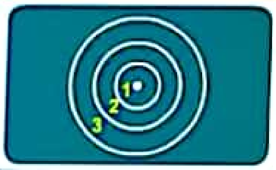
QUANTUM NUMBER

THE ELECTRON'S ADDRESS

GPS is used to track anyone at any place on the earth.

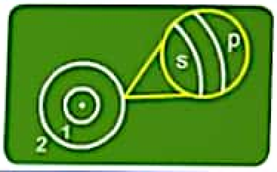
n, ℓ, m Similarly Quantum Numbers are used to identify the position of an electron in an atom.

QUANTUM NUMBER



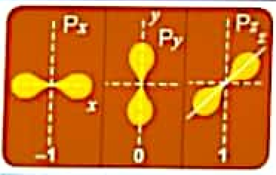
Principal Quantum Number (n)

Represents the orbit number in an atom. It is denoted by letter 'n'.



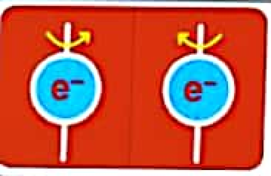
Azimuthal Quantum Number (ℓ)

Represents the shape of an orbital in atom. it is denoted by letter 'ℓ' and its value vary from 0 to 'n'.



Magnetic Quantum Number(m_ℓ)

Represents the orientation of an orbital in the space. it is denoted by letter 'm_ℓ' and its value vary from 'ℓ' to '-ℓ'.



Spin Quantum Number(m_s)

Represents the spin of an electron. It is denoted by m_s and each electron has an orbital either $\frac{1}{2}$ or $-\frac{1}{2}$

DIFFERENCE BETWEEN BOTH ATOMIC MODELS

Bohr's model is a 2-Dimensional model. Therefore he used only Principal quantum number (n) to identify the position of an electron in an atom.

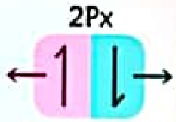
Schrodinger's model is a 3-Dimensional model. Therefore he used n, ℓ, m to identify the position of an electron in an atom.

Hide Something at n = 1, ℓ = 1, m_ℓ = 0, $m_s = \frac{1}{2}$

Quantum numbers have some restrictions. It's not possible to find an electron at every possible combination of n, ℓ, m, s. So you will never find an electron at above point.

No two electrons in an atom have same Quantum Number.

n = 2 ℓ = 1
m = 0 $s = \frac{-1}{2}$



n = 2 ℓ = 1
m = 0 $s = \frac{1}{2}$