

Physics 472 - 2020

Quantum Mechanics

Quiz 5

Your name:

For an electron in the s -state ($l = 0$) in a magnetic field \mathbf{B} along the z -axis, find the expectation value $\langle S_y(t) \rangle$. Assume that $g = 2$. The Pauli matrices are

$$\sigma_x = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}, \quad \sigma_y = \begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix}, \quad \sigma_z = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$$