

- Contain discrete lines
- Coverage at high energy level (when n increases) - energy difference decreases at higher energy level

Electronic Transitions (Excitation and Relaxation):

- Excitation - The process when electron absorbs energy and jumps to a higher energy level
 - **Convergence limit** ($n = \infty$) - Energy required to remove the electron from an atom (ionisation)
- Relaxation - The process when electron releases energy and fall to a lower energy level
 - Relaxation to:
 - **Lyman Series** - relaxation to first ionisation energy ($n = 1$)
 - **Balmer Series** - relaxation to second ionisation energy ($n = 2$)
 - **Paschen Series** - relaxation to third ionisation energy ($n = 3$)

Procedure:

- Supply energy (heat, electricity, etc)
- Electrons absorb energy
- Excited - Jump to a higher energy level
- Electron falls back to lower energy level
- Electron loses energy
- Some energy is lost as photon (discrete frequency)
- Identical to the energy difference between the two energy levels

Line Spectrum is one of the evidence to the existence of energy level.

First Ionisation Energy: Energy required to remove a mole of electron from a mole of gaseous atom, ion or molecule.

Depends on: