## Teleportation

Quantum teleportation is a method to send qubits using entanglement. Teleportation works as follows:

First Alice and Bob need to establish an entangled pair of qubits between them. Alice then takes the qubit that she wants to send and the qubit that is entangled with Bob's qubit and performs a measurement on them. This measurement collapses the qubits and destroys the entanglement, but gives her two classical outcomes in the form of 2 classical bits. She takes this two classical bits and sends them over the classical internet to Bob.

Bob then applies a correction operation that depends on these two classical bits on his qubit. This allows him to recover the qubit that was originally in Alice's possession.

Note that we have now transmitted a qubit without really using a physical carrier that is capable of transmitting qubits. But of course you already need entanglement to do this.

It is also important to note that quantum teleportation does not allow for faster than light communication.

This is so because Bob cannot make sense of the qubit in her possession before he gets the classical measurement outcomes from Alice.

These classical measurement outcomes must take a certain amount of time to be transmitted. And this time is lower bounded by the speed of light.