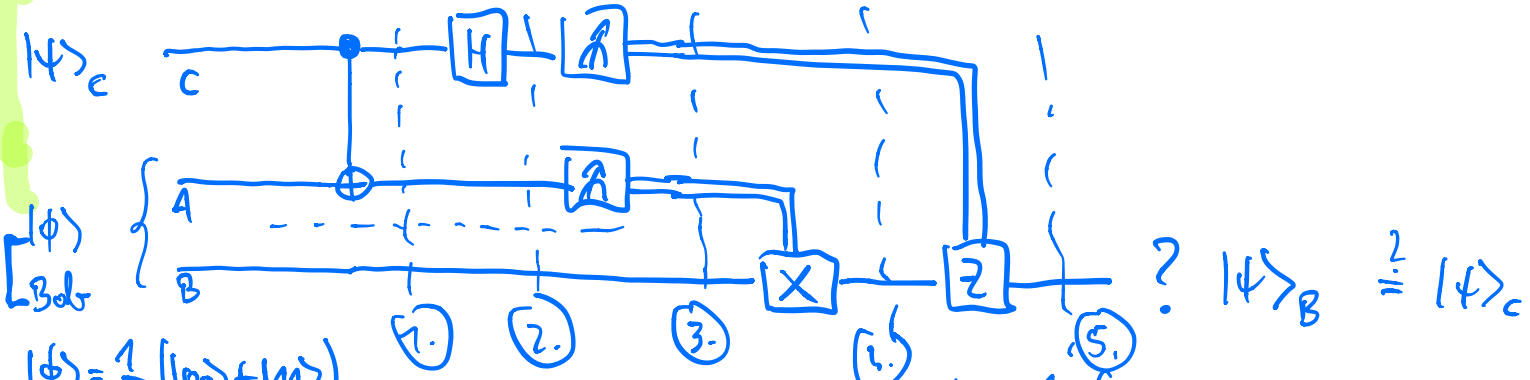
KVANTNA TELEPORTACIJA

Alice



$|\phi\rangle = \frac{1}{\sqrt{2}}(|00\rangle + |11\rangle)$

$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle$

$H|0\rangle = \frac{1}{\sqrt{2}}(|0\rangle + |1\rangle)$

$H|1\rangle = \frac{1}{\sqrt{2}}(|0\rangle - |1\rangle)$

$$|\phi\rangle_{AB} \otimes |\psi_C\rangle = \frac{1}{\sqrt{2}}(\alpha|000\rangle + \alpha|110\rangle + \beta|001\rangle + \beta|111\rangle)$$

① CNOT

$$\frac{1}{\sqrt{2}}(\alpha|000\rangle + \alpha|110\rangle + \beta|101\rangle + \beta|011\rangle)$$

② H

$$\frac{1}{2}(\alpha|000\rangle + \alpha|001\rangle + \alpha|110\rangle + \alpha|111\rangle + \beta|000\rangle - \beta|101\rangle + \beta|010\rangle - \beta|011\rangle)$$

③

A	C	ψ'_B	④ X_A	⑤ Z_C
0	0	$\alpha\|0\rangle + \beta\|1\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$
0	1	$\alpha\|0\rangle - \beta\|1\rangle$	$\alpha\|0\rangle - \beta\|1\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$
1	0	$\alpha\|1\rangle + \beta\|0\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$
1	1	$\alpha\|1\rangle - \beta\|0\rangle$	$\alpha\|0\rangle - \beta\|1\rangle$	$\alpha\|0\rangle + \beta\|1\rangle$

$$|\psi\rangle_B = |\psi\rangle_C$$