

# Mary Letey

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

## Education

Now	<b>Harvard University</b>	PhD Student — Applied Mathematics	Supervised by <a href="#">Prof. Cengiz Pehlevan</a>
2023	<b>Perimeter Institute</b>	MSc — Theoretical Physics	Supervised by <a href="#">Prof. Latham Boyle</a>
2022	<b>University of Cambridge</b>	BA Honours — Mathematics	
2018	<b>University of Colorado</b>	Non-degree student — Mathematics, Computer Science	

## Publications & Preprints

2025	Theory of Scaling Laws for In-Context Regression: Depth, Width, Context and Time <a href="#">arxiv</a> — Bordelon, <b>Letey</b> , Pehlevan
	Pretrain–Test Task Alignment Governs Generalization in In-Context Learning <a href="#">arxiv</a> — <b>Letey</b> , Zavatone-Veth, Lu, Pehlevan
	Asymptotic theory of in-context learning by linear attention <a href="#">PNAS</a> — Lu, <b>Letey</b> , Zavatone-Veth, Maiti, Pehlevan
2024	Quantum initial conditions for curved inflating universes <a href="#">Physical Review D</a> — <b>Letey</b> , Shumaylov, Agocs, Handley, Hobson, Lasenby

## Talks & Posters

2024	<b>Workshop paper</b> at <a href="#">Neurips</a> Mathematics of Modern Machine Learning <b>Opening talk</b> about <a href="#">in context learning</a> at <a href="#">Kempner Institute</a>
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## Research & Work Experience

2025	<b>Harvard Applied Mathematics Department</b> Teaching Fellow for AM50
2023	<b>Montreal Institute for Learning Algorithms (MILA)</b> — Supervised by <a href="#">Prof. Siamak Ravanbakhsh</a> Studied extensions of equivariance to neural operators to implement Lie point symmetries. <b>Perimeter Institute for Theoretical Physics</b> — Supervised by <a href="#">Prof. Latham Boyle</a> <i>Master's thesis</i> — Studied reflection groups acting on Lorentzian geometries to classify spacetime discretisations.
2022	<b>Perimeter Institute Quantum Intelligence Lab</b> — Supervised by <a href="#">Prof. Roger Melko</a> Investigated noise sensitivity for physics-informed neural network simulations of neutral atom arrays. <b>Kavli Institute for Cosmology, Cambridge</b> — Supervised by <a href="#">Dr. Will Handley</a> Extended inflation calculations to universes with spatial curvature; defined novel variable for quantisation.

## Awards & Funding

2025	<b>Graduate Fellowship</b>	Kempner Institute
2024	<b>Clare Marie Doris Innovation Fund</b>	Harvard University
2023	<b>Graduate Prize Fellowship</b>	Harvard University
	<b>Summer Research Bursary</b>	McGill University, \$4,000
2022	<b>International Scholar Award</b>	Perimeter Institute, \$45,000
	<b>Summer Research Bursary</b>	Royal Society, £3,000

## Community & Sport

21 — 24	<b>Tutor</b> with <a href="#">Blue Education</a> and <a href="#">U2Tuition</a> for maths, physics, and admissions
21 — 22	<b>Senior Coxswain</b> for Cambridge City Rowing Club and Lady Margaret Boat Club
19 — 21	<b>Founder &amp; President</b> of the St Johns College Entrepreneurs' Club