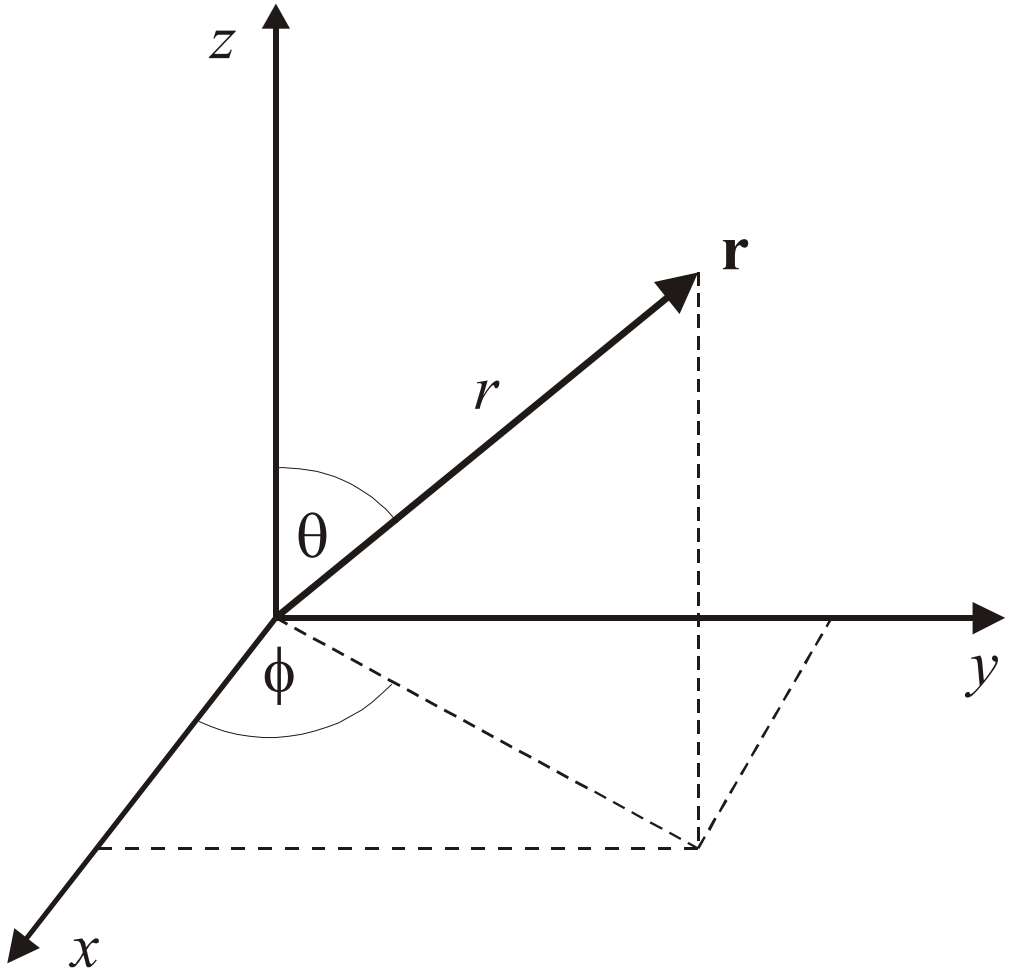
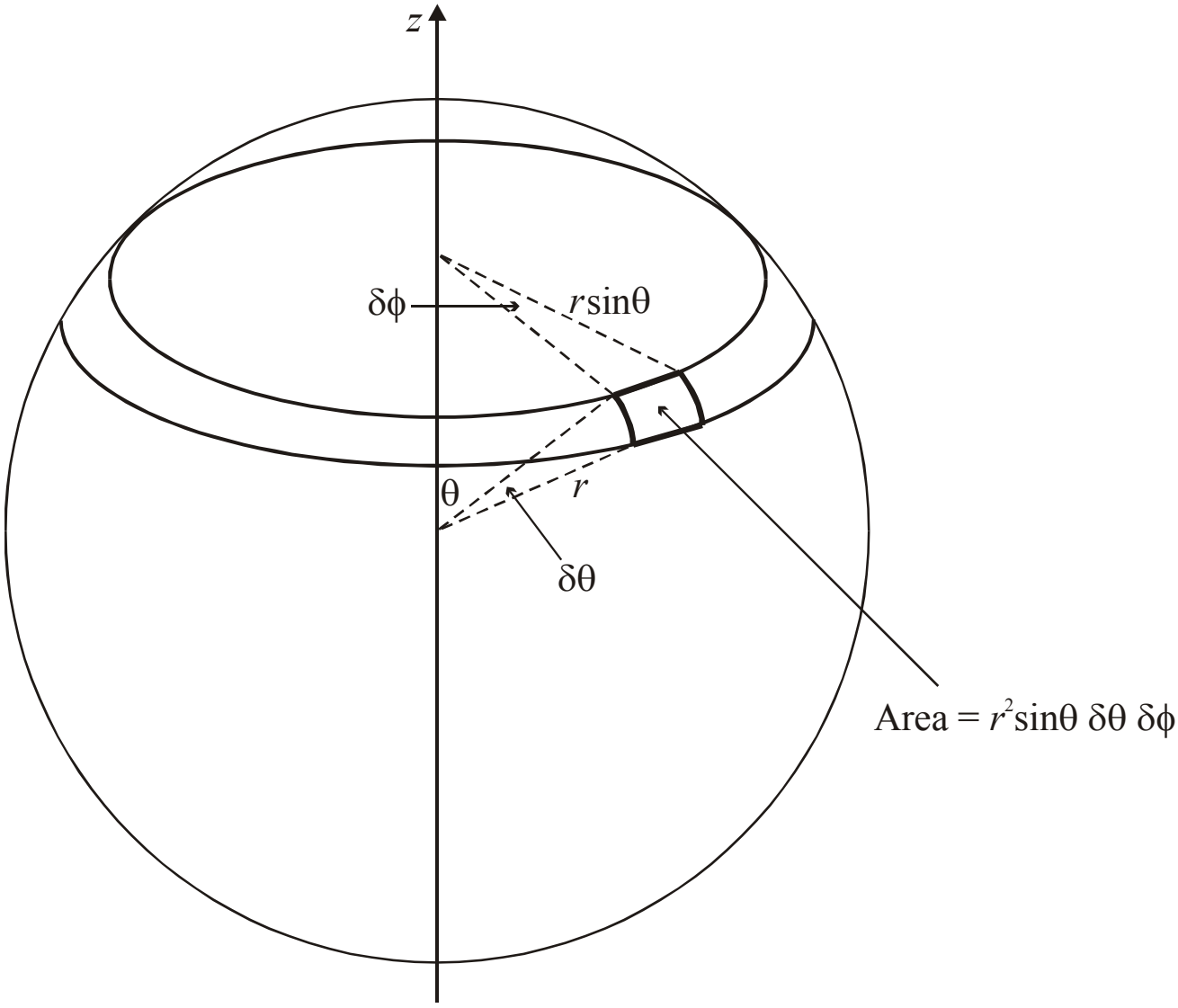
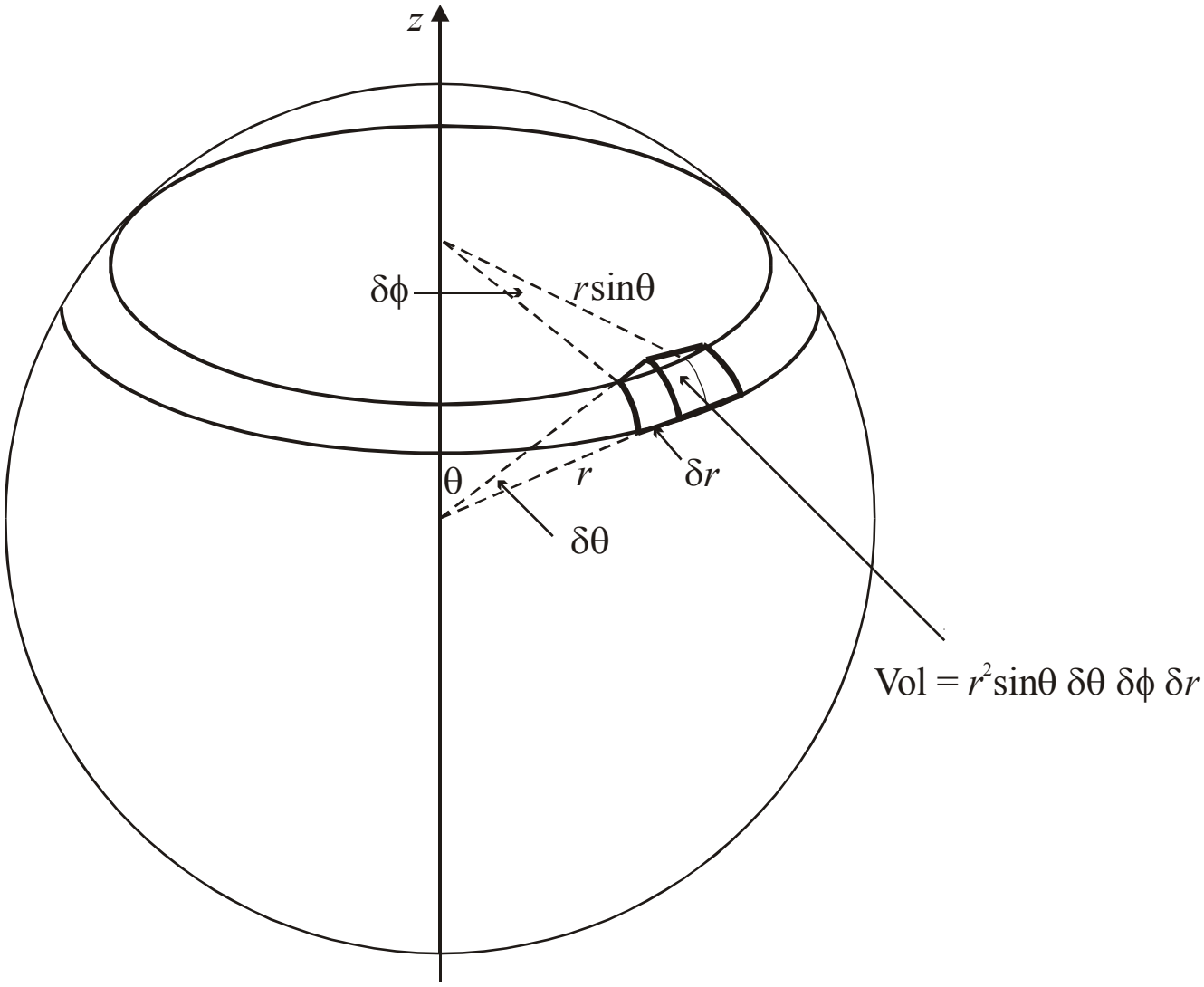
Spherical polar coordinate system.



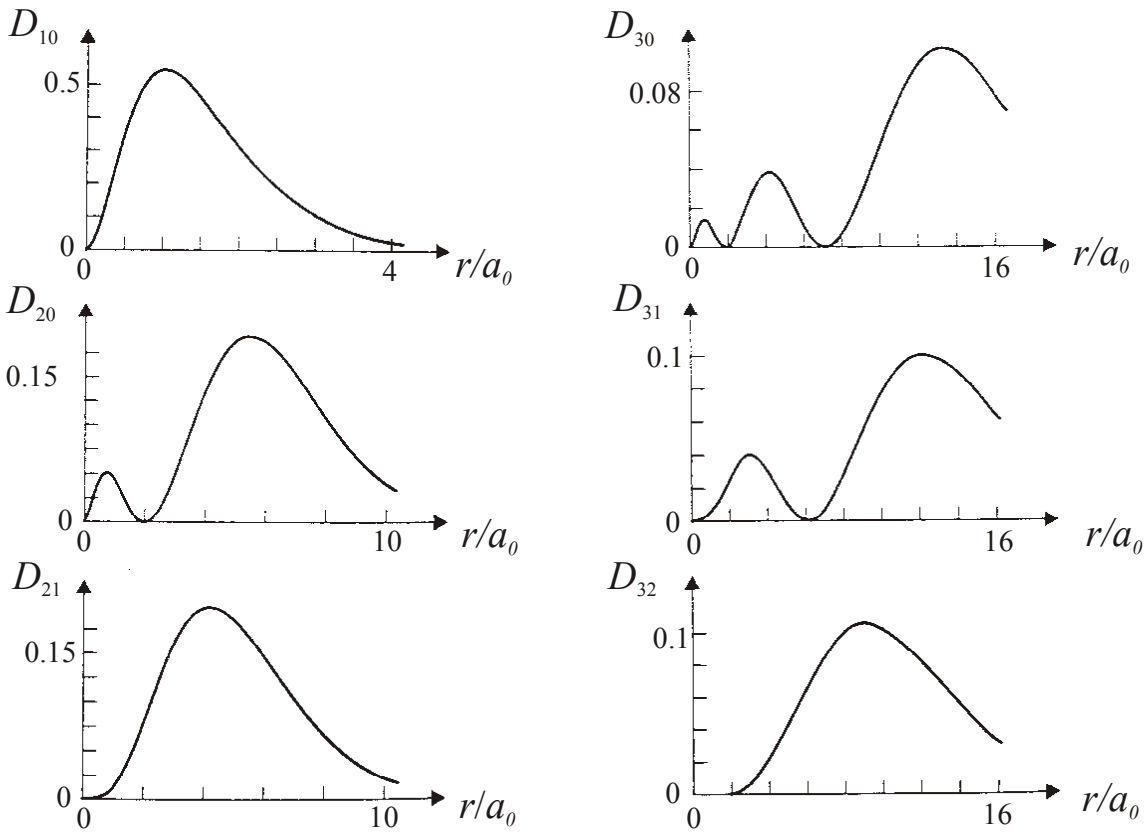
Differential element of area on the surface of a sphere in spherical polar coordinates



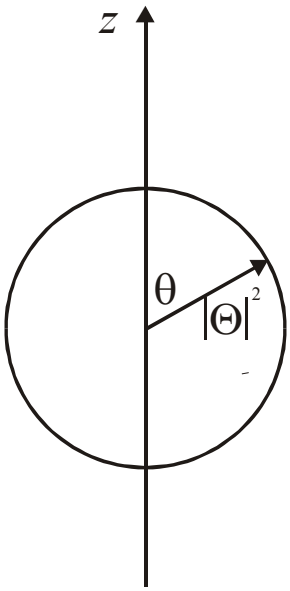
Differential element of volume in spherical polar coordinates



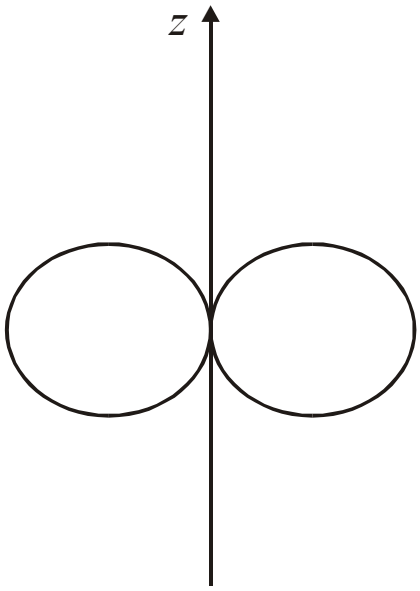
Radial distribution function for some states of the hydrogen atom



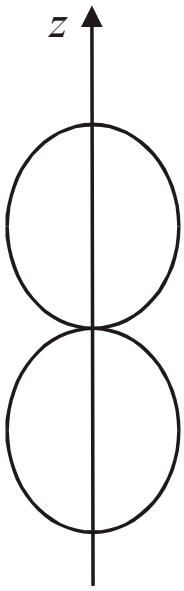
Polar diagrams showing the θ dependence of the probability density for s and p states



$l = 0 \quad m_l = 0$

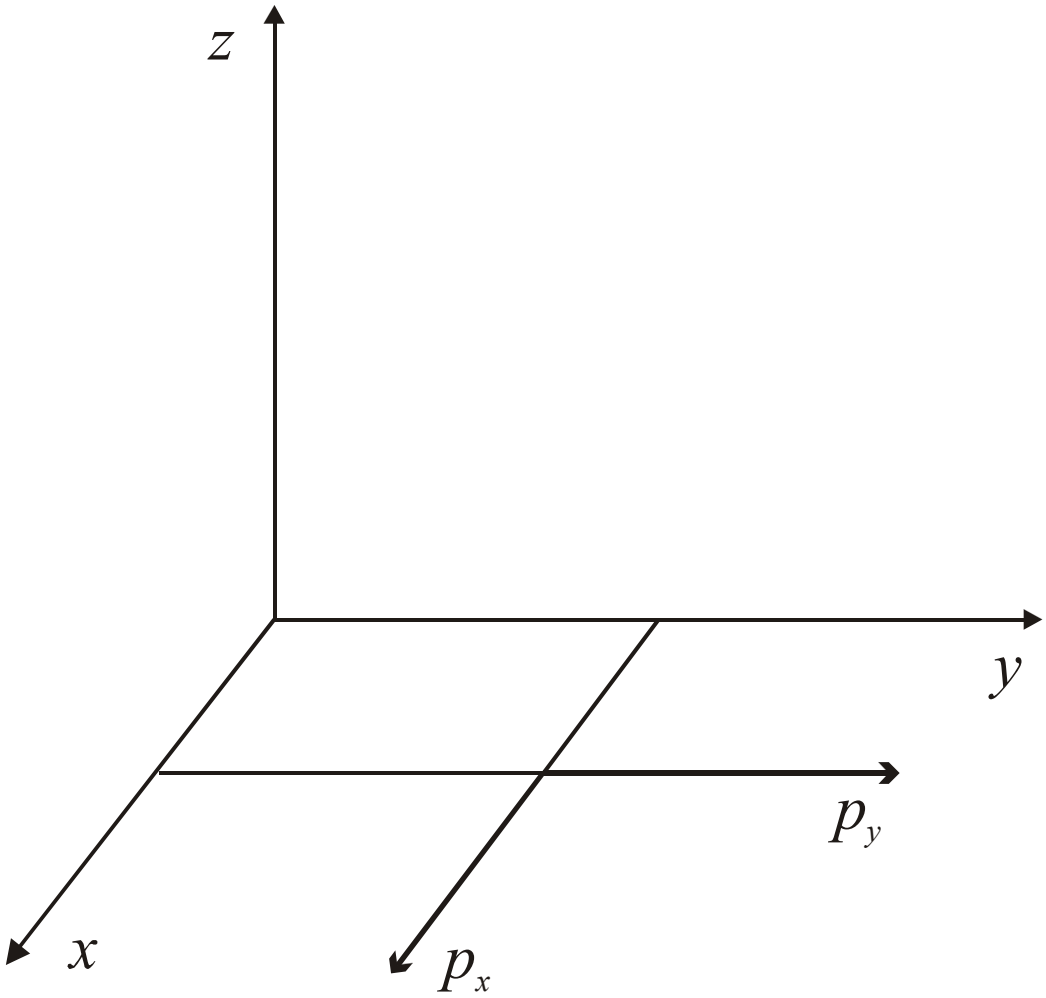


$l = 1 \quad m_l = \pm 1$

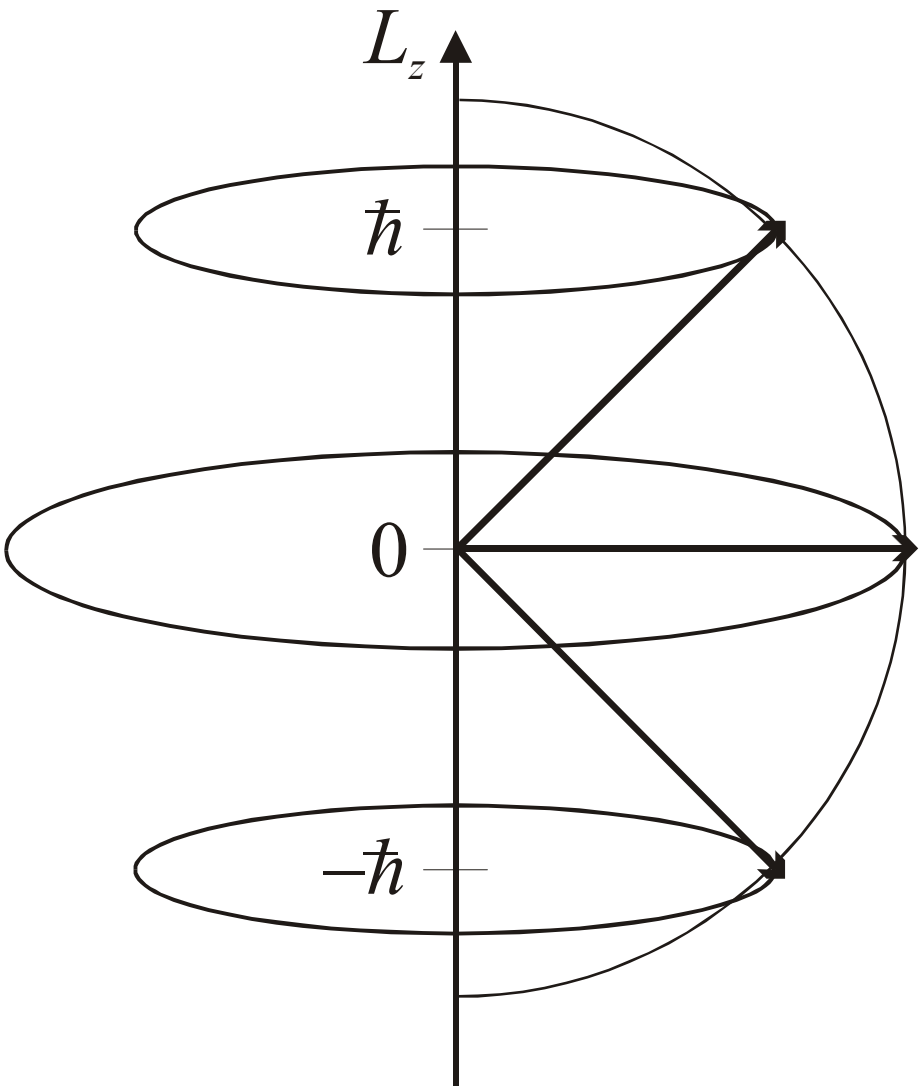


$l = 1 \quad m_l = 0$

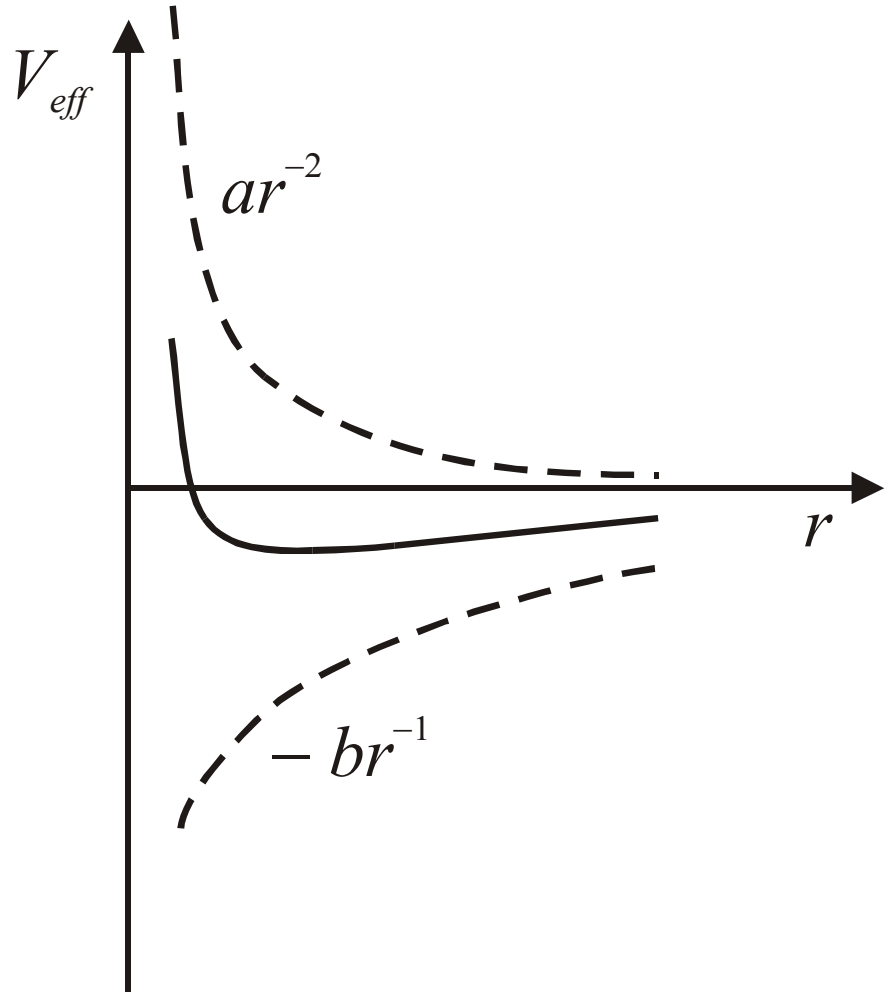
Relation between angular and linear momentum



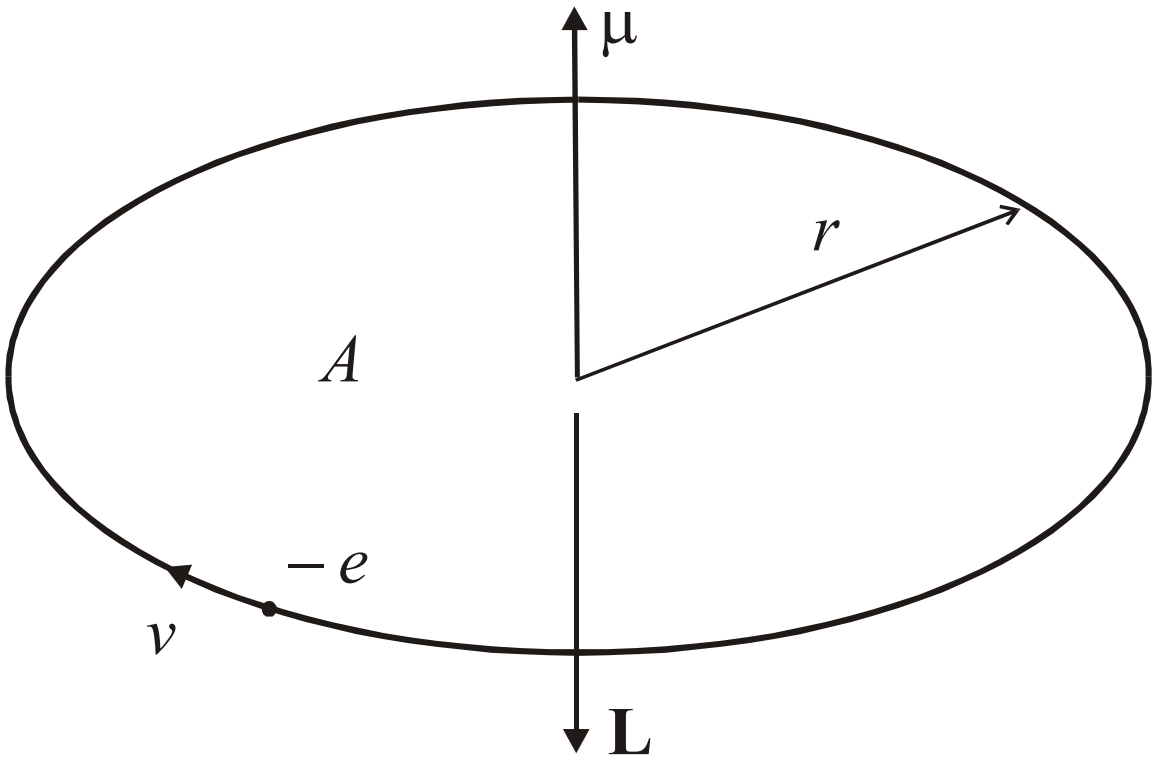
Vector model of angular momentum for p states



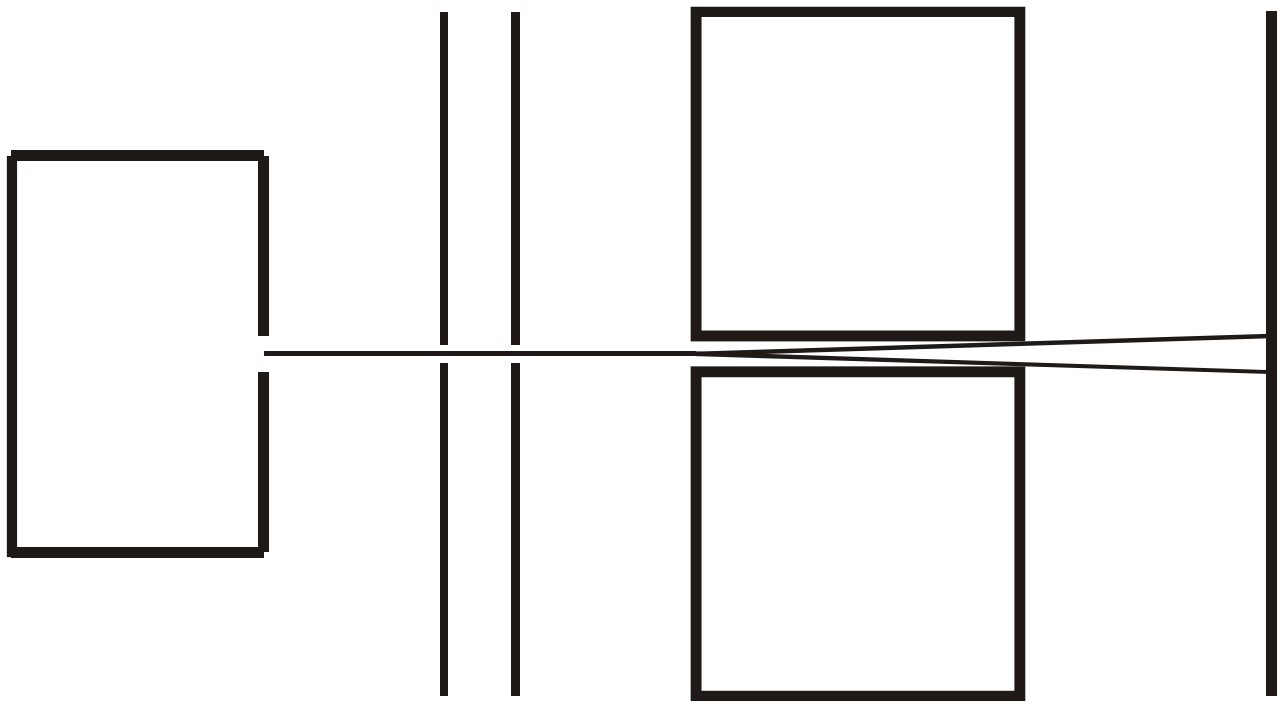
Centrifugal potential barrier in the equation for the radial part of the hydrogen atom energy eigenfunctions



Magnetic moment of a current loop

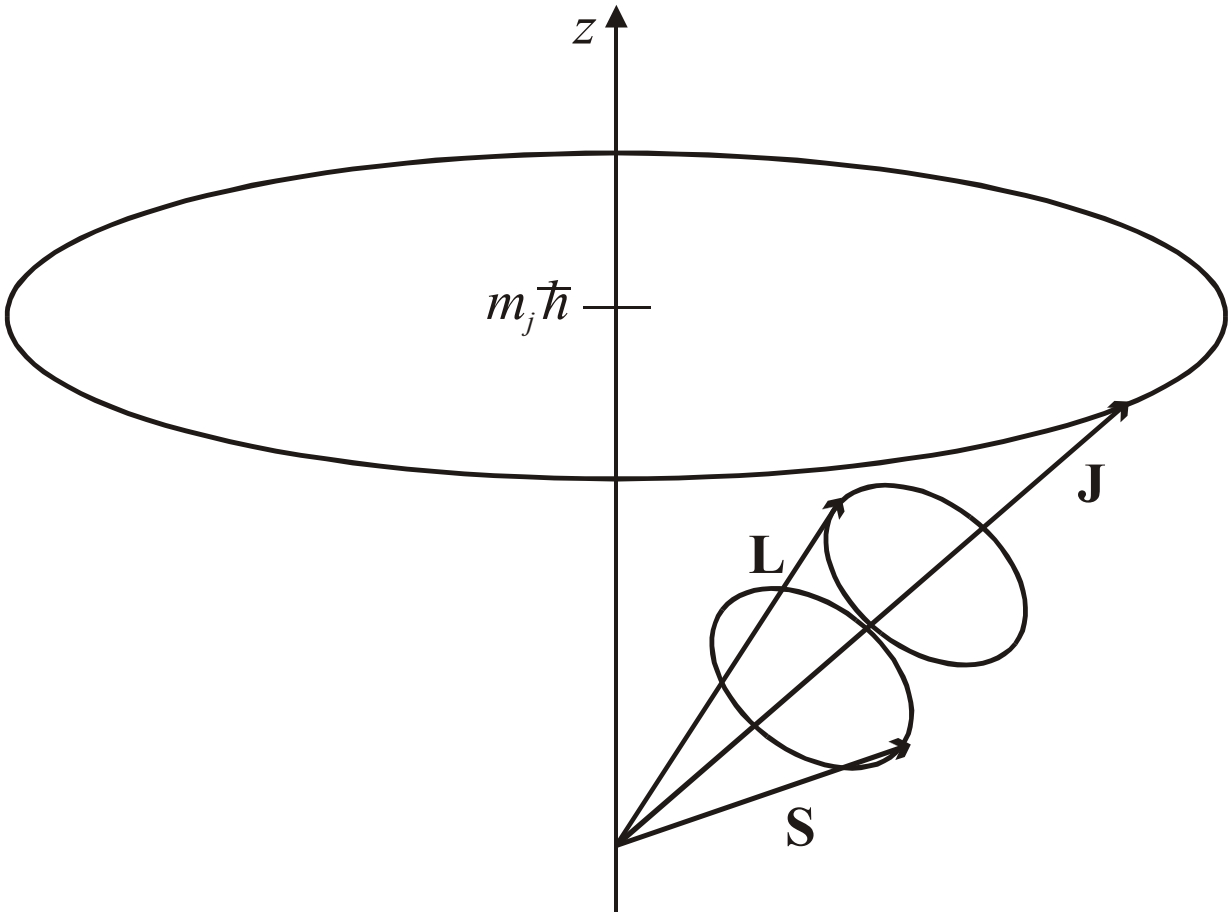


Schematic illustration of the Stern-Gerlach experiment

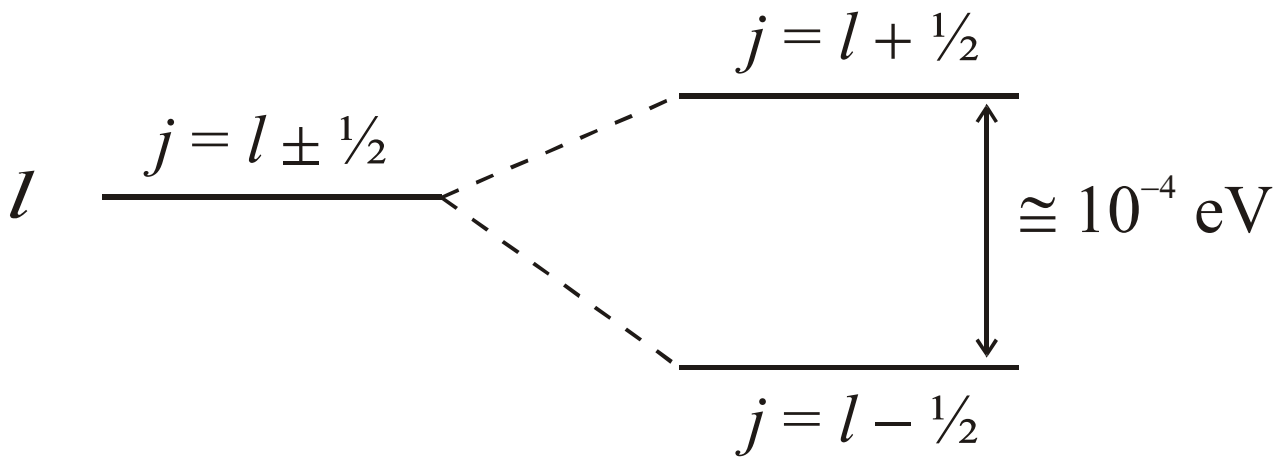


Oven Collimators Magnet Screen

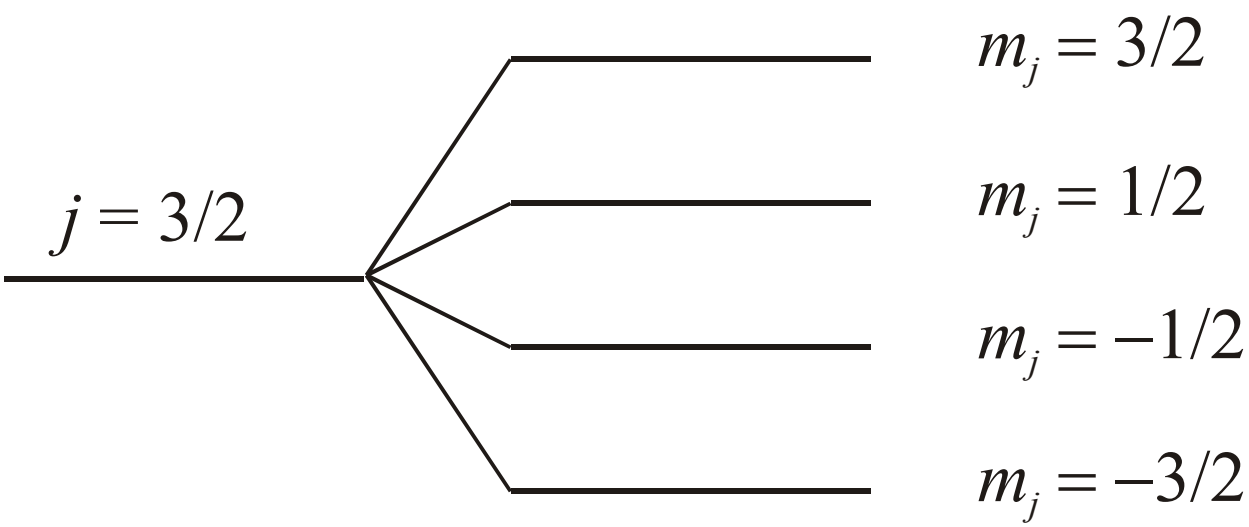
Vector model of total angular momentum



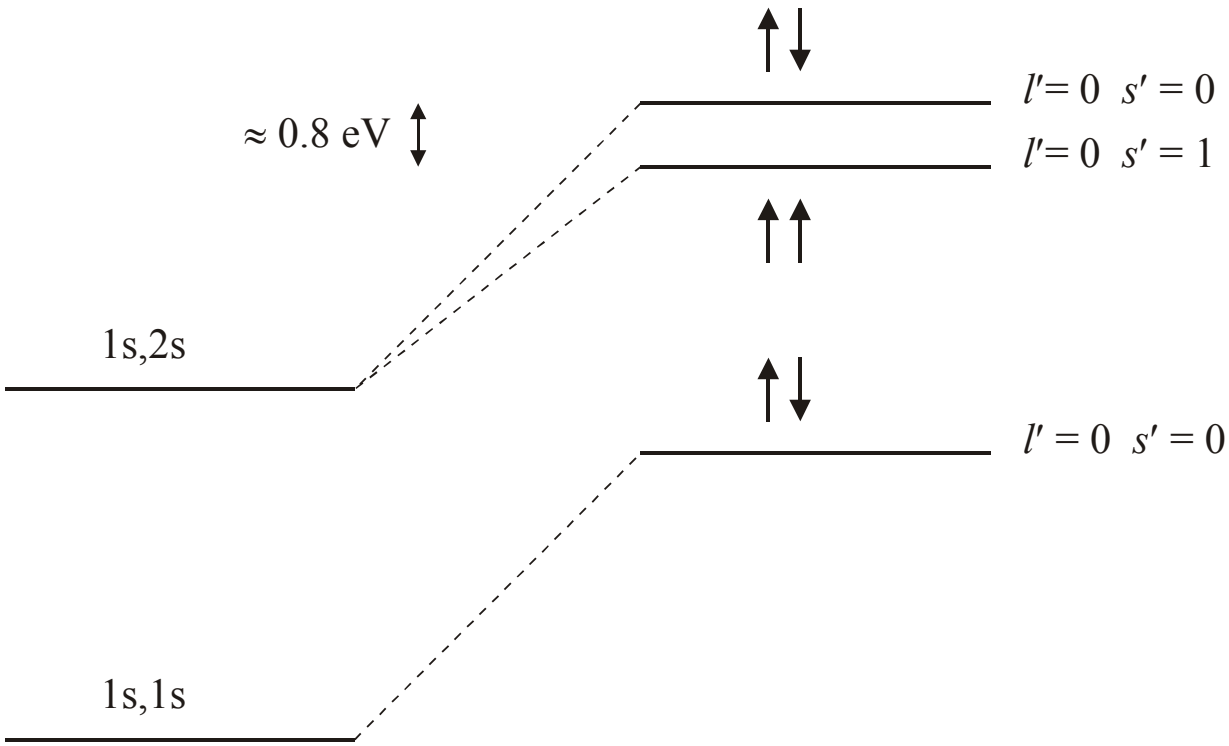
Energy level splitting due the spin-orbit interaction



Energy level splitting due to the Zeeman effect



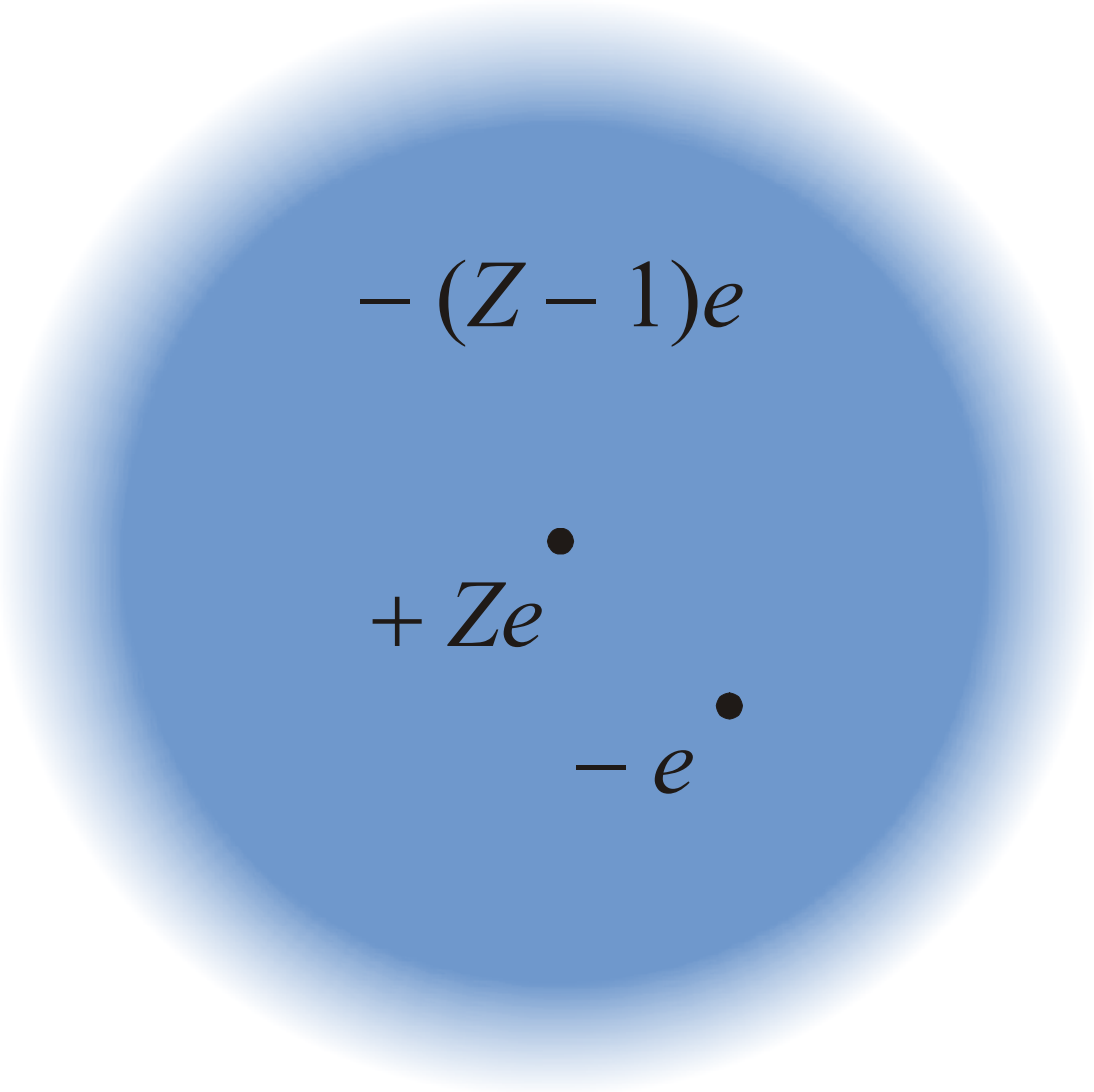
Exchange splitting of the lowest excited states in helium.



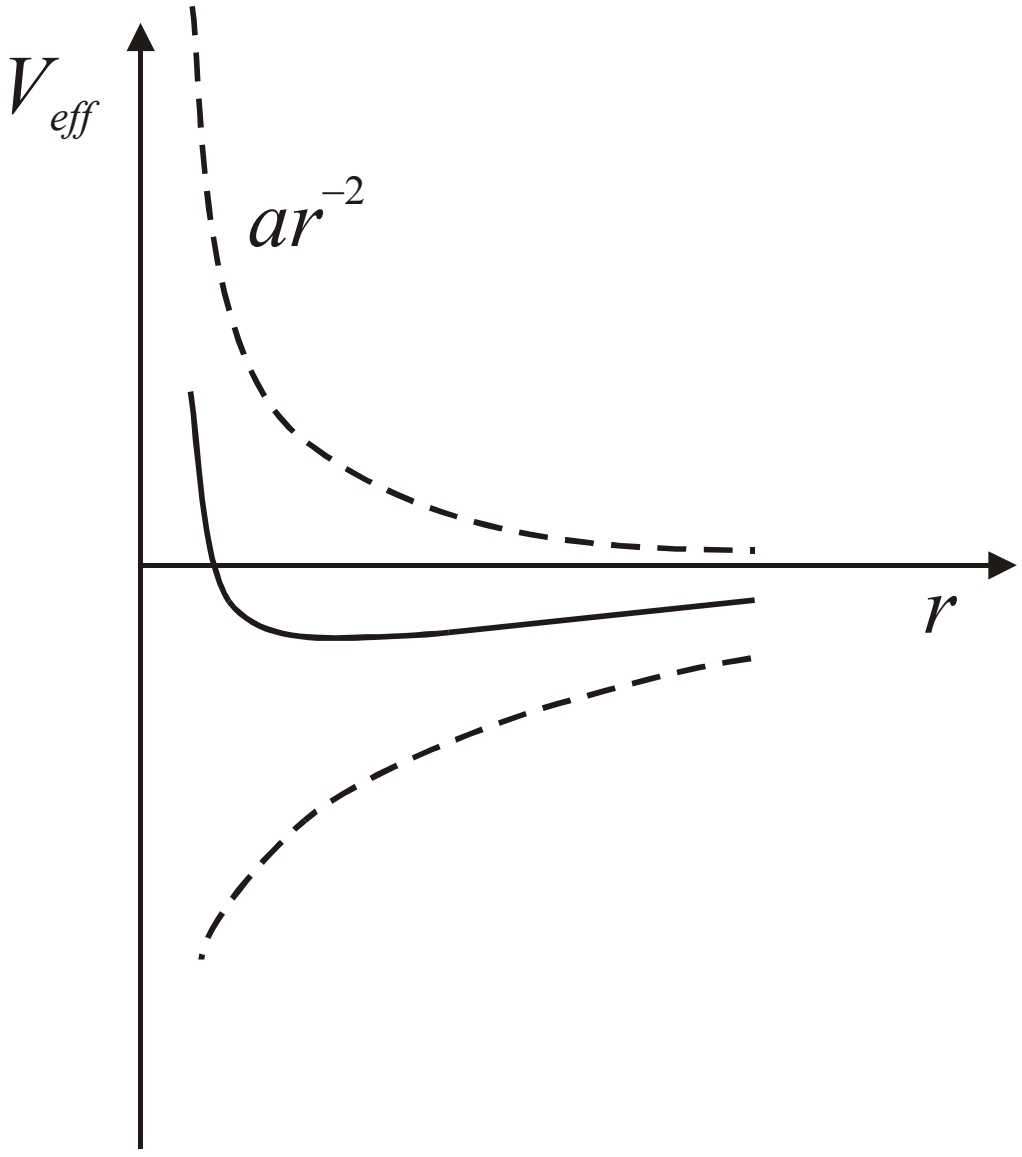
No e-e interaction

With e-e interaction

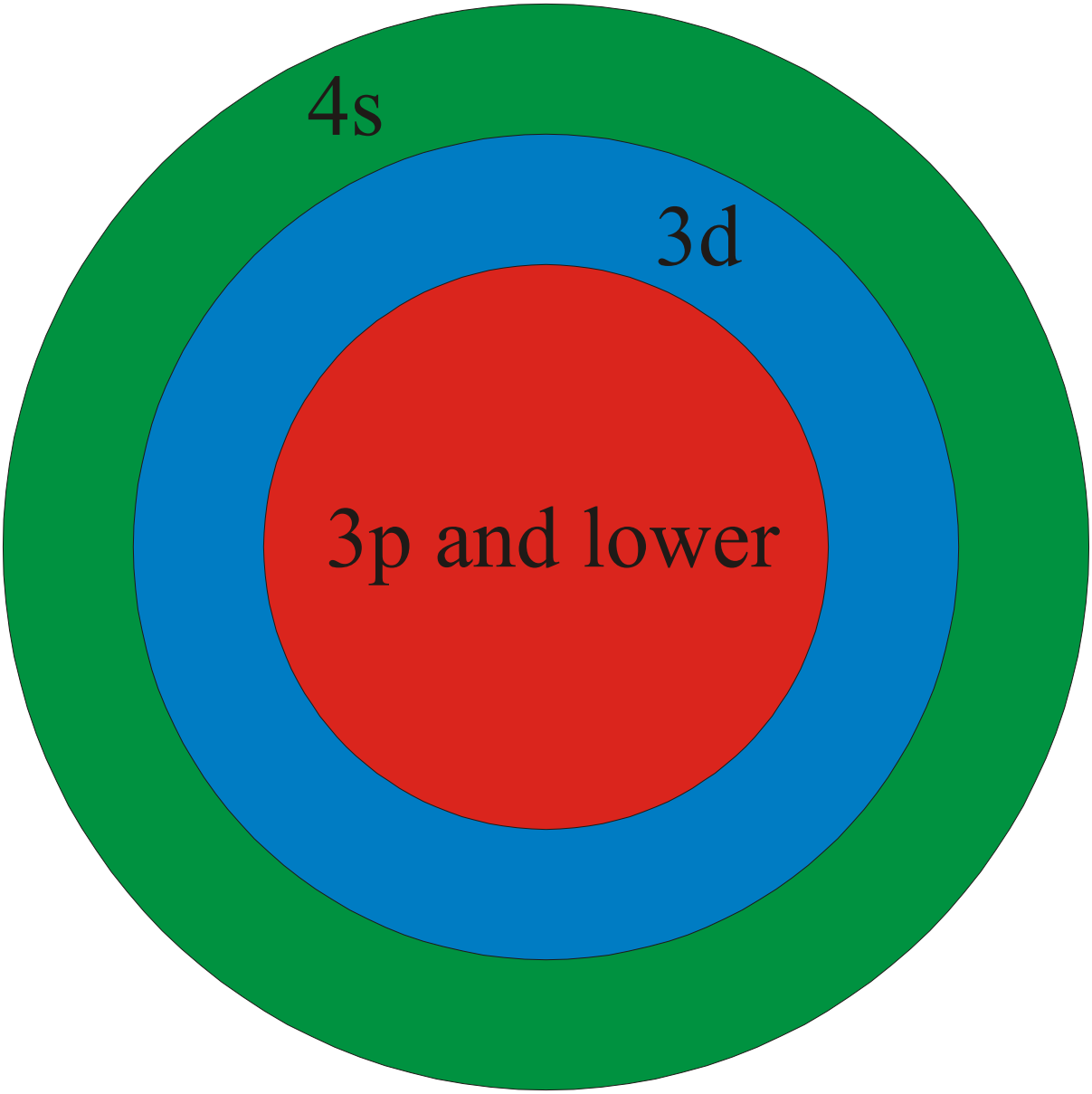
An electron moving in the charge distribution due to the nucleus and all the other electrons of a multielectron atom.



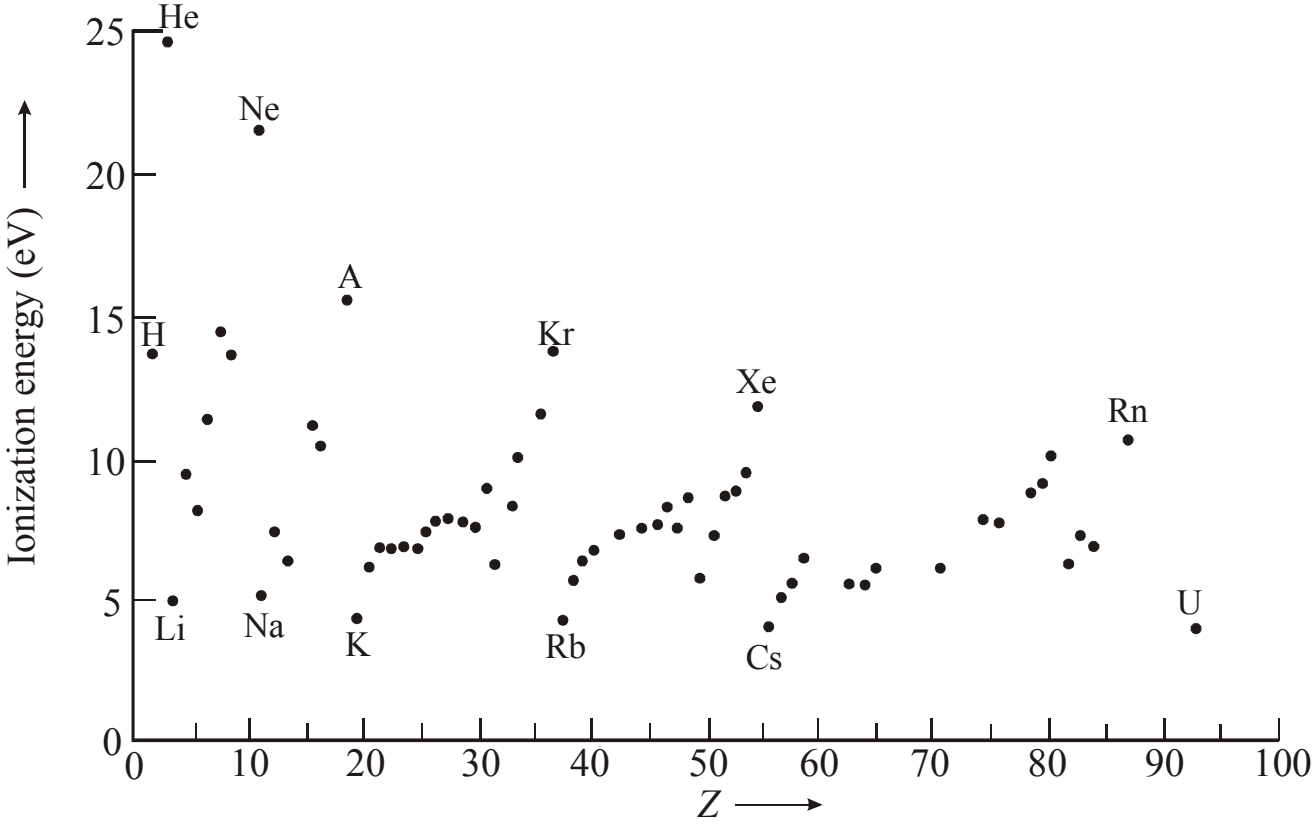
Effective potential determining the radial distribution function for the electrons in a multielectron atom. Because the attractive potential is due to the distributed charge of the other electrons as well as the nucleus, it is not inversely proportional to r (as in hydrogen). However, it is the centrifugal barrier that determines the radial distribution function at small r and results in an increase of state energy with increasing angular momentum.



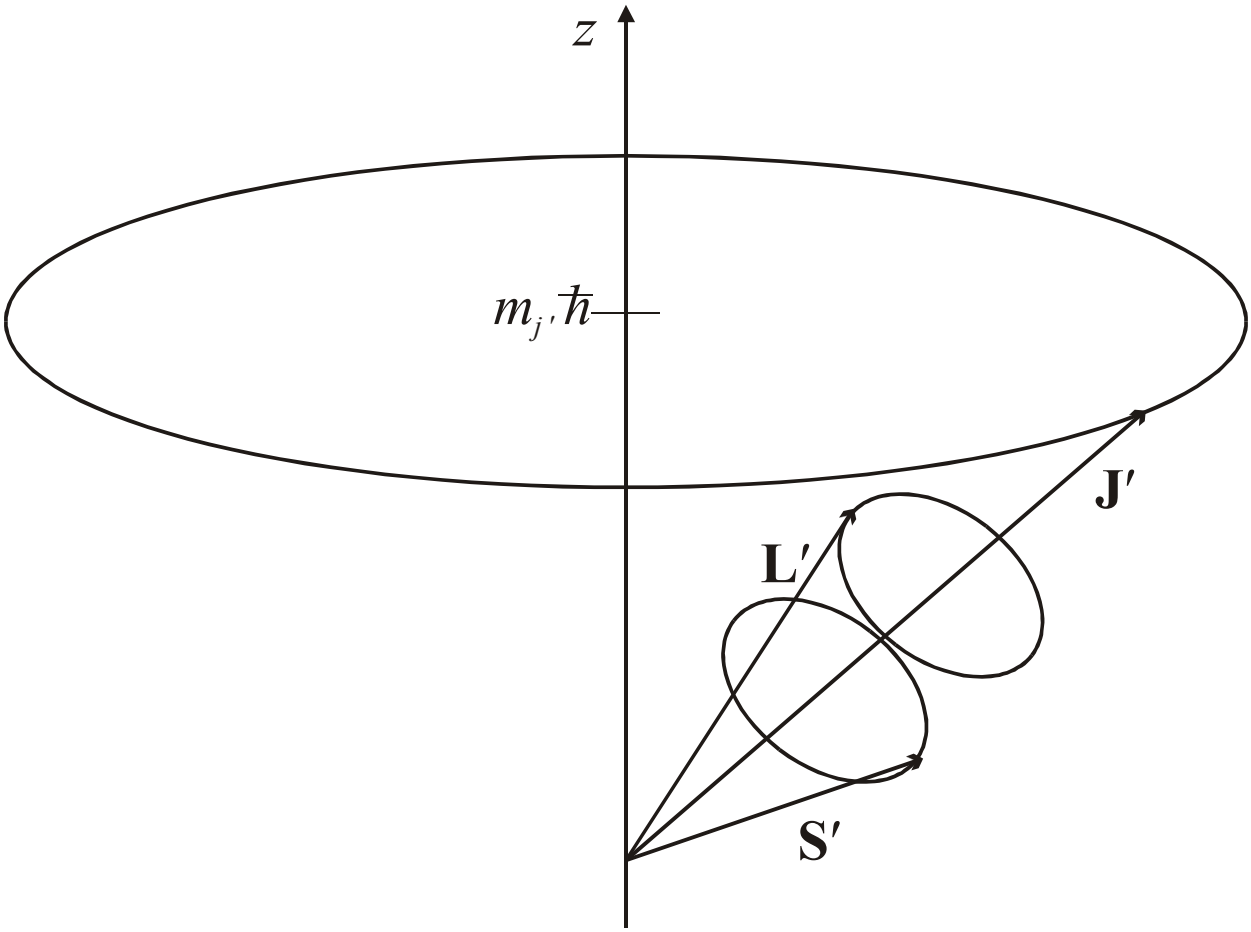
Schematic diagram showing that, despite the fact that for the first transition group the 4s states are full and the 3d states are filling, the region of substantial probability density for the 3d states is at a smaller radius.



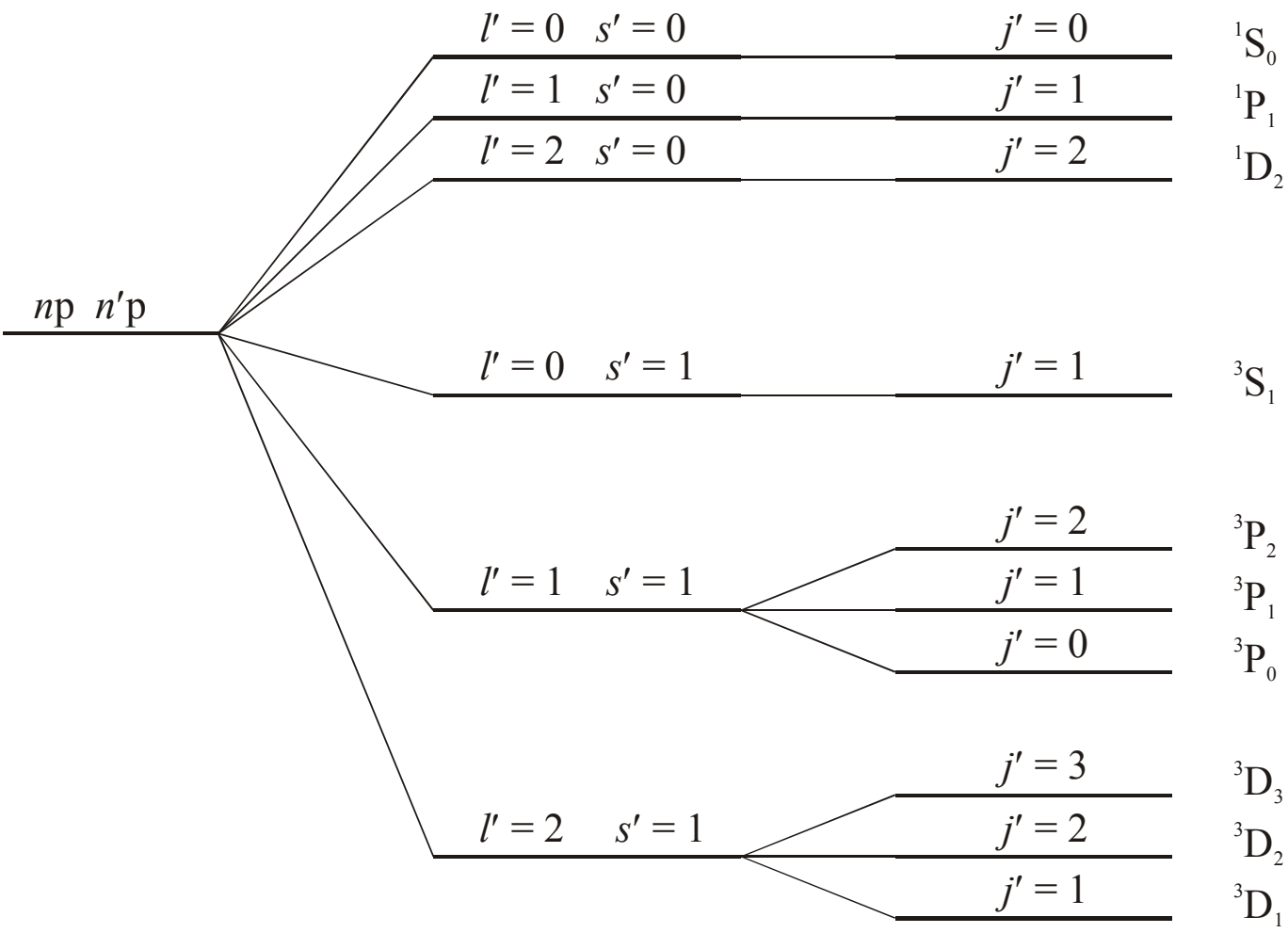
Variation of the ionization energy of the atoms through the periodic table.



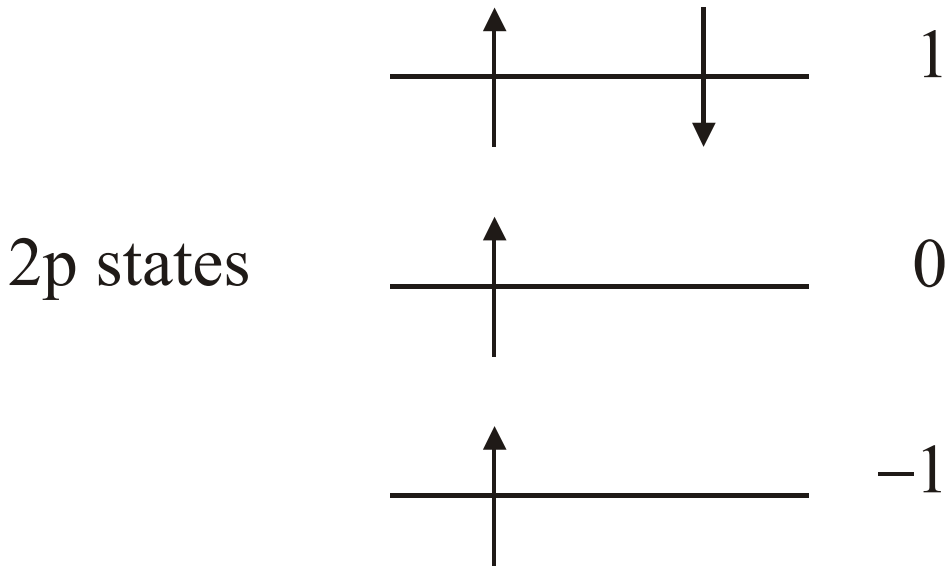
Vector model of the total angular momentum in a multielectron atom for LS coupling.



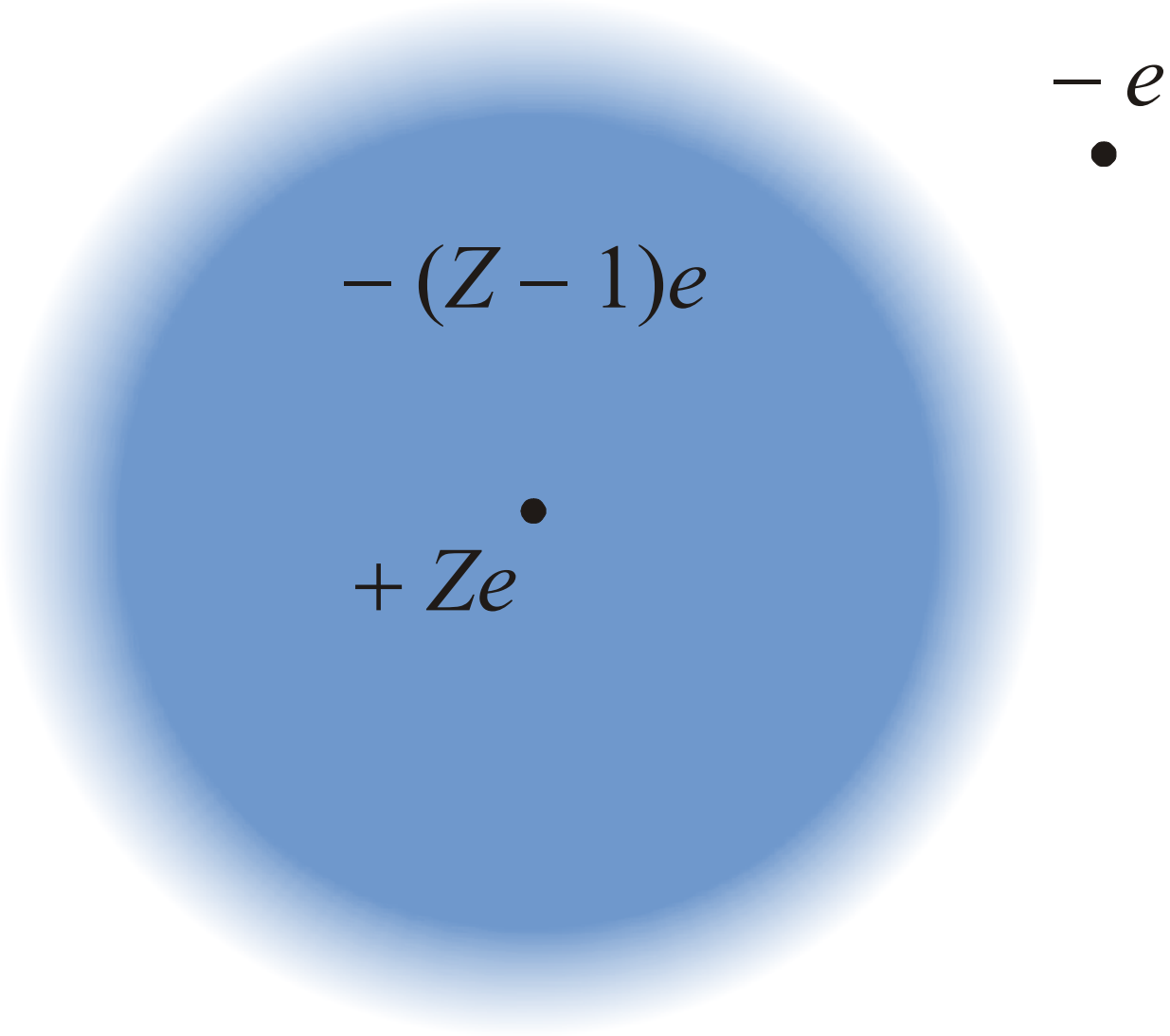
Energy levels for two p electrons in different shells.



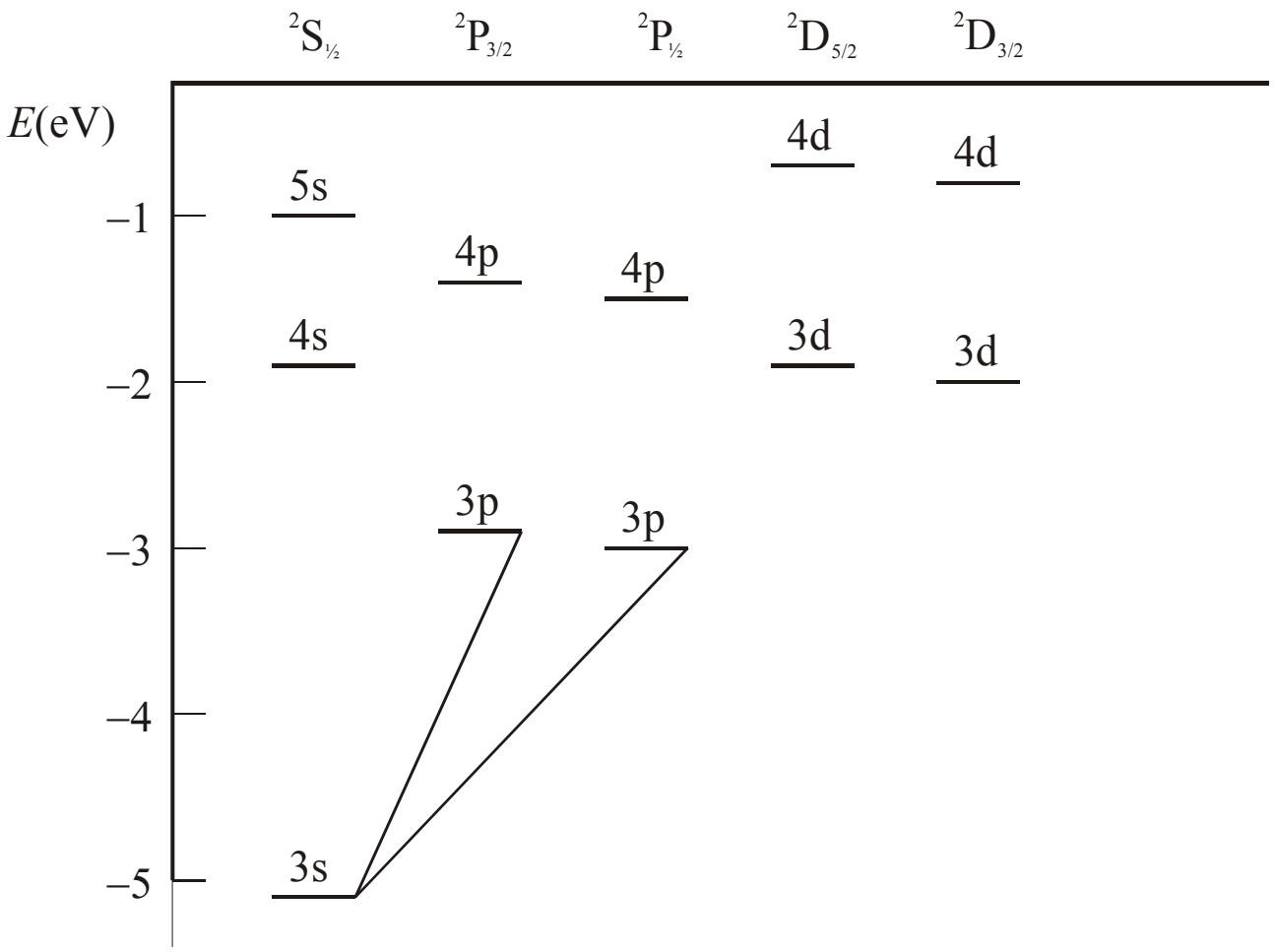
Application of Hund's rules to oxygen.



An electron outside the charge distribution due to the nucleus and all the other electrons of a multielectron atom.



Some energy levels of sodium and the electronic transitions producing the doublet of yellow lines characteristic of sodium vapour.



Some energy levels and hole transitions associated with X-ray line spectra.