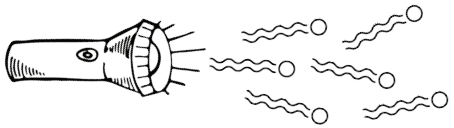
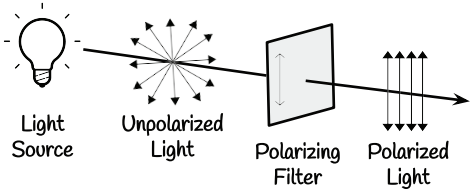
PHOTONIC QUANTUM COMPUTERS

PHOTONS

Light is made of particles called photons which are always in motion!



Filters can polarize light.



"FLYING" QUBITS

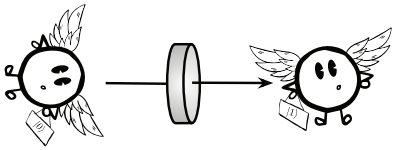
ONE photon stores ONE qubit

A vertically polarized qubit is is $|0\rangle$

A horizontally polarized qubit is $|1\rangle$

QUANTUM GATES

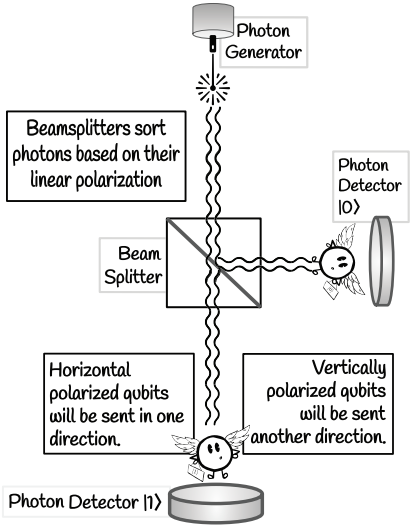
Waveplates are used to change the polarization of a photon.



Rotates polarization of linearly polarized light

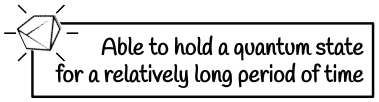
MEASUREMENT

A beamsplitter and photon detectors are used to measure photonic qubits.

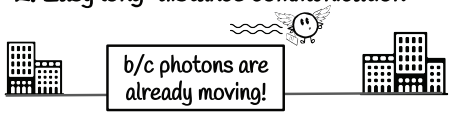


ADVANTAGES

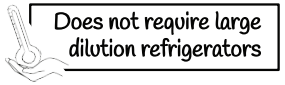
1. Stable!



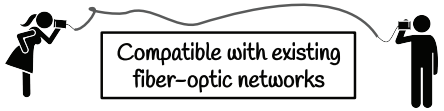
2. Easy long-distance communication



3. Most components work at room temperature



4. Cheap long-distance communication

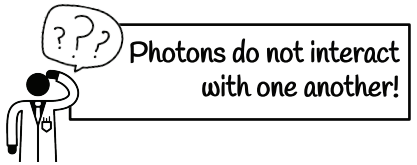


CHALLENGES

1. Time intensive!

You need to change the hardware to change the software

2. Multi-qubit gates are difficult to build



FIND MORE QUANTUM COMPUTING ZINES HERE:

https://www.epiqc.cs.uchicago.edu/resources/

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