

Mary Letey

[email](#) + [gscholar](#) + [github](#)

Education

Sept 2023 – June 2028	Harvard University	PhD Student – Applied Mathematics
Sept 2022 – June 2023	Perimeter Institute	MSc – Theoretical Physics
Sept 2018 – June 2022	University of Cambridge	BA Honours – Mathematics

Publications & Preprints

Pretrain–Test Task Alignment Governs Generalization in In-Context Learning

Under Submission at ICLR2026 – [arxiv preprint](#)

‘What Can(t) Transformers Do’ [Workshop, Neurips 2025](#)

ML, Zavatone-Veth, Lu, Pehlevan

Theory of Scaling Laws for In-Context Regression: Depth, Width, Context and Time

Under Submission at ICLR2026 – [arxiv preprint](#)

Bordelon, ML, Pehlevan

Asymptotic theory of in–context learning by linear attention

[Proceedings of the National Academy of Sciences \(2025\)](#)

‘Mathematics of Modern Machine Learning’ [Workshop, Neurips 2024](#)

Lu, ML, Zavatone-Veth, Maiti, Pehlevan

Quantum initial conditions for curved inflating universes

[Physical Review D \(2024\)](#)

ML*, Shumaylov*, Agocs, Handley, Hobson, Lasenby

Research & Work Experience

Quebec Artificial Intelligence Institute (MILA) – Summer 2023

Research Internship – Equivariant architectures for neural PDE solvers

Perimeter Institute for Theoretical Physics – 2022–2023

[Master’s thesis](#) – Classification of discrete symmetries in non-Euclidean space

Perimeter Institute Quantum Intelligence Lab – Fall 2022

Graduate Rotation – Machine learning for quantum wavefunction prediction

Cavendish Laboratory & Kavli Institute for Cosmology, Cambridge – Summer 2022

Research Internship – Research on early-universe cosmology and curved spacetimes

Embryo Ventures – Summer 2020

Internship – Due diligence and founder outreach

Iguana Investments – Fall 2019–Spring 2020

Research Internship – Optimisation algorithms for market prediction models

Awards & Funding

2025	Graduate Fellowship	Kempner Institute – Full support for graduate studies
2024	Clare Marie Doris Innovation Fund	Harvard University
2023	Graduate Prize Fellowship	Harvard University
2022	International Scholar Award	Perimeter Institute – \$45,000

Skills

Programming languages	Python · C · C++
Software packages	JAX · PyTorch · TensorFlow · Matlab · Maple