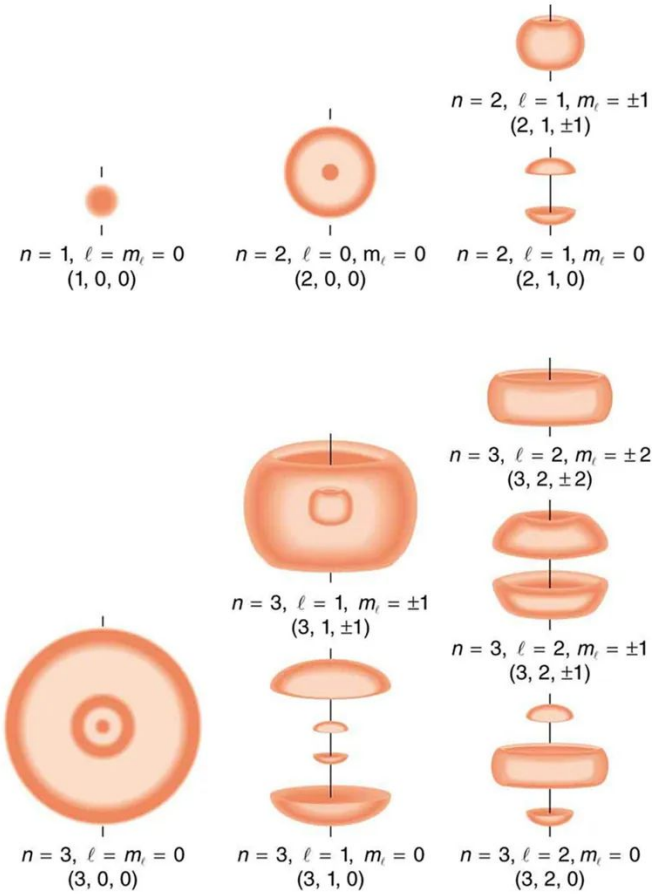
Electron clouds

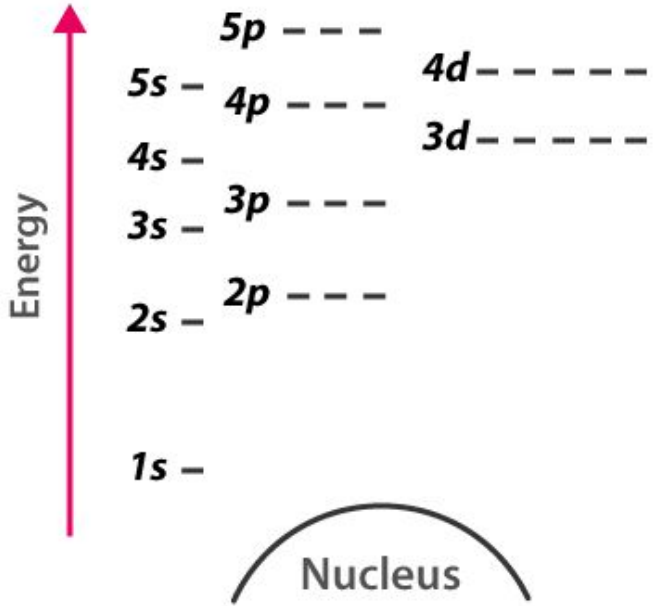
Solve the Schrodinger for electron in an atom for all x and t

$\hbar[\partial\psi(x, t)/\partial t] = (-\hbar^2/2m)[\partial^2\Psi/\partial x^2] + V(x, t)\,\psi(x, t)$

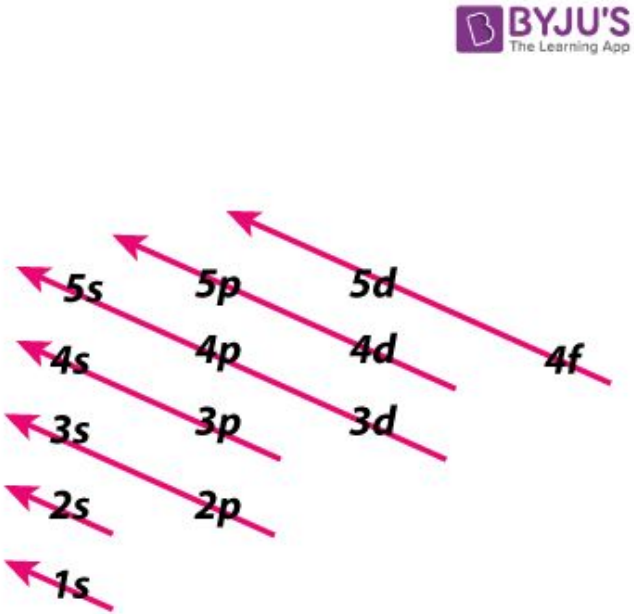
Each suborbital (l, m_l) has its own energy



Energy level Diagram



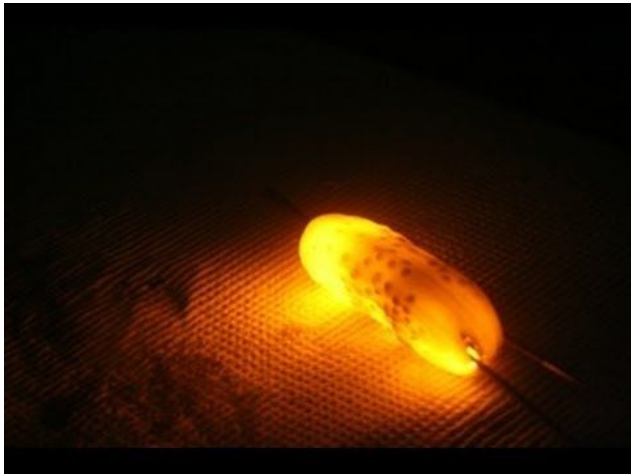
A blank energy level diagram



The Aufbau Principle

Quantum numbers problem

1. The famous sodium D-lines are produced by electron transitions in the sodium atom from the 3p to the 3s orbital. If the 3p orbital has energy -3.04 eV, and the 3s has energy -5.14 eV in the sodium atom, calculate the wavelength of this spectral feature (Hint: h = 4.136×10^{-15} eV s).



The electric pickle experiment