PHY 491

HW Assignment #2; September 12-19, 2011

1. Using the 1st order perturbation results for , where *mv* denotes mass velocity and , where *so* denotes spin-orbit show that

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where *fs* denontes fine structure and *j* is the total angular momentum, orbital plus spin.

If we add the above two we get . However for s=1/2, j=l+1/2 or j=l-1/2. This means l=j-1/2 and l=j+1/2. Eliminate l from the above equation for each value of l. Do the algebra and you will get the answer in terms of j.