Uloha 2

Thursday, September 29, 2022 13:28

$\boxed{\text{D.Ú}}$

$$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle$$

$$|\psi_\perp\rangle = ?$$

$$\langle\psi_\perp|\psi\rangle = 0$$

$$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle \quad h$$

$$\langle\psi_2|\psi\rangle = 0 \quad v$$

$$|\psi_2\rangle = ?$$

$\langle 0|0\rangle = 1$

$\langle 1|1\rangle = 1$

$\langle 0|1\rangle = 0$

keďže sú vektory kolmé môžeme si ich predstaviť ako $|h\rangle$ a $|v\rangle$ a teda podľa toho zakódovať

$$|\psi\rangle = \alpha\begin{pmatrix}1\\0\end{pmatrix} + \beta\begin{pmatrix}0\\1\end{pmatrix}$$

$$|\psi\rangle = \begin{pmatrix}\alpha\cdot 1\\ \alpha\cdot 0\end{pmatrix} + \begin{pmatrix}\beta\cdot 0\\ \beta\cdot 1\end{pmatrix} = \begin{pmatrix}\alpha\\0\end{pmatrix} + \begin{pmatrix}0\\ \beta\end{pmatrix}$$

$$|\psi\rangle = \begin{pmatrix}\alpha\\ \beta\end{pmatrix}$$

$$0 = (x \;\; y^*)\cdot\begin{pmatrix}\alpha\\ \beta\end{pmatrix} = (x\cdot\underline{\alpha}) + (y^*\cdot\underline{\beta}) = 0$$

$$\frac{-(x\cdot\alpha)}{\beta} = y^* \qquad \frac{-(y^*\beta)}{\alpha} = x$$

$$\frac{x\cdot(-\alpha)}{\beta} = y^*$$

$$\frac{x\cdot(-\alpha)}{\beta} = y^*$$

$$x\cdot\left(-\frac{\alpha}{\beta}\right) = y^* \qquad \boxed{-\frac{\alpha}{\beta} = \frac{y^*}{x}}$$

neviem čo ďalej s tým spraviť