

E 443 (2005C #2)

$$R = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} = \left(\frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}}\right) \cdot \vec{\sigma} = i e^{-i\vec{\Phi} \cdot \vec{S}}$$

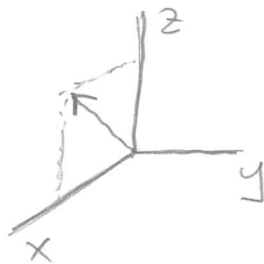
(3) $\Phi = \pi = 180^\circ$

$$\vec{n} = \left(\frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}}\right)$$

$$U = e^{-iH} = e^{-i(\hbar \cdot \vec{\sigma} + c)}$$

(4) $\vec{h} = \frac{1}{2} \vec{\Phi}$

(5) $c = -\frac{\pi}{2}$



E 444

$$R_A = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \quad \Phi = \pi \quad n = (1, 0, 0)$$

$$R_B = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & -1 \\ 1 & 1 \end{pmatrix} \quad \Phi = \pi/2 \quad n = (0, 1, 0)$$

$$R_C = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} \quad \Phi = \pi \quad n = (1, 0, 1)$$

$$R_C \otimes R_C = \begin{pmatrix} 1 & 1 & 1 & 1 \\ 1 & -1 & 1 & -1 \\ 1 & 1 & -1 & -1 \\ 1 & -1 & -1 & 1 \end{pmatrix}$$