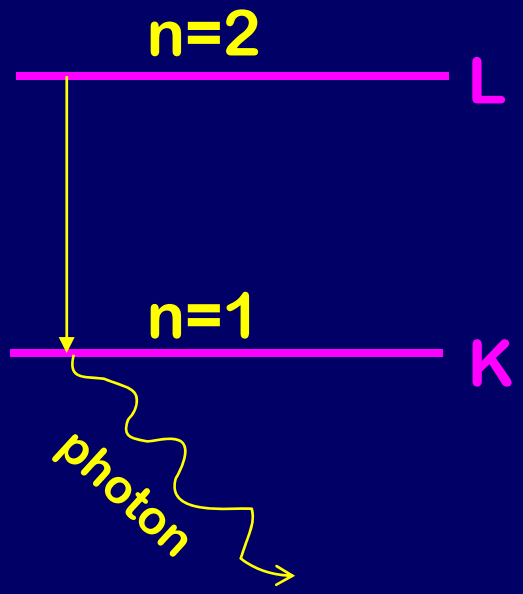
K_α X-Rays

Estimate the energy of K_α X-rays off of a silver (Ag) target (Z=47).

Better formula for multi-electron atoms

$$E_n = \frac{(-13.6)(Z-1)^2}{n^2}$$



$$E_L = -13.6\text{eV}(47-1)^2\frac{1}{2^2} = -7.2\text{keV}$$

$$E_K = -13.6\text{eV}(47-1)^2\frac{1}{1^2} = -28.8\text{keV}$$

$$E(K_\alpha) = E_L - E_K = 21.6\ \text{keV}$$

(vs. 21.7 keV Expt)

Not bad!