

BB84 Quantum Key Distribution with Qiskit

Toma Sulava-Sulaberidze
Nikoloz Kharadze
Demetre Abramishvili
Anna Maria Vibliani

What is Quantum Key Distribution

BB84

Basis	bit = 0	bit = 1
Z	$ 0\rangle$	$ 1\rangle$
X	$ +\rangle$	$ -\rangle$

Alice's bits	0	1	0	0	1	1	0	1	0	...
Alice's bases	X	X	Z	Z	Z	X	Z	Z	X	...
Alice's states	$ +\rangle$	$ -\rangle$	$ 0\rangle$	$ 0\rangle$	$ 1\rangle$	$ -\rangle$	$ 0\rangle$	$ 1\rangle$	$ +\rangle$...
Bob's bases	X	Z	X	Z	X	X	Z	X	X	...
Bob's states (measured)	$ +\rangle$	$ 0\rangle$	$ -\rangle$	$ 0\rangle$	$ +\rangle$	$ -\rangle$	$ 0\rangle$	$ -\rangle$	$ +\rangle$...
Bob's bits	0	0	1	0	0	1	0	1	0	...



How our BB84 works

What can BB84 be used for ?

Thank You!