

Q: If get outcome P_2 when measure $a|000\rangle + b|011\rangle + c|100\rangle$, what does state collapse to?

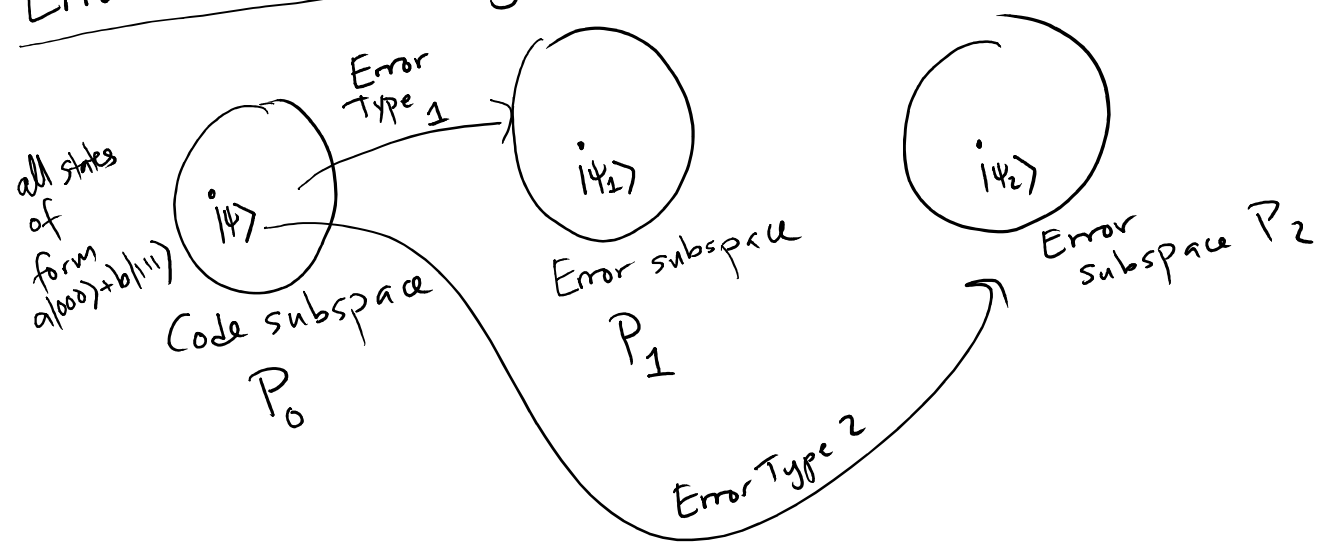
A) $b|011\rangle + c|100\rangle$

B) $(b|011\rangle + c|100\rangle) \frac{1}{\sqrt{|b|^2 + |c|^2}} \leftarrow \frac{P_2 |\psi\rangle}{\sqrt{\langle \psi | P_2 | \psi \rangle}}$

C) $b|011\rangle$

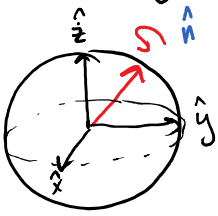
D) $c|100\rangle$

Error Correction Big Idea



Measurement doesn't cause full collapse, just tells you type of error. Doesn't tell you about a, b .

Single qubit unitary



$$U = \cos \frac{\theta}{2} I - i \sin \frac{\theta}{2} (n_x X + n_y Y + n_z Z)$$

$$= aI + bX + cY + dZ$$

$$U(x|0\rangle + y|1\rangle) = a(x|0\rangle + y|1\rangle) + b(xX|0\rangle + yX|1\rangle) + c(xY|0\rangle + yY|1\rangle) + d(xZ|0\rangle + yZ|1\rangle)$$

When do projective measurement, collapses to just one of these outcomes. Then fix as needed.