

Comprehensive Double Slit Experiments Showing That Light Is Photons

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Abstract Young's double slit experiments have been described by wave theories, i.e., before and after passing through a double slit, the light is waves. To test the wave description, we extend the double slit experiments to the comprehensive double slit experiments by utilizing Shield, Metal tube, Blocker, Combination of Shield and Blocker with two triangle cuts, Photon-Chamber, and Lens. We propose both "Postulate on light: light is photons before and after passing through double slit" and "Postulate on lens: light behaves same before and after passing through lens". Then, we show the novel phenomena of the comprehensive double slit experiments: (1) the light is photons, not waves, before and after passing through a double slit; (2) it is the photons that form both the non-interference patterns and interference patterns; (3) the non-interference patterns gradually evolve to the interference patterns in the same experiment. We refer to the novel phenomena as "PhotoWave phenomena" that are universal. The comprehensive double slit experiments provide the novel phenomena for developing theoretical model further to study: (1) the nature of the light; (2) the Feynman's mystery of the double slit; (3) the wave-particle duality; (4) the wave theories of the light; (5) the quantum theory of matter. A complete explanation is demanded and should describe all the comprehensive double slit experiments consistently.

Keywords: double slit experiment, interference pattern, non-interference pattern, Shield, Blocker, Photon-Chamber, lens, PhotoWave phenomena

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1. Introduction

The double slit interference phenomenon is one of basic phenomena in the physical optics. Historically, the study of the nature of the light reached basically two concepts: wave and particle. Let us briefly summarize the study of the nature of the light. In 1690, C. Huygens established the wave theory of light: Light is pure waves. In 1704, Newton established corpuscles theory: Light is pure particles.

In 1801, Young proposed the hypothesis that the light should behave similar to water waves. In order to test his hypothesis, Young designed/performed the double slit experiment, observed the *interference pattern*, and proposed that the interference pattern could only be produced if the light was waves [1]. The wave explanation of Young's double slit experiment was not immediately accepted by people who believed that the light propagated as particles.

The water waves are *not the physical entities*, instead, they are just the vibrations of the water particles. Thus, for explaining Young's experiment, a hypothetical medium "Ether" was introduced and believed to carry light waves.

In 1860s, Maxwell equation gave the speed of the electromagnetic (EM) waves, which is very close to that

of the light. This was considered as evidence of that the light is EM waves.

In 1887, however, Michelson-Morley experiments were unable to detect the "Ether". Thus, it is assumed that, unlike the water waves, the light as waves does not require a medium to propagate. Namely the light waves are not the vibrations of a medium, but as the *real physical entities* to propagate.

From 1887 to 1905, H. Hertz, J.J. Thomson, P. Lenard, and A. Einstein discovered and interpreted the "Photoelectric effect", which shown that the light is photons.

In 1924, de Broglie noticed that the light behaves as both the waves and particles. Then, he extended this dual concept of the light to the matter, and proposed the "de Broglie matter wave" and the wave-particle duality.

In 1926, the concept of the "de Broglie matter wave" led Schrodinger to propose the "Schrodinger wave equation" to describe particle, the basis equation of the quantum mechanics.

In 1927, Bohr proposed the complementarity principle that stating that the wave and particle phenomena cannot be observed simultaneously.

Until 1951, the wave-particle duality of the light still puzzled Einstein, he wrote "All these 50 years of conscious brooding have brought me no nearer to the answer to the question: What are light quanta?" [2].

Table 1. Brief summary of studying light

Light is particles 1704 Newton (theory) 1887 Hertz (experiment) 1905 Einstein (theory)	Electron is particle 1897 Thomson (experiment)
Light is waves 1690 Huygens (theory) 1801 Young (experiment) 1860 Maxwell equation: Light is EM waves	Electron is wave 1924 de Broglie matter waves
	Quantum Mechanics 1926 Schrodinger wave equation

In 1956, Feynman called the double slit experiment "a phenomenon... has in it the heart of quantum mechanics. In reality, it contains the only mystery. We cannot make the mystery go away by 'explaining' how it works" [3].

In 2013, W. Rueckner and J. Peidle detected single photoelectrons liberated by the light. Then they assumed that a single photon produces the interference pattern in double slit experiment [4]. In 2016, R. S. Aspden, M. J. Padgett, and G. C. Spalding shown the single-photon double-slit interference [5].

In 2021, H. Peng proposed and performed the comprehensive double slit experiments that show that the light is particles near the detector [6].

In 2022, R. Penrose in an interview stated: "this is not something that people normally even recognize as a problem I mean they do but they shove it under the carpet which is known as the collapse of the wave function. Now you see current quantum mechanics strictly speaking is an inconsistent theory that is rather brutal way of saying what Einstein and Schrodinger and even Dirac said that quantum mechanics is incomplete" [7].

To study the nature of the light further, we argue that one of the reasons why the mystery of the double slit experiment is long-standing is the lack of the variation of experiments. To study the nature of the light in the double slit experiments, we propose to utilize Shield, Blocker, Metal tube, Photon-Chamber and the convex lens in the experiments, and show for the first time the **PhotoWave phenomena** (the light is photons and it is photons that form the non-interference pattern and the interference pattern in the same experiment). If the light was the optical waves, then Shield and Blocker would disturb the interference patterns. If the light was the EM waves, then the conductive metal tube would disturb the interference patterns.

In the particle physics, the cloud chamber has been invented to detect a particle interacting with the contents. By looking for the track, one can identifies the existence of a particle. A famous example is the finding of positron by Anderson. Inspired by cloud-chamber, we proposed the Photon Chamber to detect the particle nature of the light by placing Photon Chambers between the light source and the double slit, and between the double slit and the detector.

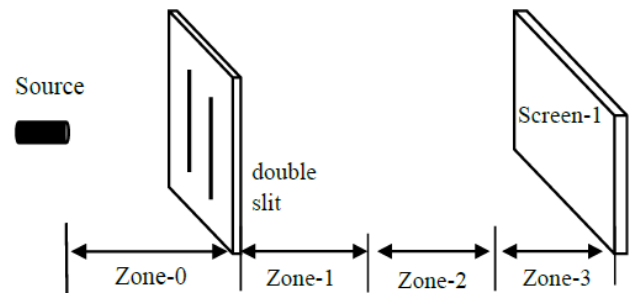
By applying the convex lenses in the double slit experiments, we show the pattern evolution, the non-interference pattern evolving to the interference pattern, which reveal the fundamental nature of the light: **the light is photons in the double slit experiment.**

To interpret consistently above PhotoWave phenomena is a challenge. The PhotoWave phenomena are fundamentally significant in the further development of optics/physics. Our experiments provide new evidences for studying the optics/physics further.

2. Zones and Postulates

2.1. Four Zones

Let us divide the space between the laser source and the screen/detector into four Zones (Figure 1) and name the corresponding patterns in each Zone.

**Figure 1. Four Zones**

- (1). Zone-0: between the source and the double slit, in which the pattern is non-wave and thus, the light is particles;
- (2). Zone-1: near the double slit, in which the patterns are *non-interference* and thus, the light is particles; referred to the patterns as **Particle patterns**;
- (3). Zone-2: between zone-1 and zone-3, in which the patterns are *non-interference* and thus, the light is particles; referred to the patterns as **Transition patterns**; in Zone-2 Particle patterns evolve to Interference patterns,
- (4). Zone-3: near the screen, in which the patterns are **Interference patterns**;
- (5). Surface of the screen: on which the light lands as particles.

Note: On the surface of the screen, the light is photons which distribute as interference pattern.

2.2. Postulate on Light

In standard Textbooks, it is assumed that, **the light is waves before and after passing through a double slit** (Figure 2). To my knowledge, there is no experiment to test it. The only experiment is to confirm that the light distributes as the interference pattern **on the detector**, but not between the double slit and detector (Zone-1, Zone-2 and Zone-3), and not between the light source and double slit (Zone-0).

Now, we propose a new Postulate on light and experimentally test/confirm it in this article. This article is based on the new Postulate on light.

Postulate on light: Light is photons before and after passing through a double slit

When it is confirmed that the light is particles in one Zone and then, the light is particles in all Zones. It is photons that produce the both the non-interference

patterns and the interference patterns, we referred to it as the PhotoWave phenomena.

Postulate on light completely alters the understanding of the nature of the light, especially the nature of the light in the double slit experiment.

Example: If the light shows particle nature in Zone-1, then the light is photons in all four Zones, i.e., the light has the same particle nature before and after passing through double slit.

Note: Postulate on light avoids introducing the concept of the “Collapse of Wave Functions”.

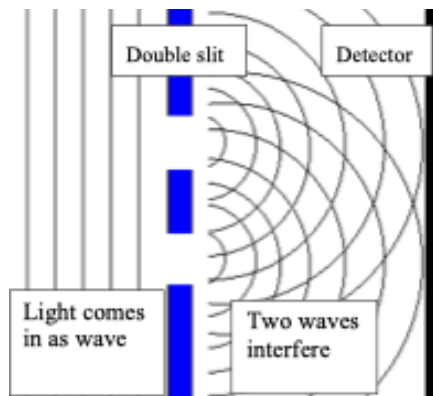


Figure 2. Classical interpretation of double slit experiment

2.3. Postulate on Lens

In standard Textbooks, the theory of the convex lens is directly applied to the wave experiments of the physical optics. In the classical wave experiments, the diaphragm stays at the same location. The light coming out the slits has the certain pattern. In Textbooks, it was assumed that the function of the convex lens is to *bring light rays to a focal point P on the screen*. This assumption is based on the geometrical optical theory of the lens. But we will show that the pattern changes with the distance from the diaphragm.

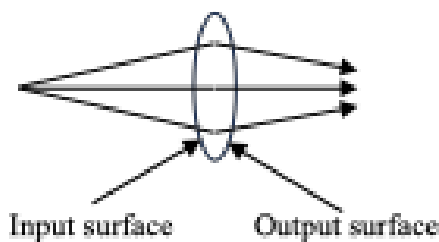


Figure 3. “Input surface” and “Output surface” of convex lens

To study the evolution of the patterns, the convex lens moves and thus, the patterns arriving at the input surface of the convex lens (Figure 3) change. The light patterns arriving at the input surface of the convex lens are position-dependence. Based on above consideration, we suggest the Postulate on lens.

Postulate on lens:

- (1). The convex lens enlarges the image that arrives at the input surface.
- (2). The convex lens breaks the evolution of the patterns.
- (3). The convex lens does not change the behavior of the input pattern.

Example: After passing a convex lens, the patterns keep the same nature: e.g.,

(a) if the input pattern is Particle pattern, the output pattern is still Particle pattern, and vice versa;

(b) if the input pattern is Transition pattern, the output pattern is still Transition pattern, and vice versa;

(c) if the input pattern is Interference pattern, the output pattern is still Interference pattern, and vice versa.

3. Light is Photons before and after passing Through Double Slit

3.1. Light Is Photons before Passing through Double Slit

3.1.1. Double Slit experiment with Photon Chamber

Now, let us experimentally show that the laser beam is particles before passing through a double slit, i.e., in Zone-0, the light is particles.

Experiment-1 (Figure 4 and Figure 5): Light is photons before passing through double slit:

Experimental setup (Figure 4): Placing a Photon Chamber between the laser and the double slit (Zone-0).

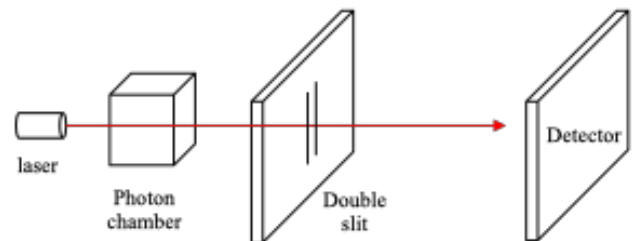


Figure 4. Experimental setup

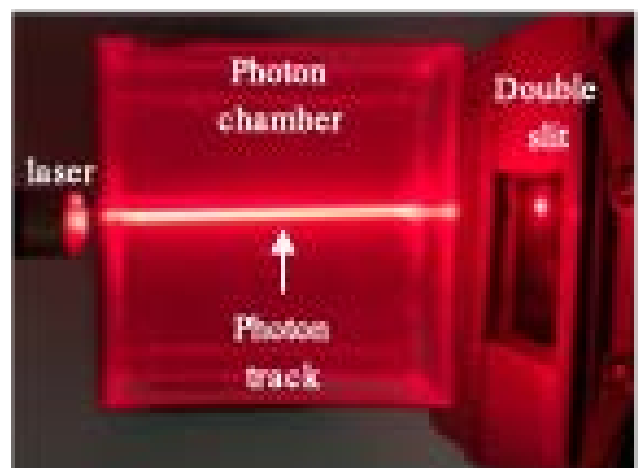


Figure 5. Light is particles before passing through double slit

Observation (Figure 5): The Photon Chamber shows the photon track (pattern) which is the image of the source, not waves.

Conclusion: the light is photons before passing through the double slit.

3.1.2. Double Slit experiment with Beam Splitter (BS)

We will utilize the following rule.

Rule: A Beam Splitter (BS) does not change the

behavior of the light.

Example: when a light beam reflected by a BS behaves as particles, then the input light beam behaves as particles, while the transmitted light beam behaves as particles.

Experiment-2 (Figure 6 and Figure 7): We perform the experiment in two setups.

Experimental setup-1: A laser beam partially reflected by BS1 arrives at D1 on detector, and partially transmitted through BS1 and reflected by mirror-1 (M1) arrives at D2 on detector. A larger screen is utilized (left of Figure 6).

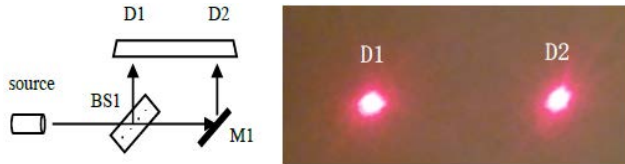


Figure 6. Light is particles before passing through double slit

Observation (right of Figure 6): both D1 and D2 show the images of the source.

Conclusion: Rule is proved. Photons detected on both D1 and D2 have the same particle nature. The particle nature of the light is not changed by either being reflected by BS or passing through BS.

Experimental setup-2 (left of Figure 7): Insert a slide of double slit between BS1 and M1. The laser light passing through both BS1 and the double slit arrives at D2. The light reflected by BS1 arrives at D1.

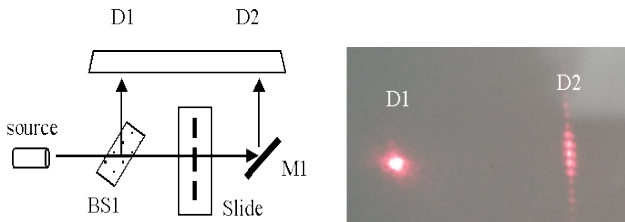


Figure 7. Light is particles before passing through double slit

Observations (right of Figure 7): (1) D1 still shows the image of the laser source; (2) D2 shows an interference pattern produced by the double slit.

Conclusion: D1 shows the particle nature of the light. Based on Rule, the light passing through BS1 towards the double slit is photons, i.e., before arriving at the double slit, the light is particles.

On the other hand, D1 and D2 show that the Particle pattern and Interference pattern coexist in “the same experiment”.

Definition of “the same experiment”: To study wave-particle duality and complementarity principle, let us define the term, “the same experiment”, as followings: when there is “only one source” emitting light/photons, regardless of the configurations of the experimental apparatus, the experiment is defined as the same experiment.

Experiment-3 (Figure 8): Light is photons before passing through double slit

Experimental setup (top of Figure 8): the light passing through BS1/BS2/BS3 and slide-4 arrives at D4; the light reflected by BS1 arrives at D1; the light reflected by BS2 passes through slide-2 and arrives at D2; the light reflected by BS3 arrives at D3.

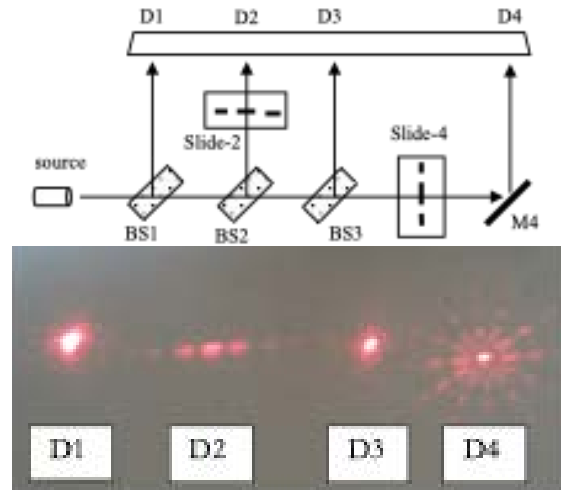


Figure 8. Light is particles before passing through slides of double slit

Observations (bottom of Figure 8): D1 shows the image of the source, which indicates that the light is particle before passing the slide-2 and slide-4; D2 shows the wave distribution; D3 shows the image of the source, which indicates that the light is particle before passing the slide-4; D4 shows the wave distribution of a cross-double-slit.

Conclusion:

Based on Rule, since the light reflected by both BS1 and BS3 behaves as particles, thus, before arriving at slide-2 and slide-4, the light is particles respectively.

Slide-2 and slide-4 convert light’s particle nature (before arriving) to wave distribution (after passing through) respectively. The slides determine the behavior of photons only when the light pass through it, but not the behavior before passing it.

The particle nature and wave distribution coexist in the same experiment.

The wave distribution doesn’t indicate that the light is wave (see Experiment-4 to Experiment-10).

It would be interesting to perform the experiment by emitting photons one at a time.

3.2. Light Is Photons after Passing Through Double Slit

3.2.1. Double Slit Experiment with Photon-Chamber

Experiments with Photon Chamber show the top view of patterns in different Zones.

Experiment-4 (Figure 9 to Figure 12):

Experimental setup (Figure 9): Photon chamber-1, Photon chamber-2 and Photon chamber-3 placed in Zone-1, Zone-2 and Zone-3 respectively. The three photon chambers are 50x50x150 mm.

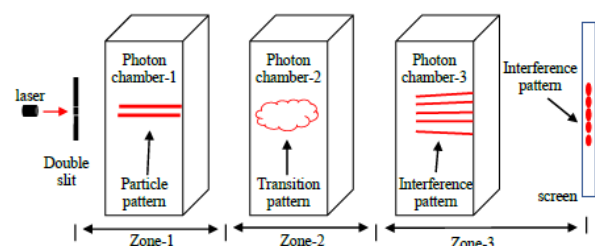


Figure 9. Experimental setup

Let us define Particle pattern, Transition pattern and Interference pattern:

1) Particle pattern (Figure 10): When classical particles going through a double slit, they will form the pattern with the shape of the double slit, referred to it as Particle pattern. A double slit produces the same shape patterns in Zone-1 as two photon tracks in Figure 10. Thus, we define the pattern of two photon tracks as “Particle pattern” that indicates that the light behaves as particles in Zone-1.

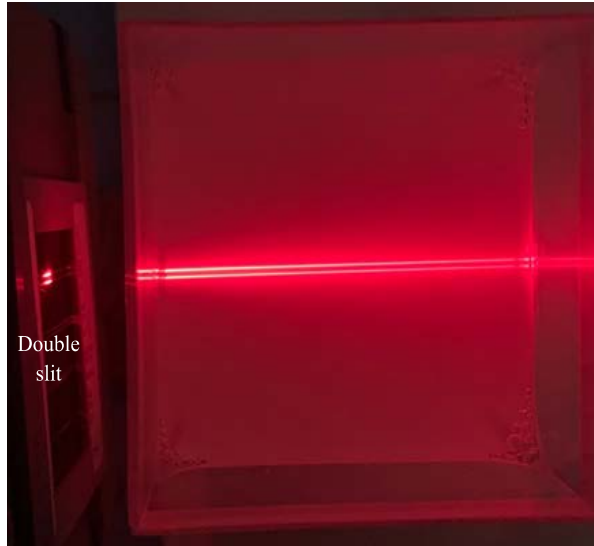


Figure 10. Photon Tracks --- Particle patterns in Zone-1



Figure 11. Transition pattern in Zone-2

2) Transition pattern (Figure 11): Transition patterns are in between the Particle patterns in Zone-1 and the Interference patterns in Zone-3. When Particle patterns gradually evolve to Interference patterns, they are neither Particle pattern nor Interference patterns and thus, the light behaves not as a wave in Zone-2. We call them the “Transition patterns”. The transition pattern is the non-interference pattern.

3) Interference pattern (Figure 12): Figure 12 shows the interference pattern.

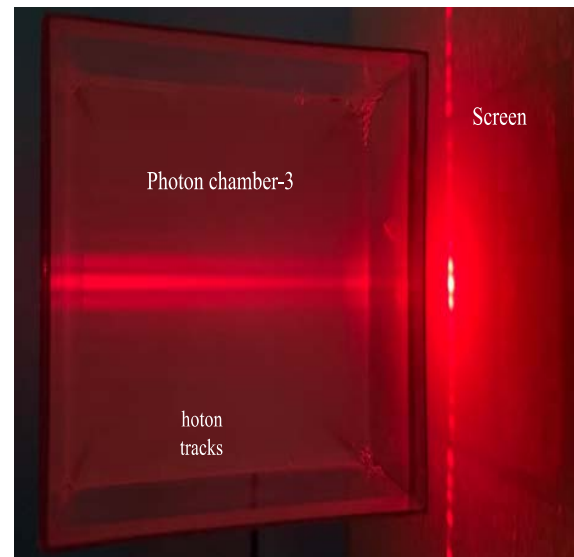


Figure 12. Interference pattern in Zone-3

Observation: Photon chamber-1 shows the top view of the photon tracks distributing as Particle pattern. Photon chamber-2 shows the top view of the photon tracks distributing as Transition pattern. Photon chamber-3 shows the top view of the photon tracks distributing as Interference pattern.

Conclusion: Particle patterns and Transition patterns indicate that the light is not waves after passing through the double slit. Figure 12 shows that the light is photons and it is photons that form the interference pattern. Thus, according to Postulate on light, the light is photons in all four Zones.

To explain “photons distribute as wave” is a challenge.

Note: the boundaries between Zone-1 and Zone-2, and between Zone-2 and Zone-3 are not clear cut. Patterns in one Zone gradually evolve to Patterns in another Zone.

3.2.2. Double Slit Experiment with Shields

Experiment-5 (Figure 13 and Figure 14): Light is photons after passing through double slit: two Shields

Experimental apparatus: Two shields form a narrow channel. The purpose is to test whether the channel would prevent the light from interfering if the light would behave as waves in Zone-3. Shield-1 and Shield-2 are 70 inches long, 1.5 inch wide, and 0.3 mm thick.

Experimental setup (Figure 13): Both Shield-1 and Shield-2 contact the detector.

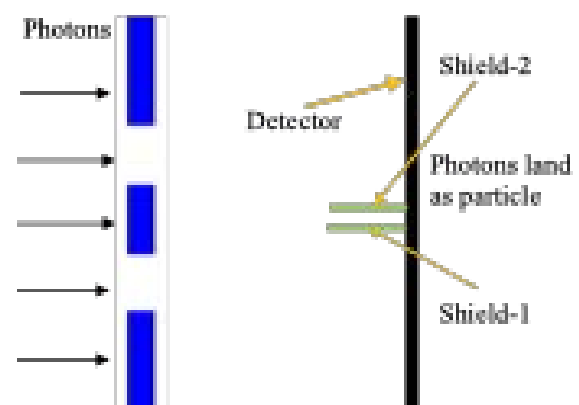


Figure 13. Experimental setup

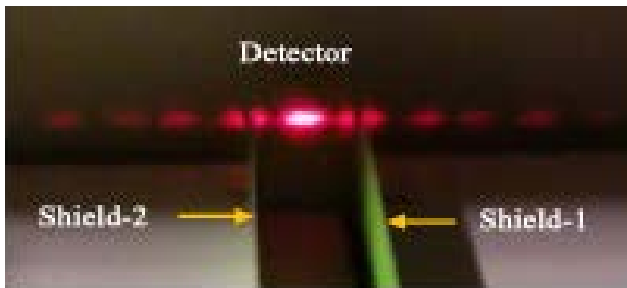


Figure 14. Double slit experiment with two Shields

Observation (Figure 14): We observe the interference pattern that is the same as there were no shield-1 and shield-2. The existence of two parallel Shields has no effect on the “interference” pattern, which indicates that the light is photons that produce the interference pattern on the detector.

Conclusion: Only the light as particles can (1) pass through the narrow channel; (2) strike at the positions of the zeroth-order fringe and two first-order fringes on the detector; (3) form two projections; and (4) do not disturb the existing interference pattern.

3.2.3. Double Slit Experiment with Blockers

Experiment-6: Light is photons after passing through double slit: Blocker.

Experimental Setup (Figure 15): Blocker-11 and blocker-12 are placed along the normal vector of the surface of the detector and separated by 4 inches.

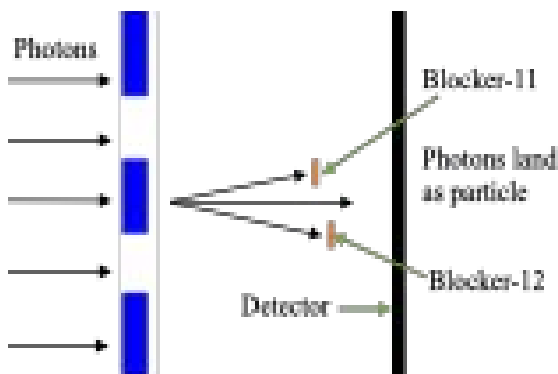


Figure 15. Experimental setup

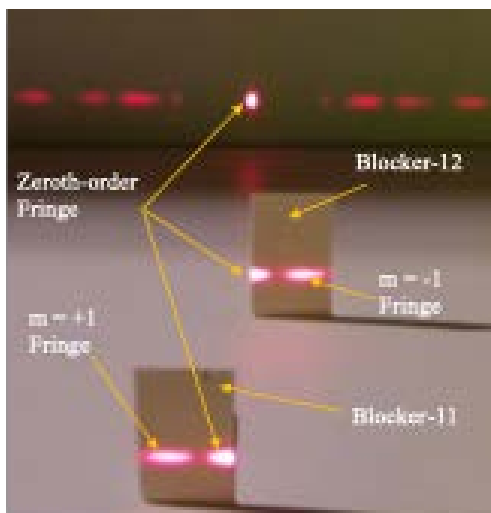


Figure 16. Fringes Formed Independently and Partially

Observation (Figure 16): Two blockers are arranged such that portions of the zeroth-order fringe are formed on the detector, blocker-11 and blocker-12 respectively. Thus, the fringe can be formed partially. The existence of each blocker does not affect the fringes formed on other blockers and on the detector. Namely, fringes are formed independently.

Conclusion: Experiment-6 show that Fringes are formed independently and partially, which would be expected only if the light is particles in Z-3 near the detector. Some of photons form fringes on blockers, while some of photons form partial of the interference pattern on the detector.

Postulate on light is experimentally confirmed.

3.2.4. Double Slit Experiment with Combination of Shields and Blockers

Now let us show the effects of combinations of Shields and Blockers.

Experiment-7: Testing Postulation on nature of light: combination of Shields and Blocker in two setups.

Experimental Setup-1 (Figure 17): One end of the channel of shield-1 and shield-2 contact the detector. Place blocker-1 at the other end of shield-1 and shield-2, where we denote it as Entrance (Figure 18).

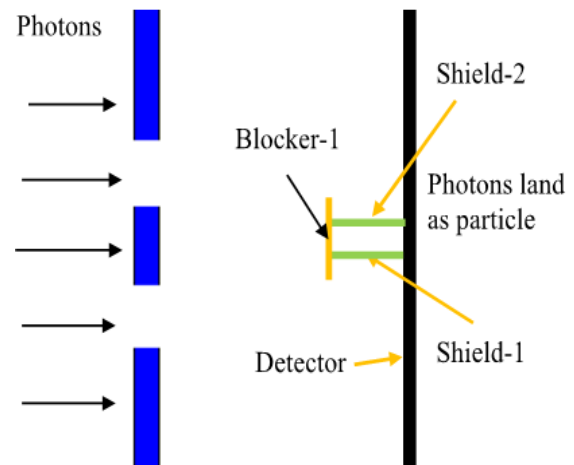


Figure 17. Experimental setup

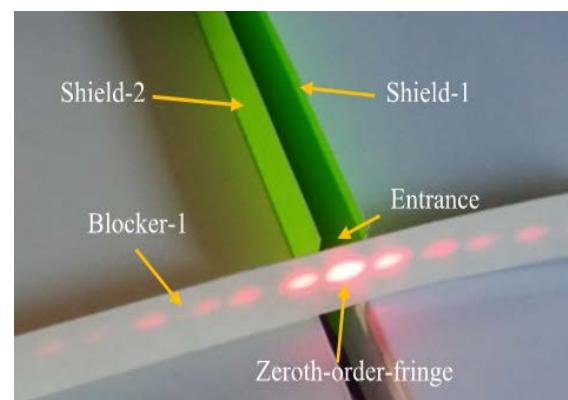


Figure 18. Testing Postulate on light with Shields and Blocker

Observation (Figure 18): The interference pattern is formed on blocker-1 instead of the detector.

Experimental Setup-2: Cutting the top portion of blocker-1.

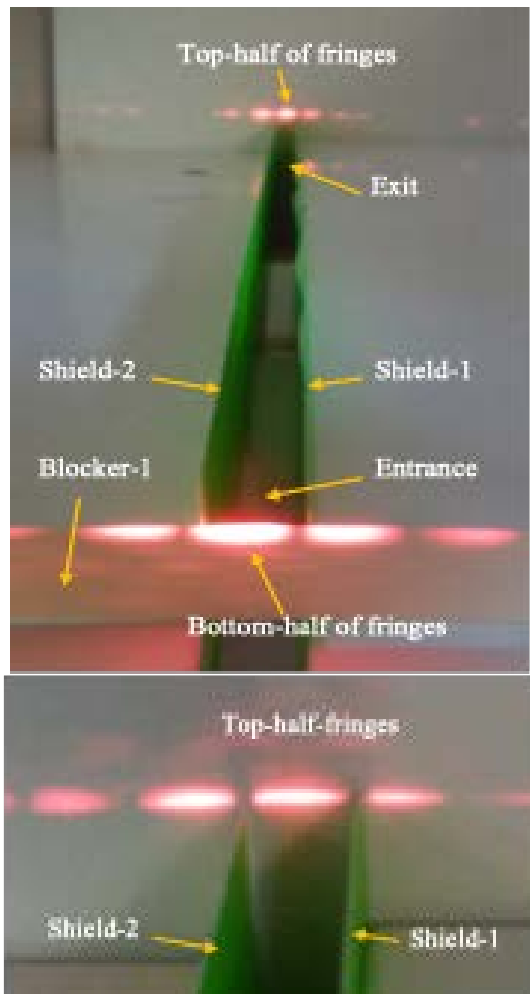


Figure 19. Cut Top Half of Blocker-1

Observation (Figure 19): The bottom half of the fringes still appears on blocker-1 (top of Figure 19), while the top half of the fringes appears on the detector (top of Figure 19 and bottom of Figure 19). Namely each fringe is formed partially. Shields have no effect on the interference pattern at all. This observation indicates that the light is particles.

Experiment-8 (Figure 20 and Figure 21):

Testing Postulate on light with Shields and Blocker. We perform this experiment in two setups.

Experiment Setup-1 (Figure 20): Insert transverse blocker-2 one inch wide into the channel formed by shield-1 and shield-2.

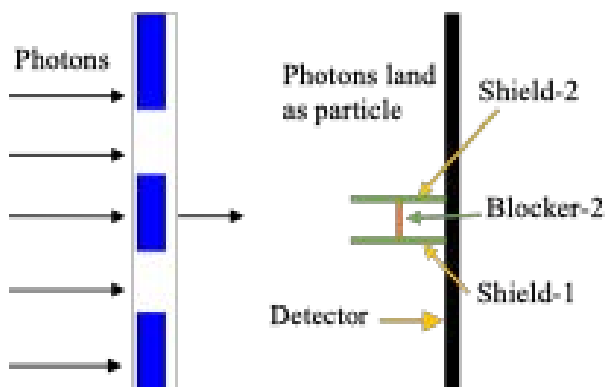


Figure 20. Experimental setup

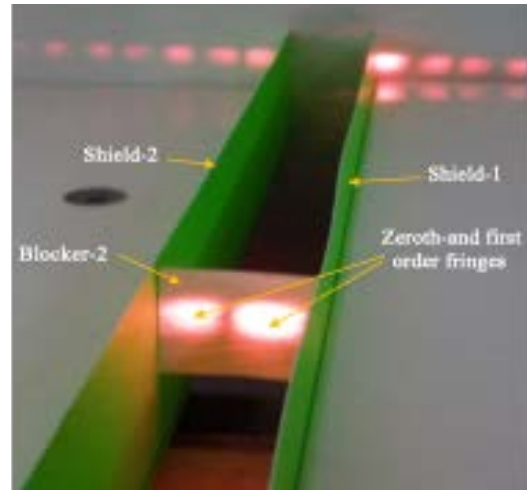


Figure 21. Blocker-2 in Channel

Observation (Figure 21): Two fringes are formed on blocker-2, and the remaining fringes are formed on the detector. Namely, Fringes are formed independently. Two shields have no effect on the interference pattern. This observation indicates that the light is particles.

Experimental Setup-2 (Figure 22): Cut two triangles on blocker-2 at the locations of the zeroth-order fringe and a first-order fringe respectively. Then place blocker-2 into the channel.

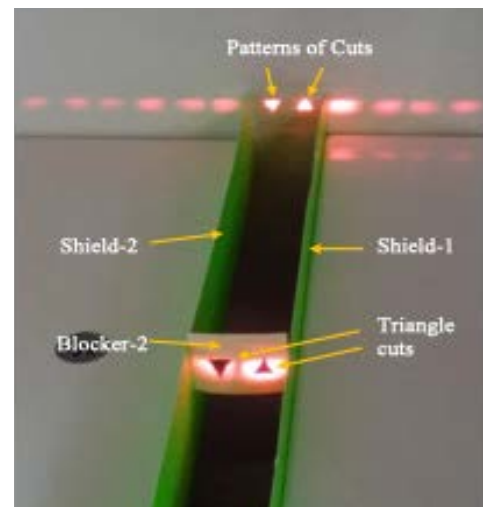


Figure 22. Blocker-2 with Two Cuts

Observation (Figure 22): The light passes through two triangle-shaped cuts and forms exactly the same triangle-shaped patterns on the detector, which shows the particle nature of the light, namely, photons move along straight lines. Note that photons are not directly from the source; they just pass through a double slit and, if we adopt the wave theory, are supposed to behave as waves.

Conclusion: The light is particles.

Postulate on light is confirmed experimentally.

3.2.5. Double Slit Experiment with Conductive Metal

Tube

Experiment-9: Testing Postulate on light and EM theory of light

Experimental setup (Figure 23): In this setup, an Aluminum (AL) rectangular tube of 0.75x1.12x48 inches is used.

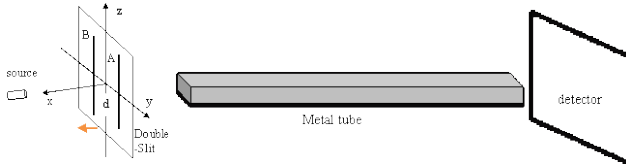


Figure 23. Experimental setup: Aluminum-tube-shield

Observation: Figure 24b shows the interference pattern without AL tube. Figure 24c and 24d show the unaffected interference patterns. Figure 23d also shows the projections of the two side walls of the AL tube.

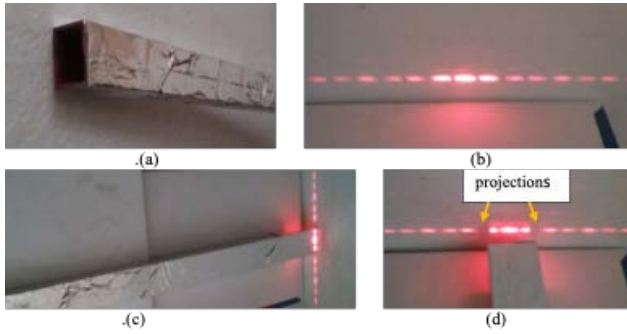


Figure 24. Interference pattern

Conclusion: The conductive metal tube has no effect on the interference pattern, which indicates that the light is not the electromagnetic (EM) waves.

3.2.6. Double Slit Experiment with Lens

Experiment-10: Double slit experiment

To study the nature of the light after passing through the double slit, we utilizing a lens.

Experimental setup: the left of Figure 25 shows the experimental setup.

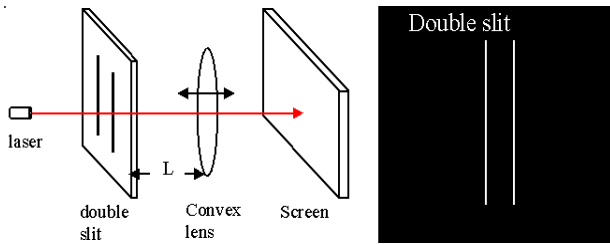


Figure 25. Experimental setup

When placing the lens at different positions L , we have the following patterns that shows: (1) the light is photons after passing through the double slit (from $L = 10$ mm to $L = 600$ mm); (2) the Particle patterns (from $L = 10$ mm to $L = 150$ mm)) gradually evolve to the Interference patterns (at L is equal and larger then 750 mm).

Observation (Figure 26): When $L = 75$ mm, the vertical pattern is the typical image of double-slit, Particle pattern. When $L = 350$ mm, the pattern is the typical Transition patterns. Both the Particle pattern and the Transition patterns are the non-interference patterns and thus, indicate that the light is particles after passing through the double slit. When $L \geq 750$ mm, the patterns are the interference patterns.

Conclusion: according to Postulate on light, the light is photons after passing through the double slit, and photons form the interference pattern.

Note: The Particle patterns gradually evolve to the *orthogonal* interference patterns.

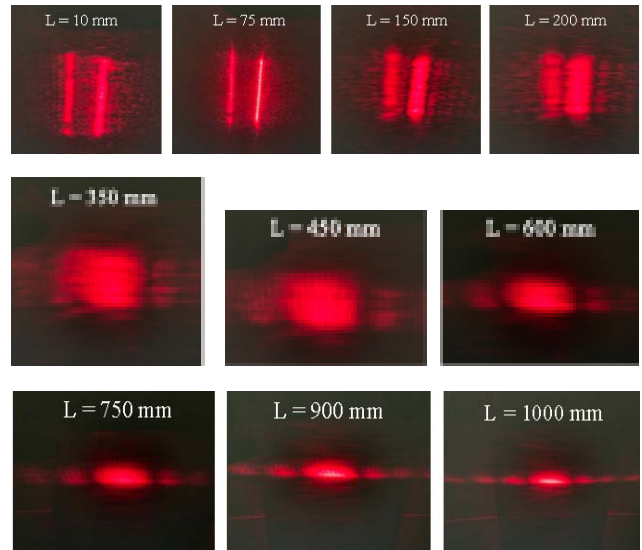


Figure 26. Evolution of patterns of double slit experiment

3.2.7. Discussion on “Collapse of Wave Functions”

In Zone-0, Zone-1, Zone-2 and on the surface of the screen, the light is particles. According to the Postulate on light, the light in Zone-3 is photons as well. And Photons as particles distribute as wave-like pattern in Zone-3 and the detector.

According to the standard concept of the “Collapse of wave functions”, in the area of Zone-3 near the screen, for example, 1 nm (which is “huge” comparing to the “0 dimension of photon”) from the surface of the screen, the light is still waves. Then once the light crosses the distance of 1 nm and lands on the surface of the screen, the wave functions of the light immediately disappeared and the light becomes photons. This process has the name “Collapse of Wave Functions”. To explain the “Collapse of Wave Functions” is a challenge.

According to the Postulate on light, the light is Photons in all Zones of the double slit experiment, there is no need to introduce the “Collapse of Wave Functions”.

4. Discussion and Conclusions

Table 2. Comparison between classical wave theory of light and PhotoWave phenomena of light

Zone	Classical wave theory	PhotoWave phenomena
Zone-0	waves	Particles producing <i>non-wave</i> pattern
Zone-1	waves	Particles producing <i>non-wave</i> pattern
Zone-2	waves	Particles producing <i>non-wave</i> pattern
Zone-3	waves	Particles producing <i>wave</i> pattern
Detector	Particles producing <i>wave</i> pattern	Particles producing <i>wave</i> pattern
Challenge	Collapse of wave function	PhotoWave phenomena

To the best of my knowledge, we show for the first time the PhotoWave phenomena (Table 2). The phenomena of all comprehensive double slit experiments in this article

are consistent. The phenomena of the non-interference patterns evolving to the interference patterns are universal.

The comprehensive double slit experiments show the coexistence of particle nature and wave-distribution of the light, which violate the Bohr's complementarity principle.

To interpret consistently both the comprehensive double slit experiments and the PhotoWave phenomena is a challenge (Table 3). The PhotoWave phenomena affect the understanding of the nature of the light.

Table 3. New theory demanded

Light is particles 1704 Newton (theory) 1887 Hertz (experiment) 1905 Einstein (theory) 2021 Peng (comprehensive double slit experiments: Photowave phenomena)	Electron is particle 1897 Thomson (experiment) 2015 Waldie (experiment) (Electrons producing wave patterns)
Need new theory for describing that particles produce wave patterns	

We show the PhotoWave phenomena for further studying: (1) the optics. (2) the wave-particle duality of

the light. (3) the wave-particle duality of the matter. (4) the EM theory of the light. (5) quantum theory of the light and matter.

References

- [1] "May 1801: Thomas Young and the Nature of Light" www.aps.org/publications/apsnews/200805/physicshistory.cfm
- [2] S. Rashkovskiy, "Is a rational explanation of wave-particle duality possible?" arXiv 1302.6159 [quant-ph], 2013.
- [3] R. Feynman, R. Leighton, and M. Sands, "The Feynman Lectures on Physics" (Addison-Wesley, Reading, 1966), Vol. 3.
- [4] W. Rueckner and J. Peidle, "Young's double-slit experiment with single photons and quantum eraser", Amer. J. Physics 81, 951.
- [5] R. S. Aspden; M. J. Padgett; G. C. Spalding, "Video recording true single-photon double-slit interference", Amer. J. Phys. 84, 671–677.
- [6] Hui Peng, "Comprehensive Double Slit Experiments-Exploring Experimentally Mystery of Double Slit", Research Square, preprint,
- [7] Penrose, R. "Why Quantum Mechanics Is an Inconsistent Theory|Roger Penrose & Jordan Peterson". YouTube. 2022.



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