

Importance of Schrödinger Equation:

The Schrödinger equation, like Newton's laws of motion is a fundamental relationship sharing a vast amount of experimental observation. However Newton's laws are restricted to macroscopic systems and events but the Schrödinger Equation is applicable to both macroscopic and microscopic systems - order of angstroms. It is found to be true in both the cases.

Meaning of ψ :

ψ is not very clearly defined in Schrödinger wave equation. It seems to represent the amplitude of the so called electron wave and is called wavefunction.

Max Born with the analogy of other wave equation interpreted ψ^2 as the probability. It is the probability of finding a particle in a three dimensional space defined by $dx \cdot dy \cdot dz$ or $d\tau$ (a small volume element)

Alternatively $\psi^2 d\tau$ or more correctly $\psi\psi^* d\tau$ (ψ^* = complex conjugate) envisaged as being the measure of the density of matter in the region $d\tau$.

Meaning of ψ^2 as probability enables the quantum mechanics to incorporate the uncertainty principle.

Properties of ψ :

(i) ψ must be finite.

