-polarized orders in bilayer graphene, Phys. Rev. B 107, 075108
4. S. Fisher, **O. Ogunnaike***, L. Levitov
   Three-Body Bound States of Quantum Particles: Higher Stability Through Braiding, Phys. Rev. A 109, 043323

INVITED TALKS

1. National Society for Black Physicists Conference, United States, 11/15/2024
   "Measurement-Induced Phase Transitions & Spontaneous Symmetry Breaking"
2. Cambridge Condensed Matter Physics Seminar, United Kingdom, 2/7/2024
   "Dynamics from Dispersion: A Versatile Tool"
3. Yale Condensed Matter Physics Seminar, United States, 12/21/2023
   "Dynamics from Dispersion: A Versatile Tool"
4. Maryland Quantum-Thermodynamics Hub Seminar, United States, 12/13/2023
   "Dynamics from Dispersion: A Versatile Tool"
5. Perimeter Institute Quantum Matter Seminar, Canada, 11/28/2023
   "Dynamics from Dispersion: A Versatile Tool"
6. National Society for Black Physicists Conference, United States, 11/10/2023
   "Dynamics from Dispersion: A Simple Predictive Tool"