

An explanation of single electron double-slit experiment

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Abstract

The phenomenon of double-slit interference is not an attribute of the electron itself, but is caused by the fluctuation of space. Because of the big bang of the universe, there has always been an explosion afterwave in space. I call it " universe ripple". This kind of ripple is hard to be felt in the macro world. However, for particles with very small mass such as electrons and photons, the effect of such ripples can not be ignored.

Since the big bang, the universe has become relatively stable, but just like the existence of microwave background radiation, the space oscillation still exists, which leads to the uneven distribution of space, that is, the space itself has some continuous and subtle fluctuations. This is similar to throwing a stone into the water. Although the surface is calm after a period of time, there are still afterwaves in the water. As long as the objects in the water are small enough, the waves can still be felt and displayed.

In my opinion, in the single electron double-slit experiment, the electron does not change before or after it passes through the slits, and it is still an electron. It does not show different states before and after crossing the slits because of the existence of the partition with slits. Especially before it reaches the double-slit, it seems that it has just been emitted. Therefore, no matter how you observe it, it is

the same particle without any changes. Moreover, an electron can only pass through one of the slits, and there is no possibility that an electron can pass through two slits at the same time. However, the existence of double-slit leads to the interference phenomenon of spatial ripples when they pass through the double-slit. When electrons pass through the double-slit, they are affected by the interference of spatial fluctuations, and produce the interference pattern, that is, electrons make the spatial fluctuations appear. Moreover, this distribution has nothing to do with the emission of a single electron or multiple electrons at the same time, because this is not caused by the properties of the electrons themselves.

As for the reason why the interference phenomenon disappears after the observation equipment is set up at the double-slit position or behind the screen, the influence of the quality of the observation equipment on the micro world can not be ignored. When the object with large mass is close to the double-slit or the screen, it will have an impact on the space around it, which will destroy the original spatial fluctuations, the interference disappears. Especially when it is close to the double-slit, because this is where the wave interference begins to occur, this spatial disturbance directly destroys the occurrence of the interference phenomenon. The movement of the electrons only faithfully reflects this change. This explains why we can "observe" the interference pattern again when we take away the observation equipment, which has nothing to do with the observation

itself.

If the experimental conditions are met, we can carry out such an experiment to verify. When the observation equipment is placed at the side of the electron beam gun, the interference phenomenon can be seen. Then, the observation device is gradually moved to the double-slit and finally around the back of the screen. When the distance between observation equipment and double-slit and screen is small enough, the interference phenomenon should disappear and become a simple superposition of the results of two single slits. When the observation equipment moves back to its original position, the interference phenomenon will appear again. If this is the case, it can be explained that as long as the observation equipment for space disturbance is small enough, the whole interference process can be observed without affecting it.

The widespread existence of this kind of spatial fluctuations in the universe is the root cause of the interference and diffraction phenomenon of various particles such as electrons and photons, rather than the particles themselves. When particles pass through this uneven space, the path of particles changes, and eventually forms a certain regular distribution.

The stable existence of the interference phenomenon indicates the stability of the spatial wave, which will have a fixed property, that is, there is a cosmological

constant. The motion of micro particles will be affected by it. Taking this constant into account, we can more definitely explain some behaviors of particles.

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