

Light Speed, Absolute Motion and Quantum Phenomena – Does Nature Have a Foreknowledge of Observer’s Motions and Actions? Scientific Proof of God

A new scientific paradigm

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Abstract

Physicists have endeavored for decades to ‘reconcile’ Einstein’s theory of relativity and quantum mechanics, and have failed. This paper reveals that this ‘reconciliation’ should have occurred in the genesis of the two theories, not after the two theories have been developed *separately* and dogmatized. The two theories developed separately from apparently unrelated problems in the behavior of light, namely: 1. The problem of absolute motion and the speed of light 2. Quantum phenomena. The mainstream view is that these two theories have addressed and solved all the puzzles in physics. However, experimental evidences increasingly challenge and disprove this view. I have been searching for an explanation for each of these apparently unrelated problems, by considering them as separate problems, and have gained crucial insights that have eluded physicists for centuries. However, these insights did not lead to a complete solution of the problems. I was finally able to find the missing link for the quantum puzzles and, profoundly, that turned out to be the missing link for the light speed problem also. The mystery is that nature acts as if it had a foreknowledge of the observer’s motions and actions, which is another way of saying that God exists and directly intervenes in the operation of the universe. In the “Which-Way” and Quantum Experiments, God foresees the experimental set up and, literally, aims each photon accordingly. In the case of light speed experiments, from a foreknowledge of the observer’s motion, God emits a photon from the right point in space and time, with the right velocity of the center of the wave fronts, so that the behavior of light speed in the different experiments and observations is the way it is. One of the long standing puzzles in physics is whether the speed of gravity is finite (light speed) or infinite. Suppose that the Sun disappeared suddenly. Will gravity of the Sun on Earth disappear instantaneously or with the delay of the speed of light? Nature emits zero gravitational field towards the Earth 8.3 minutes before the actual disappearance of the Sun. The zero gravitational field travels at the speed of light and reaches the Earth exactly at the instant the Sun disappears. By apparent violation of causality, nature allows the speed of gravity to be both finite and infinite.

Introduction

Experimental and theoretical investigations made over centuries on the problems of absolute motion and the nature and speed of light have developed into two *separate* theories of modern physics: relativity and quantum mechanics. It is known that the two theories are incompatible.

Generations of physicists have endeavored to ‘reconcile’ Einstein’s theory of relativity and quantum mechanics, and have failed. This paper reveals that this ‘reconciliation’ should have occurred in the genesis of the two theories, not after the two theories have been developed *separately* for decades. If that was done, we would have one ‘reconciled’ correct theory, rather than two wrong theories that need to be ‘reconciled’. The two theories developed separately from apparently unrelated problems in the behavior of light, namely: 1. The problem of absolute motion and the speed of light 2. Quantum phenomena.

The problem of absolute motion and the nature and speed of light is a longstanding one that has existed for centuries in its modern form. Does absolute motion exist? Is light a wave or a particle? Is there a light carrying medium (the ether)? What is the speed of light? What is gravity? What is the speed of gravity? What is the speed of electrostatic fields?

Many optical experiments and observations have been carried out over centuries in an attempt to probe the nature and speed of light. So far the experiments and observations on the speed of light are so contradictory that they have defied all attempts to create a consistent theoretical model. There were two classical theories of light: ether theory and emission theory. Both of these theories have failed to explain experimental results consistently.

The Thomas Young double-slit experiment clearly showed that light is actually a wave phenomenon. However, Bradley’s stellar aberration phenomenon pointed to emission (corpuscular) theory. The Arago and the Airy starlight refraction and aberration experiments were consistent neither with ether theory, nor with emission theory.

The Michelson-Morley experiment was a compelling evidence of emission theory. The Venus planet radar range anomaly, as analyzed and reported by Bryan G Wallace, also agreed with the ballistic hypothesis. On the contrary, the Marinov, the Silvertooth and the CMBR experiments have unambiguously detected our absolute motion in space. The Sagnac effect is also consistent with ether theory. However, the Sagnac effect cannot be cited as evidence of absolute translational motion.

However, the Michelson-Morley experiment and the Miller experiments did not give complete null result, as is often claimed. They always gave small fringe shifts which were much smaller than the expected values. Particularly, the Miller experiments consistently pointed to the same direction in space and, crucially, showed sidereal correlation. Yet, modern Michelson-Morley experiments using optical cavity resonators give complete null results.

Supporters of the theory of relativity often cite the modern Michelson-Morley experiments that give complete null result, but ignore other experiments that have clearly detected absolute motion. This is not in accordance with the scientific method. A theory that claims to be a fundamental way the universe works should address and explain *all* experimental evidences, not just those that conform to it.

The theory of relativity has already been disproved in many ways, both experimentally and logically. The assertion of special relativity that absolute motion doesn't exist has been disproved by the Miller, the Marinov, the Silvertooth, the CMBR and the Roland De Witte experiments. The constancy of the speed of light, as presented by special relativity, has also been disproved by the Venus planet radar range anomaly (Bryan G Wallace). A recent experiment [1] has apparently disproved the light postulate of SRT. The assertion by SRT that no information can travel faster than light has also been disproved by another experiment [2]. Astronomical observations have also found galaxies moving up to nine times the speed of light.

The scientific community has ignored the numerous logical, experimental and observational counter-evidences and pursued Einstein's relativity for more than a century and has now come to a dead end. Today physicists are increasingly being aware that relativistic physics (special relativity, general relativity, black holes, gravitational waves, dark matter, dark energy, . . .) has already stalled. But they have no idea of a replacement theory either. Fringe attempts at alternative theories are mostly centered on modifications of the classical ether theory, Lorentz's ether theory or special relativity. No classical or modern theory of light exists that can consistently explain the numerous contradictory experiments and observations on the speed of light.

Quantum mechanics, the other pillar of modern physics, has also proved to be incapable to explain several quantum phenomena. Some of the puzzles in quantum phenomena are: how can we explain the particle (electron, photon) interference patterns in double-slit experiments? If there is no medium for light waves, what is waving ? What is the origin of Planck's relation, $E = hf$? How can we explain the "Which-Way" and quantum erasure experiments ? How does the source 'know' that the polarizers are there or not, so that it would aim the photons to one or both slits accordingly, so as to form a Gaussian pattern or interference pattern, respectively ? How do two entangled particles, separated by light years, instantaneously 'know' each other's states ?

This paper reveals not only a new theory but also a new scientific paradigm. It unveils a mystery: nature has a foreknowledge of observer's motions and actions, which is another way of saying that God exists and directly intervenes in the operation of the universe to an extent even believers would not expect. I have been working on the two apparently unrelated problems of the speed of light and quantum phenomena, by considering them as separate problems. With this I have

gained crucial insights that eluded physicists for centuries, for both problems. However, these insights have helped me make significant progresses but did not lead to complete solution of the problems.

I have formulated a new theory called Apparent Source Theory (AST) [3] [4][5] that can consistently explain the Michelson-Morley experiment. However, some problems, particularly the phenomenon of stellar aberration, remained a challenge to AST.

I also gained a crucial insight regarding the quantum puzzles. The new insight is that elementary particles such as photons and electrons have internal structures and dynamics that have been unknown to physics so far. Wave-particle duality is well known in physics, but modern physics does not provide any insight regarding the mechanism allowing this duality. The new theory explains this mechanism. However, some quantum phenomenon, particularly the “Which Way” and quantum erasure experiments, remained a great challenge to me.

Eventually, I was able to find the missing link for the quantum puzzle and, profoundly, this also turned out to be the missing link for the light speed paradox! This has enabled the first true unification of light speed and quantum phenomena, a goal scientists have been pursuing for decades. The existence of God and His direct intervention in the operation of the universe has been proved in this paper from two independent and apparently unrelated phenomena: 1. light speed and absolute motion 2. quantum phenomena.

Physicists have worked for decades to reconcile (unify) relativity and quantum mechanics, and have failed. For decades, physicists have been searching for a unifying idea that does not exist. The problem turns out to be that they have been trying to unify two separately and independently developed theories. Physicists should learn from nature. Physics needs to be seen as development of a living organism, for example humans, where unification of the different parts of our body starts at the level of a single cell. Physicists should search for unification of relativity and quantum mechanics in the genesis of the two theories, not in fully developed and dogmatized theories.

The two theories are already known to have many defects, which should have been an opportunity for unification. The physics establishment has been suppressing experimental evidences against relativity, and wants to unify physics at the same time. There are also well known quantum phenomena that are beyond quantum mechanics and other quantum theories. The most logical way towards unification would have been to work on these defects.

The problem is that relativity and quantum mechanics have been hailed as ‘the way the universe works at the most fundamental level’, ‘the most accurate theory in the history of science’, and so on. So physicists want to have relativity, quantum mechanics and their ‘unified’ version at the same time. It should be realized that unification in physics will never occur without destroying much of modern physics, as this paper shows.

Physicists should have been more humble. If that was the case, they would have been willing to consider the foundations of each theory, which might have given them the chance to search for unification in the genesis of the two theories, and work on the defects of the theories.

In this paper, I will introduce a new interpretation of Apparent Source Theory (AST), a new theory I have already presented extensively in my previous papers [3][4][5]. In these papers light speed experiments have been analyzed extensively according to Apparent Source Theory. However, as I mentioned above, I realized that one phenomenon, Bradley’s stellar aberration, remained a challenge to AST. It was a solution that I found for the quantum mysteries that also turned out to solve the problem of stellar aberration according to AST and to give a new interpretation of AST itself.

Apparent Source Theory

One of the questions that have puzzled physicists for centuries is why experiments such as the Michelson-Morley experiments gave null results? This paper reveals this centuries old mystery.

Let us first consider a light source S and observer O, as shown below. The observer is at point P, which is at a distance D from the source.

At first assume that the observer is at rest, i.e. $V_{\text{abs}} = 0$. In our discussions, we assume a stationary source to avoid any confusions. By ‘stationary’ I always mean ‘at absolute rest’.



Therefore, a light pulse emitted by S will be detected by observer O after a time delay of:

$$T = \frac{D}{c}$$

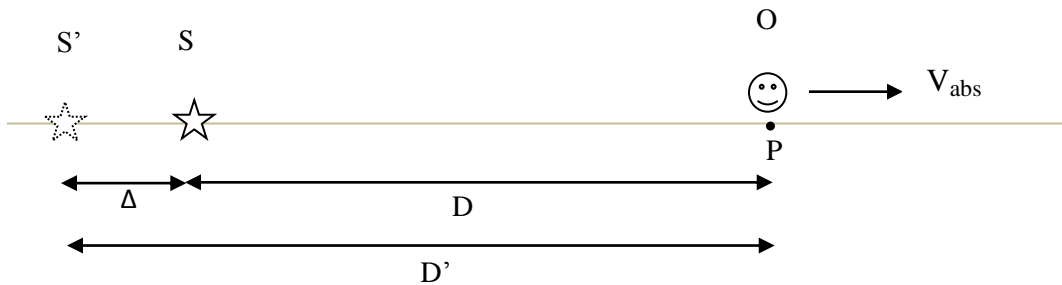
The great puzzle of the speed of light arises when we consider a moving observer. The new theory is formulated as follows. It reveals the extremely subtle nature of the speed of light.

The logical way is to start the analysis by assuming that the source emitted a light pulse at time $t = 0$, and then go on to determine the time of detection of light by each observer.

Conventionally, and logically, the point in space and the instant of time the light pulse was emitted by the source is the same for all observers, regardless of their positions and velocities.

The behavior of light has defied all logic and it turns out that we should start our analysis by assuming that the observer detected light at time $t = 0$, and then go on to determine the point in space and the time instant light was emitted in the past, for each observer. We will see that the time in the past when light was emitted is different for two observers with different absolute velocities, even if both observers detected light at point P.

Suppose that an observer detects a light pulse at distance D from the source, while moving with absolute velocity V_{abs} directly away from the source, at time $t = 0$, as shown below.



Our task is to determine the point in space and the instant of time the light was emitted by the source in the past.

For now we postulate that the light pulse was emitted from point S' , and not from actual source position S , where S' is at distance D' from point P . Therefore, the time delay of light will be:

$$T = \frac{D'}{c}$$

where

$$D' = D \frac{c}{c - V_{abs}}$$

We have just postulated the above because that is the way light is known to behave in various experiments. Therefore, the time delay of the light pulse will be:

$$T = \frac{D'}{c} = \frac{D \frac{c}{c - V_{abs}}}{c} = \frac{D}{c - V_{abs}}$$

Conventionally, and logically, the light was emitted at a time instant $t = D/c$ before detection at point P. However, this is correct only for an observer at rest at point P, and turns out to be wrong for all absolutely moving observers who detect the light pulse at point P.

Therefore, for an observer who is moving with absolute velocity V_{abs} and is just detecting the light pulse, the light was emitted in the past T seconds before the instant of detection, where:

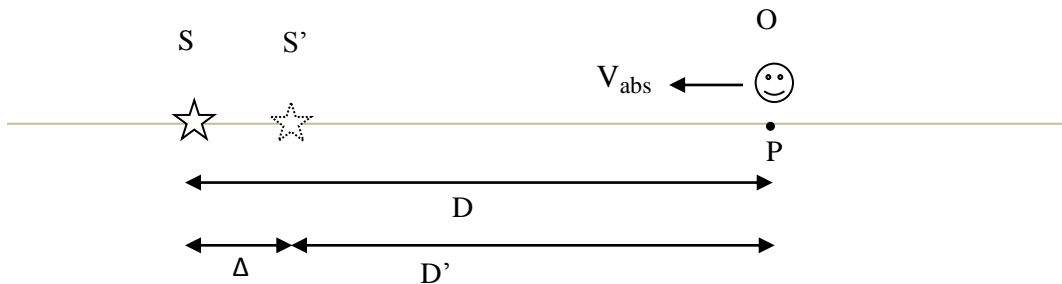
$$T = \frac{D'}{c} = \frac{D \frac{c}{c - V_{abs}}}{c} = \frac{D}{c - V_{abs}}$$

and not at time $T = D/c$ before detection.

Therefore, for the absolutely moving observer, the light was emitted from a distance D' and at time $T = D'/c = D / (c - V_{abs})$ in the past. Absolute motion of an observer creates an apparent (or real ?) change in the point in space and time light was emitted in the past. Whether this is real or apparent change will be clarified after we unveil the profound implication shortly.

Both observers, the observer at absolute rest and the observer in absolute motion will detect the light at point P at time $t = 0$, but for the stationary observer the light was emitted at time $t = D/c$ before this time, whereas it was emitted at time $t = D'/c$ before this time for the moving observer.

Next we will consider the case of an observer detecting the light pulse at point P while moving with absolute velocity V_{abs} directly towards the light source. Again assume that the light source emits a short light pulse.



Again we start by assuming that an observer detects the light pulse at point P at time $t = 0$, while moving with absolute velocity V_{abs} directly towards the source. Our task is to find the point in space and the point in time when the light pulse was emitted *for this observer*.

We postulate that the light was emitted from point S' , not from the actual position of the source which is S, which is at distance D' from point P. Therefore, for this observer, the light pulse was emitted at time:

$$T = \frac{D'}{c}$$

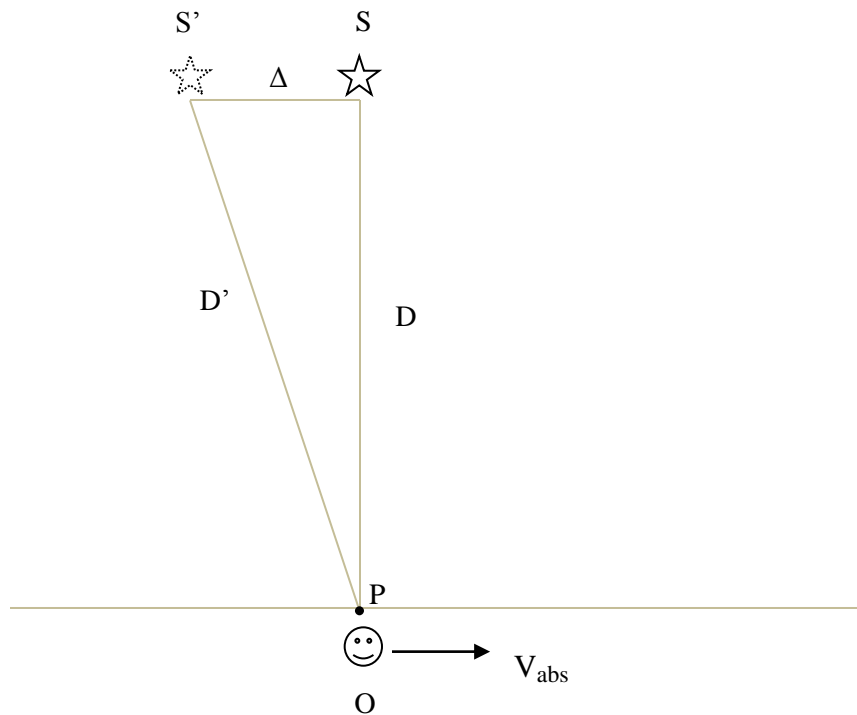
in the past before the moment of detection, where

$$D' = D \frac{c}{c + V_{abs}}$$

Therefore,

$$T = \frac{D'}{c} = \frac{D \frac{c}{c + V_{abs}}}{c} = \frac{D}{c + V_{abs}}$$

Next we will consider the case where the line connecting the light source and the observer is orthogonal to the observer's absolute velocity.



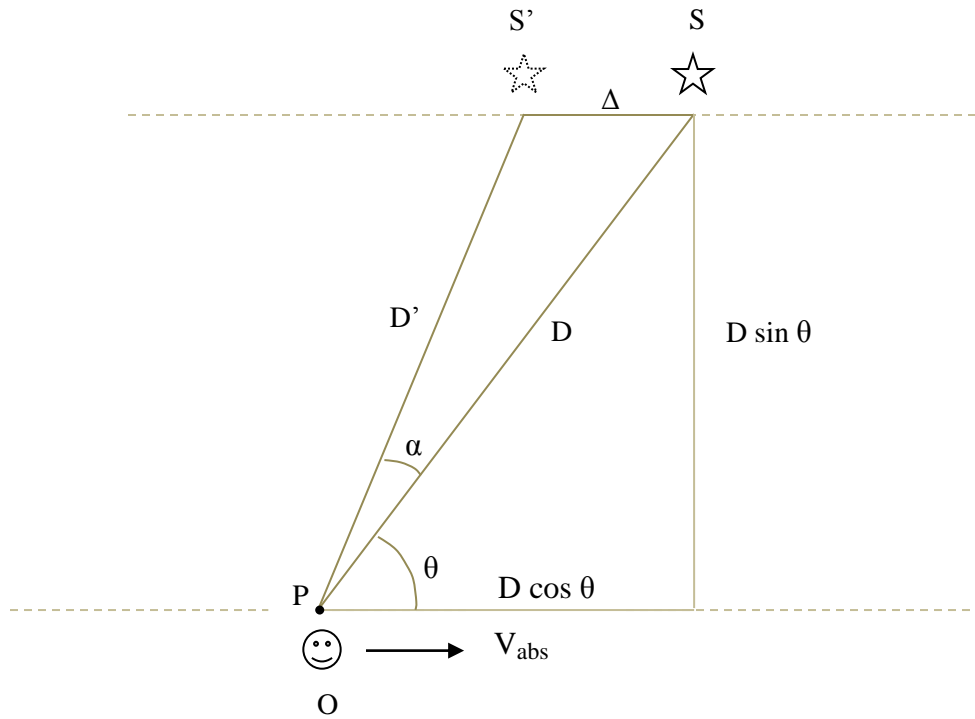
In this case, we postulate that:

$$D' = D \frac{c}{\sqrt{c^2 - V_{abs}^2}}$$

Therefore,

$$T = \frac{D'}{c} = \frac{D \frac{c}{\sqrt{c^2 - V_{abs}^2}}}{c} = \frac{D}{\sqrt{c^2 - V_{abs}^2}}$$

Consider the general case in which the observer is detecting the light at an arbitrary point relative to the source, as shown below.



To determine the point in space where light is emitted for the observer, we proceed as follows. Note that these equations have been developed in previous papers and we are giving a new interpretation in this paper.

Therefore,

$$\frac{D'}{c} = \frac{\Delta}{V_{abs}}$$

where

$$\Delta = D \cos \theta - \sqrt{D'^2 - D^2 \sin^2 \theta}$$

From the above two equations,

$$D'^2 \left(1 - \frac{V_{abs}^2}{c^2}\right) + \frac{2DV_{abs}}{c} \cos \theta D' - D^2 = 0$$

which is a quadratic equation from which D' can be determined, which in turn enables the determination of Δ and α .

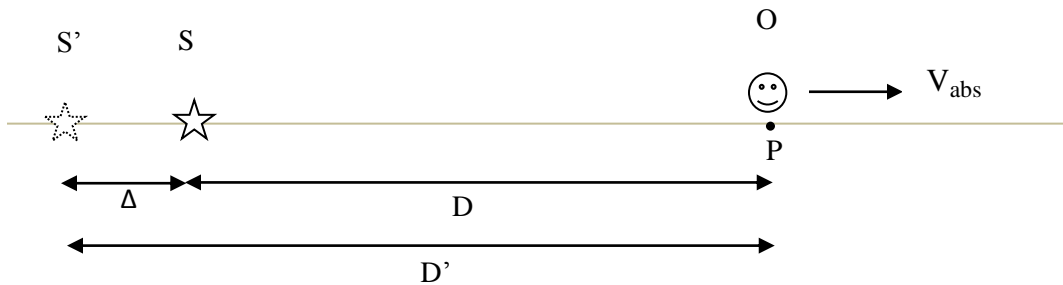
We should note the extremely subtle behavior of light that, for a given distance D from the source, the time in the past when the light was emitted depends on the absolute velocity of the observer!

Does nature have a foreknowledge of observer's motion ? Scientific evidence of God.

What does our conclusion imply? It points to a mind boggling idea that nature has a foreknowledge of observer's motion. Consider again the case of an observer detecting the light pulse at point P while moving with absolute velocity V_{abs} directly away from the source, as shown below.

As we have already stated, for this observer, light was emitted from a point that is at a distance D' from the point of detection, T seconds before instant of detection, where:

$$T = \frac{D'}{c} = \frac{D \frac{c}{c - V_{abs}}}{c} = \frac{D}{c - V_{abs}}$$



For an observer at rest at point P who is detecting the light pulse, the light was emitted at T seconds before detection, where:

$$T = \frac{D}{c}$$

This one is the time instant the light pulse was ‘actually’ emitted, as understood conventionally, and logically, according to the principle of causality. This is the instant light is logically thought to have been emitted. However, we note that for the moving observer light was emitted before it was ‘actually’ emitted because T for the moving observer is greater than T for the stationary observer.

Suppose that light was ‘actually’ emitted T seconds before it was detected by the stationary observer. Therefore, for the moving observer, light was emitted earlier than it was actually emitted. It is as if nature had a foreknowledge of the observer’s motion and emitted light before it was ‘actually’ emitted.

The trick of nature is that, the light is not emitted from the actual position of the source, but from a point S' , which is at a distance D' away from the observer. Light is emitted from distance D' , with the center of the wave fronts moving with the same velocity as the absolute velocity of the observer. The light is actually emitted from an apparent source S' , which is moving with velocity V_{abs} to the right. The speed of light is constant c relative to this apparent source S' . Since both the observer and the apparent source S' , which is at the center of the wave fronts, are moving with the same velocity, the speed of light is constant c relative to the observer. The apparent source S' will always have the same velocity as the absolute velocity of the observer, so the speed of light relative to the observer will always be constant c regardless of the observer’s absolute velocity.

Therefore, the effect of absolute motion of an observer is just to change the point in space where light was emitted, and the point in time in the past when light was emitted. This means that the velocity of light relative to the observer will not change because of observer’s absolute motion; it is always constant c .

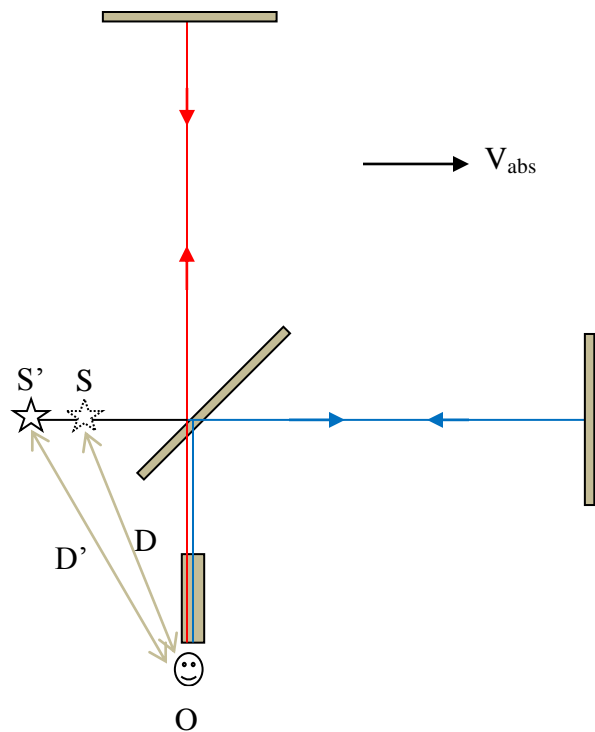
The Michelson-Morley experiment

This theoretical model (Apparent Source Theory) reveals the mystery of why the Michelson-Morley experiment failed to detect absolute motion.

We formulate Apparent Source Theory as follows.

The effect of absolute motion of an observer is to create a change in the point in time and space when and where light was emitted in the past relative to the observer. Light is emitted from an apparent point of emission, at an apparent time in the past, with the velocity of the center of the wave fronts equal to the instantaneous absolute velocity of the observer at the instant of light detection.

With this theory, we can gain an intuitive understanding of why the Michelson-Morley experiment gives null result.

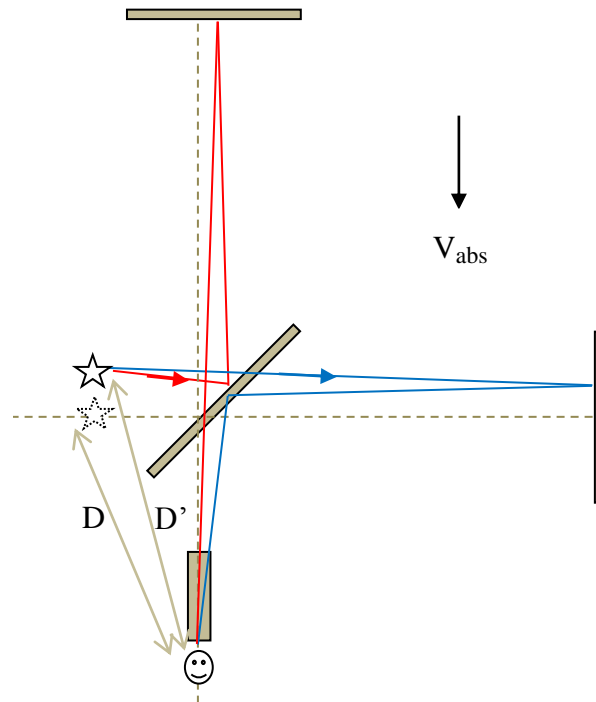


As we can see from the above diagram, absolute motion of the Michelson-Morley interferometer causes only an apparent change in the point of light emission relative to the observer. The velocity of light is always constant c relative to the observer, regardless of the absolute velocity of the interferometer, because the center of the wave fronts moves with the same velocity as the absolute velocity of the observer at the instant of light detection.

The best way to clarify this is to ask: will changing the position of the source from S to S' cause any fringe shift? Obviously, the answer is NO, because both the longitudinal and transverse waves will be delayed by the same amount and hence no fringe shift will occur.

Note again that the velocity of the center of the light wave fronts as 'seen' by an 'observer' at absolute rest moves with the same velocity as the absolute velocity V_{abs} of the observer at the instant of light detection. This would make the velocity of light relative to the stationary observer different from c . However, this velocity is only an illusion because the real observer is the one who is actually detecting the light, which is the observer looking through the detector (telescope) of the Michelson-Morley experiment in this case. This is what makes the behavior of light extremely elusive. The velocity of light *detected* by any observer, including the stationary observer, is also always constant c . Therefore, according to AST, when we say the velocity of light is constant relative to the observer, we are referring to the observer as the detector or absorber of the photons. The origin of all the confusion caused in physics so far is the fallacy of trying to make the speed of light constant relative to some third 'observer' (reference frame) who is not actually detecting the light.

What about the small fringe shifts observed in the Miller experiments ? For absolute velocities parallel to the longitudinal axis of the interferometer, the fringe shift caused by absolute motion is completely null. However, fringe shifts can occur for absolute velocities not parallel to the longitudinal axis. For example, for absolute velocity perpendicular to the longitudinal axis and directed downwards, the scenario is as follows.

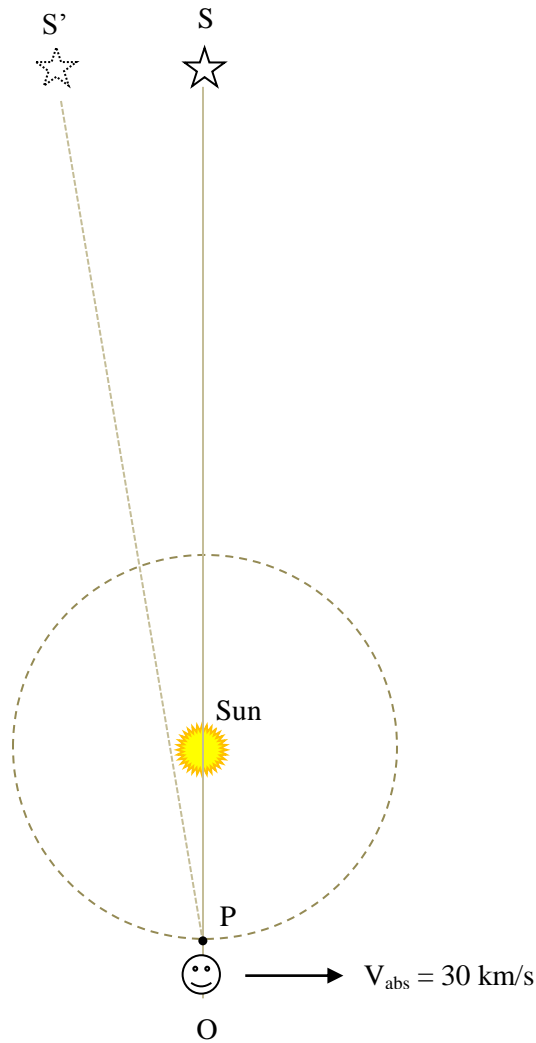


The path lengths of the longitudinal (blue) and the transverse (red) light beams are changed slightly *differently* by the absolute motion, and hence causing small fringe shifts.

Stellar aberration – scientific proof of God

Apparent Source Theory (AST) successfully explains the Michelson-Morley experiment, the Marinov experiment, the Silvertooth experiment, the Venus planet radar range anomaly, moving source, moving observer and moving mirror experiments and the Sagnac effect.

However, the phenomenon of stellar aberration remained a challenge for AST. Stellar aberration apparently contradicted AST. The solution to this puzzle finally came from the solution to the quantum puzzle. The mystery behind the problem of the speed of light and the quantum puzzle turned out to be the same. The contradiction between AST and stellar aberration turned out to be because of incomplete understanding of AST.



One of the profound mysteries revealed by Apparent Source Theory is that the apparent change in direction of a star is NOT in the same direction as the velocity of the observer, which is the universal, unquestioned view. The apparent change in the direction/position of the star is not NOT forward, but backward !

Suppose that S is a star one million light years away. The analysis of stellar aberration is the same as discussed already. Suppose that an observer at rest at point P detects the light (imagine that the Earth stopped moving around the Sun for a moment at point P) from the star. In this case, he/she needs to point his/her telescope directly towards the actual/physical position/direction of the star which is S.

Now let us look at a puzzle. Imagine that a photon is approaching point P just before the observer accelerates instantaneously from rest to 30km/s . Assume that the observer observed the

photon just after he attained a velocity of 30 km/s. Now, according to Apparent Source Theory, the direction of the starlight will also change instantaneously from S to S'.

In this case the observer needs to point his/her telescope towards S', as if the photon came from S' along the path S'P. Let us assume that the observer *actually detected* the photon by pointing his/her telescope in the direction of S'. But we have already assumed that the observer was at rest just before he started accelerating, so, logically, the photon he was to observe if he stayed at rest had already come along the path SP. Did motion of the observer have an effect of going back in time and changing the path of the photon ? The answer is NO.

The solution that has eluded physics for centuries is as follows. That particular photon was not emitted from position S in the first place, and did not come along line SP. It was emitted from point S' one million years ago. One million years ago, God foresaw that an observer at rest at point P would start accelerating instantaneously from rest to 30 km/s, so God sent that photon from S' to be detected by the moving observer.

Imagine the observer accelerated from rest to 30km/s at point instantaneously to see if he can fool nature. But God has a foreknowledge of the motions of the observer at every instant of time in the future, so it is impossible to fool nature.

This is perhaps the most profound discovery in the history of science. For the first time, the existence of God is proved unambiguously by science. Actually, as I have mentioned already, it was solving the quantum puzzle that has led to solving of the light speed puzzle. The mystery turned out to be the same for both puzzles: the foreknowledge of God and the direct intervention of God in the operation of the universe to an extent even believers would not have imagined.

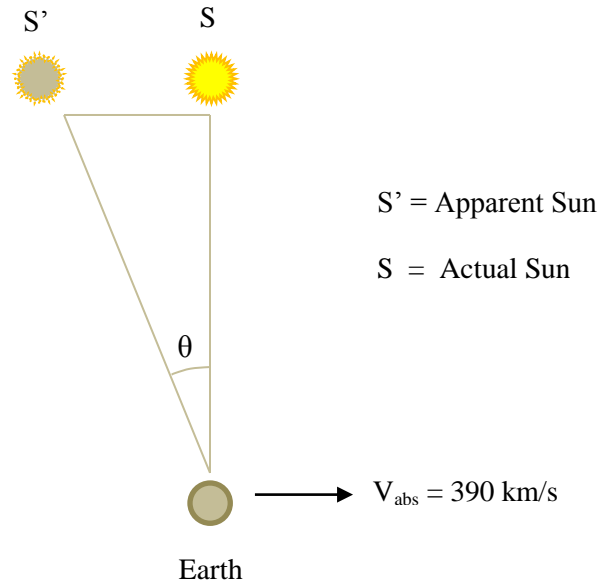
The speed of gravity – scientific proof of God

One of the longstanding enigmas in physics is the problem of the speed of gravity. The mainstream view is that the speed of gravity is equal to the speed of light. However, experts [6] have argued that finite speed of gravity would result in instability of planetary systems, implying that the speed of gravity must be infinite. Newton's law of gravitation also implies infinite speed of gravity.

However, a different line of reasoning (Apparent Source Theory) [3][4][5] has shown that, based on astronomical observations[6], gravity acts as if it had dual nature: light speed and infinite speed.

The argument for the dual nature of the speed of gravity is as follows.

We know that the Solar System is moving in space with a velocity of about 390 km/s, toward constellation Leo, as measured independently by the Silvertooth experiment and the NASA CMBR anisotropy experiment. The absolute velocity vector is almost in the plane of the Solar System.



Let us consider the case when the line connecting the Sun and the Earth is orthogonal to the absolute velocity vector. According to Apparent Source Theory, although the Sun is actually/physically at point S, Sun light actually comes from S'. The angle θ is given by:

$$\sin \theta \cong \theta \cong \frac{V_{abs}}{c} = \frac{390 \frac{\text{km}}{\text{s}}}{300,000 \frac{\text{km}}{\text{s}}} = \frac{390}{300,000} \text{ radians}$$

To convert this to arc seconds:

$$1 \text{ arc second} = \frac{1}{3600} \text{ degrees}$$

Since

$$2\pi \text{ radians} = 360 \text{ degrees}$$

we get

$$1 \text{ arc second} = \frac{2\pi}{360 * 3600} \text{ radians}$$

From which

$$\theta = \frac{390 * 360 * 3600}{2\pi * 300,000} \text{ arc seconds} = 268 \text{ arc seconds}$$

Therefore, sun light comes from a direction of 268 arc seconds behind the actual position/direction of the Sun.

Now, astronomical observations [6] indicate that the direction of sunlight and the direction of Sun's gravity on Earth almost coincide when observed from Earth, except for a difference of 20 arc seconds. If the speed of gravity was infinite then, according to the above analysis, the direction of sunlight would have differed from the direction of Sun's gravity by about 268 arc seconds. This shows that the speed of gravity is equal to the speed of light. However, as mentioned above, this simplistic, conventional interpretation of finite speed of gravity would result in instability of planetary orbits. Thus, we conclude that the speed of gravity is both finite (light speed) and infinite, at the same time.

This is a great puzzle. How can something have both finite and infinite speeds at the same time ?

The new explanation is as follows. We will give the explanation in terms of the usual formulation of the problem of the speed of gravity which is as follows. Suppose that the Sun disappears suddenly. The question is: will Sun's gravity on Earth disappear instantaneously or with a delay of the speed of light ? The answer is both. The new theory is that God has a foreknowledge that the Sun will disappear. So, 8.3 minutes before its actual disappearance, nature makes the Sun emit zero gravitational field toward the Earth. This signal travels at the speed of light and reaches the Earth after 8.3 minutes. Thus the zero gravitational field reaches the Earth at the same instant the Sun disappears, as if gravitational effect travelled instantaneously. Thus by violation of causality, nature allows dual nature of the speed of gravity.

What is gravity ?

We have reached the conclusion that the speed of gravity has dual nature: finite (light speed) and infinite. But why is the speed of gravity exactly equal to the speed of light? I mean why not any other finite value? If gravity is a force fundamentally different from the other physical forces of nature, as has been believed for centuries, why is its speed equal to the speed of light?

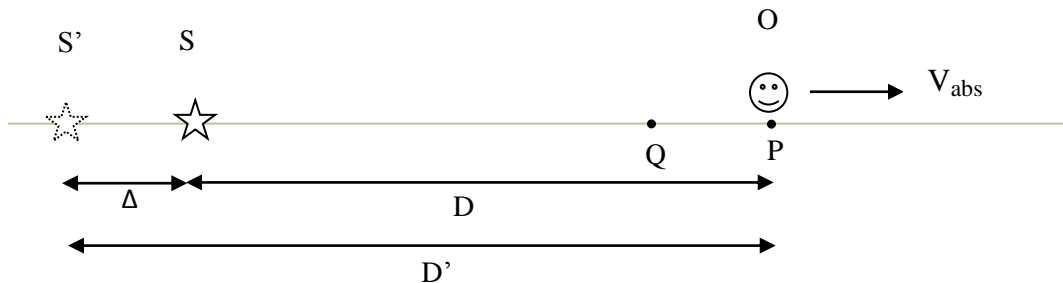
This line of reasoning led me to think that gravity is actually an electromagnetic phenomenon. Then the question followed: but how can we explain gravity as an electromagnetic phenomenon ? Once I realized that gravity must have electrostatic origin, it did not take me long to figure out that gravity can be explained as a result of a slight difference between electrostatic attractive and repulsive forces. Later on, I realized that Michael Faraday had proposed this idea already more than a century ago.

Constancy of the speed of light – scientific proof of God

The speed of light has been puzzling physicists for decades. Mainstream physicists believe that there is no more puzzle because the paradox has been solved one hundred years ago by the special theory of relativity. They cite the Michelson-Morley experiment null result as one of the experimental evidences. However, the speed of light has also been shown to be apparently variable in other experiments, such as in the Silvertooth experiment, the Marinov experiment, and the Miller experiments. So far, crucially, no one has recognized this contradiction. Everyone working on the light speed problem looks at these experiments in light of the theories they support. Relativists deny that absolute motion effects have been observed in some experiments and ether supporters deny the ‘null’ result in the Michelson-Morley experiment and refuse to abandon the ether.

This paper accepts the paradoxical nature of the speed of light in the different experiments and provides a new explanation that resolves this contradiction.

Imagine a stationary light source S and an observer O moving inertially with absolute velocity V_{abs} away from the source, as shown below. The light source emits a short light pulse at some time instant $t = \tau$. Suppose that the moving observer was at point Q at the instant of light emission and detects the light at point P .



The elusive nature of light is that it appears as if the speed of light is $c - V_{abs}$, and hence variable, relative to observer O . However, fundamentally, the speed of light is constant relative to observer O , regardless of his/her absolute velocity. How can this be explained?

According to Apparent Source Theory (AST), for moving observer O :

1. Light was emitted not from point S but from point S'
2. The center of the wave fronts moves with the same velocity as the absolute velocity of the observer (in this case, with velocity V_{abs} to the right)
3. The light was not emitted at time instant $t = \tau$, but *earlier* than this.

To clarify this, consider another observer A (not shown in the figure) who is at rest at point P. We start by assuming that both moving observer O and stationary observer A detect the light pulse at point P simultaneously, at time $t = 0$. Obviously, for observer A light was emitted from point S, at time instant $t = \tau$. However, for moving observer O light was emitted from point S', at a time instant earlier than $t = \tau$. Note that τ is negative since we have assumed $t = 0$ as the instant of light detection at point P.

Therefore, for stationary observer A the time *interval* of light between emission and detection will be:

$$T = \frac{D}{c}$$

Therefore, the time *instant* of light emission for observer A is:

$$t = \tau = -\frac{D}{c}$$

For moving observer O, the time interval between emission and detection of light will be:

$$T = \frac{D'}{c}, \quad \text{where} \quad D' = D \frac{c}{c - V_{abs}}$$

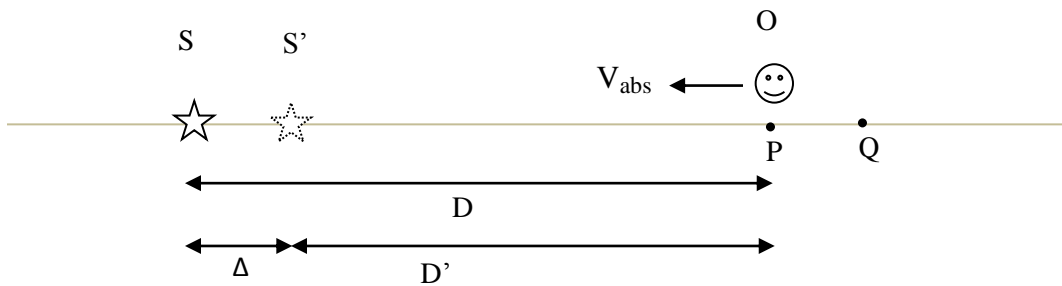
Therefore,

$$T = \frac{D'}{c} = \frac{D \frac{c}{c - V_{abs}}}{c} = \frac{D}{c - V_{abs}}$$

Therefore, the time *instant* of light emission for observer O is:

$$t = -\frac{D}{c - V_{abs}}$$

Now consider the case in which the observer is moving towards the light source, as shown below.



Assume that the source emits a short light pulse at some time instant $t = \tau$. At the instant of light emission, the inertial observer O, moving with absolute velocity V_{abs} towards the light source, was at point Q. Suppose that observer O detects the light pulse at point P. Also assume a stationary observer A is at point P. Suppose that observers O and A detect the light pulse at point P, at time instant $t = 0$.

According to Apparent Source Theory (AST), for moving observer O :

1. Light was emitted not from point S but from point S'
2. The center of the wave fronts moves with the same velocity as the absolute velocity of the observer
3. The light was not emitted at time instant $t = \tau$, but *later* than this.

Therefore, in the same way as before, for stationary observer A the time *interval* of light between emission and detection will be:

$$T = \frac{D}{c}$$

Therefore, the time *instant* of light emission for observer A is:

$$t = \tau = -\frac{D}{c}$$

For moving observer O, the time interval between emission and detection of light will be:

$$T = \frac{D'}{c}$$

where

$$D' = D \frac{c}{c + V_{abs}}$$

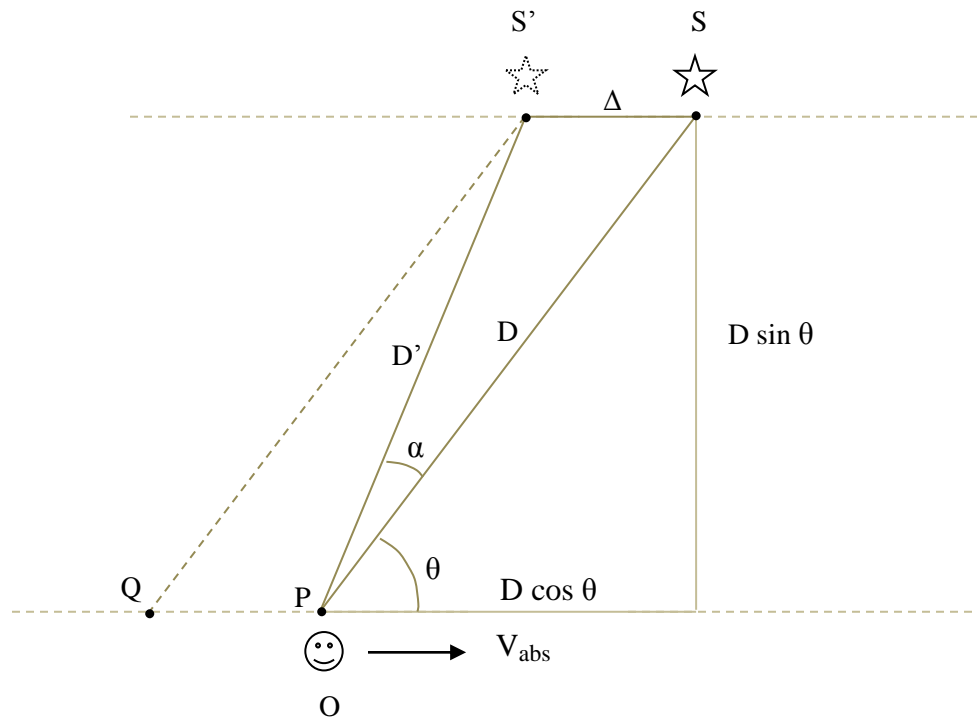
Therefore,

$$T = \frac{D'}{c} = \frac{D \frac{c}{c + V_{abs}}}{c} = \frac{D}{c + V_{abs}}$$

Therefore, the time *instant* of light emission for observer O is:

$$t = -\frac{D}{c + V_{abs}}$$

Next we will see a more general case in which the observer detects light at an arbitrary point relative to the light source, as shown below.



Suppose that the light source emits a short light pulse from point S, at a time instant $t = \tau$. Suppose that the inertial observer O was at point Q at the instant of light emission. Assume that the observer detects the light at point P.

According to Apparent Source Theory, for observer O light was emitted from S' , at a time instant *later* than τ . The distance D' and angle α are determined according to the equations on page 10.

In the above analyses, we have seen that for a moving observer light is emitted from a point in space different from the actual/physical point of light emission and at a time instant different from the actual, conventional time of emission that the speed of light is always constant relative to a moving observer. The speed of light is constant and absolute motion exists at the same time. This duality is a direct evidence of an intelligent, supernatural being, God.

Suppose that the source emits a light pulse. Suppose that observer O, instead of moving, stays stationary at point P, but instantaneously accelerates from rest to V_{abs} just before the light pulse arrives at point P. Observer O detects the light at point P (or in the vicinity of point P). Obviously, the light pulse was approaching point P with light speed c , along the line SP, when observer O was at rest at point P. The puzzle is, how can the speed of the light pulse still be equal to c after the observer has accelerated to V_{abs} ? Apparent Source Theory solves this riddle as follows. God had foreknowledge that observer O would accelerate from rest to V_{abs} at some instant of time in the future, at some point in space, so He sent a photon from point S' , with the

center of the wave fronts moving to the right with velocity V_{abs} , *later* than the ‘actual’ time of emission. It is as if nature had a foreknowledge of the observer’s future positions and velocities, and nature emitted the photon from the right point in space, at the right instant of time and with the right velocity of the center of the wave fronts. Therefore, the photon was never emitted from point S and never came along path SP in the first place, it was emitted from S’ and came along the path S’P. The photon was coming along path S’P while the observer was at rest, ‘knowing’ that the observer will accelerate to V_{abs} .

The Michelson-Morley experiment

We show that the constancy of the speed of light proves God based on the Michelson-Morley experiment, as follows. Imagine an observer who is at absolute rest at point P. Suppose that the observer has a Michelson-Morley interferometer that uses light from a star one billion light years away. The arrangement is the same as the familiar Michelson-Morley experiment except that the light source (the star) is one billion light years away and is not mounted on the apparatus. Suppose that the observer is at rest at point P observing the interference fringes. We know that (absolute) motion of the Michelson-Morley experiment does not cause any fringe shift, at least for motion along the longitudinal axis.

With the observer (and the interferometer) at rest, the star light approaches the observer (and the interferometer) at the speed of light c . Let us consider a paradox. Suppose that, just before the starlight hits the beam-splitter, the interferometer (and the observer) instantaneously accelerated to a velocity of 30 km/s in a direction away from the star. If the velocity of light when the interferometer was at rest was equal to c relative to the interferometer then, logically, after the interferometer has attained a velocity of $V = 30$ km/s, the velocity of light relative to the observer (and the interferometer) would be $c - V$. Therefore, a fringe shift should occur. However, we know that no fringe shift will occur. How can this paradox be resolved ?

The explanation is as follows. One billion years ago, God foresaw that an observer would carry out a Michelson-Morley experiment at some specific time and point in the universe. God foresaw that at some point of time, the observer (and the MM interferometer) would instantly accelerate from rest to 30 km/s. Therefore, God sent light whose center of wave fronts moved towards the Earth with the same velocity as the interferometer, which is $V = 30$ km/s, in which case no fringe shift would occur. No fringe shift will occur for the same reason that no fringe shift will occur according to classical emission theory; in both cases the center of the light wave fronts moves with the same velocity as the velocity of the observer. The constancy of the speed of light is a direct evidence that God exists.

Actually, for the moving observer :

1. Light was emitted from S’ not from S.
2. The center of the light wave fronts moves with the same velocity as the velocity of the observer at the instant of light detection, that is 30 km/s to the right.
3. The light was not emitted at the ‘actual’ instant of emission (which is the instant of emission for the observer at rest at point P), but earlier than this.



Quantum phenomena – scientific proof of God

As I have mentioned already, it was while I was working on the quantum puzzles of the “Which Way” and quantum erasure experiment that I found the mystery, which I then applied to quantum entanglement and other quantum puzzles [7][8]. This also led to the final disentanglement of the puzzle of the speed of light. The “Which Way” and quantum erasure experiment is perhaps the most bewildering of all the quantum puzzles.

I will start from the fundamental puzzles of quantum phenomena.

1. What is the medium for quantum particles (waves) such as electrons and photons ?
2. How can particles (electrons and photons) form interference patterns ?
3. How can wave function ‘collapse’ be explained ?
4. In the “Which-Way” and quantum erasure experiments, how does a distant light source know whether to direct the photons to only one slit or to both slits ? How does the distant light source know whether there are polarizers there or not ?
5. In quantum entanglement, how is the state of one particle of an entangled pair communicated

A crucial insight gained for questions 1 and 2 led to insight into the internal structure and dynamics of quantum particles such as electrons and photons, which in turn led to revealing of the mystery of questions 3, 4 and 5.

Internal structure and dynamics of electrons and photons

Ordinary waves such as water and sound waves are travelling disturbances of their material media. If we drop a stone on a pond, a packet of circular water waves will form and travel radially outwards, with its center O fixed at a point where the stone was dropped. Let us see what happens at a certain point P some distance away from the origin of the wave.



Before the arrival of the wave packet, the water is standing still at point P. As the wave arrives, the water molecules start to oscillate vertically. After the wave packet has passed through point P, the water molecules become standing still again. The *wave (the oscillation)* disappears from point P.

Let us note a seemingly trivial, yet key idea:

Disappearance of the water wave (oscillation) from point P doesn't mean disappearance of water molecules from point P.

This idea is the basis of the distinction between ordinary waves and quantum waves (the photon wave, the electron wave).

At first consider the electron not as a point particle but as an object whose mass is distributed in space. For each point of space, therefore, we define the electron density (mass per volume), we call this the electron field. The density of the electron varies continuously over space.

With this picture, the electron is analogous to the pond water example discussed above. Assume that a wave is created somehow in the electron 'pond', analogous to the water wave. If we assume a direct analogy between the electron wave and the water wave, the electron *density* would be non-zero and standing still at point P before the arrival of the wave, its density oscillates as the wave arrives, and becomes stand still again after the wave has passed through point P. This means that the electron density is non-zero and standing still (not oscillating, i.e. not varying with time) before the wave arrives and after the wave has passed. But from our ordinary experience of motion of particles we know that there will be no particle at a point until the particle arrives at that point and after the particle has already passed through that point. The particle is detected at a point only when it arrives at that point. This is the crucial distinction of quantum waves from ordinary water waves.

Therefore, we need to modify this direct analogy for the electron wave as follows:

There will be no electron (zero electron density) at point P before the arrival of the electron wave and after the electron wave has passed. *The electron density disappears (diminishes to zero) from point P with the disappearance of the wave.* Unlike the water wave, the medium for the electron wave, which is the electron density field itself, exists at a point only when the wave (oscillation)

exists (is non-zero) at that point. This means that the electron wave drags the electron (the electron medium) with itself. Where and when there is no electron wave (oscillation), i.e. where the amplitude of the wave is zero, there will be no electron; the electron density will be zero. The density will always be concentrated at regions where there is high oscillation (time variation) of electron density.

The puzzle can now be resolved:

“If the electron is a wave, then what is the medium for the electron wave? What is waving ?”

The electron is both the medium and the wave. The medium for the electron wave is the electron density field itself. No exotic medium is required.

The same applies for the photon. The electric and magnetic field intensities are the ‘mediums’ for the photon. No exotic medium (ether) is needed. In the case of the photon, *the medium is the electromagnetic energy density field.*

Fine tuning

Let us now consider a crucial related concept, fine tuning. By fine tuning, we mean setting the initial conditions of the electron density field for each point of space. It means initially setting for every point in the field :

1. the density,
2. the time rate of change of density

These are analogous with position and velocity of a mechanical system.

The fine tuning of the electron (and the photon) occurs during the instant of emission. The initial condition determines the internal dynamics of the electron from the instant of emission to the instant of detection. Initial fine tuning determines not only the direction of photon emission, but also the instant of photon detection (absorption)! The photon absorption occurs when all the mass of the electron converges to a single point in the field. Fine tuning determines the parameters of the electrons between emission and detection.

Interference patterns in double-slit experiments

The new insight introduced above says that the reason why the electron (and the photon) is not spread indefinitely throughout space but localized is that the electron mass will be concentrated only at points in space where there are *oscillations* of electron density. The density of the electron will be zero at points of space where the amplitude of density oscillation is zero. The mathematical formulation of this intuitive idea is yet to be done, and I will not attempt it in this paper.

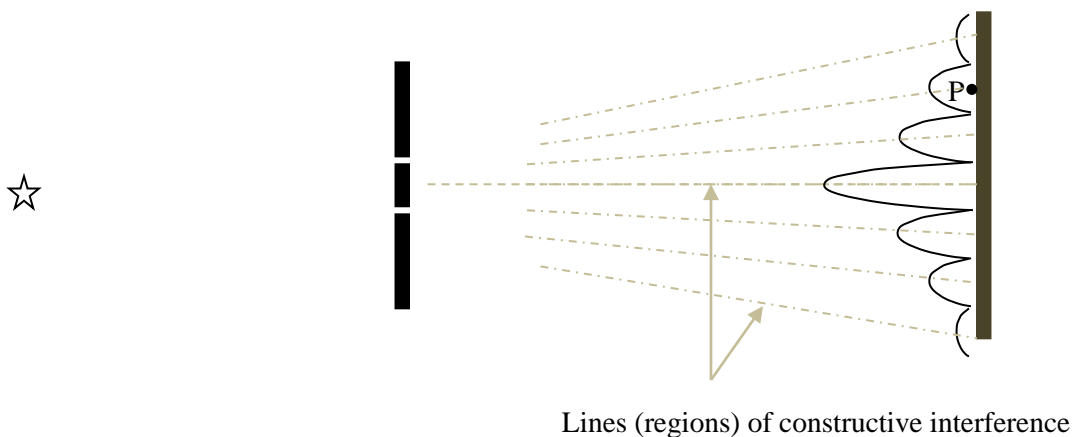
Let us take again a deeper look into the internal structure and dynamics of the electron and the photon. Imagine the electron to be like a pond water again. At each point in the electron field,

there will be electron density oscillations (fluctuations), defined by the rate, just like a pond water will have an instantaneous velocity of the water molecules at every point. Just as the pond water can never be standing still, assuming there is no energy loss, the electron density can never be standing still at each point of space. According to the new theory, the electron mass always keeps flowing from points of lower *density* oscillation to points of higher density oscillation. Considering the almost infinite internal degree of freedom of the electron, the internal dynamics and interactions of the electron mass distributions will be complex. Suppose that at some instant of time there are multiple points with maximum oscillations in the electron (density) field. Due to the complex dynamics and interactions, those points will continue to change over time according to initial conditions, and points where there were high oscillations may change to be points of lower oscillations or points of even higher oscillations. The electron mass continuously flows from one point to another point and then to another point, and so on. The law behind this is the new theory that electrons tend to be concentrated at points (regions) of higher density oscillations or fluctuations.

But there is also a probability (however small) that all the mass of the electron flows towards a single point in the field, making the density infinite. This is what happens during detection! The same applies for the photon.

Now consider the double-slit experiment. We know from experiments that, if both slits are open, an interference pattern will be formed on the detecting screen. In light of the theory proposed above, *this is a deep mystery*, despite its familiarity. Why ?

We have said that fine tuning of the photon (that is, setting the initial conditions) occurs at the instant of emission. Fine tuning determines in which direction the photon is emitted, when and where it will be detected. Detection occurs when all the energy of the photon converges to a single point in the photon energy density field.



This is a deep mystery, a great puzzle. In the case when both slits are open, *who* fine-tuned each photon so that it will land at a point on the screen so as to form an interference pattern? ! Mind you, according to the new theory, where the photon lands on the screen is completely *predetermined* by the initial condition (fine tuning) of the photon during emission! Unlike classical waves, and unlike current understanding, the interference patterns are not formed after the photon has passed through the slits ! Imagine that you had the ability to fine tune each photon when it is emitted by the source. This means that you can form any pattern you desire on the screen, regardless of whether one or both of the slits are open! Even with both slits open, you can create (‘write’) any pattern different from the usual interference pattern we know from experience by fine tuning each photon emitted. Note by fine tuning each photon you can decide at which point on the detecting screen the photon will be detected !

In the same way as for classical mechanics, in which the exact place a ball lands on the ground is completely determined by its initial conditions, the exact point in the universe where a photon is absorbed is predetermined by its initial conditions, which are set during emission !!!

But suppose that you are told to form only the usual interference pattern when both slits are open and to form the usual Gaussian pattern when only one slit is open. You can form whatever pattern if you wanted, but you respect the order given to you and always stick to it. Imagine that nature ordered you what it wanted to happen.

The burning question is: WHO fine-tunes each emitted photon to form an interference pattern when both slits are open ? ! You can’t argue that the fine tuning is random. Random tuning will not consistently form an interference pattern. Did the emitting atom fine-tune the photon it was emitting ? Or, did the source and the detector screen conspire ? All of these are meaningless because ‘dead’ atoms are not intelligent, and are not intelligent enough to (almost) infinitely fine tune the photon to *predetermine* where and when the photon will be absorbed on the screen!

My conclusion is that some intelligent being is fine tuning the emission of the photons every time a physicist is doing a double-slit experiment in the laboratory !!!

Imagine the level of fine tuning required to PREDETERMINE exactly where and when a photon will be detected on the screen, to predetermine by which atom of the detector screen it will be absorbed. Considering the almost infinite level of fine tuning required (note that the photon has infinite internal degrees of freedom), the intelligence required is supernatural !

What if a physicist is doing a double slit experiment by using light from a galaxy one billion light years away? Can you imagine that (almost) infinite fine tuning is required ? Just imagine aiming at an atom one billion light years away ! This is supernatural (GOD). Imagine the precision of fine tuning required, one hundred decimal places ? one thousand ? one million ?

Suppose that a photon from that galaxy entered through the slits and was absorbed by a particular atom on the detecting screen. This happened because GOD aimed the photon one billion years

ago at that particular atom on the detecting screen.!!! This is not all. What is more, it is like aiming at a moving target one billion light years away ! Ever since the emission of that photon from the galaxy, this particular atom has been moving due to rotation of the Earth, due to revolution of the Earth around the Sun, due to motion of the Solar System in Space, due to motion of Milky Way galaxy in space, and so on. You might say that these are predictable. But that atom on the detector was at some point on Earth before it was used to make a detector screen in a factory, which is not predictable. Which physics laboratory would buy that screen is unpredictable. It is unpredictable exactly when the physicist will perform the double-slit experiment, and exactly where in the lab the detector will be placed , and exactly how it is oriented. GOD had (has) a foreknowledge of all these and infinitely fine- tuned the photon one billion years ago, so that it would enter the slits at exactly the right moment. The detecting screen may even be subjected to some vibration, and GOD has a foreknowledge of all these.

GOD knew in advance that, a physicist, using his free will, would do a double-slit experiment one billion years later, at some point in the universe, and, literally, sent him a photon for his experiment!

Each and every photon emitted in the universe is aimed at a specific target atom somewhere in the universe, that can be one light year away or one billion light years away. Exactly at which point in the universe it is absorbed is predetermined by almost infinite fine-tuning of the initial conditions of the photon. When the convergence of the photon occurs at the predetermined point in the universe, the atom destined to absorb it just happens to be at that point. Aiming in the case of a photon is different from aiming in the case of a bullet. A bullet will hit anything it finds in its way. So you only have to make sure that the path of the bullet passes through your target. In the case of the photon, a photon is aimed at a single point in the universe. And there is no photon that misses its target, there is no photon emitted that keeps propagating in the universe until it finds some atom to hit by chance. In other words, if that was the case, the target was meant to be that specific atom in the first place. The interference patterns in the double slit experiments, the puzzling behavior of photons in the “Why Way” and quantum erasure experiments and quantum entanglement are overwhelming evidences that this is the case.

But God fine tunes not only light from natural sources, such as light from galaxies. God also fine tunes a photon from a laser source during a double-slit experiment in a laboratory.

You may ask: if the pattern on the detecting screen can be changed arbitrarily, why then do we always see the same patterns consistently ? GOD always respects the laws he created himself.

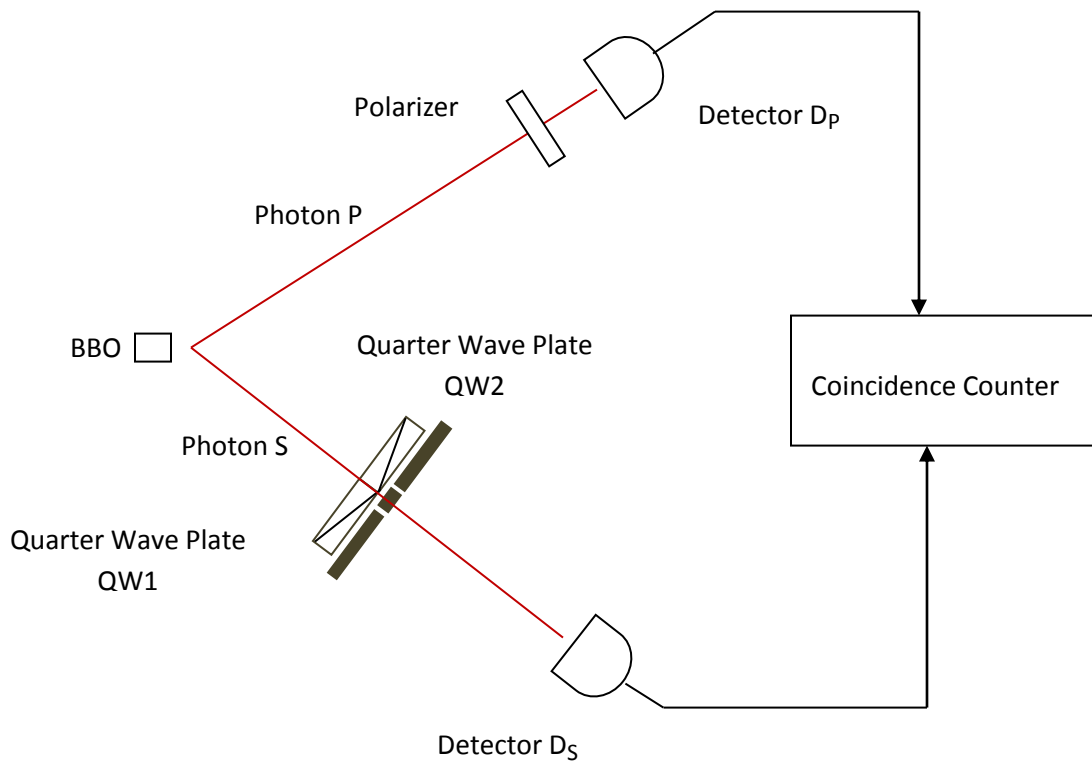
And the laws and phenomena of nature (such as forming of interference patterns) are laws of nature just because GOD wanted them to be the way they are! He can change them if He wanted.

“ Which Way “ and quantum erasure experiments, causality violation

Consider the “Which Way” and quantum erasure experiment below.

Entangled photons, one X-polarized and the other Y-polarized, are each sent toward detectors D_p and D_s .

The experimental set up is to test whether it is possible to know which slit the photon has passed through and to have an interference pattern at the same time. Experiments showed that when the polarizer in front of D_p is removed, it is possible to know which slit the photon has passed through, but the interference pattern is destroyed and we will have only a Gaussian pattern. This means that the source emitted the photons only through one, and not both, slits. But when the polarizer is placed in front of D_p , it is impossible to know which slit the photon passed through. But the interference pattern is restored.



The puzzle is: how did the source ‘know’ whether there is a polarizer in front of D_p . Note that this will continue to happen even if the source, D_p and D_s are placed light years away from each other.

The explanation is the same as for the double-slit experiment.

The interference patterns are formed when there is a polarizer in front of D_p and are destroyed when the polarizer is removed just because, LITERALLY, God wanted it to be that way.

What I mean is that, according to the new theory, where a photon lands on the screen is completely *predetermined* at the instant of light emission, by fine tuning of the photon field (that is, initial conditions). This is analogous with classical mechanics that where a ball lands is completely determined by its initial conditions.

In the same way as for classical mechanics, in which the exact place a ball lands on the ground is completely determined by its initial conditions, the exact point in the universe where a photon is absorbed is predetermined by its initial conditions, which are set during emission !!!

The source ‘kicks’ each photon just like a football player kicks balls. Imagine performing a ‘double-slit’ experiment using a ball ! Two holes with appropriate sizes and spacing are made in a wall. Behind the wall is a ‘detecting’ screen. Can you imagine that, by extreme fine tuning the initial conditions, a football player can in principle form an interference pattern ?! But no human can have such level of intelligence because the fine tuning required is almost infinite. The fine tuning includes the initial velocity and initial direction.

Note again that the ball is fine-tuned at the instant it is kicked to form an ‘interference pattern’ . It is not because the ball ‘interfered’ with itself after passing through the holes! In fact, two holes are not necessary to form an interference pattern, one hole is enough. It can in principle be done using only one hole. The exact point where the ball will land on the ‘screen’ is predetermined by the initial conditions, at the instant it is kicked. It is the same in the case of photon !

At this point, we have not made clear how ‘diffraction’ will happen in the case of the ball. It is possible to design a hole so that the ball can exit the hole at different angles. The hole may be designed to have an internal structure. One can do an experiment to see whether or not a ball passing through a hole will exit at different angles.

Just to show how perplexing and mind-boggling this is, imagine a wall with two appropriately sized holes and a ‘detector’ wall behind it at some appropriate distance, as discussed above. Suppose that from some fixed point in front of the holes (analogous to slits), a ten year old boy/girl having no training in football repeatedly kicks the ball many times towards the holes and the point where the ball landed on the ‘detector’ wall recorded. Imagine that the ball formed an interference pattern on the wall ! Isn’t this surprising for a ten year old boy to infinitely fine tune the kicking of the balls intentionally to form an interference pattern ?! *He was super intelligent*

and simulated 'wave-particle duality' of balls! The atoms in the light source have infinitely too small intelligence to form an interference pattern in the double-slit experiment !

Suppose that the 'double-slit' experiment with the ball really happened, that is, the boy/girl succeeded in forming an interference pattern by the ball. Imagine that this really happened. Wouldn't all the world media start talking about this twenty-four seven? What possible explanations do you think people might give? People would say that the boy somehow used a supercomputer, using some unknown advanced technology. I would guess that the boy prayed to God. I am saying that whether by some advanced technology or by divine intervention, creating an interference pattern by a ball requires almost infinite fine tuning, and thus 'infinite' intelligence. I mean the interference pattern cannot be formed by randomly kicking the ball towards the holes. To say that photons formed interference pattern but were emitted randomly is to say that the balls are kicked randomly and formed an interference pattern.

The case of the double-slit experiment is even more perplexing because the light source (the emitting atom) has too infinitely small intelligence to do the infinitely complex tuning of each photon ! Note again that where a photon lands on the detecting screen is *predetermined* at the instant of emission, just as where a ball lands on the ground is predetermined by its initial conditions.

From our argument so far, the notion that atoms inside the light source of a double-slit experiment emit the photons randomly has been completely ruled out ! Those fictitious interference patterns formed by a ball cannot happen randomly without (almost) infinite fine tuning of the initial conditions of the ball, hence requiring (almost) 'infinite' intelligence. The same applies to the interference patterns in double-slit experiments. The interference patterns cannot be formed by random emission without (infinite) fine-tuning of the emission of each electron.

Now back to the "Which Way" and quantum erasure experiment. The interference patterns appear when the polarizer is placed in front of D_s , just because, literally, God wanted it to be that way, and we call this a law of nature. There is no 'explanation' other than accepting it as a law of nature. All we can do is to model the phenomenon so that we can use it to predict the outcome of experiments.

God can see and foresee our experimental arrangements and send each photon accordingly so that our experiments behave the way they do. He can see when a polarizer is placed in front of D_p and then fine tune each photon emitted from the source so that they form an interference pattern. He can also see that there is no polarizer in front of D_p and fine tune each emitted photon so as to form a Gaussian pattern.

So, according to our new theory it does not give sense to ask " how did the source know whether or not a polarizer is there, so that the source would direct the photon to one slit or to both slits accordingly ? " The explanation is that God just wanted it to be that way. If He wanted, he could

arbitrarily change the patterns on the screen, regardless of whether or not a polarizer is placed in front of D_p . Can you imagine that, just by fine tuning each photon, God can form the usual interference pattern by using only one slit, with the other closed? He can also form a Gaussian pattern or any arbitrary pattern with both slits open. He can send the photons alternately through each slit (so that we can know which slit the photon passed through) and form a Gaussian pattern or an interference pattern at will. God can form any pattern regardless of the distance between the slits.

In the ball 'double-slit' experiment, we assumed that there are two holes ('slits'). But, in principle, it is possible to create an 'interference pattern' by using only one hole, by extreme fine tuning of initial conditions of the ball. In principle, an interference pattern or any arbitrary pattern, can be formed by using only one of the holes or both holes. In the case of two holes, we don't say the ball passed through both holes to 'interfere' with itself. Whether only one hole is used or both holes are used, the ball always passes only through one hole. It is possible to create any arbitrary interference pattern regardless of the distance between the holes. However, this is not to rule out the idea that, in the case of photons, the photon, being a wave, can pass through both holes and yet form an interference pattern, a Gaussian pattern or any arbitrary pattern. However, all that matters is the ability to infinitely fine tune each photon (electron) at the instant of emission, i.e. initial fine tuning.

But God has regulated the laws of nature in a certain fixed way and not in an arbitrary way. In the case of "Which Way" experiment, he made it a law that it is impossible to know which slit the photon passed through and to have an interference pattern at the same time.

But, occasionally, God may 'violate' the laws He formulated and He does this with purpose and we call this miracle.

Now can you imagine that the super intelligent boy/girl can even simulate "Which Way" and quantum erasure experiment and even quantum entanglement? He can *define* some objects as polarizers and put them in front of the holes. To simulate, say, horizontal and vertical polarization he may use not a spherical ball but a slightly elliptic ball. He may also simulate clock-wise polarization and counterclockwise polarization. He can kick the ball with some 'infinitely' fine-tuned initial conditions so that the ball will spin clockwise (or counterclockwise) after exit through the hole.

Quantum entanglement

Think of the usual quantum entanglement thought experiment. Imagine a pair of entangled photons sent in opposite directions into space, one with X-polarization and the other with Y-polarization. But it is unknown which photon is X-polarized and which one is Y-polarized before detection. A detector is placed at a distance of one light year in the path of one of the photons.

After one year, one of the photons was detected to have, say, Y-polarization. According to quantum mechanics, the polarization of the other photon will be fixed to be X at the same instant. The puzzle is: how did information travel to the other photon instantly, with the photons separated by light years. Quantum mechanics has no physical explanation for this, it does not explain the physical mechanism for the particles to communicate, it has only a mathematical ‘explanation’ : probability.

What is the explanation of quantum entanglement according to the new theory ? We have said that the initial fine tuning of the photon predetermines in which direction the photon is emitted, at which point in the universe it is absorbed, what polarization it will have. As we have said already, the initial conditions of the photon are fine-tuned during emission. Therefore, accordingly, all the parameters of the photon, including the polarization, is also tuned during emission. Therefore, the polarization of each of the entangled photons are fixed during emission. There is no need for two photons light years away to “communicate” information about polarization.

Not only the polarization, but also where and when each photon is detected is predetermined by fine-tuned during the instant of emission. If we placed a detector at a distance one light years away, and if we succeeded in detecting the photon, then this happened because God fine-tuned the photon so that it would be absorbed at that point in the universe.

To make this clear, suppose that we have arranged a quantum entanglement experiment with two detectors placed light years away. According to the new theory, therefore, God sends an X-polarized photon to one detector and a Y-polarized photon to the other detector. Which detector will get an X- or a Y- polarized photon is determined by God at the instant of emission. With this theory, all the enigma and puzzle of quantum entanglement just disappears. As already stressed, God can see where exactly in space the detectors are placed, and aims the photons accordingly, with polarization fixed at the instant of emission.

To make these ideas clearer, we may ask: what if we did not place the detector ‘correctly’ ? First, there is a problem with this question itself because we can only try to make the probability of detection higher and we cannot know with certainty the path of the photon. But we say that, if the detector detected the photon, it is because we have placed the detector where there is significant probability of detection and because God fine-tuned the photon during emission. But what if we place the detector at a place where there is less probability of detection ? The answer is that our detector will not detect the photon most of the time, it detects, say, only 0.1 percent of the time.

Here two questions arise: what happens to those photons that have missed the detector. The answer is: God aimed at some other target in the universe. The other question is, if God can fine tune the photon so that He can aim it towards a detector where the probability of detection is low, why doesn’t He do so ? The answer is that God acts according to the laws He created

Himself, not arbitrarily. The law in this case is that, if a detector is placed at a place with low probability of detection, as we learned from experience, then there will be low probability of detection.

The GRAND question and the Grand plan

We have said that the double-slit experiment, the “Which-Way” and quantum erasure experiments behave the way they behave because, literally, God wanted it to be like that.

God can fine tune the emission of each photon so that it will land at any arbitrary point on the screen, regardless of whether only one slit or both slits are open, regardless of the distance between the slits, regardless of the distance between the slits and the detector. This means that God can fine tune the emission of each photon to form any arbitrary pattern on the screen.

But there is a GRAND question.

Why does God want that an interference pattern be formed when both slits are open and the interference pattern be destroyed when only one slit is open ?

Why does God want that, in the “ Which Way“ and quantum erasure experiments, the interference pattern be formed when there is a polarizer in front of detector D_p , but the interference pattern be destroyed when the polarizer is destroyed ?

Here is the GRAND plan of God.

The GRAND plan of God is for humanity to know and believe that He exists, that He has supernatural power and intelligence, that He is holy. What more *scientific* evidence can God give us about His existence other than the double slit experiment and the “ Which-Way” and quantum erasure experiments as we have seen extensively ?!

Suppose that God made it a law that double-slit experiments, with both slits open, do not give an interference pattern. Imagine how much that would affect the advance of physics. Thomas Young would not get the interference pattern in his experiment and the wave nature of light would be hidden from us. The new theory in this paper became possible because the quantum experiments behaved the way they behaved. If, in the “Which-Way” experiments, light behaved like ordinary waves (such as sound waves), the new theory proposed in this paper would not have been possible. These experiments and the way God made them to behave led to the scientific proof of God presented in this paper.

Can you see now that the wave-particle duality is an overwhelming direct evidence of divine intervention ? Photons and electrons CANNOT by themselves act as both waves and particles simultaneously! The observed wave-particle duality of quantum particles is, literally, a divine intervention. This is why we have found the wave-particle duality hard to understand.

Note that God does not do wave-particle duality with water waves or with macroscopic objects. Water waves are pure waves and macroscopic particles also behave purely like particles. I would say this was by design. Why does God not fine tune the initial conditions every ball we kick, like the photons? I think that He wanted us to see pure classical waves and pure classical particles so that He would challenge us with the wave-particle duality of photons and electrons, and, through this, so that we would be able to discover His existence.

Conclusion

In this paper, we have provided a direct scientific evidence that God exists, based on quantum phenomena and light speed phenomena. So we have presented two independent proofs of God's existence. These experimental evidences are so overwhelming that no one can reasonably refuse to accept them, if not by outright denial. Particularly, the "Which Way" and quantum erasure experiments boldly point to the existence of God. That God created the universe this way gives us the big picture: the grand plan of God that humanity may discover Him not only through religion and faith, but also through nature and science. Some physicists have openly declared that God did not exist based on theories developed from quantum phenomena and light speed phenomena. It is ironic that these same phenomena (light speed phenomena and quantum phenomena) provide overwhelming *scientific* evidence that God exists.

Glory be to Almighty God Jesus Christ and His Mother, Our Lady Saint Virgin Mary

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Appendix

Additional clarifications

This theory explains those phenomena that quantum mechanics (QM) claims to explain PLUS those phenomena that QM (and science as we know it) cannot explain. According to QM, a photon is not said with certainty to be at a given point P until it is detected at that point. The wave function of the photon collapses to that point at the instant of detection. The new theory says that the photon was sent to be at point P at some specific time instant τ because God had a foreknowledge that an observer (for example, an absorbing atom that is in motion) would be at point P at time instant τ . From a foreknowledge of the future positions of the atom, God made the source emit the photon in the right direction, and at the right instant, so that the photon and the atom will meet at point P.

But why point P ? For example, the photon could be emitted so that it would be absorbed at another point Q. God just chose the point of photon absorption to be point P. Imagine an absorbing atom moving relative to a light source. According to current paradigm, the points where the moving atom absorbs photons are random. According to the new theory, those points are just God's choices. God is behind all the apparent randomness in physics.

Suppose that right now, say at noon, you *plan* to look in the sky at a specific star one light year away at the next midnight, that is 12 hours from now. You plan to see the star from a point just outside your house. The new theory says that if you will *really* see the star, that is if you will really implement your plan, then the photons that are destined to meet your eyes have already travelled almost one light year and are already on the way, 12 light hours away right now. But are the photons *really* there, are they really coming ? This depends on whether you will execute your plan or not, which is impossible to tell with certainty however determined you are to implement your plan. For example, right now you may be far away from your house and you might not get to your house by mid night due to traffic jam and so on. Only God knows whether you will actually implement your plan, and thus whether the photons are really coming. The only way for you to be sure whether the photons are really coming or not is to pray to God so that He will tell you. Suppose that He answers your prayer immediately and tells you that the photons are on the way. Then you can be sure not only that the photons are coming, but also that at least you will not die within the next 12 hours. In this case, therefore, God foresaw one year ago that you would actually implement your plan (see the star). Then He must have sent the photons from one light year away by extreme fine-tuning so that the photons would meet your eyes at that point outside your house, at just the next midnight. Just imagine the fine tuning required to aim at a specific atom in your retina from a distance of one light year!

Stated in another way, by choosing at will to look or not to look at a star that is one million light years away, at a specific time of a specific midnight, from a specific point of space, the observer can retroactively decide on whether a photon was to be emitted or not, one million years ago from that star, and decide on the fine tuning of each photon. The observer is one hundred percent responsible for a photon coming all the way from a galaxy that is one billion light years away.

What is my evidence for this theory ? Answer: this is the only theory that can explain the “Which-Way” and quantum erasure experiments. Science, as we know it, cannot explain this experiment.

Regarding quantum entanglement, imagine a source of entangled photons A and B, one X-polarized and the other Y-polarized. The photons are emitted in opposite directions in space and two detectors are placed each of them one light year away from the source. The new theory says that the photons are fine-tuned at the instant of light emission. The fine tuning is required to aim the photons at the detectors. One can imagine that the fine tuning required is almost ‘infinite’.

There is no puzzle about the polarization of each photon which is fixed at the instant of emission. The quantum entanglement puzzle just disappears.

One may ask : “ What if the photons ‘missed’ the detectors” ? We can guess that this is only a thought experiment and in reality it is extremely difficult to aim the photons at detectors that are one light years away. Perhaps, say, only one in one trillion photons hit the detector. What about the other photons? One might ask, if God fine-tuned every photon, why did all those photons ‘miss’ their target? The explanation is that if only one photon hit the detector, it was because God aimed only that photon to hit the detector. The other photons were aimed at other targets in the universe. The fact that most photons did not hit the detector is just a law of physics.