Problem 6-21 – Clarification

Let's agree to solve this problem as described here.

1. Build a table like the one below.

State	E_{Bohr} (E_2)	E_{fs} ($\alpha^2 E_2$)	g_J	E_Z ($\mu_B B$)
$\left\|2,1,\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\rangle$	-1		$\frac{4}{3}$	2

2. Draw an energy level diagram similar to problem 6-18 showing the Bohr energy for n =2, then the fine structure splitting. Now add the Zeeman splitting as a function of the strength of the magnetic field using figure 6.11 as a guide. Indicate the m_j value for each level as well as the slope with varying B.