Quantum computing with Python

@PyConAU

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What's the hype all about?

- "Quantum advantage"

  https://quantumalgorithmzoo.org/

- Security implications and opportunities

  RSA compromised!

- Fundamental research

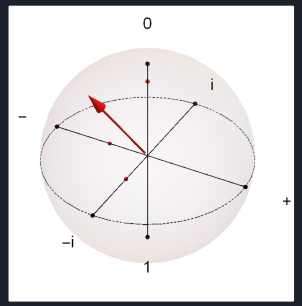
  E.g. quantum chemistry & condensed matter

- NISQ

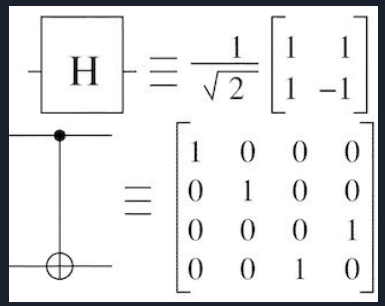
  The hunt is on for a "Killer App"

What is “quantum”?

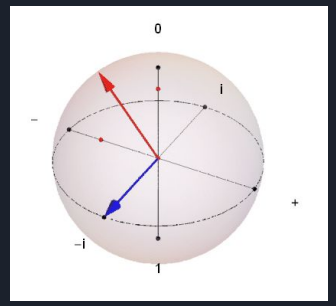
Qubits



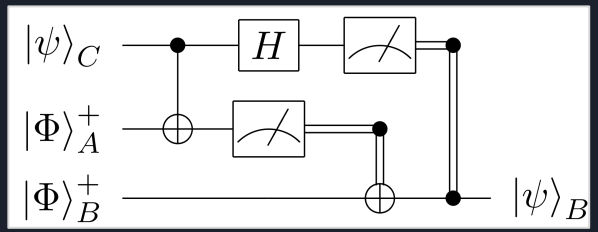
Gates



Francois Impens

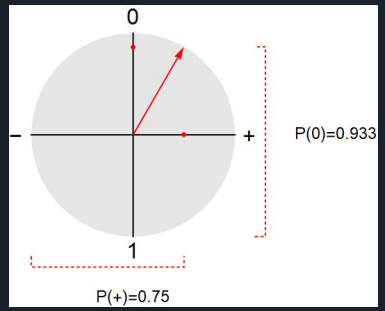


Circuits



Wikipedia

Measurement



https://catappy.com

What's out there?

	Quantum Hardware	Open Source Software
	Yes (But not for you)	https://github.com/quantumlib/Cirq
	Yes! (Q Experience)	https://github.com/Qiskit
	Yes! (Quantum Cloud Service)	https://github.com/rigetti
	Yes (For the chosen ones)	Nope!
	Yes! (Starship Engine)	https://github.com/xanaduai
	Nope!	https://github.com/Microsoft/Quantum

Let’s get started!

Get entangled!

@groundhogstate 

PennyLane documentation https://pennylane.readthedocs.io/

An Introduction to quantum computing - Kaye, Laflamme & Mosca
https://bit.ly/2LPG57a

Quantum Machine Learning - Peter Wittek @ University of Toronto
https://www.edx.org/course/quantum-machine-learning-2