

Homework 6 (Due Wednesday 2 March 2005)

1. Show that the 2 by 2 matrix $U = e^{-iHt/\hbar}$, where $H = h_1\sigma_1 + h_2\sigma_2 + h_3\sigma_3$, is unitary: $U^\dagger U = 1$.
2. Interpret U in Prob. 1 in terms of rotation.
3. Reinterpret this result in terms of a spinning particle with a magnetic moment (along the spin axis) which precesses in a magnetic field..