Quantum Physics Lecture 1

Cliff Sun

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Classical Mechanics	Quantum Mechanics
$x(t)$	$\Psi(x,t)$
Definite position as a function of time	Probabilistic description of the particle as a function of space and time

Let's dissect this Wavefunction idea further.

Classical Mechanics	Waves
$x(t)$	$y(x,t)$
Definite position as a function of time	Used to describe B Field, E Field, etc.

Classical Wave Equation:

$$\frac{\partial^2 y}{\partial x^2} = \frac{1}{v^2}\frac{\partial^2 y}{\partial t^2} \tag{1}$$

Solution:

$$y(x,t) = A\cos(\frac{2\pi x}{\lambda} - \frac{2\pi t}{T}) \tag{2}$$

Such that

$$\frac{\lambda}{T} = v \tag{3}$$