

The wave function

In quantum physics, sub-atomic particles do not have a defined position until they are observed. Instead, all particles are described as “a wave function”.

The wave function ψ gives the probability of finding a particle at a given position at a particular time, which is given by the square of the amplitude of the wave function at that location $\psi^*\psi$



Each “particle” is represented by a wavefunction Ψ (position, time) such that $\Psi^*\Psi$ = the probability of finding the particle at that position at that time.

The wavefunction is used in the Schrodinger equation. The Schrodinger equation plays the role of Newton’s laws and conservation of energy in classical mechanics - i.e., it predicts the future behavior of a dynamic system. It predicts analytically and precisely the probability of events or outcome. The detailed outcome depends on chance, but given a large number of events, the Schrodinger equation will predict the distribution of results.

For wave function, just make sure you know that the absolute value of the square amplitude of the wave function tells you the probability of finding a particle there. For uncertainty, you can be asked to use Heisenberg’s uncertainty equation.