

$$(|0\rangle_c + |1\rangle_c) | \text{ellipsoid} \rangle \rightarrow$$

$$|0\rangle_c \left| \text{cylinder with dashed blue loop and red path } a \right\rangle + |1\rangle_c \left| \text{cylinder with solid blue loop } \Psi_m \text{ and red path } a \right\rangle =$$

$$(|0\rangle_c + \tilde{S}(a, \Psi_m) |1\rangle_c) | \text{ellipsoid with two red dots} \rangle$$