



בצד 3 - ה'ה' צד 1

$$V_{\frac{\pi}{8}}, V_{-\frac{\pi}{8}}$$

78 ד/צ

$$w_1 \perp V_{\frac{\pi}{8}} = (\cos \frac{\pi}{8}, \sin \frac{\pi}{8}, 0)$$

$$w_1 = (\delta \sin \frac{\pi}{8}, -\delta \cos \frac{\pi}{8}, \sqrt{1-\delta^2})$$

$$w_2 \perp V_{-\frac{\pi}{8}} = (\cos \frac{\pi}{8}, -\sin \frac{\pi}{8}, 0)$$

$$w_2 = (\delta \sin \frac{\pi}{8}, \delta \cos \frac{\pi}{8}, \sqrt{1-\delta^2})$$

$w_1, w_2$  ב'צ'ו

$\{w_1, w_2, w_3\}$  > צד 1) הצד 2) צד 3)  $w_3$  צד 1) צד 2)

$$\begin{aligned} P(\text{no success}) &= \frac{1}{2} \cdot | \langle V_{\frac{\pi}{8}}, w_1 \rangle |^2 + \frac{1}{2} \cdot | \langle V_{-\frac{\pi}{8}}, w_2 \rangle |^2 \\ &= \frac{1}{2} \cdot | \delta \sin \frac{\pi}{8} \cos \frac{\pi}{8} |^2 + \frac{1}{2} \cdot | \delta \sin \frac{\pi}{8} \cos \frac{\pi}{8} |^2 \\ &= \delta^2 \sin^2 \frac{\pi}{8} \cos^2 \frac{\pi}{8} = \delta^2 \frac{\sin^2 \frac{\pi}{4}}{4} = \delta^2 \frac{1}{4} \end{aligned}$$

$$\delta^2 \sin^2 \frac{\pi}{8} - \delta^2 \cos^2 \frac{\pi}{8} + (1-\delta^2) = 0$$

צד 2)  $\delta^2$  צד 1)

$$-\delta^2 \cos^2 \frac{\pi}{8} + 1 - \delta^2 = 0$$

$$\frac{-\delta^2}{\sqrt{2}} + 1 - \delta^2 = 0$$

$$\delta^2 (1 + \frac{1}{\sqrt{2}}) = 1$$

$$\delta^2 = \frac{1}{1 + \frac{1}{\sqrt{2}}} = \frac{\sqrt{2}}{1 + \sqrt{2}}$$

$$P(\text{no success}) = \frac{1}{\sqrt{2}} \cdot \frac{1}{1 + \sqrt{2}} = \frac{1}{2 + \sqrt{2}} = 1 - \frac{1}{\sqrt{2}}$$

$$\frac{1}{\sqrt{2}} \cdot \frac{1}{\sqrt{2} + 1} = \frac{\sqrt{2}-1}{\sqrt{2}}$$

$$\frac{(\sqrt{2}-1)(\sqrt{2}+1)}{2-1} = 1$$

2 שאלות

$$\text{rank}(A) \leq \min(\text{rank}(A), \text{rank}(B)) \leq 1$$

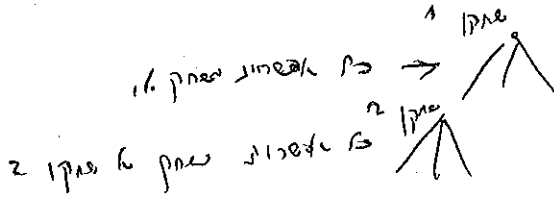
rank(A) < 1

$$A = B^T B \quad B_{k \times n}$$

$$k = \text{rank}(A) \quad 1 \leq k \leq n$$

$$B = I_k \oplus 0 \quad \text{rank}(A) = 1$$

שאלה 2



NOT enough

rank(A) = 1

max rank = 1

rank(A) = 1

rank(A) = 1

שאלה 4