

Reinterpreting the Double Slit Experiment

Junichi Hashimoto

Annaka, Japan

Email: Junichi.Sakura.Relationship.1139@proton.me

Abstract

The double-slit experiment will teach us that not only light but also electrons can be emitted and their traces will form interference fringes. In its hermeneutics, quantum mechanics denies the reality of objects and describes their behavior only as abstract, coexisting states of probability. In order to change such conventional thinking, I devised new models and hypothesized “Spatial Waves” and “Object Elasticity”. It states that the double-slit wall has a “Spatial Processing Function” that changes the nature of the space into a wave. This theory allows for the deterministic treatment of electrons as particles, flying through the air on the wave, passing through either the left or right slit, and landing on the screen. The results of this research will greatly affect not only the fate of the electron, but also the fate of quantum theory.

Keywords: Spatial Processing Function; Spatial Waves; Relational Wave; Double-Double Slit Experiments; Electron Elasticity

Introduction

Since ancient times, people have noticed that there are phenomena of interference and diffraction of light. Because of this, the wave theory has remained the dominant idea that light may have an essence as a wave. It was in this historical context that Thomas Young conducted the double-slit experiment of light. He set up a wall with two equally spaced slit between the light source (light bulb) and the screen, and created a situation in which the path of light was limited to the slits. When the light bulbs were turned on, a stripe pattern appeared on the screen, reminiscent of the interference of waves on the surface of water. This has led to a long period of time when scientists supported the wave theory. However, after an era in which experiments on the photoelectric effect were conducted, phenomena reminiscent of particle nature began to be observed. Eventually, with the rise of quantum mechanics, such characteristics of light came to

be understood as duality. That is, light is a wave when observed as a wave and a particle when observed as a particle. This view remains the prevailing theory to this day. Not only that, De Broglie's concept of matter waves appeared, and it was argued that not only light but also matter (particles) have duality. In fact, in recent years, the widespread use of technology that can extract a single electron from a metal has made it possible to perform double-slit experiments on electrons. In the experiment, a single electron bullet was fired from an electron gun towards the double-slit wall in front and the screen wall beyond it. As this process was repeated an enormous number of times, interference fringes eventually formed on the screen after several hours. This reminds us that each time an electron passes through the double-slit, it spreads out like a wave, passing through the two holes simultaneously and landing on the screen. This is because, if the electrons were particles like a gun-ball, they would be expected to travel straight through space and through the slits, forming a square vertical landing strip on the screen that mimics the shape of the two holes. However, this was not the case, and the electrons left interference traces on the screen that looked like water surface waves. In order to understand such seemingly strange phenomena, quantum mechanics has denied the reality of objects and introduced the formal and abstract concept of the wave function. It was interpreted to represent the coexistence of overlapping waves of probability. By thinking this way, quantum mechanics tried to overcome the problem of simultaneous double-slit passage. Furthermore, they tried to reconcile the interpretation that the projectile was engraved as a single point when it landed on the screen by applying the following treatment. The wave was a wave before it interacted with the instrument, but after it interacted with the instrument, it became a particle because the wave packet contracted to a single point [1].

Indeed, it is no wonder that if we build up a mathematically consistent logic from the assumptions set, we can arrive at a probabilistic interpretation as quantum theory claims. However, because quantum theory is based on the theory of wave contraction, it has to change the way it treats the form of existence of objects before and after the act of human observation, and it is far from a faithful depiction of nature as it is.

Nature is, by nature, simple.

In this paper, I would like to discuss the law of causality behind quantum phenomena from the standpoint of this philosophy.

Methodology

The quantum phenomena that come into view through the double-slit experiment do, indeed, lead to strange and mysterious observation processes. However, we tend to be too tied down by the scientific results obtained in the past. It is true that water and light passing through a double slit have represented the nature of waves, but there is a wide gap between what "appears to be" and what "actually is". Just because an electron passes through a double slit and lands on a screen and leaves an interference mark does not immediately mean that the electron is a wave. We must look at natural phenomena and experimental facts more simply, more honestly, and more fundamentally.

All that is known is that a single electron left a particle imprint on the screen wall beyond the slit wall. The stripe pattern that looks like an interference mark was created by the comprehensive and complex relationship among the electron gun, the double slit wall, and the screen wall, and not by the nature of the electrons. It should not be blamed on the electrons. It is a hasty assumption to regard electrons as waves.

It is not the electron that is the wave, but space.

It is the space that is turned into a wave by the “Space Processing Function” of the double-slit wall. I coined the term “Spatial Wave”. The individual electrons are simply riding the wave like surfers. Therefore, the electrons, which are originally a single particle, fly along the path of the electrons as a particle, called a Spatial Wave, go through the slit, and finally land on the screen. It is only natural that the electrons leave traces as particles on the screen.

To understand this, a basic knowledge of relational physics, which I founded, is necessary, and I will explain it again in detail in a later section.

It is time for us to graduate from our long-held misconceptions.

The following thought experiment seems to be the best way to verify it (and it would be possible to actually experiment with it). First, let us conduct a preparatory thought experiment to make this experiment more imaginative. It is as follows. Please, think of a spectroscopic experiment using a prism. When sunlight passes through it, the light bends twice in total on the walls on both sides of the prism. Since the direction of the light is varied according to the refractive index of the medium, the light should show a vivid continuous spectrum with a rainbow-like gradation. Now, let us increase the number of prism to two and let sunlight pass through them. The light will be refracted a total of four times, which should further increase the spectral effect. This result implies that the “Spatial Processing Function” of the prisms has been strengthened.

So, with that in mind, let us conduct a full-scale thought experiment. It goes something like this. Prepare a fan. Assume it has excellent wind regulation (assuming it can feed air molecules one at a time). In addition, provide a screen wall. It is assumed to be a matrix of 100 small shelves mounted on one wall. One candle is placed in each of these shelves, and each candle is lit. A double-slit wall is placed between the fan and the screen wall. It will be “double” installed to facilitate detection of the “Spatial Processing Capability” that the double-slit wall is supposed to have. In other words, the double slit wall will be installed twice, hence the “Double Double Slit Experiment”.

Now, I would like you to start the experiment in your mind. Let us run a fan with the wind power set at an appropriate level. If the Double-Double Slit Wall has an intense “Spatial Processing Function”, then “Spatial Waves” should be formed there, and the aforementioned “relationship” between the three parties should be strengthened or weakened, and the space should be classified into “pathways” and “non-pathways” of the wind. Therefore, it is thought that is reflected in the screen wall, and that “wind-receiving zones” and “non-wind-receiving zones” are alternately distributed in a striped pattern. Therefore, in response, the 100 candles on the shelf would be divided into “areas that extinguish” and “areas that do not extinguish”, forming a “flame stripe pattern” that looks like interference stripes. In your imagination.

If the above results were obtained, it would be strong evidence that air molecules (wind) are not waves, but space is the wave.

Discussion

An object with a special shape, when placed in a space, has the function of transforming that space into a processed special space. If a prism is placed in a space, the space is transformed into a special space where light is spectrally processed. Similarly, if a double-slit wall is placed in a space, the space is transformed into an inhomogeneous special space where discrete relational airspace is distributed due to interference among the three parties of the electron gun, the double-slit wall, and the scree wall. This is a “Relational Wave” (Spatial Wave). A tiny particle like an

electron has no power to resist it. They simply pass through the flight range prepared by the Spatial Wave. If an object has a macroscopic size and mass as large as a pachinko ball, it can go straight ahead without being affected by Spatial Waves, but microscopic substances such as electrons and atoms are so affected that they behave confusingly, as if they themselves were waves. Nevertheless, electrons are particles, not waves. It is space that makes them appear to be waves, not electrons.

Until now, we have paid attention only to electrons and not to space.

Some of you may be of the viewpoint of the Big Ban Theory (Expanding Cosmology). The basis for this theory is a phenomenon called redshift, in which Lyman α rays (in the ultraviolet region) flying to the Earth from far away in space are observed as light with a wavelength longer than the original wavelength, and they believe that not light but space itself is being stretched out. Regardless of the truth or falsity of the cosmic expansion, many researchers consider the redshift phenomenon to be caused by space in their interpretation. However, in the interpretation of the double-slit experiment, they have all, for some reason, attributed the quantum phenomena to electrons rather than space.

To misinterpret the double-slit experiment means that quantum mechanics itself stumbles from the start. We are now facing a time when we must look again at space and revise the basic theory of physics.

Electrons are not waves. It is a particle. It is space that is the wave. Because space is a wave, divided into regions of increasing relationship and regions of decreasing relationship, a single electron fired from an electron gun can only pass through a limited area of flight and can only land in a limited band on the screen. Of course, the electron can only pass through one of the two slits on either side. This is only natural, since it is a single, substantial particle. It cannot pass through both slits at the same time. The electron, as a single particle, flies through the passable zone prepared by the Spatial Wave, goes through one of the slits, and lands somewhere in the possible impact zone on the screen.

The evidence that electrons are particles and space is a wave has already been clearly demonstrated by the numerous double-slit experiments that have been performed so far. If one of the two slits is blocked so that electrons pass through only one slit, no stripe pattern appears on the screen [2]. This phenomenon was triggered because the “Spatial Processing Capability” of the specially shaped object, the double-slit wall, was lost when only one hole remained, and the space became “ordinary space” instead of “Spatial Waves”. Since electrons are originally particles, when they are launched, they simply travel straight toward the one slit one screen and land on it. If this process is repeated tens of thousands of times, it is only natural that a single vertical, rectangular landing strip that resembles a single slit will appear.

Now, we know that electrons can only land on a limited band on the screen, but there are many different areas because the possible impact zone is formed by many stripes on the wall. Why do some electrons land on the center strip, while others land on the right or leftmost strip, and others land on the top, bottom, right, or left side of the same strip?

The answer to this question is a new atomic model provided by my relational physics [3]. The concept of “Electron Elasticity” introduced there also contributes greatly to our understanding of the double-slit experiment. For details, please refer to the relevant sections of my paper, but here I would like to give only a brief explanation. Electron Elasticity refers to the phenomenon in which electrons, after losing their interaction partners, change their form of motion in order to establish stable relationships with an unspecified number of parties. In other words, if an electron

that normally rotates on its own axis loses its interaction partner and becomes an isolated electron, it will henceforth undergo a stretching and shrinking motion.

What happens if we apply such an electron image to the quantum phenomena in the double-slit experiment?

Electrons are repeatedly contracting and expanding at extremely high speeds at the moment they are ejected with great force from the muzzle of the electron gun. Therefore, depending on the timing, they will form a variety of firing angles and trajectories. Hence, the direction of flight will be different each time it is fired. The factor of whether it passes through the right slit or the left slit is also determined at the moment of launch. In this way, depending on the expansion and contraction conditions at the time of launch, it will fly in various paths and eventually land at various points in the possible landing zone on the screen. This is why the same launch experiment, repeated tens of thousands of times, eventually produces an overall stripe pattern on the screen.

As describe above, the interference stripes produced by the double-slit experiment can be successfully explained by taking the standpoint of relational physics and combining the two concepts of “Relational Waves” (Spatial Waves) and “Electron Elasticity”.

Results

In order to unravel the mysteries of quantum phenomena in the double-slit experiment, I constructed a hypothesis based on a different way of thinking than the conventional interpretation of quantum mechanics. It is as follows. The unique shape of the double-slit object, due to its peculiarity, has an effect on space in such a way that it processes relationships and changes the properties of space into waves (Spatial Waves). If such a “Spatial Processing Function” exists in the double-slit wall, then by further “doubling” it and conducting a “Double-Double-Slit Experiment”, the Spatial Waves would be further enhanced, further increasing the interference effect. I proposed and performed a thought experiment with this idea in mind. As a result, I was able to obtain an image of similar quantum effects in the behavior of air molecules, which have a scale just between that of elementary particles such as electrons and that of macro-objects.

Conclusion

The more coils wound around the iron core, the more potent the electromagnet becomes. In the same way, by installing multiple layers of double-slit walls like the torii gate at Fushimi Inaritaisha shrine, the “Double-Slit Effect”, or “Spatial Processing Effect”, will be enhanced, and the properties as Spatial Waves will be further emphasized. Electrons will ride the wave and, while flying, pass through either the left or right slit and eventually land on the possible landing band on the screen. And its trajectory depends on the expansion and contraction state of the electrons at the time of launch, and can be given various directions depending on the timing. Therefore, each time the electrons are fired, they land at a different point. Such a sequence of electron behavior follows a law of causality, and the fate of the electron can be determined in principle. Such a treatment is possible only because I had the reversed idea of treating electrons as particles and space as waves. In the future, the consequences here will bring about major changes not only in quantum mechanics but also in various fields of physics.

References

1. Newton Press (2025) 100 Years of Quantum Mechanics. Newton Press. 76-77.
2. Newton Press (2025) 100 Years of Quantum Mechanics. Newton Press. 80-81.
3. Junichi. H (2025) Hydrogen Spectrum and New Atomic Model.