

Andrew G. Yates

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PhD student at Harvard. At the intersection of quantum computing, information theory, and fundamental physics.

Education

Harvard University

Doctor of Philosophy in Quantum Science & Engineering (Theoretical Physics)

2022 –
Cambridge, MA

› Activities and societies: Harvard Quantum Initiative

Cornell University

Bachelor of Arts in Physics

2018 – 2022

Ithaca, NY

» *Magna Cum Laude*

› Selected coursework: Quantum Information Processing, Blackholes & Quantum Information (Grad), QFT (Grad), Solid State Physics, Applied Functional Analysis (Grad)

Research Experience

Caltech Institute For Quantum Information And Matter

Summer Undergraduate Research Fellow

2021
Pasadena, CA

» (Co)advisor(s): John Preskill*, Sepehr Nezami

› Gave a talk at the MURI Annual Meeting 2021 for Quantum Codes, Tensor Networks, and Quantum Spacetime

› Studied the effects of noise on 'quantum gravity in the lab' experiments. Predicted noise-resilience of quantum information due to operator-scrambling.

Cornell University

Undergraduate Researcher

2020
Ithaca, NY

» (Co)advisor(s): Paul Ginsparg*, Peter McMahon*, Elliott Rosenberg, Thomas Hartman

› Implemented a quantum algorithm to prepare thermofield double states of the Sachdev-Ye-Kitaev (SYK) model

› Developed methods for measuring the von Neumann and Rényi entropies of such systems

Cornell University

Undergraduate Researcher

2019 – 2022
Ithaca, NY

» (Co)advisor(s): Peter McMahon*, Logan Wright

› Created and simulated a circuit-model quantum reservoir ML algorithm

› Discovered that it is equivalent to a dual classical neural network, where the layer size grows exponentially with its depth

Skills

Quantum information Quantum Shannon theory, random matrix theory (i.e., unitary t-designs, Weingarten Calculus)

QML Classical/quantum reservoir machine learning, linear algebra algorithms, quantum neural networks

Software Cirq, Qutip, Qiskit, PennyLane, Tensorflow Quantum, OpenFermion

Industry Experience

Cornell Design & Tech Initiative

Software Developer

2019
Ithaca, NY

› Software developer for DTI, an engineering project team at Cornell.

Xifin, Inc.

Software Developer Intern

2017
Ithaca, NY

› Software architect intern at Xifin, a company that automates healthcare financial processing.