

Exercises for Physics 472

Problem Set 5; Due 4pm Friday October 10

1–3) Griffiths, Ch. 4: 34, 35, 37

4) Spin-orbit coupling

An electron has orbital angular momentum $\ell = 1$ and spin $s = 1/2$.

- a) If the projection of the electron spin along its orbital angular momentum $\vec{L} \cdot \vec{S}$ is measured, what are the possible outcomes?
- b) Suppose it is known that $S_z = -\hbar/2$ and $L_z = -\hbar$. What are the possible outcomes if the total angular momentum quantum number J is measured?