

Göndermek istediğimiz kütrit a=c şeklinde:

$$\psi = a(|0\rangle) + b(|1\rangle) + a(|2\rangle)$$

Kuantum kanal 3 dolaşık kütritten oluşuyor:

$$\phi = \frac{(|0, 0, 0\rangle + (|1, 1, 1\rangle) + (|2, 2, 2\rangle))}{\sqrt{3}}$$

Joint state $\psi \otimes \phi$ şeklinde yazılıyor.

Birinci aşama 2 kütritten oluşan Bell bazlarında ölçüm yapmak. Joint state'in ilk 2

kütriti, 2 kütritin Bell bazlarına izdüşürüyoruz. Buna karşılık son 2 kütritin aldığı haller var.

İkinci aşama olarak son 2 kütritten birine tek kübit Bell bazlarını

izdüşürüyoruz. Buna karşılık, Bob'un elinde recovery öncesi ara durumlar oluşuyor.

Birinci aşama sonuçları:

$$\frac{1}{3}a(|0_1, 0_2\rangle) + \frac{1}{3}b(|1_1, 1_2\rangle) + \frac{1}{3}a(|2_1, 2_2\rangle)$$

$$\frac{1}{3}a(|0_1, 0_2\rangle) + \frac{1}{3}b e^{-\frac{2i\pi}{3}}(|1_1, 1_2\rangle) + \frac{1}{3}a e^{\frac{2i\pi}{3}}(|2_1, 2_2\rangle)$$

$$\frac{1}{3}a(|0_1, 0_2\rangle) + \frac{1}{3}b e^{\frac{2i\pi}{3}}(|1_1, 1_2\rangle) + \frac{1}{3}a e^{-\frac{2i\pi}{3}}(|2_1, 2_2\rangle)$$

$$\frac{1}{3}a(|0_1, 0_2\rangle) + \frac{1}{3}a(|1_1, 1_2\rangle) + \frac{1}{3}b(|2_1, 2_2\rangle)$$

$$\frac{1}{3}a e^{\frac{2i\pi}{3}}(|0_1, 0_2\rangle) + \frac{1}{3}a(|1_1, 1_2\rangle) + \frac{1}{3}b e^{-\frac{2i\pi}{3}}(|2_1, 2_2\rangle)$$

$$\frac{1}{3}a e^{-\frac{2i\pi}{3}}(|0_1, 0_2\rangle) + \frac{1}{3}a(|1_1, 1_2\rangle) + \frac{1}{3}b e^{\frac{2i\pi}{3}}(|2_1, 2_2\rangle)$$

$$\frac{1}{3}b(|0_1, 0_2\rangle) + \frac{1}{3}a(|1_1, 1_2\rangle) + \frac{1}{3}a(|2_1, 2_2\rangle)$$

$$\frac{1}{3}b e^{-\frac{2i\pi}{3}}(|0_1, 0_2\rangle) + \frac{1}{3}a e^{\frac{2i\pi}{3}}(|1_1, 1_2\rangle) + \frac{1}{3}a(|2_1, 2_2\rangle)$$

$$\frac{1}{3}b e^{\frac{2i\pi}{3}}(|0_1, 0_2\rangle) + \frac{1}{3}a e^{-\frac{2i\pi}{3}}(|1_1, 1_2\rangle) + \frac{1}{3}a(|2_1, 2_2\rangle)$$

İkinci aşama sonuçları:

$$1. \left(\frac{a(|0_1\rangle)}{3\sqrt{3}} + \frac{b(|1_1\rangle)}{3\sqrt{3}} + \frac{a(|2_1\rangle)}{3\sqrt{3}} \right)$$

$$2. \left(\frac{a(|0_1\rangle)}{3\sqrt{3}} + \frac{b e^{-\frac{2i\pi}{3}}(|1_1\rangle)}{3\sqrt{3}} + \frac{a e^{\frac{2i\pi}{3}}(|2_1\rangle)}{3\sqrt{3}} \right)$$

$$3. \left(\frac{a(|0_i\rangle)}{3\sqrt{3}} + \frac{b e^{\frac{2i\pi}{3}}(|1_i\rangle)}{3\sqrt{3}} + \frac{a e^{-\frac{2i\pi}{3}}(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$4. \left(\frac{a(|0_i\rangle)}{3\sqrt{3}} + \frac{a(|1_i\rangle)}{3\sqrt{3}} + \frac{b(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$5. \left(\frac{a(|0_i\rangle)}{3\sqrt{3}} + \frac{a e^{-\frac{2i\pi}{3}}(|1_i\rangle)}{3\sqrt{3}} + \frac{b e^{\frac{2i\pi}{3}}(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$6. \left(\frac{a(|0_i\rangle)}{3\sqrt{3}} + \frac{a e^{\frac{2i\pi}{3}}(|1_i\rangle)}{3\sqrt{3}} + \frac{b e^{-\frac{2i\pi}{3}}(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$7. \left(\frac{b(|0_i\rangle)}{3\sqrt{3}} + \frac{a(|1_i\rangle)}{3\sqrt{3}} + \frac{a(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$8. \left(\frac{b(|0_i\rangle)}{3\sqrt{3}} + \frac{a e^{-\frac{2i\pi}{3}}(|1_i\rangle)}{3\sqrt{3}} + \frac{a e^{\frac{2i\pi}{3}}(|2_i\rangle)}{3\sqrt{3}} \right)$$

$$9. \left(\frac{b(|0_i\rangle)}{3\sqrt{3}} + \frac{a e^{\frac{2i\pi}{3}}(|1_i\rangle)}{3\sqrt{3}} + \frac{a e^{-\frac{2i\pi}{3}}(|2_i\rangle)}{3\sqrt{3}} \right)$$