

$$|0\rangle \rightarrow |H\rangle, |1\rangle \rightarrow |V\rangle$$

$$|\psi\rangle_{\text{in}}$$

$$\hat{R}(k)^{\otimes m}$$

Alice

$$\hat{U}$$

Bob

$$\hat{R}(-k)^{\otimes m}$$

Alice



$$|\psi\rangle_{\text{out}} = \hat{U}|\psi\rangle_{\text{in}}$$