Méabh I. L. Allen

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Education

UC Berkeley — Berkeley, USA
PhD candidate in Physics — *Jan. 2022 - Present*

Imperial College London — London, UK
Masters in Quantum Fields and Fundamental Forces — *Oct. 2020 - Oct. 2021*

Technical University of Munich — Munich, Germany
Erasmus Exchange Program — *Oct. 2018 - Sep. 2019*

University College Cork — Cork, Ireland
Joint First Class Honours B.S. in Mathematics and Physics — *Sep. 2016 - May 2020*

Awards

CIQC Seed Funding — 2024
Leo Falicov Fellow — 2023
Heising-Simons Fellow — 2022

Research Experience

PhD Thesis — Jan. 2022 – Present
Prof. Joel Moore — *University of California, Berkeley*
Non-equilibrium quantum dynamics of critical systems.

Masters Dissertation — May 2021 – Oct 2021
Prof. Arttu Rajantie — *Imperial College London*
"The Kosterlitz-Thouless phase transition in spin models and quantum field theory."

Tyndall National Institute Research Assistant — May. 2020 – Aug. 2020
Dr. Stefan Schulz — *Tyndall National Institute, Ireland*
"Modelling the temperature dependence of photoluminescence properties of disordered AlGaN quantum wells for ultraviolet light emission: A kinetic Monte Carlo study."

Bachelors Thesis — Jan. 2020 – May 2020
Prof. Stephen Fahy — *University College Cork, Ireland*
"Surface vibrational modes in Bi2Te3 & Bi2Se3, two layered topological insulators."

Presentations and publications

J. Wei, MILA, C. Wang, J. Kemp, J. Moore, N. Yao, "Shallow Global Quenches in Critical Spin Chains," *in preparation.*

MILA and Oriana Diessel, "Novel Short-Time Universality for Critical Quenches in Non-Equilibrium Phase Transitions," *in preparation.*

MILA, G. Woolls, C. Wächtler, J. Moore, "Quantum Fisher Information in a Driven-Dissipative Critical Spin Chain,"" *in preparation.*

"Kibble-Zurek Dynamics vs Dissipation in Critical Spin Chains," *APS Global Summit* (Mar 2025).

"Correlations Induced by Quench Protocols in Critical Spin Chains," *APS March Meeting* (Mar 2024).

J. A. Sobota et al., "Influence of Local Symmetry on Lattice Dynamics Coupled to Topological Surface States," *Phys. Rev. B, 107, 014305* (Jan 2023).

Y. Huang et al., "Ultrafast Measurements of Mode-Specific Deformation Potentials of Bi2Te3 and Bi2Se3," *Phys. Rev. X, 13(4), 041050* (Dec 2023).

Teaching/Outreach Experience

Graduate Student Instructor | *Physics 141b* Jan. 2024 - May 2024

Teaching assistant for UC Berkeley's Physics 141b, an upper-level solid state course for Physics majors.

Graduate Student Instructor | *Physics 7a* Aug. 2023 - Dec. 2023

Teaching assistant for UC Berkeley's Physics 7a, an introductory course on mechanics for non-Physics track students.

Graduate Student Manager | *CIQC, UC Berkeley* Jan. 2023 - Present

Lead role on the Challenge Institute for Quantum Computation organizing team planning quantum computing-related seminars and networking events. Graduate representative of CIQC on outreach trips, such as to the Chicago Quantum Forum, NSF HQ and the Quantum Showcase on Capitol Hill.

Undergraduate Student Instructor | *Physics 2106* Jan. 2020 - May. 2020

Teaching assistant for University College Cork's Physics 2106, an astrophysics and special relativity course for Physics majors.

Graduate Mentor | *UC Berkeley COMPASS Mentoring Program* Aug. 2022 - Present

Connect with physics majors from underrepresented backgrounds to discuss questions about STEM, undergraduate life, research and internship plans.

Founding Committee Member| *EPONA, University College Cork* Sep. 2019

Equal Physics Opportunities Network in Academia network aimed at promoting gender equality & inclusivity within the physics department & community through workshops, seminars & outreach.

Extracurricular

Volunteer Assistant Trainer at Kheystone Stables 2023-Present
Equestrian training program.

University College Cork Physics & Astronomy Club 2017 - 2020
Lead committee roles in organization of societal events to foster community within the department.

Founder & Co-Director, Munster Schools Integrated Oratory Competition 2016 - 2019
Debating competition for high schools throughout southern Ireland.

Technical Skills

Programming: high proficiency in Python, Mathematica and Julia for use in coursework and most research to date. Experience modelling molecular dynamics with C++, Monte Carlo simulations with Matlab.

Other languages: CEFR C1 German speaker, proficient in French.

Relevant Masters and graduate school coursework: special topics in many body physics, non-equilibrium statistical physics, quantum field theory, quantum electrodynamics, advanced field theory, unification, particle symmetries, quantum theory of matter, quantum information, differential geometry.