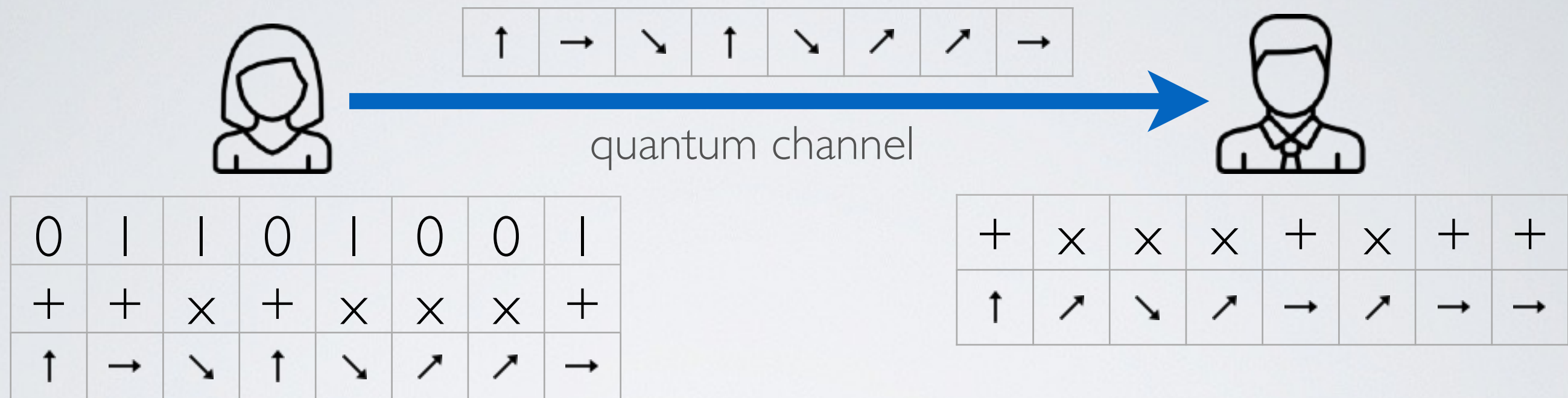# Quantum Cryptography

The use uses quantum bits and quantum-mechanical phenomena to realize cryptographic tasks

➡ Example : <u>Quantum Key Distribution</u> - use a quantum channel to establish a shared key to use on a public channel

Quantum Key Distribution - step 1

| ↑ | → | ↘ | ↑ | ↘ | ↗ | ↗ | → |

quantum channel

0	1	1	0	1	0	0	1
+	+	×	+	×	×	×	+
↑	→	↘	↑	↘	↗	↗	→

| + | × | × | × | + | × | + | + |
| ↑ | ↗ | ↘ | ↗ | → | ↗ | → | → |

1. Alice creates:
   I. a sequence of random sequence of bits
   II. a sequence of random sequence of basis
   III. a sequence of random sequence of polarized photons corresponding to the basis
2. Alice sends the photon sequence to Bob over the quantum channel
3. Bob selects a random sequence of basis
4. Bob measures Alice's sequence of photons using his basis