

phil physics: pset 2

Let ψ be the singlet state. That is,

$$\psi = \frac{1}{\sqrt{2}} (|L\rangle|R\rangle - |R\rangle|L\rangle).$$

Recall that $|L\rangle|R\rangle$ is shorthand for the more cumbersome notation $|L\rangle \otimes |R\rangle$. You are given the equations

$$|0\rangle = \frac{1}{\sqrt{2}} (|L\rangle + |R\rangle), \quad |1\rangle = \frac{1}{\sqrt{2}} (|L\rangle - |R\rangle).$$

Show that

$$\psi = \frac{1}{\sqrt{2}} (|1\rangle|0\rangle - |0\rangle|1\rangle).$$