

How exactly does the wave-particle duality arise? Understand the wave-particle duality in a systematic and global way of thinking

Electromagnetic waves (light) are shock particle waves emitted by electric and vertical magnetic fields in space. Electromagnetic wave is similar to fluctuations, but there is no morphological fluctuations in the process of transmission, but along the direction of electric field (see the law of ternary equilibrium), is the electric field and magnetic field in the form of energy conversion, and the formation of the shock, through periodic shock and wave "particles" (real state, electric field and magnetic field is periodic conversion microscopic system).

Electromagnetic wave in a fluctuating frequency, the electric field from strong to weak and then from weak to strong, in a periodic change, changing around the electric field will form a magnetic field around it. When the electric field changes from strong to weak, the magnetic field around it changes from weak to strong, and the magnetic field around it changes from weak to strong.

With the exception of electromagnetic waves (light), all fluctuations and object interactions in the universe must follow the

"law of ternary equilibrium" ratio. That is, all the waves in the universe are necessarily a "ternary equilibrium system", but a "ternary equilibrium system" is not necessarily a wave. Electromagnetic waves, electron waves, basic particles, including ordinary matter, and so on, are the typical "ternary equilibrium systems", but they are not the waves in the real sense.

But electromagnetic waves (light) is the most basic type of this "ternary balance system", electronic waves, basic particles, matter, and so on, are more complex systems, so this kind of "ternary balance system" actually has "wave particle duality". Because the electromagnetic wave (light) is one of the most basic of this "ternary equilibrium system", so its "wave particle duality" is the most obvious, and the "wave particle duality" of ordinary matter is the weakest or even difficult to detect by scientists.

Law of ternary equilibrium: In a system, two non-equilibrium states tend to the equilibrium state, which is the process of ternary equilibrium.

In the ternary balance of electromagnetic wave, the electric field and magnetic field are two non-equilibrium factors, in the electromagnetic wave, the electric field and magnetic field of the two energy relationship, similar to the water wave in the peak and trough position of the two kinds of potential energy, in the peak of

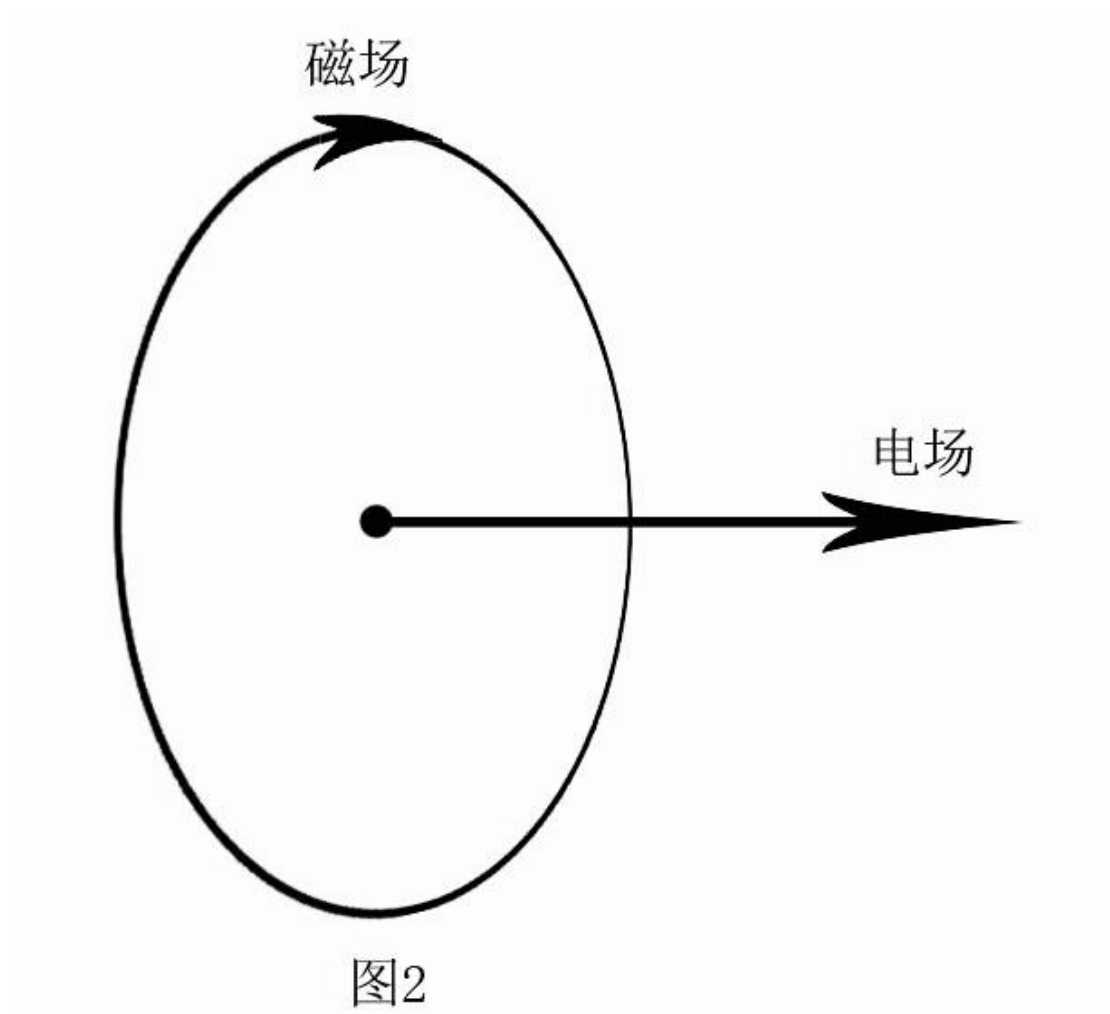
the potential energy and the trough, a periodic conversion, and eventually form water wave.

The process of conversion of electric field into magnetic field and magnetic field into electric field is the process of changing magnetic field and changing electric field (the process of energy transfer or conversion process), similar to the changing kinetic energy in a water wave (the process of potential energy transfer or conversion process). That is, in the water wave, the kinetic energy of the downward from the peak to the trough, and the kinetic energy from the trough to the peak of the kinetic energy and the size of the potential energy.

magnetic field in an electromagnetic wave are a pair of non-equilibrium states in the form of fluctuations, and the state of non-equilibrium tends to equilibrium. So the electromagnetic wave is actually the ternary equilibrium state of electric field and magnetic field, which is the most basic ternary equilibrium state, and is also the most basic ternary equilibrium system.

But also because the electromagnetic wave is not a generally understood wave, that is, the electromagnetic wave is not the general sense of the horizontal wave, also is not the general sense of the longitudinal wave. In a general sense, both horizontal wave and vertical wave are a mechanical wave, mechanical waves are the

energy (including potential energy and kinetic energy), the wave formed by alternating conversion. Such waves formed by non-equilibrium forces often need to be transmitted through the medium. The two non-equilibrium factors that form the electromagnetic waves are different from the energy formed by the acting force, but the electric field and the magnetic field itself, so the electromagnetic waves propagate through the electromagnetic radiation, and do not need to be transmitted through some medium.



Figure, the wave form model diagram of the electromagnetic wave, the electric field and the magnetic field alternately enhance or weaken, the fluctuation relationship of the two is a mutual conversion relationship, the change is causal to each other. Electromagnetic waves propagate in the form of particles (microscopic system), but the particles also show periodic changes, the magnetic field and electric field are periodic conversion, so that the electromagnetic waves show wave-particle duality.

The propagation direction and transmission speed of electromagnetic waves are only directly related to the direction of the electric field, and not to the direction of the magnetic field, but the magnetic field can affect the propagation direction of electromagnetic waves.(The direction and the speed of electromagnetic waves is detailed in the Law of Ternary Equilibrium).

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