

Course Project, Spring 2016

Cluster-State Quantum Computing

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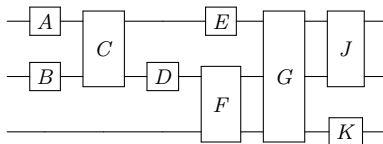
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¹Auth, DV, 123, 2001.





Arbitrary quantum circuit involving unitary operations on 3 qubits.

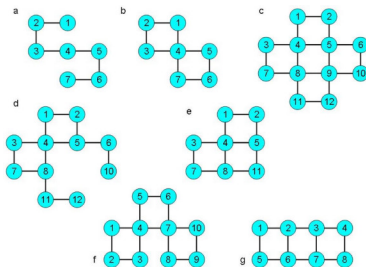
One-way quantum computing, measurement based quantum computing
As opposed to circuit based quantum computing



Basic teleportation





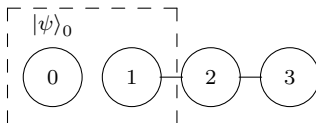


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Figure: Figure showing representative 2-D cluster shapes. The vertices are qubits with integer indices, and the edges indicate entanglement connectivity between select neighbors.



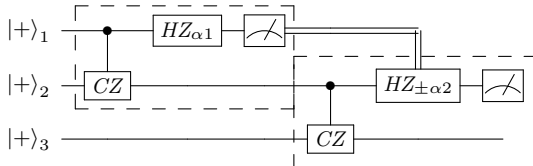


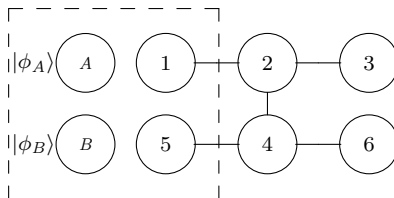


Gate $C_z^{(0,1)}$, followed by measurements $M_X^{(0)}$, $M_X^{(1)}$, & $M_X^{(2)}$.



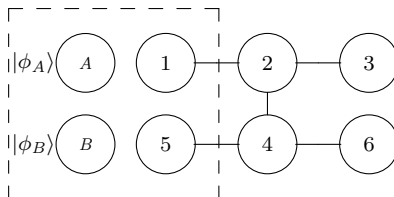
Callback to teleportation discussion





Apply $C_z^{(A,1)}$ and $C_z^{(B,5)}$ to input quantum information into cluster state.





Apply $C_z^{(A,1)}$ and $C_z^{(B,5)}$ to input quantum information into cluster state.

