There is a single reference point of fundamental significance in the universe in defining and determining the laws and phenomena of nature! The elementary laws of physics just happen to apply correctly only when defined with respect to that point!

Natural laws and phenomena are ultimately simple, elementary and universal.

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Henok Tadesse, Electrical Engineer, B.Sc

Ethiopia

e-mail: entkidmt@yahoo.com or wchmar@gmail.com

Abstract

The problem of reference frames was a long standing one which existed and was confusing for hundreds of years since the time of Galileo, until the 'solution' provided by Einstein. However, the whole theory of relativity is considered invalid in this paper and my other paper[1] in which I have attempted to show that the speed of light is constant only relative to its source and that the whole relativity theory is based on a mistake made by Maxwell in his assumptions about 'free' space. Relativity theory gave no explanation as to why planetary orbits are non-circular. Even the explanations given by general relativity on bending of light near the sun and Mercury perihelion advance are based on the estimated mass of the sun , which I have shown in my other paper[2] to be overestimated. The problems of non- circular orbits and perihelion advance are fundamental ones connected to the long standing problem of reference frames. Therefore, the problem of reference frames is still an unsolved problem. This paper hopefully provides the ultimate solution. There is an absolute reference point in the universe with respect to which nature defines and determines its simple, elementary and universal laws and phenomena. The laws of physics (Newton's laws) have been implicitly defined with respect to reference frames that are fixed to and moving with the systems to which they are to be applied. Newton's laws never correctly (exactly) predicted the phenomena of nature, such as non –circular planetary orbits and Mercury perihelion advance. The fundamental reason is that those elementary Newton's laws were not defined with respect to the absolute reference point. Nature defines and determines its laws and phenomena with respect to that absolute reference point, where as Newton's laws are implicitly defined with respect to reference frames fixed to and moving with natural systems to which they are to be applied. Ideally, the problem was that Newton formulated his laws which he never observed (exactly) happen physically. He never observed circular orbits, but he formulated laws implying circular orbits. Ideally, he should have stated the reference frame with respect to which his laws

are defined AND ***observed exactly as formulated***. All correct laws of physics should predict natural phenomena correctly if they are to be considered correct. The absolute reference point is what it is (an absolute reference) because it ***just happens*** that ***the laws of physics happen to be simple, elementary, universal and be able to predict natural phenomena correctly only when they are defined with respect to that point.*** Newton's laws can predict planetary orbits correctly only if they are ***redefined*** with respect to the absolute reference point. The reference frame of the observer has no fundamental role. The problem of orbit prediction should be ***solved*** in an absolute reference frame, and the results transformed to the reference frame of the observer. Can we discover the absolute reference point in the universe? Theoretically, yes.

Introduction

The problem of reference frames was a long standing problem which existed and was confusing for hundreds of years since the time of Galileo, until the 'solution' provided by Einstein. However, the whole theory of relativity rests on the constancy of the speed of light for all observers, which I have attempted to show this to be wrong in my other paper. Relativity is a theory based on Maxwell's mistake in his assumptions about 'free' space, according to that paper. Fundamentally, the theory of relativity lacks an intuitive element. A correct theory *of nature* should ultimately be understandable *intuitively*, even if it seemed unintuitive at first. Quantum mechanics is an example of a theory which seems unintuitive at first and becomes intuitive gradually (at least to some people). A correct *theory of nature* has to fulfill both (at least one) of two criteria:
1. It should ultimately be understandable intuitively
2. There should be observations supporting it.
The theory of relativity fails to fulfill both of these criteria. No one has understood the theory of relativity intuitively in the long time of one hundred years since its initial formulation. If anybody did, he/she would have explained it to us intuitively.

Now we will go one hundred years back and look at the problem of reference frames with a fresh view, from an entirely new perspective. Hopefully this paper will provide the ultimate solution to the problem.

Discussions

There is an absolute reference point in the universe, with respect to which all the simple, elementary, universal and fundamental laws of nature and phenomena of nature are defined and determined. Nature defines its laws and determines its phenomena with respect to that point. All other reference points (frames) have no significance in defining and determining the laws and phenomena of nature. Why is that point the 'preferred' absolute reference point? No, it is not preferred arbitrarily, but ***it just happens that the simple, elementary, fundamental, universal laws of physics can be applied to correctly predict natural phenomena only when they are defined with respect to that absolute reference point in the universe.***. ***We can formulate and observe, observe***

and formulate simple, elementary, and universal laws of physics (of nature) only if they are defined with respect to the absolute reference point and only in natural systems at absolute rest at the absolute reference point.

Why are we not observing circular orbits in the solar system as predicted by Newton's laws? This is connected with the way laws in physics are formulated. Ideally, how should a law of nature be formulated? **Fundamentally, the laws of nature should be formulated as they are observed (happened) and observed as they are formulated.** Newton formulated laws which he never observed happen. Newton never observed his laws apply in their *elementary* forms in the earth's reference frame. He never saw circular orbits. Thus, ideally, he should have followed the principle: formulate as observed and observe as formulated. On the other hand if Newton tried to formulate what he was observing in the solar system (non-circular orbits), as stated in the above principle, he wouldn't be able to ***observe and formulate, formulate and observe*** those elementary, fundamental and universal laws, because what he was actually observing was the distorted, transformed and complex forms of nature (non-circular orbits). Therefore, ideally, he should have *physically* explored the universe and tried to *formulate what he observed and observe what he formulated* from every point in the universe, until he observed (and formulated) nature (and its laws) in its easy, elementary, fundamental and universal forms. This would happen at the absolute reference point in the universe. Then he would have defined his laws with respect to this absolute reference point.

Nature defines its simple, elementary, fundamental, universal laws and determines its phenomena with respect to a single reference point in the universe. Therefore the fundamental problem was that *the laws of nature* had an absolute reference point, whereas *the laws of physics* did not have any explicitly stated reference point with respect to which they should be defined and applied to predict natural phenomena correctly. Implicitly the reference point of the laws of physics were (are) always fixed and moving with the system to be observed. Therefore, the laws of physics could not correctly predict the phenomena of nature. This is why Newton's laws fail to correctly predict the shape of planetary orbits in the solar system's frame of reference. This means that Newton's laws are not complete because a law will be correct and complete only when it predicts natural phenomena correctly. Therefore, ***Newton's laws should be corrected so that they include the frame of reference with respect to which they are defined: an absolute reference frame fixed to the absolute reference point.*** Only then can Newton's laws correctly predict natural phenomena.

The simple, elementary and universal Newton's laws can only be ***formulated AND observed AND applied*** to correctly predict natural phenomena only when they are defined with respect to the absolute reference point.

An elementary, universal law of physics is not complete without clear statement of a physical reference point (frame) with respect to which it is defined: the absolute reference point.

For example, Newton's laws are not complete because they do not specify the frame of reference with respect to which they are defined. Thus once a (simple, elementary) law of physics is formulated with respect to a reference point (frame), it should be tested if it is correct *with respect to that reference point*.

Elementary, universal, fundamental laws of physics can only be defined with respect to the absolute reference point, whereas non-elementary , complex, and local laws can be defined with respect to the reference frames of the systems to which they are to be applied .

For example, what kind of law of motion of the moon can one formulate in the reference frame of the earth. It would be complex, local (non-universal) because the moon's orbit is not simple (not circular). If one is to formulate the law governing the motion of the moon around the earth in the reference frame of the earth, all he/she can do is to describe the mathematical expression of the orbit. Therefore it would be specific (non universal) and cannot be used to predict phenomena even for slightly different cases. The formulation of theories starts with observation of natural phenomena in our local spaces. Always the phenomena will not be in their simple, elementary forms (as far as we they are not happening in natural systems which are not at absolute rest). However, we simplify the problem by ignoring the distortions. For example, Newton ignored the non-circular shape of orbits and assumed them to be circular. Then we formulate laws that govern those simplified phenomena. These laws would be elementary and universal. But can we apply these laws to our reference frames to predict natural phenomena with accuracy? No. Those elementary laws can only be defined with respect to the absolute reference frame if they are to predict all natural phenomena (to which they apply) exactly.

Fundamentally, the laws of nature should be formulated as they are observed (happened) and observed as they are formulated

Fundamentally, the laws of nature should be formulated as they are observed (happened) and observed as they are formulated. In general, this means that a law formulated as observed in the reference frame of one natural system (e.g a solar system at absolute rest) cannot be applied in the reference frame of another natural system (e.g our solar system) with a different state of absolute motion and absolute position. To predict phenomena in the second natural system there would be two options: 1. To apply the laws of the first natural system (in the reference frame reference of the first natural system, with respect to which they were defined) to the second natural system and transforming the result to predict what an observer in the frame of reference of the second natural system would observe. OR 2. To formulate for the second natural system its own laws, as observed (in its own frame of reference). But the elementary laws of nature can only be observed and formulated in their simple, elementary and universal forms only in natural systems at absolute rest at the absolute reference point . Thus, we conclude that all natural phenomena can be explained and predicted correctly and easily in terms of the (elementary) laws of nature that are defined with respect to the absolute reference point (frame).

Newton's laws are not laws to be applied in the reference frame of our solar system because our solar system is not at absolute rest. If the solar system was at absolute rest, the planetary orbits would be circular. Therefore, we cannot apply Newton's laws in the reference frame of our solar system to determine the planetary orbits around the sun. Then how can we determine the planetary orbits of our solar system by using the elementary Newton's laws? We solve the problem by applying Newton's laws (which are ***redefined*** with respect to the absolute reference frame). After solving the problem in the absolute reference frame we can easily determine what size and shape of orbits an observer in the solar system (or any observer) would observe by simple mathematical transformations.

Therefore, the problem of predicting the orbits in the solar system or any phenomena in any natural system should be solved by applying the simple, elementary laws of nature that are defined with respect to the absolute reference point.

Nature and its laws are ultimately simple and elementary. Nature happens to be in its simple, elementary form only in natural systems that are at rest at the absolute reference point in the universe, and complex and distorted in natural systems in absolute state of motion (and position).

How should laws of physics be formulated normally ? We physically observe natural phenomena in our local spaces. Then we try to formulate laws governing those phenomena. The formulated laws should exactly explain and predict natural phenomena. If the law doesn't correctly explain and predict those phenomena, then that law is not considered a correct law of nature. But natural systems always exist (except those in an absolute reference frame) in their complex forms so that it will be difficult to formulate simple laws governing them (e. g non-circular orbits, and non spherical sun). So do we conclude that nature is too complex to be formulated by simple laws? No. Nature and its laws are ultimately simple and elementary. So what we are observing should be distorted (complex) forms of those simple forms.

Nature and its laws are ultimately simple and elementary. And nature in its simple and elementary form exists only in natural systems that are at rest at the absolute reference point. Nature and its laws becomes complex in natural systems (when observed from all reference frames) that are at absolute state of motion. Therefore, ideally, the elementary laws of physics should be formulated by observing natural systems that are at rest at the absolute reference point in the universe. It would be easy to formulate Newton's law of gravitation if one observes a solar system at rest at the absolute reference point.

Therefore, ideally, when searching for the ultimate laws of nature we should always look if we are observing nature in its simple, elementary and universal forms.

In the last topics we discussed that we can predict natural phenomena correctly only by applying the laws of nature (that are defined with respect to the absolute reference frame). For example, we can only predict the non circular orbits around the sun only by applying Newton's laws as defined with respect to the absolute reference point. What is discussed in the present topic is that the results obtained with respect to the absolute reference point will be complex and distorted from elementary forms, even though they are correct, due to the absolute motion of the natural system. Therefore, an observer in the reference frame of an absolutely moving natural system (and all observers in all reference frames) would observe the complex non-circular orbital shapes and non spherical shape of the sun.

All observers in all reference frames will basically predict (observe) the same shape of the planetary orbits, because all of them apply the laws of nature which are defined with respect to an absolute reference frame. Therefore, the reference frame of the observer has no fundamental role. Here, 'observe' can also be taken to mean 'predict'. All of them will predict the same specific shape (the same mathematical expression for the orbit).

The simple, fundamental, elementary, and universal laws of nature will happen only in natural systems that are at rest at the absolute reference point.

Distortion of the elementary laws and phenomena in natural systems in absolute motion

Theoretically the distortion of those elementary laws of the universe is caused by the absolute motion and by the absolute position of the system (e. g the solar system). Both absolute motion (velocity and acceleration) and absolute position cause the distortion (transformation) of those elementary laws in different extents and forms. The effect of absolute motion might be more pronounced than the effect of absolute position. This means that, theoretically, the shape of the sun and the planetary orbits may be distorted by absolute motion and by absolute position (the effect of position is due to non symmetrical gravity in all other points other than the center of the universe) of the solar system. Therefore it is possible to estimate the state of absolute motion of natural systems by observing the form and extent of distortion of the simple and elementary laws and phenomena of nature in that system.

It is not the absolute motion of the observer that distorts those elementary laws and phenomena. It is the absolute motion of the systems (e. g the solar system) that distorts those elementary laws.

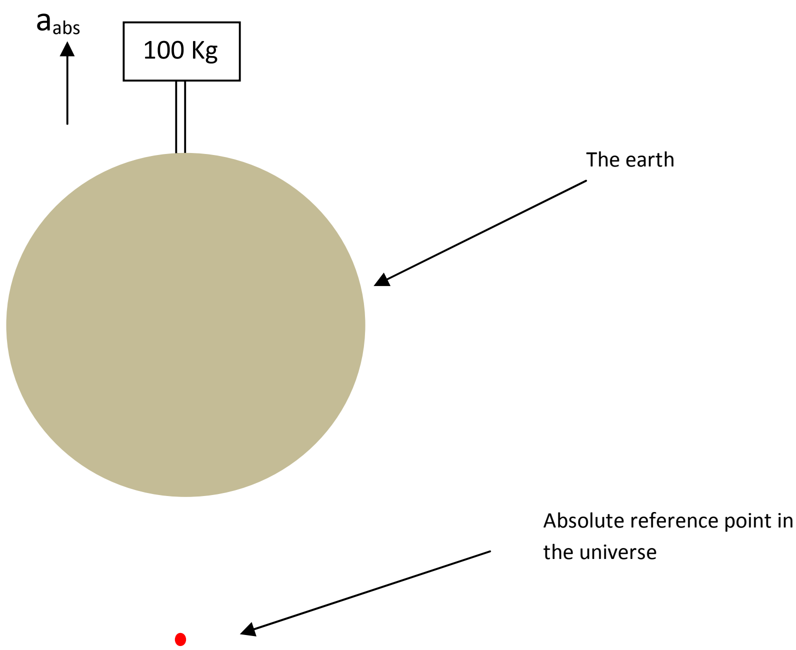
But what do we mean by simple, elementary forms of nature (phenomena) and its laws? For example, if one observes the non-circular orbits of planets, he/she will certainly ask why it is non-circular; non-circular shape is not a direct consequence of the elementary laws of nature. Non-symmetry is also not a direct consequence of the elementary laws of nature. And he/she will certainly ask why the shape of the sun is non-spherical. Even the smallest observable deviation from the sphere, other than that can be accounted to the non symmetrical distribution of planets around it, will invoke a question. If one observes the universe as different in different directions, with galaxies receding away from him when looking in one direction but approaching him in another direction, this non-symmetry will invoke a question. Nature and the laws of nature are in their simple, elementary forms when they do not invoke any question in the observer, i. e when they are ultimately accepted as postulates: at the absolute reference point or the center of the universe. For example, it is only a postulate that the planetary orbits will be circular if the solar system is at absolute rest.

Can we theoretically discover the absolute reference point in the universe? Or can we know our absolute state of motion?

Theoretically, yes. Imagine that we can control the speed and direction of motion of the solar system. Theoretically we can accelerate, decelerate, change directions. Then we continuously check the shape of the planetary orbits. Then at the state in which the shape of planetary orbits happen to be circular and the shape of the sun becomes spherical, the solar system is known to be at absolute rest. Going to the absolute reference point (the center) of the universe is also theoretically possible, for example by following non local gravity. In my other paper[2] the universe has a center away from which all non-local gravitational forces in the universe are directed.

Example of absolute problems

For example, let us see the problem of determining what load (force) is being carried by a mechanical structure shown below. Imagine a 100 Kg object is carried by the structure fixed on the earth's surface. What absolute load is being carried by the structure, assuming that the earth is accelerating with absolute value a_{abs} in the direction shown (ignore the gravitational force in the universe and also the rotation of the earth for simplicity).



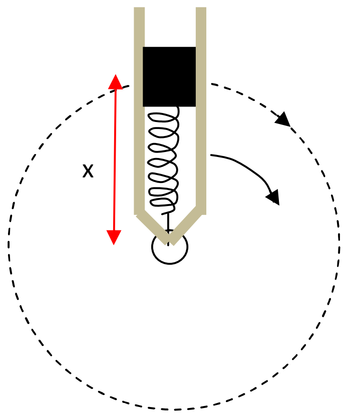
The above figure is not drawn to proportion.

Assume the vertical column has no mass to simplify the problem. According to our knowledge in physics so far, the load carried by the beam is
$m*g = 100*9.81 = 981$ Newtons, regardless of the absolute acceleration of the earth in space.

According to the theory presented in this paper, however, the above calculation would be correct only if the earth was at absolute rest at the absolute reference point (assuming that the value of g is 9.81 m/s^2 at that point too, to simplify the problem). In the above example, however, the earth is in absolute acceleration. So the above calculation is fundamentally wrong.   The correct calculation would be:
$F= m*g + m* a_{abs} = m* (g + a_{abs}) = 100*(9.81 + a_{abs})$

Therefore, the absolute load carried by the vertical structure is greater than that calculated according to our knowledge so far.

In the above example we assumed a mass of 100 Kg. But how can we determine the value of mass accurately. It is known that we use standards of mass to measure mass. How do we normally measure mass? We actually do not measure mass directly, we measure the weight of an object and divide it by 9.81. Our instruments effectively do the same thing. Suppose that you have measured the mass of an object to be 100Kg at one time by a weighing instrument. Suppose that, again you measure the mass of the same object, but this time the absolute acceleration of the earth in space has changed from the previous value. Therefore, you are going to get different values of mass at different times. So what is the most reliable way of measuring mass. According to the theory presented in my other paper, the force of gravity is zero at the center of the universe and an object put at that point is at absolute rest. Therefore we can measure mass reliably only at that point and get repeated results only at that point, theoretically. How can we measure mass at the center of the universe where there is no gravity? Theoretically by the law, F=ma, for example by rotating the mass with a specified speed about an axis and measuring extension of a spring, as shown below.



The other alternative is to measure weight with a weighing instrument and subtract the force due to the absolute acceleration of the earth, provided that we know it. Suppose we have a standard mass measured at the center of the universe, brought back to earth, then we measure the value of the earth's absolute acceleration at any time using that standard mass, and then use this value of earth's absolute acceleration to measure and calculate the value of other masses.

Therefore, the absolute (even relative) values of forces and masses we measured at one time can change due to a change in an absolute acceleration of the earth.
The above argument was presented for its theoretical significance only, not for its practical significance, which is not in the scope of this paper.

The non zero absolute values of position, velocity and acceleration can theoretically affect measured values of mass on our earth. What about length and time? Length doesn't seem to be affected because a measuring stick will not be compressed or expanded to any significant extent by the forces of acceleration and gravity. Time also will not be significantly affected, for electronic clocks. For mechanical clocks that operate on gravity, they may be affected if the solar system went to a position of stronger gravitational field.

Therefore standards of measurements for time and mass are reliable if set at the center of the universe.

Conclusions

The key problem why presence of an absolute reference point in the universe has never been accepted or predicted was that the extremely subtle nature of the problem : "Why should any point in the universe be the 'preferred' absolute reference point ? Why not any other point?" The problem is extremely subtle because the answer lies in the question itself. The key idea in this paper is:

The absolute reference point is what it is (an absolute reference) because the elementary laws of physics just happen to predict natural phenomena correctly only when they are defined with respect to that point.

Newton's laws explain natural phenomena (e. g planetary orbits) only approximately and not exactly in our frame of reference. The problem was not because the laws themselves were incorrect, but because of being defined implicitly with respect to the wrong reference frames.

We can compute planetary orbits correctly by redefining Newton's laws with respect to the absolute reference point. But this requires measurement of the absolute motion (velocity and acceleration)and absolute position of the solar system in space. But we can't know our absolute motion and position directly because we don't know yet the location of the absolute reference point. So we follow the reverse approach. We prepare a mathematical model in terms of the masses, the absolute position, absolute velocity and absolute acceleration of the solar system for the orbits and by starting from the actual measured sizes and shapes of the orbits, we might work backwards to estimate our absolute velocity and position in space and determine the physical location of the absolute reference point in the universe.

References

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