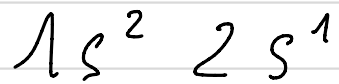
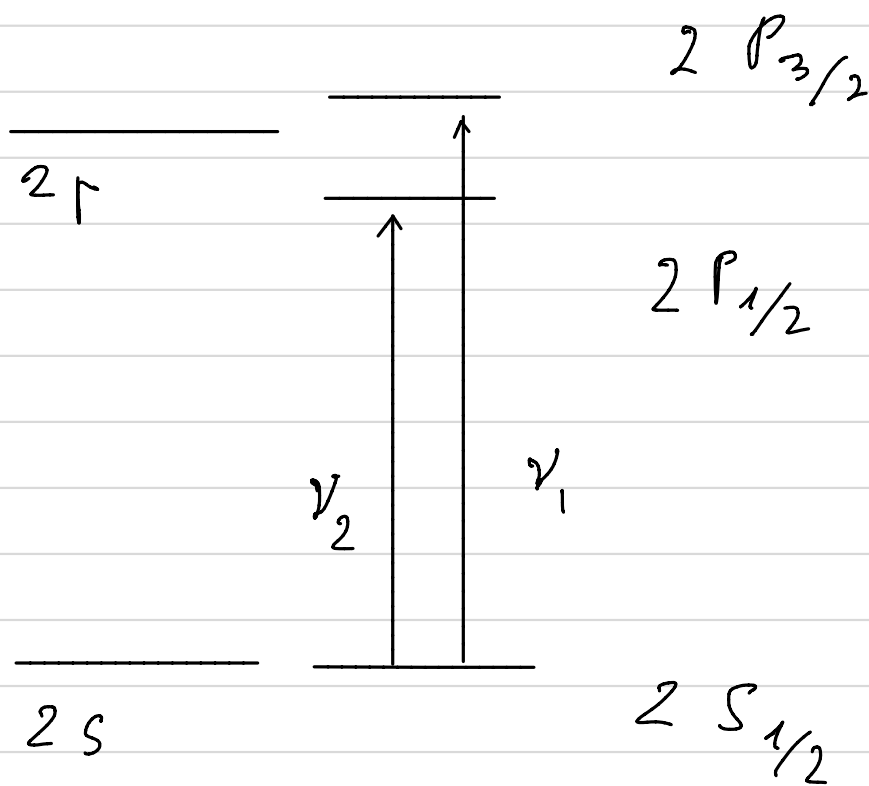


PROBLEMA 1

Atomi di Litio $Z=3$



$\nu_1 - \nu_2 = \text{SPIN ORBITA}$



REGOLE DI SELEZIONE

$$\Delta l = \pm 1 \quad \Delta J = 0, \pm 1$$

$$\Delta m_l = 0, \pm 1 \quad \Delta m_s = 0, \pm 1$$

$$\Delta E_{so} = \frac{1}{2} \lambda_{nl} \left[J(J+1) - l(l+1) - \frac{3}{4} \right]$$

$$l=0 \quad J = \frac{1}{2} \quad \Delta E_{so} = 0$$

$$l=1 \quad J = \frac{1}{2} \quad \Delta E_{so} = -\lambda_{2p}$$

$$l=1 \quad J = \frac{3}{2} \quad \Delta E_{so} = \frac{1}{2} \lambda_{2p}$$

$$\nu_1 - \nu_2 = 0.27 \text{ cm}^{-1}$$

$$\nu_1 - \nu_2 = \frac{3}{2} \lambda_{2p}$$

$$\lambda_{2p} = 0.18 \text{ cm}^{-1}$$

$$E_{2s} = -R \frac{1}{(2 - \mu_s)^2} = -43516 \text{ cm}^{-1}$$

$$E_{2p} = -R \frac{1}{(2 - \mu_p)^2} = -28612 \text{ cm}^{-1}$$

$$\Delta E = E_{2p} - E_{2s} = 14904 \text{ cm}^{-1}$$

$$\nu_1 = \Delta E + \frac{1}{2} \lambda_{2p} =$$

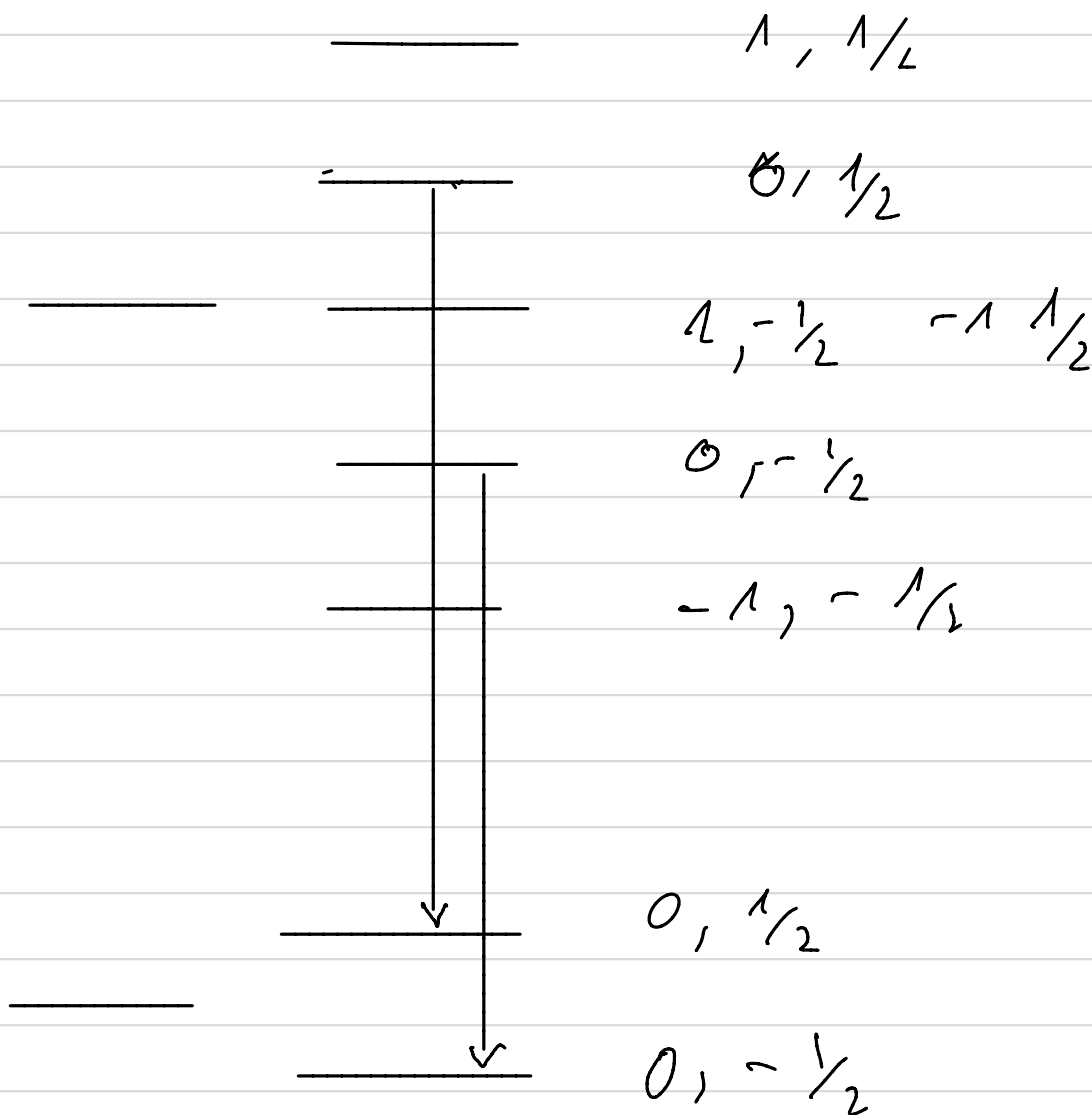
$$\nu_2 = \Delta E - \lambda_{2p} =$$

$$\mu_B B = 4.66819 \cdot 10^{-5} \cdot 100 \cdot 10^3 \text{ cm}^{-1}$$

$$= 4.67 \text{ cm}^{-1}$$

→ Zeeman normale

$$\Delta E = \mu_B B (m_l + 2 m_s)$$



REGOLE DI SELEZIONE

$$\Delta S = 0, \Delta l = \pm 1$$

$$\Delta m_l = 0 \quad \Delta m_s = 0$$