c) $v_1 = 7.3 \times 10^{-3} c \ll c$

$v_2 = 3.6 \times 10^{-3} c \ll c$

$v_3 = 2.4 \times 10^{-3} c \ll c$

Therefore no relativistic correction is needed.

Pb # 16.

Li^{2+} $Z = 3$

Li^{2+} has only <u>one</u> electron. It is a hydrogen like ion.

$$E_n = -\frac{13.6}{n^2}(Z^2) = -\frac{13.6}{n^2}(9) = -\frac{122.4}{n^2}\ (eV)$$

$E_1 = -122.4$ eV ground state

$E_2 = -\frac{122.4}{4} = -30.6$ eV first excited state

$E_3 = -\frac{122.4}{9} = -13.6$ eV 2nd excited state

$E_4 = -\frac{122.4}{16} = -7.65$ eV 3rd excited state

Energy diagram (not to scale)