Corrections : laser pen = laser pointer
Proof 1 and 2 were reversed.
Removed **bold** from Ref #1

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Title: "MAJOR EARLY PHYSICS ERROR"   Copyright 2016

Abstract:
The interference pattern from a precisely aligned Michelson interferometer is employed to re-evaluate and disprove the current traditional principle of superposition of light waves. Two proofs providing definitive evidence superposition of light waves is actually from wave collisions, not superposition as currently defined. A missed or ignored part of the Michelson interferometer reveals a lost part of physics. Superposition of electromagnetic waves appears to be from addition of waves similar to that of water waves but is not. The present theory of addition of waves will be shown to be incorrect.   The reality of superposition cannot be distinguished any other way. This is a tough one to believe happened, so be sure to read the iron clad proofs.

Introduction
An interference pattern is defined as a series of light and dark bands produced as a result of light interference. One can make an interference pattern many different ways. 1. Place a thin wire about the thickness of a human hair in the beam of a laser pointer, or direct the beam at a DVD disk. The resulting dot or dashed interference pattern appears several feet away on the wall. 2. When two pebbles are simultaneously dropped into still water, the resulting ripples appear to collide but actually pass directly through another resulting in an interference pattern.

Beginning at around the 1700's, several famous scientists argued the point of superposition and the physics community adopted a result. Well before the development of QED, at the time when Newton's corpuscular theory was rejected. The early pioneers of physics, Newton, Huygens, and Young, argued several points about what light is and how it propagates. The conclusions of interference and superposition of light were based on the addition of waves. They simply assumed that interference or superposition of light is from the addition of waves. This paper provides proof this assumption is not correct. They may have incorrectly based this decision on the visual effects from water waves, pinholes, and double slits, which is why I brought up water waves. Their main objective was to determine if light is a wave, or a particle.

Interference theory
Light is a transverse wave. When two waves of same wavelength and amplitude travel through the same medium, their amplitudes combine. A wave of greater or lesser amplitude than the original will be the result (figure 1). The addition of amplitudes due to superposition of two waves is called interference. If the crest of one wave meets with the trough of the other, the resultant intensity will zero and the waves are said to interfere destructively. Alternatively, if the crest of one wave meets with the crest of the other, the resultant will be maximum intensity and the waves are said to interfere constructively.

In constructive interference, a bright fringe (band) is obtained on the screen. For constructive interference to occur, the path difference between two beams must be an integral multiple λ of the wavelength λ, where m is the order, with m=0,1,2… If the path difference between two waves is 180 degrees out of phase (m+ ½) λ, the interference between them is destructive, and a dark fringe appears on the screen (see figure 3).

Wave amplitudes add
(Constructive interference)
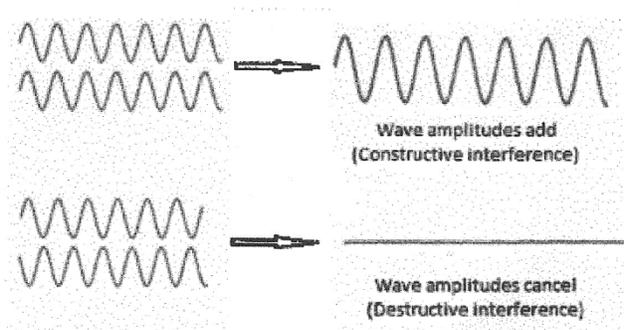
Wave amplitudes cancel
(Destructive interference)

Figure 1. Traditional principle of superposition of waves.

Interference and superposition
You have to be careful how to understand the principle of superposition because of the simultaneous use of the two words interference and superposition can cause some serious confusion. Physics has combined the two dissimilar words together to describe the principal of superposition. Superposition is basically the addition of different waves. It also implies that the behavior of the different waves are **not affected** by the other waves with which they are being superposed. Interference typically refers to a condition in which the superposed waves either cancel (destructive interference) or reinforce (constructive interference) figure 1. However the word "interference" in common English (outside of physics arena) carries the meaning that two things hinder, obstructs, or impedes another. So in physics lingo we have the word 'superposition' describing a condition where the behavior of the different waves are not affected by the other waves which they are being superposed, and the use of the word 'interference' in common English which carries the opposite meaning. This may be acceptable for water waves, but as we will find out is not acceptable for light waves. This confusion may be contributing to a fundamental misunderstanding.

Could it be that something happened and the wrong decision was made? Now is it is so deeply woven in the textbooks that it can never be changed? I don't know! The physics community at that time, made the huge error by assuming that the pattern was the result of the adding of waves. The interference pattern is not from the addition of waves, but from light wave impingement or collisions when in phase heading into new directions. This forms the light /dark fringe patterns that appears to be superposition but is not. There is a way to answer some further early debated questions such as duality, but not before it is concluded that light waves are actually bouncing. This experiment lays out a visual way to show that light waves bounce off one another giving the appearance of superposition. Something that Young's double pinhole experiment was unable to determine, and was not setup to determine. He was simply trying to determine if light is a wave or a particle.

Here is proof that could not be seen, mostly because of the use of sunlight and or the sodium vapor light source. No match for the modern day laser with its monochromatic and coherent light. Too late the decision was made, too early for the laser the decision was fully entrenched. They may have gotten confused by inferior sodium vapor light source and the complications encountered while investigating the experiment. The coherence length was so short that a phase correction plate was required. Also the apparatus was crude, lacking the laser light source. Basically they bypassed a very important observation.   Maybe it was just common sense at that time to believe light waves were like water waves. There simply was no way to see it any other way.

Michelson Interferometer

The Michelson interferometer (figure 2) invented by Albert Michelson in 1893 was used in the famous Michelson-Morley experiment, to demonstrate the non-existence of an electromagnetic-wave-carrying ether. The interferometer consists of a laser light source, two mirrors, and a special half silvered mirror called a beam splitter which allows half of the light to pass through and half to be reflected. For the nonprofessional this *beam splitter mirror* is the same as a two way mirror or sometimes called a one way surveillance mirror depending on how it is used.   The four pieces are arranged so that the laser light beam is split in half, by the beam splitter mirror, creating two paths, the two light paths are then reflected back, directly passing through the beam splitter to a screen or nearby wall. The resulting light and dark bands found at the screen are called interference fringes. The interferometer simply divides a single beam of light into two paths, and then recombines (superimpose) them together again resulting in an interference pattern. An optical interferometer can measure the wavelength of light by counting the interference fringes that move when one mirror is moved in relation to the other. The Michelson interferometer is required here in the proofs to find a special property of light we will be looking for.

The Michelson Interferometer Proofs

This is going to stir up some vehemence. I have a life, but not a job in a university to lose. So here you go! We just have to understand that a mistake was made early on, and we all built upon it. No single person needs to take the blame for it. To that guy who wins all his battles; "Don't Kill Me". Einstein was warned not to mess with Plank, so I hope you're not going to feel the same way.

I know it is distasteful being so blunt, but everyone has been fooled by this. Two proofs are provided. Proof 1: Sequence of Patterns. Proof 2: Where does the Light Go? Proof 3, sequential interference will be posted at synodicgravity.com (soon).

PROOF #1: Final Sequence of Patterns

Incorporating the Michelson 2 arm interferometer, the following procedure compares the sequence of patterns found at the screen to the principles of superposition.   What are we looking for is whether or not the rules of constructive/destructive interference or addition or waves fit the actual sequence of patterns found when the interferometer is adjusted from $d1 < d2$ through $d1 > d2$. The equations of the addition of waves should fit into the resulting sequence of patterns; however we will find they do not.   The equations of traditional superposition don't fit the real

sequence of patterns. There are many explanations found on the internet of the Michelson Interferometer. They all come up with the correct answers but the concept is wrong. This cannot be determined with the double slit experiment. To my knowledge the Michelson interferometer may be the best or only way.

Finding and identifying the center point
I've done a lot of interference experiments and I've always tried to locate the center of the patterns where d1 = d2. Sometimes it seemed to be a bright fringe and other times it appeared to be a dark region. It was difficult to determine. So I strove to determine which one. Is light or dark the true center? Note: The two slit experiment is not adequate as the beams are not parallel and any number of fringes are possible although the center normally is bright. I set up the below experiment to get to the root of the problem. In so doing, I discovered something unusual about light that is different from that of water. This is something the early pioneers could not do with their antiquated equipment (lacking a laser light source) and is ignored today.

The procedure is as follows: Setup a Michelson two arm interferometer as shown in figure 2. Ignore the second beam splitter at this time. A piezo micrometer will be required on mirror M1 to adjust the path length of leg d1. M2 remains stationary. Note the reflection at the mirror doubles any adjustment of the micrometer, so references of ½ Lambda are actually ¼ at the micrometer. The lens should be on the output side to reduce aberrations. A circular interference pattern is required where M1 and M2 are perpendicular as possible. The interferometer must be producing a circular ring fringe pattern only, indicating the correct alignment of its components for this procedure. We will have an absolute head on collision of lambda, phase, and coherence. We will be looking for a condition I term 'blackout' where no light reaches the screen. A line interference pattern from misalignment will not blackout. The term "blackout" used herein describes 'total destructive interference' where no light reaches the screen. The blackout is very difficult to obtain, requiring a very stable laser and table. A cube type beam splitter is suggested. (Note: This condition may be difficult to achieve since air currents or small table vibrations constantly cause small random changes in the path length.

Here we can use MIT's excellent video found on U-tube of this procedure Ref: 1. I suggest you take a look at this video, it lays out the following setup very well, including the blackout. However the professor skips over the following analysis.

Set d1 > d2, slowly move d1 inward reducing its path length. The fringes collapse inward. Continue reducing d1 path length and note when only a single bright circle appears at the screen. Further reduction of d1 and this single bright circle collapses inward and the point of total cancellation is reached where no light reaches the screen. Continue reducing d1's path length until the next single bright circle now expands into view. Please note we have gone from collapsing 2 fringe rings, to a single circle, to blackout, then to an expanding single bright circle and back to 2 fringe rings again. Since the field collapsed then expanded we must assume it passed the equal point (d1=d2) somewhere along the adjusting. Note that there was only 1 position of blackout and two bright spot positions of either side of this adjustment. One with a single bright circle that collapsed and one with a single bright circle that expanded. Logic demands that the blackout position is d1=d2. However since some may continue to reject this we will continue further.

The fringes (rings in this case) are a function of the path length difference between d1 and d2. Interestingly the rings will open and close like an iris collapsing inward then expanding outward (fig 3) as d1 is reduced from d1 > d2 through d1 < d2, and the center is easily identified by matching the count of rings that collapse inward to the number that expand outward giving us the type of pattern found in the center position. The diameter of the central ring gets larger and larger as path lengths approach equal then collapses into blackout. Note that a full size single bright spot occurs on either side of the centering. As d1 is adjusted, the center is found between the collapsing and expanding of the rings. The center pattern is the blackout condition!

When the blackout condition is attained, the output does not want to remain at the blackout point and may oscillate slowly to either side in and out of blackout, appearing and disappearing, raising the question are there two blackout positions?   No, the fact that during the oscillation from bright spot to blackout, the interference pattern 'collapses inward' to blackout then 'expands outward' to a single bright spot indicating only a single position of total cancellation. The collapse then expansion of the pattern confirms the center pattern is a single blackout. This sequence and corresponding images identifying the pattern found at the center in the past have been ignored; however the shocking importance of this will be revealed.
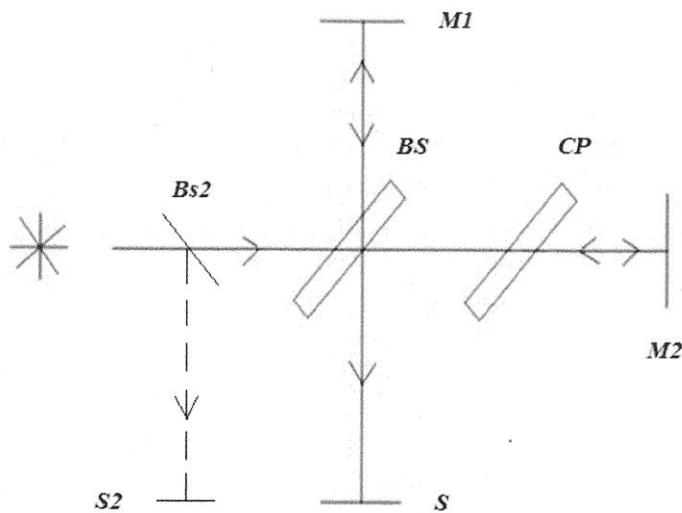

Figure 2: Michelson Interferometer with Optional Beam Splitter

* = Laser, Bs = Beam Splitter,   M$_1$ = Mirror,   M$_2$ = Mirror,   S = Screen
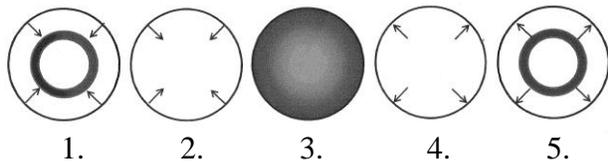. CP = Correction plate, (*Bs$_2$ = Optional Beam Splitter & S2 See proof 1*)

1.   2.   3.   4.   5.

Figure 3. Correct sequence of patterns as d1 > d2 through d1 < d2, where position #3 is d1 ≈ d2. The arrows represent the collapse or expansion of the field. Note that the patterns are symmetrical to the center #3. It's not possible to arrange the equations of superposition by addition of waves to form this sequence while keeping the patterns symmetrical to the center. Since the 'single rings' 1 and 5 are identical they must have the same cosign angle. Similar are the 'single bright circles' 2 and 4. Here we know we have found the center point as blackout.

What I'm will explain here is something that is very simple, yet difficult to comprehend, much like a puzzle. It can be approached from several different ways. With respect to the center pattern, the equations immediately to the left side (+) must be identical immediately to the right (-). Because blackout must be 180 degrees off in phase, it is shifted to the side. Because the patterns to either side of blackout are identical they must have the same equations only opposite in sign. This simple puzzle cannot be solved using the principles of 'addition of waves'. The equations of traditional superposition cannot fit the true sequence. The patterns cannot be arranged in the correct order using the rules of superposition. Where m = +1, +½, 0, -½, -1. d1= mλ+ d2. (See figure 3).

The absolute centering position where d1=d2 is unknown and may be difficult to measure. However we can watch the sequence change through the center and use it to verify superposition theory. Physics brushes over this area considering it unimportant. However I will show you a huge error in early physics. Only the pattern sequence and identifying the center pattern is of importance here, and forms the logic of the conclusion. Only the last three patterns are required (see figure 5). We know we have the center because the ring pattern on either side is identical. We have established the center is a blackout and a blackout must be from a cancellation of waves, so is 180 degrees phase difference. So we assign the blackout as a position of 180 degrees phase difference. So to either side must be a position of constructive interference or zero phase difference. The cosign of the angle for each side spot must be different and this does not relate to the identical spots. So the center pattern cannot be d1=d2 by the rules of superposition. The left side becomes 180 degrees shifted in distance. If the left side is shifted in distance by ½λ then the pattern to the left side should not be identical to the pattern to the right of center. The only way to get identical angles to either side of the center is to have two blackouts, but there is only one. So something is wrong with the rules of superposition.

We now know that the center of the pattern sequence is the blackout condition. The question we will ask then, does the image on the screen match the mathematics of constructive and destructive superposition? The answer is no! The following simple logic will allow us to resolve and we can see what is really happening. The equations for constructive/destructive interference cannot be arranged in any way to result in a single blackout. They always result in

two blackouts with a constructive interference pattern (a spot) as the center. The rules of superposition errantly state the light should cancel when the phase is 180 degrees off, where a trough meets a crest.

BASIS: The blackout or total cancelation point is just 1/2 wavelength from d1 = d2 where d = distance of each leg. Here the phase is exactly 180 off and the wave crest and troughs perfectly match up.

Start mirror M1 adjustment at d1 > d2.   The last three patterns and their sequence are as follows:

1. If the waves are superimposing 'adding' then the very last fringe pattern viewed before the iris pattern reverses direction would be a single center bright spot or constructive interference.
2. If the waves are colliding then the very last fringe in the center would be the blackout where no light reaches the screen.

If light is in constructive and destructive interference what order of sequence should we see appearing at the screen? If we follow the sequence required for addition of waves in constructive interference we will find there must be two occurrences of blackout positions as d1 is adjusted. These should occur at: $d1 = +\frac{1}{2}\lambda + d2$ and $d1 = -\frac{1}{2}\lambda + d2$

It will be shown that if constructive/destructive interference is in effect there must be two positions of blackout. If the light waves are bouncing and re-directed then there will be one position of blackout. If only a single blackout position occurs the sequence proves the light is bouncing, forming what appears to be constructive and destructive interference but clearly is not.

Looking at the experiment from two perspectives (option 1 and 2) we discover the error.

Option 1: Conventional accepted superposition theory.
The following final sequence is required to satisfy constructive/destructive interference rules:
A collapse to single bright spot, collapse to blackout, collapse to single bright spot, expand to blackout, expand to single bright spot.
The center position d1= d2 would be a single bright spot, indicating the addition of two waves. Here we find there must be two positions of complete blackout where no light reaches the screen.

Option 2: Wave collisions.
The following final sequence is required to satisfy wave collision and path redirection resulting in the interference pattern. Here we find there must be only one position of complete blackout where no light reaches the screen. It is not possible for this sequence to occur with a single blackout using the addition of waves superposition theory.

Using the 3 following knowns we will attempt to fit the equations into the real pattern sequence.
1. There is only 1 blackout position.
2. As d1 is adjusted, 2 *identical* single bright spots to either side of the blackout position occur.
3. If current superposition rules of addition of waves apply, the blackout must be an out of phase addition of the two beams where d1<>d2.

By traditional rules of superposition; if the single bright spots to either side of the blackout are identical, we must assume they have the same path length difference. Tracking the order of the final equations with superposition by the addition of wave's, results in two blackouts and a bright center spot. If the waves were interfering by constructive and destructive interference then there must be two positions of total wave cancellation resulting in a total dark screen, one at d1 = (m+1/2)λ+d2 and the other at d1 = (m-1/2)λ+d2 where n=1. The point at d1=d2 should be constructive interference. Else the results reveal the waves are colliding and bouncing apart, (redistributing in the case of mirror misalignment), and at d1=d2 the waves bounce fully back to the source resulting in the dark screen of total cancellation.

If you analyze this fully, interference as currently understood should result in a different pattern order occurring at the screen. REGARDLESS OF WHETHER THE PHASE IS ALTERED BY THE OPTICS: THIS ORDER MUST OCCUR BUT DOES NOT:

When the adjustment passes from (1/2 λ) just before d1=d2 through d1=d2 to just after d1=d2 the following sequence of order must occur to make the proper conclusion.

If light undergo constructive/destructive interference the sequence of order steps are 'A'. See figure 4.

A: Using the equations of superposition by addition of waves we must have this order:

1. d1= +½λ + d2   Blackout   (destructive)
2. d1= d2   Single bright Spot (constructive)
3. d1= -½λ + d2   Blackout   (destructive)

Here you can see there must be two occurrences of a total dark screen of total cancellation. This results in two total blackouts at the screen **whether or not** the phase of one beam is reversed by the optics. The equations cannot be arranged in any way to define the final 3 patterns and sequence found at the screen even if another correction plate is inserted. If the above order does not occur, and it does not, then it reveals something else is in effect, revealing an error in the rules of superposition.

B: If photons are bouncing off another, the order goes from: See Figure 5.
Here we use the same equations only the result is different resulting in the correct sequence.

1. d1 = +½λ + d2   Single bright Spot
2. d1 = d2   Blackout   (collision)
3. d1 = -½λ + d2   Single bright Spot

In this case the photons collide head on and bounce directly back to the source. So at every phase alignment there is a collision: d1 = (m+1)λ+d2, and at every out of phase, a bright fringe: d1 = (m+1/2)λ+d2

Note that the equations for both 'A' and 'B' are the same but only 'B' results in the correct order.

Current superposition rules demand that blackout must be ½ λ phase off absolute center. Attempting to re-construct the equations with the center is impossible with superposition. The only way to make it look correct is to fudge it.

A head on and total bounce directly back to the source at d1=d2 results in a single occurrence of a point of total cancellation where no light reaches the screen. This is the correct order and can only occur it the photons are impinging in a type of collision and bouncing apart.

This results in a single total blackout at the screen **whether or not** the phase of one beam is reversed by the optics. The evidence they are bouncing becomes obvious by the sequence of order of which the patterns occur. It's not possible to form the correct sequence order of patterns through constructive/destructive interference or addition of waves.
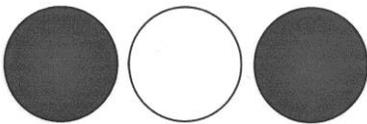

Figure 4. If light waves 'add' as in superposition, this is the final sequence.
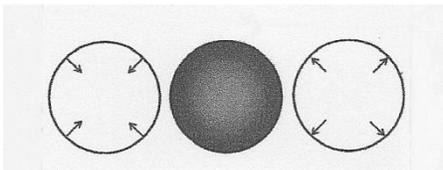

Figure 5. If light waves collide and re-direct paths, this is the final sequence. The real sequence of patterns shown above has a single blackout position. The pattern sequences are symmetrical to either side of blackout but the phase equations cannot match it. Because the center must be ½ wave off for addition of waves, the pattern sequence are symmetrical to either side of blackout, Superposition by addition of waves would have two blackout positions.

In reality there is no cosign angle when both beams hit head on. The angle is due to the wave front collision, as only a few fringe rings appear when d1 >> d2. Conversely many fringes appear from mirror miss-alignment.

Because the patterns on either side of the blackout are identical indicates the blackout is d1 = d2. For most people this would convince them this is the center where d1=d2, however there still is a way for your mind to be fooled into believing that the blackout is not d1=d2 simply by shifting the phases over 1 position and re-evaluating. However this is an error, the patterns to either side are not identical at this position, which indicates a different cosign angle.

Proof #2: Where Did the Light Go?
U-tube video is required. Professor Shaoul Ezekiel at MIT (Ref: 1). OPTICS: Destructive interference "Where does the Light go?"
Link: https://www.youtube.com/watch?v=RRi4dv9KgCg

Placing a second beam splitter immediately after the laser (See Figure 2) reveals the light from the dark or destructive interference areas is instead of adding as in superposition, is bouncing directly back toward the source, in this case the second screen. Here we find the so called destructive light energy is instead 'found at the second screen'.

Professor Shaoul Ezekiel at MIT runs a well-executed Michelson interferometer and attains the condition of total destructive interference, where the two beams completely cancel out one another, and he asks the question "Where does the light go?" At 4:30 minutes of the video the professor places a second beam splitter in attempt to find out where the light is going. He finds that the light has not undergone destructive interference but instead is returning back to the source, The fringes are reversed on the second screen; the dark fringe becomes a bright fringe at #2 screen and vice versa, similar to a positive and negative of a photograph.

Ezekiel's MIT demo w/2 beam splitters show the light bounces back to the source.

The fringes are reversed on the second screen; the dark fringe becomes a bright fringe at #2 screen (Figure 2) and vice versa.

So if the light beam has passed directly through another as stated in classic superposition, it would not have bounced back to the second screen. But maybe the light did not get to the first screen in the first place. But, block off either leg of the light before they have combined and the other beam of light re-appears. *So what did the light do?*

The Michelson interferometer does not become 4 times brighter intensity when a head on collision is occurring, instead the so called destroyed energy is found at the second screen. So here we almost have two versions of the same theory, depending on the setup. A bounce directly back with the same intensity, and a bounce to the sides with mirror miss-alignment, resulting in increased intensity. Either way it is wave collisions, not traditional superposition as currently described.

Without this second beam splitter in place, during the condition of total blackout the energy bounces back into the laser and may cause an unstable laser to partially de-phase. The energy is not destructively adding as the rules of superposition states. Instead the two beams hit head on reflecting directly back to the source. This in no way relates to water in a ripple tank.

Only a head on collision from perfect mirror alignment will reflect back to the source.
Note: Impinge may be a better description than collision. A circular ring and bright spot, not a fringe pattern is required. My experiments with miss-aligned mirrors that produce line fringes showed the light will not bounce back to the source, instead the light bounces to the sides resulting in intensity that is greater than either beam combined (Maximum 4 times directly to the

sides). *It would be interesting to know what the mirror miss-alignment angle is, when the light does not to bounce back to the source.*

Preliminary Theory:
The main goal in this paper was to present the error. The details of light wave collisions must be worked out further, however we can make some preliminary theory. Since this has been positive proof, we can theorize how light passes through and bounces at the same time. Since there is an obvious error in superposition, I will define he concept as: 'Super-Collision' for future reference, and give it the initial premise: *'Coherent Electromagnetic Waves of the Same Phase and Wavelength Collide'*.   I can only lay out some initial premises here. The proofs are undeniable, but the scientific community will have to sort out the full details.

We know some of the attributes, so may I theorize on what is happening.
The collisions appear to have several types depending on the interferometers alignment. I have outlined three (see below).
1. Bounce directly back to the source as in proof #2 with perfect component alignment.
2. Collision that alters trajectory of the colliding waves of each path altering the wave function.
   With superposition, Note: Huygens was not able to make reality of the correct the angles.
3. Two beams of light pass directly through another unaffected. A dumbbell lobe shape is
   required.

1. Bounce directly back to the source as in proof #2 with perfect component alignment.
Why does not the light from the experiment not bounce again – because after the collision the phases shift (wave function) preventing it. The two waves must have the same polarization to give rise to interference fringes. It is not possible for waves of different polarizations to cancel one another out or add together. Instead, when waves of different polarizations are added together, they give rise to a wave of a different polarization state.

2. Collisions alter trajectory of the colliding waves altering the wave function.

3. Double Lobe (Dumbbell Shape) initial theory.
This is the best I can figure how two source separate source beams (no interference pattern) of light appear to pass directly through another unaffected. The photon consists of an electric and magnetic component at 90 degrees to another. These components form an elbow dumbbell like shape. This shape has the attributes, if weightless, and elastic, to appear to pass directly through another seemingly unaffected. At collision the two dumbbell forms to put simply, wrap and spin around another like a football player spinning around a tackler. Any photons to the side of the collisions allow the colliding photons to resume their original phase, like support shoulders (this point may not be required for a 90 degree dumbbell shape).

Interference from a double slit is somewhat different, yet impingements are still occurring. Placing a beam splitter at the source, interference from a single, double slit, or a thin wire, does not bounce back to the source. Here we find something slightly different from a perfectly aligned interferometer. Instead the light is bouncing to the sides increasing the intensity to 4 at the fringes directly to the sides of center.   The lights builds at center spot is able to not bounce

because the polarization or wave function has altered by diffraction or collision of the edges of the slits.

With miss aligned mirrors or double slits, the collision causes a change in phase of the *colliding wave fronts only*, alters their phase or spin, de-cohering and preventing a re-collision, thus allowing the intensity to build up. This is "Schrodinger's Cat", once they collide or, pass through a detector, something is altered collapsing the wave function. Proof #3 'Double Interference or Interference in Succession Experiment' (synodicgravity.com or e-mail) gives some evidence of this. This will require some additional research. Many simulations of this interferometer are wrong when the math is compared to the equaling of both legs.

Conclusion
This one is a "no brainer". Superposition is a big error. It is utter nonsense to continue along its path. It might be impossible to get this one through. It looks like some would rather believe in a lie. All of relativity's principles can be explained with super-collisions.

Superposition is a fundamental principal much of physics is designed around. How much of the foundation of physics was built upon waves pass through another unaffected. The implications are far reaching into the very foundation, answering some unknowns in modern physics. This leads to a spectacular understanding of magnetism, and gravity, as well as the mechanics within chemical bonding. Concludes "Schrodinger's cat", and provides clues to answering the EPR paradox (Einstein-Podolsky-Rosen)**,** and duality.

Combining all the principals shown herein concludes the proof: Light waves under these conditions are impinging, bouncing apart forming what appears to be a classical interference pattern but is not! So what does this mean? The early pioneers could not make the correct decision with the instruments available at the time. This looks like a catastrophe! If Albert Einstein had known this he may have designed relativity's general theory on gravity around something more concrete than curved space time which has no gravity force in it period. His great genius managed to come up with the correct answers with the wrong or imaginary precepts. The scientific community will have to assemble together to find out what all is involved. I'm sure there will be great divisions, but this one is impossible to deny. Still some will deny it, coming up with esoteric explanations to fool themselves, as well as the elect. Probably be some collusion as well. This is going to be very difficult for some to accept as we were all instructed and conditioned otherwise.

Due to this error, imaginary concepts have arisen. Superposition = imaginary. Physical collisions = real. Because traditional superposition could not be directly seen it was imagined that light waves passed directly through another like water ripples. From this illusion other Imaginary concepts were built upon it, multi-universes, and gravity based on curved space time to name a few. With water waves the destructive energy is still is in the water.

The experiment is easily performed and materials are readily available. They are not like water waves (the concept that it was built upon and still used as the initial comparison explanation to this today) that pass directly through another unaffected. Total confusion arises from this comparison. By pure coincidence, Michelson's quest to search for the aether field using this

interferometer, now looked at a different way, points to its possible existence once again, as well as providing some foundation of its principles. Note: The ether field which permeates everything would be more appropriately named the Elohim field.

The proof s give some insight revealing how light can appear as either a wave or a particle (a single photon) or duality.   This concludes it is possible for an electromagnetic wave in certain specific circumstances to transmit a force; this includes particles with a charge, and the gravitational and magnetic force.

Huygens Principle
In 1816, Fresnel showed that Huygens 'Principle, together with his own principle of interference could explain both the rectilinear propagation of light and also diffraction effects. To obtain agreement with experimental results, he had to include additional arbitrary assumptions about the phase and amplitude of the secondary waves, and also an obliquity factor. *These assumptions have no obvious physical foundation* but led to predictions that agreed with many experimental observations, including the Arago spot. The Huygens–Fresnel principle provides a good basis for understanding and predicting the wave propagation of light. However, there are limitations to the principle and differing views as to whether it is an accurate representation of reality or whether "Huygens 'Principle actually does give the right answer but for the wrong reasons.

"When you have eliminated the impossible, whatever remains, however improbable, must be the truth."   Sir Arthur Conan Doyle – stated by Sherlock Holmes.

References:
Ref: 1. "Where does the Light go?" https://www.youtube.com/watch?v=RRi4dv9KgCg
Ref: 2. Polarization http://www.tulane.edu/~sanelson/eens211/interference_of_light.htm
Ref: 3. Radio Waves bounce off each other:
         http://q-track.com/2014/07/do-radio-waves-bounce-off-each-other/
Ref: 4. Article: 'Impedance Matching' Nuts and Volts Magazine March 1016 By Ward Silver
          Noax
Ref: 5. "Proof 3: Successive Interference" Synodicgravity.com or email.
Ref: 6. https://en.wikipedia.org/wiki/Huygens%E2%80%93Fresnel_principle