

Newton Force is not Real Force: Analysis of Quantum Dynamics

【 Abstract 】 Quantum mechanics, classical mechanics and relativity mechanics are still in disunity, which is a problem in modern physics. The author establish a quantum model which can explain the cause of movement and force. Here we show that $F=MV$ and Newton Force is the change rate of force. According to this new discovery, dynamics and electrics can be unified and calculating formulas of four forces are made.

1. Physical quantity of quantum

Quantum has three basic characters: Division, Rotation and Decay. They make three dimensions of space. Division Dimension shows mass of quantum marked as m . Rotation Dimension shows velocity as v and Decay Dimension shows distance or radius as r .

Mass, velocity and distance are the most basic physical quantities, and other quantities can be calculated including force marked as f and energy marked as e .

2. Interaction between mass points

Quanta with same state make a mass point. There is no difference of quantum state in mass point, so there is no space and interaction, only mass.

Suppose that $m=v=r=f=e=1$. Now mass point A and B contain N_1 and N_2 quanta respectively. When the distance between A and B is r , displacement(S), time(T), velocity(V) force(F) and energy(E) can be calculated. It is that $S_1=N_1N_2$, $T_1=N_1$, $V_1=N_2$, $F_1=N_1N_2$ and $E_1=N_1N_2$.

When the distance becomes N_3 times of quantum distance, the result is that $S_1=N_1N_2/N_3$, $T_1=N_1N_3$, $V_1=N_2/N_3^2$, $F_1=N_1N_2/N_3^2$ and $E_1=N_1N_2/N_3$.

3. Dynamics equation

According to the result of interaction, dynamics equation can be expressed as follows.

Equation 1: Force

$$F=MV.$$

In fact momentum is real force. It is the cause of momentum conservation law because forces by interaction are always equal.

Equation 2: Energy

$$E=MVR, \text{ so } E=FR.$$

Equation 3: Acceleration

$$A=\Delta V/\Delta T=V^2/R.$$

Equation 4: Change rate of force

$$Nf=\Delta F/\Delta T=MV^2/R, \text{ so } Nf=MA.$$

This is the equation of force by Newton. Newton Force(Nf) is not force, but the change rate of force.

Equation 5: Power

$$P=\Delta E/\Delta T= MV^2, \text{ so } P=NfR.$$

Equation 6: Mechanical potential energy

According to Equation 6, when R is large enough, P tends to zero. When $R=r$, then $V=v$. In fact quantum velocity is the speed of light, then $P=MC^2$. This is the equation of mass and energy by Einstein. Mechanical energy is not energy, but power.

Equation 7: Mechanical kinetic energy

$$\Delta P = Nf\Delta R = MV^2\Delta R/R = MV\Delta V$$

So mechanical kinetic energy can be expressed as $MV^2/2$.

4. Relation of dynamics and electrics equation

When we use quantity of electricity instead of mass, electrics equation is made.

Equation 1: Quantity of electricity

$$Q = QmM, \text{ and here } Qm = Q/M.$$

Qm shows the ratio of electricity and mass.

Equation 2: Resistance

$$R = VT$$

Resistance is distance between electricity or the length of electric conductor.

Equation 3: Current intensity

$$I = Q/T = QmMV/R$$

Equation 4: Voltage

$$U = IR = QmMV, \text{ so } U = QmF.$$

Equation 5: Electric power

$$P = UI = QmQrMV^2, \text{ and here } Qr = Q/R.$$

Qr shows the ratio of electricity and distance.

Equation 6: Electric energy

$$E = PT = QmQrMVR.$$

We can see that equations of dynamics and electrics are unified.

5. Universal gravity

According to quantum model, for every quantum, another quantum do circular motion around it. So gravity is universal. When an object is only affected by gravity, it will do a uniform circular motion. According to interaction of mass points, the calculating formula of universal gravitation is expressed as follows.

$$F = (N_1N_2/N_3^2)f$$

$$= (M_1/m)(M_2/m)(mv)/(R/r)^2$$

$$= (vr^2/m)M_1M_2/R^2$$

$$= GM_1M_2/R^2$$

Here $G = vr^2/m$, which is Gravitational Constant.

Gravity is different from other force by interaction and it always exists without change of quantum state and distance. Gravity comes from our feeling by the centripetal force of circle motion. When the velocity $V = GM_2/R^2$, we cannot feel the presence of gravity.

It is also different from other force on measurement. Because we can only measure the stress in relatively static state, so we can only measure gravity along the line between two mass points which is the change of gravity.

According the similar relationship of $\Delta F/F = \Delta S/R$, we can get the formula below.

$$\Delta F = F \Delta S/R = MVV \Delta T/R = MA \Delta T$$

Here $\Delta T = rR^2/(GM)$. ΔT is time in an equipotential surface of gravitational field. On the surface of the earth, it is equal to the divisor of quantum distance and first cosmic speed.

Because ΔT in an equipotential surface is fixed, we will consider that force is the product of mass and centripetal acceleration. In fact, centripetal force will change in different place, and it is proportional to the square of the distance to the earth core.

Because ΔT is very small, we will replace it with NF which is $\Delta F / \Delta T$. So observed value of gravity is the change rate which is same as Newtonian force. Two errors get a right result, so the value of gravitational constant remains, and the dimension changes.

6. Coulomb force

According to quantum model, certain quantum state shows electric. The calculating formula of Coulomb force between electricity can be expressed as follows.

$$\begin{aligned} F &= (N_1 N_2 / N_3^2) f \\ &= (Q_1 / q)(Q_2 / q)(mv) / (R/r)^2 \\ &= (mvr^2 / q^2) Q_1 Q_2 / R^2 \\ &= K Q_1 Q_2 / R^2 \end{aligned}$$

Here $K = mvr^2 / q^2$, which is Coulomb Constant.

Coulomb force is made by the change of quantum state. It is different from gravity, and it coexists with the relative motion.

Because Coulomb force comes from microscopic particles, mass and distance are very small and velocity is near to light speed, then centripetal acceleration is very large which can easily makes centripetal velocity increasing to light speed in a short period. So $F = \Delta F = MC$. Coulomb force is real force, not Newton force, but dimension of coulomb force is wrong. The correct value of Coulomb Constant should be multiplied by quantum time t .

According to the modified coulomb constant, gravity and coulomb force will be in the close order of magnitude. Gravity is much bigger than Coulomb force, because gravity is made by all quantum, and Coulomb force is only by part.

7. Strong force

In microcosm, mass and distance become smaller, then velocity and centripetal acceleration become larger, which make change of gravity ΔF more close to gravity F . At a certain distance ΔF will be equal to coulomb force. At a close distance ΔF is more powerful.

According to gravitation formula, when $R=r$, then $V = M^2 C / m$, which means velocity of mass point must achieve M/m times of the speed of light. This is clearly impossible. So mass points push each other and it shows weight in classical mechanics or strong force in quantum mechanics.

The formula of strong force shows below.

$$\Delta F = M_1 (GM^2 / R^2 - V_1^2) \Delta T / R = M_1 (GM^2 - V_1 R^2)^{1/2} r / (GM^2 R^3)$$

Here r is quantum radius.

When $R = (M^2 / m)^{1/2} r$, then $V_1 = C$. If a particle is moving at the light speed, strong force is zero. It's like a satellite flying around the earth. Particles or objects cannot reach the light speed, so $R > (M^2 / m)^{1/2} r$. When $V_1 < GM^2 / R^2$, strong force shows attraction. When $V_1 > GM^2 / R^2$, it shows repulsion.

8. Weak force

Quantum changes its state when it decays, which makes weak force. Decay is not interaction or circle motion. Weak force always shows attraction and has no reaction which maybe exists in our mirror world.

The formula of weak force is that $F=MC$, and M is mass of decaying quanta.