

Méabh I. L. Allen

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[Website](#) | [Google Scholar](#)

EDUCATION

University of California, Berkeley

PhD candidate in Theoretical Condensed Matter Physics

Berkeley, USA

Jan. 2022 - Present

Imperial College London

M.Sc. in Quantum Fields and Fundamental Forces

London, UK

Oct. 2020 - Oct. 2021

Technical University of Munich

Erasmus Scholar

Munich, Germany

Oct. 2018 - Sep. 2019

University College Cork

Joint First Class Honours B.Sc. in Mathematics and Physics

Cork, Ireland

Sep. 2016 - May 2020

RESEARCH EXPERIENCE

PhD Thesis

Prof. Joel Moore

Non-equilibrium many-body dynamics of quantum critical systems.

Jan. 2022 – Present

University of California, Berkeley

Masters Dissertation

Prof. Arttu Rajantie

The Kosterlitz-Thouless phase transition in spin models and quantum field theory.

May 2021 – Oct 2021

Imperial College London

Summer Internship

Dr. Stefan Schulz

Modelling the temperature dependence of photoluminescence properties of disordered AlGaN quantum wells for ultraviolet light emission: a kinetic Monte Carlo study.

May. 2020 – Aug. 2020

Tyndall National Institute, Ireland

Bachelors Thesis

Prof. Stephen Fahy

Surface vibrational modes in Bi₂Te₃ & Bi₂Se₃, two layered topological insulators.

Jan. 2020 – May 2020

University College Cork

PRESENTATIONS AND PUBLICATIONS

J. Wei, MILA, C. Wang, J. Kemp, J. E. Moore, and N. Y. Yao. Novel probes of universality via shallow critical quenches. *In preparation*, 2025

MILA, G. L. Woolls, C. W. Wächtler, and J. E. Moore. Cat state preparation and the quantum fisher information in a driven-dissipative critical spin chain. *In preparation*, 2025

MILA and O. K. Diessel. Novel short-time universality for critical quenches in non-equilibrium phase transitions. *In preparation*, 2025

MILA. Kibble-Zurek dynamics versus dissipation in critical spin chains, *APS Global Physics Summit 2025*, Mar. 17 2025. Anaheim, CA

MILA. Correlations induced by quench protocols in critical spin chains, *2024 APS March Meeting*, Mar. 6 2024. Minneapolis, MN

Y. Huang, J. D. Querales-Flores, S. W. Teitelbaum, J. Cao, T. Henighan, H. Liu, et al. Ultrafast measurements of mode-specific deformation potentials of bi₂te₃ and bi₂se₃. *Physical Review X*, 13(4):041050, Dec. 2023

J. A. Sobota, S. W. Teitelbaum, Y. Huang, J. D. Querales-Flores, R. Power, MILA, et al. Influence of local symmetry on lattice dynamics coupled to topological surface states. *Physical Review B*, 107(1):014305, Jan. 2023

OUTREACH EXPERIENCE

- CIQC Delegate** | *NSF Quantum Showcase, NSF Headquarters and Capitol Hill* Apr. 2024
Represented the CIQC with Director Dan Stamper-Kurn in meeting with leaders from across the NSF Directorates, with Members of Congress, Congressional staffers, and NSF Director Sethuraman Panchanathan.
- Organizing Committee** | *CIQC, UC Berkeley* Jan. 2023 - Present
Leadership role planning seminars, networking events, and journal clubs for the cross-departmental quantum-computing community on campus.
- Graduate Mentor** | *MPS and COMPASS Mentoring Programs, UC Berkeley* Aug. 2022 - Present
Mentorship role with math and physics majors from underrepresented backgrounds, providing guidance regarding STEM, undergraduate life, research, and career planning.
- Founding Committee Member** | *EPONA, University College Cork* Sep. 2019
Equal Physics Opportunities Network in Academia network aimed at promoting gender equality and inclusivity within the physics department and community through workshops, seminars and outreach.
- Organizing Committee** | *Physics and Astronomy Club, University College Cork* Sep. 2017 - May 2020
Leadership role in organization of educational and social events.

TEACHING EXPERIENCE

- Graduate Student Instructor** | *Physics 141B, UC Berkeley* Spring 2024
Teaching assistant for an upper-level condensed matter course for Physics majors.
- Graduate Student Instructor** | *Physics 7A, UC Berkeley* Fall 2023
Teaching assistant for an introductory course on mechanics for beginning engineers.
- Undergraduate Student Instructor** | *Physics 2106, University College Cork* Spring 2020
Teaching assistant for an astrophysics and special relativity course for Physics majors.

AWARDS

- NSF Challenge Institute for Quantum Computation (CIQC) Seed Funding 2024
- NSF CIQC Berkeley - Harvard Research Exchange 2024
- UC Berkeley Leo Falicov Fellowship 2023
- Heising-Simons Fellowship 2022
- Tyndall National Institute IPIC Fellowship 2020
- Erasmus Exchange Scholarship 2018
- Quercus Scholarship for top national state examination result 2015

TECHNICAL SKILLS

Programming

Nine years of coursework and research in Python and Mathematica. Tensor networks with the Python library TeNPy and the Julia library ITensor. Molecular dynamics with C/C++, Monte Carlo simulations with MATLAB.

Languages

CEFR C1 German speaker, CEFR B2 French speaker, native Irish speaker.

Graduate-level Coursework

Special topics in many-body physics, non-equilibrium statistical physics, quantum field theory, quantum electrodynamics, advanced quantum field theory, unification, particle symmetries, quantum theory of matter, quantum information, differential geometry.

EXTRACURRICULAR

- Volunteer Assistant Trainer** | *Kheystone Stables, Oakland* 2023 - Present
Equestrian training and rehabilitation program.
- Founder & Co-Director** | *Munster Schools Integrated Oratory Competition, Ireland* 2016 - 2018
Debating competition for high schools throughout the region.