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SEEING DISTANT STARS IN NEAR-REAL TIME

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KEYWORDS: bible, space, measurement, light, time, relativity

ABSTRACT

What is space? Leucippus and Empedocles disagreed (Lederman, 1993). Leibniz and Newton differed (Alexander, 1956). Einstein disputed with himself (Einstein, 1920). The issue is not resolved today (Smolin, 2001).

This paper presents a new hypothesis about space: Gravity Warps Paired Spaces (GWPS). GWPS originates from Biblical descriptions of space. The Bible describes paired spaces that were created and stretched out. This indicates that space is a physical substance and consists of small pieces – paired spaces. If space consists of pieces that can stretch in size, the number of spaces per meter can change. How can space be measured consistently?

GWPS suggests that science has overlooked the fundamental measurement of space, the intrinsic measurement – counting the spaces. In one sense this new measurement does not change anything. All existing measurements are still valid. On the other hand, this new measurement affects every area of science because existing measurements of space are not consistent. This is a paradigm shift.

GWPS agrees with Relativity that the speed of light is constant. However, GWPS claims the units should be ‘spaces per second’ not ‘meters per second’. This change makes no difference in measurements on earth. However, for distant stars it reduces the light travel time by seven orders of magnitude.

INTRODUCTION

Space is a mystery. Lee Smolin, a research physicist, says, “[S]omewhere in our thinking there is at least one, and possibly several, wrong assumptions. At the very least, these assumptions involve our concept of space and time. . .” (Smolin, 2001)

Is space a relational concept or a physical reality? Is space continuous, or does it consist of discrete pieces? Is space uniform or varied? Can space move? These questions have been debated for millennia.

Ancient Greeks debated whether space was something or nothing (Lederman, 1993). Leibniz argued with Newton and Clarke whether space was a relational concept or a physical substance

(Alexander, 1956). Einstein puzzled how to keep space a physical substance and yet make it motionless (Einstein, 1920).

If space is a relational concept (continuous, uniform, and unmoving), then light from distant stars requires billions of years to arrive on earth. This conclusion is nearly universally accepted today. However, if space is a physical substance (discrete, variable, and movable) a different picture emerges. If space pieces vary in size, light from distant stars could arrive in near-real time.

The Bible describes space as a material (Humphreys, 1994; 2009). Other Biblical clues suggest that space is discrete, variable, and moveable. This paper presents a hypothesis based on these descriptions: Gravity Warps Paired Spaces (GWPS). This hypothesis explores the ramifications of Biblical descriptions of space.

WARRANT

GWPS suggests a foundational modification to physics. Is that warranted? Dr. Smolin describes the problem with foundational hypotheses:

If they are physicists, they want to know about space and time, and what brought the world into existence. These fundamental questions are the hardest to answer. . . It is the riskiest kind of work, but the most rewarding: When someone answers a question about the foundation of a subject, it can change everything we know. (Smolin, 2006)

A foundational modification to physics is uncomfortable because it could change everything we know. However, GWPS is not really a change, but rather an addition. GWPS suggests a way to measure space intrinsically. This new measurement method does not change existing measurements. Thus, in a very real sense, GWPS does ***not change anything***. Instead, it suggests a new type of measurement which will be consistent in all environments.

GWPS modifies conventional concepts of space. Is that warranted? Here are reasons:

1. Scientists acknowledge that concepts of space are not resolved.
2. Biblical descriptions of space differ from accepted properties of space.
3. Science has no intrinsic measurement of space.
4. A new experiment supports GWPS.
5. GWPS reduces starlight travel time to conform to the Biblical timeframe.

Space is uniquely connected with God's glory (Psalm 19:1, 1 Chronicles 16:26, Isaiah 42:5). Misconceptions about space obscure God's glory and challenge the accuracy of the Bible. Christians should address this issue. It is warranted.

We destroy arguments and every lofty opinion raised against the knowledge of God. . .
(2 Corinthians 10:5a ESV)

THE PARADOX OF SPACE

We cannot see, touch, smell, taste, or hear space. Space cannot be directly observed. Does that mean it is nothing? Some think so. They say space is the void, the vacuum, unending nothingness (Lederman, 1993; Magueijo, 2003). Others recognize that space must play some role in light, gravity, and magnetism. They see space as a physical substance (Newton, 1704). Some call it the fabric of space (Greene, 2004; Humphreys, 1994; 2009).

What is space? Every answer to this question leads to a paradox. Is space a physical substance? This would be advantageous in that it would provide a carrier for light waves. It would provide a way for gravity and magnetism to propagate. It would allow for the Biblical expansion and scientific inflation of space (Guth, 1997). However, expansion/inflation would cause space to move, and then the speed of light might not be constant.

Is space nothing? This is advantageous because ‘nothing’ does not move. Thus, the speed of light would be constant. However, this space provides no method of propagation for light, gravity, or magnetism. Furthermore, the expansion of space can only be described as the movement of pieces of matter away from each other. In rapid expansion, matter would move faster than light.

Both positions appear to have fatal flaws. That is why Einstein waffled back and forth on ‘ether’. Ether is the historical name for the substance of space.

The term “ether” is unique in the history of physics . . . because it is the only term that has been eliminated and subsequently reinstated, though with a different connotation, by one and the same physicist (Einstein). (Kostro, 2000)

The central issue in this paradox is whether space (ether) can move. Einstein tried to resolve this issue by insisting that ether must exist, but it cannot move.

The next position which it was possible to take up in face of this state of things appeared to be the following. The ether does not exist at all . . . however . . . the special theory of relativity does not compel us to deny ether . . . only we must give up ascribing a definite state of motion to it. . .

Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. Space without ether is unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time . . . But . . . the idea of motion may not be applied to it. (Einstein, 1920)

Einstein understood the paradox. However, his insistence that space could not move did not resolve the issue. For Biblical expansion or scientific inflation of space to occur, space must move.

BIBLICAL SPACE

God created space. He understands it perfectly. He described it in the Creation Account. The Hebrew word for space is *shamayim* (Humphreys, 1994; Taylor, 1996; DeRemer, 2007). This is usually translated ‘heavens’ and is where God placed the stars on day four. While ‘heavens’ is a good translation, the modern term ‘space’ makes the meaning clearer. The opening verse of the Bible says:

In the beginning God created
the paired spaces (masculine, dual) and the earth (feminine, singular).

The first issue that jumps out of this translation is paired spaces. Paired spaces are dual (Owens, 1989). The dual is a special form of plural that signifies pairs. It is used for mirrored pairs like hands, eyes, and ears (Kautzsch, 1909).

The dual form for spaces has bothered commentators for centuries (Lange, 1864). How can space be mirrored pairs? To resolve this, translators typically translate this dual word as a plural – ‘heavens’. Since English does not have a dual form, and there are three meanings for heavens, atmosphere, stellar space, and God’s dwelling place, the plural could be justified.

However, when distinctly talking about stellar space, scripture still uses the dual form. Genesis 1:14 is one example of many.

Then God said, “Let there be lights in the expanse of the paired spaces. . .”

Why did God use the dual form for spaces? If space, as a whole, consisted of a multitude of tiny, paired spaces, the dual form would be appropriate. The fact that spaces are in the dual form hints that space might consist of a multitude of paired spaces.

In the beginning God created
the paired spaces (masculine, dual) and the earth (feminine, singular).

A second issue in this verse is that one creation event produced two physical things – paired spaces and matter. Neither of these existed before creation. Paired spaces are not ‘nothing’. They had to be created. Nothing was what existed before anything was created.

A third issue is that paired spaces and matter are different. Paired spaces are masculine and dual. Earth is feminine and singular. The implication of the text is that spaces and matter are both physical realities, but they are not alike. Paired spaces are not matter, and matter is not paired spaces. They were both created in one creation event, yet they are totally different.

The second day of the creation account provides a further description of the paired spaces. On day two, God made the expanse that separated the waters from the waters. He defined this expanse in Genesis 1:8. “God called the expanse, paired spaces. . .” Throughout the rest of the chapter, God used these words together “expanse of paired spaces.” (Genesis 1:14, 15, 17, 20)

This expanse of paired spaces is described in other verses of scripture that help us understand what God did and how this is related to God’s glory.

Do you not know? Do you not hear?
Has it not been told you from the beginning?
Have you not understood from the foundations of the earth?
It is he who sits above the circle of the earth, and its inhabitants are like grasshoppers;
who stretches out the heavens (paired spaces) like a curtain,
and spreads them (paired spaces) like a tent to dwell in;
who brings princes to nothing, and makes the rulers of the earth as emptiness.
(Isaiah 40:21-23 ESV)

Bless the LORD, O my soul!
O LORD my God, you are very great!
You are clothed with splendor and majesty,
covering yourself with light as with a garment,
stretching out the heavens (paired spaces) like a tent.
(Psalm 104:1-2 ESV)

In summary, the Bible describes space with these properties:

- Space consists of mirrored pairs – paired pieces of space.
- Paired spaces are a physical reality. They were created.
- Paired spaces are not the same as matter. They are a non-matter substance.
- Paired spaces were stretched out. They moved.

There is a scientific problem with Biblical space. If space moves, how can the speed of light be constant? A new type of measurement resolves this issue.

INTRINSIC MEASUREMENT

There are two types of measurements – intrinsic and extrinsic. Extrinsic measurements require an external tool or instrument to make the measurement. Weight and volume are extrinsic measurements of matter. Measuring weight requires a scale. Measuring volume requires a container.

Moving an object from the earth to the moon changes its weight. Weight is an extrinsic measurement that is not consistent in different environments. Changing the air pressure or the temperature changes the volume of an object. Volume is an extrinsic measurement that is not consistent. Extrinsic measurements are not consistent because changing the environment changes the measurement.

On the other hand, intrinsic measurements are consistent in all environments. Intrinsic measurements do not require using a tool or instrument. The intrinsic measurement of matter is counting the number of elementary particles. This is the mass or moles of the object. The count of elementary particles is unchanged in every environment. It is always consistent. Because the count of elementary particles is a huge number, tools are used to help estimate the count. However, it is just a count.

In modern science, there is no intrinsic measurement of space. This is a huge problem because extrinsic measurements can change in different environments. Why is there no intrinsic measurement of space? If space is nothing, then there is nothing to count. Similarly if space is continuous, then there are no pieces to count. Thus, for scientists who think space is nothing or space is continuous, there cannot be an intrinsic measurement of space. There is nothing to count.

However, if space consists of discrete pieces – paired spaces, there is something to count. The intrinsic measurement of space becomes both possible and essential. The intrinsic measurement of space removes the inconsistencies associated with extrinsic measurements in changing environments.

Meters, miles, light years, etc. are all extrinsic measurements of space. They require a meter rod, ruler, light beam and stopwatch, or other external instrument. Extrinsic measurements are inconsistent when the environment changes. Could a meter of space in one environment contain a different number of spaces than a meter in another environment? If gravity warps space, could that mean that gravity changes the number of spaces in a meter?

Biblical space (paired spaces that can be stretched) permits an intrinsic measurement of space. Since the intrinsic measurement is always consistent, it should be used in every measurement of space. This is a paradigm shift.

Wavelength, λ , is typically measured in the extrinsic measurement of meters. However, wavelength is a measurement of space. Measuring it intrinsically is more consistent. Wavelength should be measured as a count of spaces.

The speed of light is the wavelength times the frequency. Changing the measurement of wavelength changes the units for the speed of light. The intrinsic units for light speed are spaces per second. This means the speed of light is not constant in meters per second but in spaces per second.

This changes everything. However, in a very real sense nothing changed. All the existing extrinsic measurements of space are still valid. Extrinsic measurements in a gravitationally stable environment like earth's surface are still accurate and useful. It is just when the environment changes that extrinsic measurements are inconsistent.

Earth's surface has little change in gravity. Extrinsic measurements are valid there. On the other hand, gravity changes by many orders of magnitude from the surface of a star to a point in space five light years from the nearest star. This is where the intrinsic measurement of space must be used for consistent calculations.

RELATIVITY

A foundational concept of Relativity is that the speed of light is constant. This seems to conflict with Biblical spaces which can move. Light travelling in space that is also moving would not

travel at a constant rate. Can this conflict be resolved? Yes, the intrinsic measurement of space resolves the conflict.

Relativity expects the units for the speed of light to be meters per second, the extrinsic measurement. GWPS suggests that the consistent measurement of space is counting the paired spaces. Thus, the units for the speed of light should be spaces per second.

If the speed of light is constant in spaces per second, then the speed of light is constant even in moving space. In moving space, light would still travel the same number of spaces per second. This resolves the paradox of space that puzzled Einstein. Einstein knew space had to have physical properties, yet he also knew that this conflicted with a constant speed of light (Einstein, 1920). The intrinsic measurement of space resolves this paradox.

Now the question is, “Has this resolution caused new paradoxes that are even greater?” Obviously, the speed of light being constant in meters per second and the speed of light being constant in spaces per second are not identical. In a few instances they make very different predictions.

HYPOTHESIS

Using the properties of space suggested in the Bible, a new hypothesis can be formed. Four axioms are required:

1. Space is a physical substance but not matter.
2. Space consists of a multitude of pieces. The Biblical phrase ‘paired spaces’ will be used to signify the small pieces that make up the whole of space. Paired spaces may have many properties, but one expected property is volume because space is a volume.
3. Gravity warps space. That is, the volume of each paired space is inversely proportional to gravity at that point. Strong gravity produces smaller paired spaces. Weak gravity produces larger paired spaces.
4. The speed of light is constant. That is, light travels through a constant number of paired spaces per second.

This hypothesis can be summarized in four words: Gravity Warps Paired Spaces.

To test GWPS, a mathematical representation is required. Derivation of this formula is challenging because of the new, intrinsic measurement. Existing formulas must be modified to use those units before the new formula can be accurately derived. The following formula is likely close, but needs refinement. It comes from volume formulas and Newton’s gravity.

$$\text{A paired space diameter} = \sqrt[3]{\frac{Kr^2}{Gm}} \quad (1)$$

In this formula, the cube root converts volume to length, r is the radius from a gravitational source, m is the mass of the source, G is the gravitational constant, and K is a new constant with units of volume acceleration ($\text{m}^3 \text{m/s}^2$). K is estimated to be $4.1465 * 10^{-104}$. This would make a paired space diameter to be Planck Length in earth’s gravity.

The intrinsic measurement of space in GWPS changes Planck Length from a constant to a function of gravity. A variable Planck Length could describe the gravitational warping of space.

Figure 1 is a computer-generated illustration of paired spaces between the earth and moon using these axioms and equation (Oard D., 2012). The actual size of paired spaces is far too small to see, but they are enlarged in the illustration so the relative sizes can be observed. This picture shows how gravity warps space.

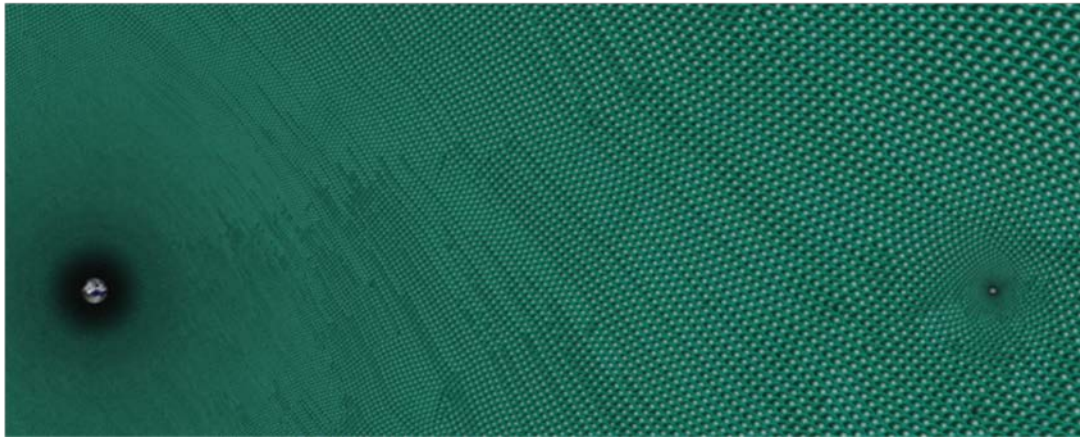


Figure 1. Relative sizes of paired spaces between earth and the moon using formula (1)

HISTORICAL EXPERIMENTS

Does GWPS agree with existing experiments about space? The most famous experiment about space is the Michelson-Morley (MM) experiment of 1887. At that time physicists generally agreed that space was some sort of substance which they called the ether. The MM experiment was designed to detect the earth's motion through the ether.

The result of the MM experiment troubled physicists. It showed that the earth was nearly standing still. That was obviously the wrong answer. Physicists carefully examined and refined the experiment, but the results were consistent. Eventually two hypotheses were proposed to resolve the dilemma.

1. Length Contraction: The length of the dimension parallel to the motion decreases as the velocity increases.
2. Entrained Ether: The earth pulls ether along with it. The earth is not moving through ether because ether is moving with the earth.

Both of these hypotheses resolved the problem, but in very different ways. At most, one was correct. Since no other hypotheses were found to resolve the issue, it was assumed that one of them must be correct and the other one wrong.

The debate was intense until an earlier experiment was considered. Bradley's starlight aberration showed that earth was moving through space. Thus, entrained ether that was moving with the earth could not be correct. Length contraction was accepted because it was the only known hypothesis that worked.

GWPS formula creates an unexpected, third way that resolves both MM and Starlight Aberration. The mathematics of GWPS causes spaces to move with the earth like entrained ether. However, this entrained ether is caused by paired spaces decreasing in size. The earth still travels through 100% of the paired spaces. The decrease in size of the paired spaces retains the starlight aberration angle precisely. GWPS agrees with both experiments. A new experiment is needed that can differentiate between length contraction and GWPS.

FALSIFIABLE

To be scientifically accepted, a hypothesis must be falsifiable.

But I shall certainly admit a system as empirical or scientific only if it is capable of being *tested* by experience. These considerations suggest that not the *verifiability* but the *falsifiability* of a system is to be taken as a criterion of demarcation. (Popper, 1959)

GWPS is falsifiable. Previous solutions to the starlight problem are not falsifiable. Time Dilation models (Humphreys, 1994, 2008; Hartnett, 2007), C decay, and light created on-the-way, all require unique circumstances during creation week that cannot be replicated today. Since the conditions cannot be replicated, the hypotheses cannot be falsified. That does not mean these models are wrong, but science cannot accept them. In contrast, GWPS is falsifiable.

The following paragraphs describe some attempts to falsify GWPS. The problem in most of these attempts is that GWPS and traditional theories make very similar, if not identical, predictions. Even though GWPS is a paradigm shift, it is hard to find issues in physics where anything observable changes.

Physicists have proposed quantum space-foam hypotheses similar to GWPS and are testing them (Amelino-Camelia, 2011; Ford, 1998). In one test, three photons from a distant star arrived at nearly the same time. If space came in discrete pieces, it was expected that the time for each photon would be more varied. This test does not falsify GWPS. First, there were only three photons. Second, the exact locations and time the photons left cannot be determined. Furthermore, GWPS uses an intrinsic measurement of space and has gravity-sized paired spaces that are not a part of the other hypotheses. Thus, GWPS predictions are very different from other quantum space-foam hypotheses.

Steve Miller saw that galaxies at all distances appeared to be the same age (Miller, 2010; Faulkner, 2010). Independently, He developed a model similar to GWPS. This model was tested by the 'light time effect' (Samec, 2011). This test showed that the speed of light seemed 'normal' in remote regions far from earth. This falsified any model that had the speed of light fast everywhere outside the Solar system. However, it does not falsify GWPS. GWPS suggests that the speed of light changes with gravity. Light travelling close to sources of gravity would not be fast. In the 'light time effect' tests, light passed through regions of strong gravity where GWPS agrees that light will take significant time.

GWPS and Time Dilation make similar, if not identical, predictions. One test that Danny Faulkner proposed in a private conversation was to measure the pulse rate of the Crab Nebula pulsar as it passed near the sun. GWPS suggests that the gravity of the sun would decrease the

size of the spaces in that region and thus delay the pulses. However, Time Dilation makes the same prediction. Gravity near the sun is stronger, and thus clocks in that region run slower than earth clocks. Thus, less time has elapsed near the sun than on earth. In that reduced time, light would not travel as far. The net result is that both GWPS and Time Dilation predict that the pulses would be delayed. Furthermore, light slows down in a medium, and light travelling near the sun would travel through the Solar Corona. This would also cause a pulse delay. This issue does not provide a testable distinction.

One issue initially seemed to falsify GWPS. GWPS predicted the distance to the moon was farther than traditional calculations. The distance to the moon has been measured three ways, so this prediction seemed to contradict well-established facts.

The most precise way to measure the distance to the moon is by reflecting a light beam off the moon. Dividing this round trip time by two and multiplying by the speed of light gives the exact distance. However, Time Dilation agrees with GWPS that the distance must be greater. All regions between earth and moon are in areas of reduced gravity. Relativity says that time runs faster in these regions than on earth. Light travelling in these regions has 'more time' than clocks on earth signify, and in this 'extra time', light travels farther. This makes the moon farther away than the simple calculation suggests. Both Relativity and GWPS agree that the simple calculation underestimates the true distance.

A second way the distance to the moon is measured is by parallax. This also is a very precise measurement. However, parallax only works in 'flat space' where light travels in a perfectly straight line. If light travels in a curved line as suggested by Relativity, the measurement given by parallax is wrong. The double curvature of space from the gravity of the moon and earth would cause parallax to underestimate the distance to the moon.

The third way the distance to the moon was measured was by travelling there in spacecraft. The actual measurement was not the distance, but the travel time. GWPS completely agrees with the travel time. If the velocity of the spacecraft was measured intrinsically (in spaces per second), no additional time is required to cover the larger paired spaces. Thus, GWPS completely agrees with the time required for spacecraft to travel to the moon.

The distance to the moon could have falsified GWPS. However, Relativity also showed that the simple measurements of timing a light beam or using parallax are both inaccurate and the actual distance is farther. It is not easy to find an experiment or observation in which GWPS can be falsified. However, there is one issue where GWPS makes a completely different prediction. It predicts that paired spaces must move.

NEW EXPERIMENT

GWPS predicts that a moving mass, like the earth, moves the surrounding paired spaces with it. The following illustration shows how this happens.

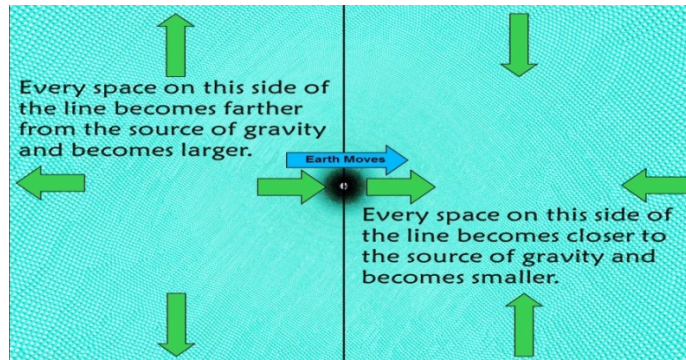


Figure 2. A moving source of gravity causes paired spaces to move.

As the earth moves left to right in Figure 2, all spaces to the left of the vertical line become farther from the source of gravity and increase in size. That produces outward movement of all paired spaces. The opposite happens on the right of the vertical line. There, gravity is increasing. This causes paired spaces to decrease in size, and move together. Notice that the spaces surrounding the earth are pushed and pulled to travel with the earth.

The math for calculating the exact speed space moves is complicated. However, the minimum and maximum speed can be calculated, and are 95% to 100% of the speed of the earth. Traditional science predicts that space does not move. A Modified Michelson Morley (MMM) experiment was designed to test for this difference. Both length contraction and GWPS resolved the original MM experiment. The MMM is designed so that length contraction and GWPS do not make the same predictions.

A rotatable light table was prepared so that vibrations, dust in the air, temperature changes, and ambient light were minimized. A collimated light source was placed at one end of the table and a digital camera with no lens at the other end. The camera is connected to a computer. In this experiment the orbital speed of earth around the sun provides the required motion. Earth's rotational speed also provides motion, but since it is about two orders of magnitude slower, it is ignored in these calculations.

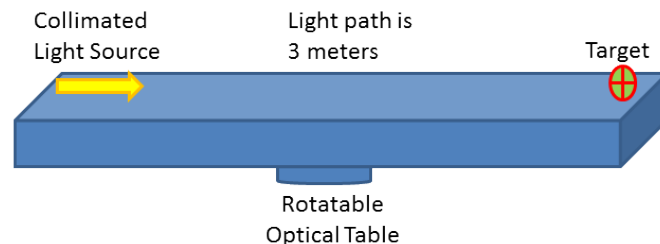


Figure 3. The optical table for the MMM experiment

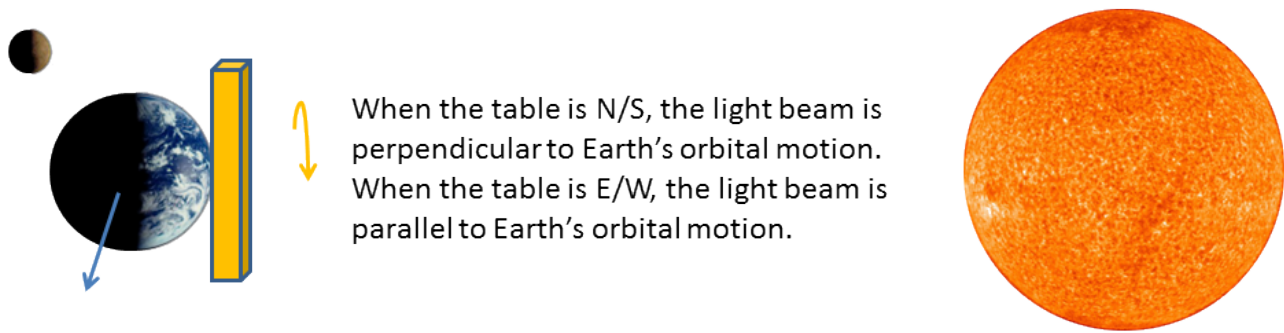


Figure 4. At true noon the table can be rotated parallel or perpendicular to earth's orbital motion around the sun.

To begin the experiment the table is rotated east/west at true noon. The camera takes multiple pictures of where the light beam is located. The computer calculates the center of the beam to an accuracy of about $0.1\mu\text{m}$. The apparatus is then rotated to north/south. The camera takes multiple pictures of the light beam, and the computer calculates the center of the beam.

The light path from the source to the target is 3.048 meters. The speed of light in air is $2.9970\text{E}+08$ meters / second. Thus, it takes $1.0170\text{E}-08$ seconds for light to cross the table.

During this time, the target has moved due to earth's orbital velocity. That velocity is about $2.9780\text{E}+04$ meters / second. Thus, during the time the light crosses the table, the earth has moved $3.0378\text{E}-4$ meters. This is about $304\mu\text{m}$.

When the table is oriented E/W the target moves $304\mu\text{m}$ toward the light source while the light beam traverses the table. This motion has little or no effect on where the light beam hits the target. In contrast, when the table is oriented N/S, the target moves perpendicular to the light beam $304\mu\text{m}$. This could have an effect on where the light beam hits the target. Traditional science and GWPS make different predictions.

Traditional Science predicts:

1. The beam is aimed at the center of the target (before it moves).
2. The target moves $304\mu\text{m}$ perpendicular to the light beam as the light crosses the table.
3. The speed of the laser is not transferred to the light beam. The speed of light is constant and no velocity of the emitting source is transferred to the light.
4. Space does not move, so this has no effect on the light beam.
5. Photons could be captured by air atoms which are moving with the apparatus. This could move the beam about $0.1\mu\text{m}$. This amount is not significant.

Traditional science predicts the target will move, but the light beam will not move. Thus, it predicts that the light beam should hit a spot about $304\mu\text{m}$ different after rotation. This chart shows the prediction of traditional science.

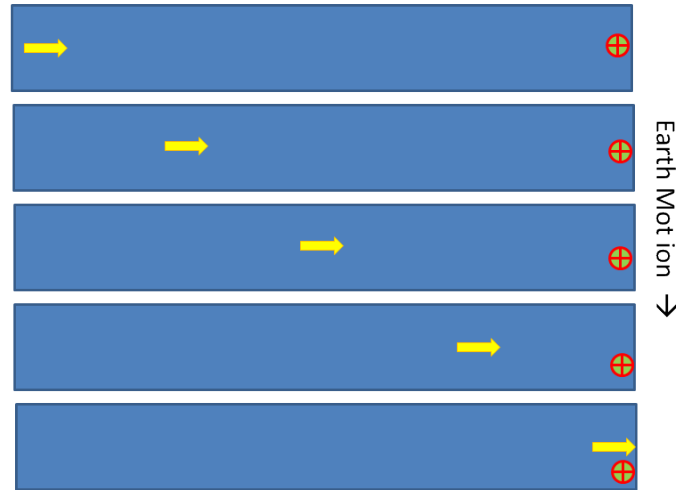


Figure 5. Traditional science predicts that the light beam will not move with the target.

GWPS predicts one issue will be different from traditional science (#4). The others are the same:

1. The beam is aimed at the center of the target (before it moves).
2. The target moves 304 μm perpendicular to the light beam as the light crosses the table.
3. The speed of the laser is not transferred to the light beam. The speed of light is constant and no velocity of the emitting source is transferred to the light.
4. Space moves at 95-100% of the speed of the earth. Light travelling in moving space moves with the space. This moves the light by 289 to 304 μm while the light crosses the table.
5. Photons could be captured by air atoms which are moving with the apparatus. This could move the beam about 0.1 μm . This amount is not significant.

GWPS predicts both the target and the light beam will move. Thus, it predicts that the beam will hit within 0 to 15 μm of the same location after rotation.

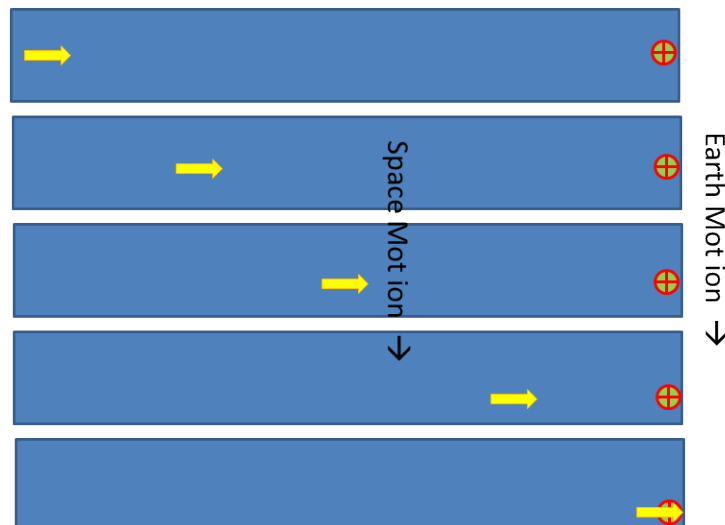


Figure 6. GWPS predicts that the light beam and target will move at a similar rate.

The actual experimental results show that the beam hits within 0 to 4 μm of the same spot after rotation of the table. This agrees with the prediction of GWPS (0-15 μm), but is very different from the prediction of traditional science (304 μm).

Our first question should be, “Can this be reconciled?” Have the traditional predictions been misstated? Is there some other theory that resolves this?

The length contraction hypothesis resolved the original MM experiment. The MM experiment compared the timing (not the location) of two light beams. If motion contracted the length of the apparatus, then the time required by that light beam would also be shortened. However, the new MMM is based on light beam location (not timing). Length contraction does not change where the light beam hits the target.

Can Relativity resolve this issue? No. Relativity says the speed of light must be constant in meters per second. Therefore, the light beam cannot take on any of the velocity of the emitting source or it would increase the speed of light.

The MMM experiment precisely agrees with the predictions of GWPS and disagrees with the predictions of traditional science. Perhaps a new hypothesis (other than GWPS) can be developed that also resolves the issue. However, it requires a new hypothesis.

It should be noted that GWPS maintains the constancy of the speed of light in this experiment, but in units of spaces per second. The movement of space moves the light beam location, but it does not change its speed in spaces per second at all.

STARLIGHT TIME

How does GWPS change the time required for distant starlight to arrive on earth?

1. Gravity diminishes exponentially as the distance from mass increases.
2. As gravity gets weaker, paired spaces get larger.
3. In remote space, light years from any gravitational source, paired spaces are huge.
4. Light travels through a constant number of paired spaces per second. In regions of low gravity, light travels a huge distance in a short time.

Because all paired spaces have different sizes, there is no simple formula to calculate the time the light takes. A computer program is the best way to estimate the total time the light takes. For distant stars, the time is reduced by at least seven orders of magnitude.

GWPS does not suggest that light from all stars appears instantly. Star light still takes time to arrive, just not as much time as previously thought. The closest stars could be seen in two days, so Adam would have seen some stars his first night. Light from the farthest stars visible to the naked eye would take several years to arrive. Light from distant galaxies not visible to the naked eye would take longer.

CONCLUSION

The nature of space has been a paradox for millennia. The Bible resolves the paradox. It describes paired spaces that were stretched out. This suggests that there is an intrinsic measurement of space. GWPS forms these axioms into a testable hypothesis.

GWPS requires much more testing and refinement. However, the concepts of paired spaces and the intrinsic measurement of space present a new path of research that has significant benefits. It resolves issues that oppose a young earth. It shows the accuracy of the Bible. It could even lead to understanding how light and gravity work.

God's glory is connected with paired spaces throughout scripture. Creationists' goal is to help the world see God's glory through what He has created.

The paired spaces declare God's glory and the expanse (of paired spaces) shows His handiwork. Psalm 19:1

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