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Unit- Doublet Fine Structure

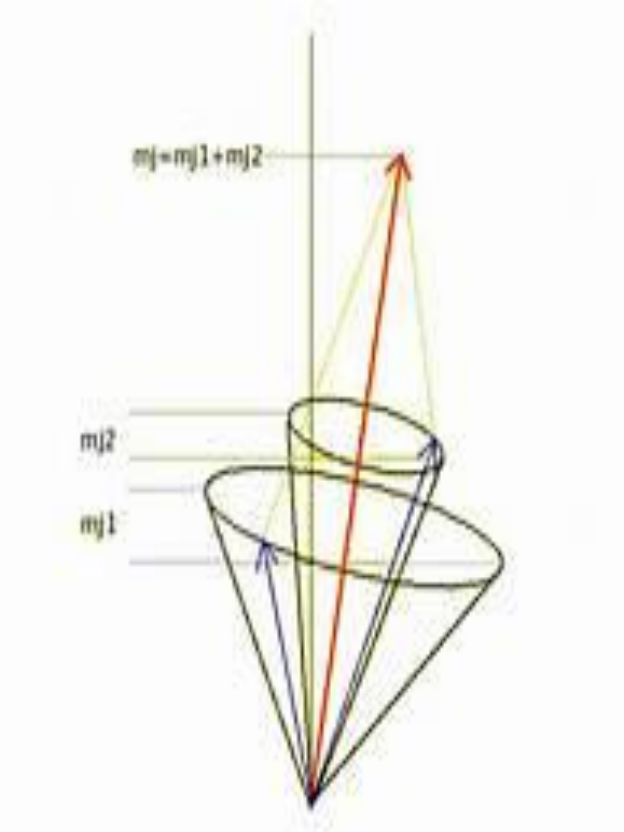
Assi.Prof. S.S.Shinde

Dept.of Physics

P.D.V.P.College Tasgaon

416312 Maharashtra

Electron Spin Orbit Interaction



- The spin orbit interaction is also a magnetic interaction but with the magnetic field generated by the orbital motion of an electron within the atom itself.

Spin angular momentum is the properties of electron, due to spin motion of electron, its possesses magnetic moment which interacts with magnetic field (B) produced by orbital motion of electron.

Selection rule for doublet:-

The forbidden transition are allowed according to following selection rules:

Selection rule for n:-

Δn =Any integral number

Selection rule for j:-

$\Delta j = 0, +1, -1$

Selection rule for l:-

$\Delta l = +1, -1$

Selection rule for s:-

$\Delta s = 0$

- Types of series:-

1) Sharp Series
2) Principal Series
3) Fundamental Series
4) Diffuse Series

Properties:-

1) Doublet seperation structure increases with atomic no.

2) For a given alkali elements doublet seperation decreases with increase in N.