PHY 232: Modern Physics

Group Problem Set 7

Due Friday October 13, 2017

1. You can calculate the eigenvectors for spin in the following way. On basic theoretical grounds, you can associate each the spin observable *Sx,* *Sy*, and *Sz* with a 2x2 matrix called an “operator”

Here *s* is a real number related to the intrinsic magnitude of the quanton’s spin.

1. Determine the eigenvalues for each of these matrices and the corresponding eigenvectors (to within an arbitrary complex multiplicative constant).
2. Normalize the eigenvectors you found in part (a) to show that the result is *consistent* with the eigenvectors listed in table Q7.1.
3. Q8R.1
4. Q9A.1