The schrodinger equation is a statistical equation

Hailong Cui

131Hao，1Haolou，Wujingongsijiashulou，Hasanduan， Hongshanqu，Chifengshi，Neimenggu，China

Email：cuihailong71522@163.com

薛定谔方程是一个统计方程

崔海龙

中国内蒙古赤峰市红山区哈三段五金公司家属楼 1 号楼 131 号

Email：cuihailong71522@163.com

摘要：由新的思路导出薛定谔方程，加深人们对薛定谔方程的理解，促进人们对微观世界的认识。使人们不再困惑。

关键词：薛定谔方程，涨落，分子运动论

Abstract：export the Schrodinger equation from a new idea,Deepening people's understanding of the Schrodinger equation,Promoting people's Knowledge of the quantum world,It makes people no longer confused.

Keywords：Schrodinger equation,fluctuations,Molecular motion theory

In this chapter, the Schrodinger equation is derived from the phenomenon of particle passing through the potential barrier， We know from the molecular kinetic theory。When a bunch of molecules shot into a piece of thin slice (that is, the barrier)， Using the classical statistical principle，It is not difficult to deduce the equation of the number of molecules（N ） and the penetration depth（x）

$$N = N_0 \, \mathrm{e}^{-x/\lambda} \qquad (1.1\text{-}1)$$

Thin slices are made of atoms， Because the atom is not continuous， So， the molecules suffer collision exist fluctuation，That is to say。The force is exist fluctuation use symbols Ψ，

Represent N

The equation（1.1-1）is transformed into the following equation

$$\Psi = \Psi_0 e^{-x/\lambda} \qquad (1.1\text{-}2)$$

Face Ψ，Finding First derivative And second derivative

$$\Psi' = \Psi_0 \ (-1/\lambda) e^{-x/\lambda} \qquad (1.1\text{-}3)$$

$$\Psi'' = \Psi_0 \ (1/\lambda^2) e^{-x/\lambda} \qquad (1.1\text{-}4)$$

Comparison (1.1-2) and (1.1-4)，There are

$$\Psi'' - (1/\lambda^2)\Psi = 0 \qquad (1.1\text{-}5)$$

p is the average momentum，$1/\lambda^2$ multiplied by p^2/p^2

into that formula（1.1-5），There are

$$\Psi'' - (p^2/p^2\lambda^2)\Psi = 0 \qquad (1.1\text{-}6)$$

The command $-h^2/4\pi^2 = p^2\lambda^2$

（attention ，λ is mean free path，It is positive；but，p^2 is negative，So, the left is negative，Why is it negative，will see later，

into that formula（1.1-6），There are

$$\Psi'' + (4\pi^2 p^2/h^2)\Psi = 0 \qquad (1.1\text{-}7)$$

Since λ is an average free path，h is a constant，so ，p is average momentum， Change the average momentum to average kinetic energy.

$$p^2 = 2m(E - \overline{U})$$

$$\Psi'' + \{8\pi^2 m(E - \overline{U})/h^2\}\Psi = 0 \qquad (1.1\text{-}8)$$

Because E is less than $\overline{U}$，

so，p^2 is negative，$p^2/2m$ Is also a negative

because

$$p^2/2m = (E - \overline{U})$$

And E is the initial kinetic energy of the particle，$\overline{U}$ is the average negative work of the field，so，$p^2/2m$ is actually，The difference between the initial kinetic energy of a particle and the average potential energy of the field。Rather than the real end kinetic energy of a particle

Be careful，E and $\overline{U}$ are only average energy，The energy of a certain or certain particle is positive $E - \overline{U} > 0$ ，through the barrier，The energy is negative $E - \overline{U} < 0$， return.

Microparticles moving in an electric field are equivalent to molecules， The element photon is equivalent to an atom。

Some particles moving at the same speed， In field， The distance forward is different， This is because of the rise and fall of the field，Although the kinetic energy of each particle is less than the average potential energy。

Let me put it another way，because of the rise and fall of the field，Although the kinetic energy of each particle is less than the average potential energy， In field， particles moving at the same speed，The distance forward is also different。

People know that，The most important part of quantum mechanics is the Schrodinger equation，usually The of deducing Schrodinger eguation from Plane wave function。

while idea of this paper，The Schrodinger equation is not derived from the wave function The Schrodinger equation is derived from the theory of molecular motion，According to the derivation process,Schrodinger equation Can be understood as a statistical equation。It is different from the previous understanding