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Write in minimum 1000 words and maximum 2000 about De-Broglie hypothesis on basis of Nobel lecture ~~div~~ delivered by louis De-Borglie?

Louis De-Borglie's Noble prize lecture delivered on December 12 1929 marked a mile stone in the history of physics. The French physicist who was awarded the nobel prize in physics that year for his discovery of the wave ~~ground~~ particle duality presented his discovery of the wave ground breaking hypothesis in the lecture In this he proposed that all matters not just light has wave like particle properties it can exihibit behaviour that is characteristics of waves.

De Broglie's hypothesis is also known as De-Broglie's wave hypothesis, was based on the concepts of wave particles duality, which was first introduced by the german physicist, Max plank plank had suggested that light exhibits both wave like and particle like behaviour. This idea was further developed by Albert Einstein, who showed that light can be considered both as a wave and particle depending on the experiment condition.

Building these ideas De-Borglie proposed that all matters including electrons atoms and molecules.

passes a wave like nature He argued that if light which has no mass, can display wave like properties, then matter which does have mass should also exihibit wave like behaviour De Broglie derived the equation that related the wave length of the matter wave to the mass and velocity of the particle which is now known as the De-Broglie equn

$$\lambda = \frac{h}{mv}$$

where λ is wave length, h is plank constant m is the mass of particle and v is velocity. This hypothesis was revolutionary because it challenges the classical view of matter as being purely composed of particles. It implied that particles could display both wave like and particle like behaviour. De Broglie theory also has far-reaching implication for the understanding of the structure of matter and the nature of the physical world De-Broglie's hypothesis was confirmed by a series of experiments (Davisson-Germer expt in 1927) In this, expt electron were scattered by a crystal and the diffraction pattern produced was found to be similar to that produced by x-rays which are known to be wave-like. This confirmed the wave like nature of electron & demonstrated the valadity of De Broglie hypothesis.