

# 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  
San Diego, CA

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