

Pauli Y basis $\{|i\rangle, |-i\rangle\}$

$$\begin{aligned}\text{Prob}\{+1\} &= |\langle i|\psi\rangle|^2 \\ &= \frac{|\alpha - i\beta|^2}{2}\end{aligned}$$

$$\begin{aligned}\text{Prob}\{-1\} &= |\langle -i|\psi\rangle|^2 \\ &= \frac{|\alpha + i\beta|^2}{2}\end{aligned}$$