**Chapter 3: Wave Properties of Particles**

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## De Broglie Waves

The momentum of a particle of mass and velocity is so its de Broglie wavelength is

where

The particle and wave nature of objects cannot be observed at the same time. In certain situations, a moving body resembles a wave and in others, a particle.

## Wave Function

is called the wave function. It is the property that changes with a matter wave (like pressure for sound waves). is simply the probability that a particle is at a certain place at a certain time. However, unlike pressure and height for other waves, it cannot be negative and thus has no physical significance. Instead, is used mathematically. This is called the probability density. A large value indicates a strong possibility of finding a body, while a small value indicates the opposite. However, the possibility of finding something is not the same as actually finding it.