Physical Reality Has Only Absolute Space and Time

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Abstract

There are two spaces, the metaphysical space and the abstract mathematical space. The mathematical space of physics is the Euclidean space commensurate with the innate faculty of man. There is the mysterious metaphysical time and there is a physical time based on the mathematical scalar. The universe and everything within exists only in the moment of the present. The past and the future are only within the mind of man. The only reality is the present. Time in philosophy is metaphysical time. It is the motion of the present, the unceasing unfolding of reality. Every real event in the universe happens simultaneously. Absolute space time is a principle of the natural world. An Euclidean coordinate system together with synchronized coordinate clocks implements a system of universal physical timekeeping. There is a covenant of physical reality which sets forth in a determinate way what constitutes a physical quantity. Physical reality has absolute three dimensional Euclidean space and absolute universal time. The greatest blunder in physics in the twentieth century is Einstein's postulate that the speed of light is a universal constant.The speed of light cannot be a universal constant.The physical reality of Newtonian mechanics and the physical reality of special relativity are mutually independent. If Newtonian mechanics is accepted, all of physics based on Minkowski spacetime had to be rejected; if physics based on Minkowski spacetime is accepted, all of physics not based on Minkowski spacetime had to be rejected.

1 Space and Time

There are two spaces, the metaphysical space and the abstract mathematical space. The mathematical space of physics is the Euclidean space commensurate with the innate faculty of man. There is the mysterious metaphysical time and there is a physical time based on the mathematical scalar.

In some mystical traditions, man is said to have two bodies, the coarse physical body and a fine body. The fine body has the instrument of the heart and mind and the inner self, the "I", which has consciousness of its own existence. The mind may be considered the living force or essence of the physical brain,

but the true inner self is even at a higher level of consciousness then the mind. Whenever we talk of knowledge and understanding, what it means is the totality of the experience of man living in the world which is stored somehow in his memory and of which the inner self is aware of. So the notion of space and time ultimately is traceable to the working of the instruments of man, the physical senses, the heart and mind and his inner self being conscious of his own existence and of creation.

Metaphysical space is the domain of creation in contradistinction with the content of creation. It is the ethereal atmosphere of creation in contradistinction from other created things. Everything physical found within creation is what we call the universe. The things that fill the universe are mainly of matter and energy - the galaxies of stars, the planets around stars and light energy. There is possibly another content of the universe - the ether. Matter, energy and ether form the content of the universe in contradistinction to space, the essence and substance of which being "nothingness" or "emptiness" - the origin of the common notion of "empty space". Every physical thing from the largest like the stars and planets down to the smallest matter particle occupy its own space, each has its own space and the one does not encroach upon that of the the other - in general it is not known that separate matter entities may share the same space. So matter occupy space, but almost an infinitesimal amount as most of space is filled by light. The notion of space that man forms is strongly influenced by his physical senses, especially that of touch and sight. On the other hand, the notion of time is not influenced directly by his physical senses but by his inner self. Space seems physical and time metaphysical.

Man's notion of time is formed mainly because of his awareness of his own existence - that his existence is real. With his awareness of his own reality, he could sense the reality of creation and the universe. Through his experience from childhood to adulthood, he is also aware of what is the past, present and the future. And time is this notion of the past, present and future. There is a moment in time. A moment passes and it is no more. We could conceive of the future ahead just as we could remember the past - but the reality of the past never returns and the future is yet to exist. ***The universe and everything within exists only in the moment of the present. The past and the future are only within the mind of man***.

The only reality is the present.

Time in philosophy is metaphysical time. It is the motion of the present, the unceasing unfolding of reality. It is the universal motion of the universe, an absolute pure motion that does not involve space - a motion of itself and by itself. There is only one real moment in time - the universal present. The present includes the whole of universe.

Every real event in the universe happens simultaneously.

In the ordinary sense, time is duration. It is not a content of the universe like matter or light. Time and motion are intimately related. Everything in nature

is in motion - there is no absolute rest. Motion always take a certain duration for completion; no motion completes itself instantaneously.

Space and time are metaphysical. What is metaphysical is unknowable in its absoluteness. Man forms only notions of space and time through his innate faculties and such notions are dependent on man. Metaphysics assumes there is a reality independent of man and this reality is beyond the comprehension of created man who only has limited endowed faculties. Real space and time are absolute, without any attribute.

Absolute space and time is a principle of the natural world.

The principle reflects the limited endowed faculties of man. The space and time that have attributes are the abstract space and time formed as notions within the mind of man and which are formalized through his mathematics.

1.1 Space, Time and Physics

For the purpose of empirical studies, abstract models of space and time are constructed and only such models may have attributes - real space and time do not. With such abstract models, a system of physical measurements incorporating standard physical units may be implemented. Only with such a system that a coherent empirical examination of physics in space and time is possible. This system makes possible measures of metaphysical space and time with quantifiable physical reality.

1.1.1 Man's Space is Euclidean

Consider first the way to measure space. It is not through accident that Euclid formed his geometry as it was and not in some other manner - his geometry is one commensurate with the innate faculties of man the created being. Man learns through experience about space through his physical senses - here, mainly through the sense of touch and sight. It is conceivable that man long ago would have ideas of what is straight, what is a surface in contradistinction to volume. The idea of straight would have been formed when a string is used to hang a weight. The right angle occur very naturally in human structures since ancient time. The sense of perpendicularity could easily be form as man walks upright or when things are not upright, they topple easily. The ancient Chinese had the four directions of the compass which, together with a direction up and another down, would be our Cartesian coordinate system. So man's space is Euclidean commensurate with his innate faculties.

1.1.2 Time in physics is Motion

In physics, we have to render what is metaphysical and unknowable manifest and measurable. The abstract mathematical construct of time is one that is the most simple - just the plain scalar of real numbers. Routinely, we see its use as a variable t or in $\frac{ds}{dt}$. The use of the scalar together with physical clocks

completes our physical model of time. But how can be sure it is a good model of time? Only through experience can we tell.

Time in the modern everyday world means the reading on the wall clock or the time of our wrist watch. Physicists too cannot escape from this common perception about time being just a clock reading. But when the significance of time in physics is examined more carefully, it is just this:

Time in physics is a reference motion.

A clock shows nothing other than its motion; it is we who "read" into it time. It is strictly a motion that is observed and the motion is somehow made used of to give a quantitative measure to our notion of time.

In physics, the most important aspect of time is not the notion, but the measurement of it. The only known way of measuring time is with reference to physical phenomena that exhibit regular motion like the motion of the shadow in the sundial, the regular trickle of water droplets, the swing of a pendulum - the usual historical clocks which enable a convenient manner of "counting" motion.

So it may even be said that there is no time in physics, but only motion. Take the simple formula: $speed = distance/time$. We say we are "timing" because time is always associated with clocks. But the physical reality of the "time" in the formula is strictly the number of ticks of a clock - just only a count of a certain motion of the clock. So what time involves is only a measurement of the reference motion of a clock. So it is easy to be misled to just think of the clock as giving time when the reality is that the clock is giving only a reading of its motion. But because of the almost universal perception that physics involves time - a rather mysterious thing - and the customary use of a variable t to represent time, we may actually have allowed philosophical concepts of time to infiltrate into our concepts in physics thereby causing controversy and confusion in physics as a science. There is no conceivable way to incorporate time into the study of physics without clocks.

Change in physics with respect to time is only about it being viewed and referenced with respect to the motion of a clock.

But there is the assumption that good clocks do in reality follow time. The assumption and acceptance is only one to be decided if physical theories based on clocks giving time are useful. Empirical evidence all along have shown that a good clock does give readings that may be taken to represent the mysterious metaphysical time.

2 System of Standard Physical Measurement

There is reality in metaphysics. There is reality too in physics, but it is the physical reality of the natural world that physics examines. Space and time are fundamentally metaphysical, but abstract concepts have been formed of them with the help of mathematical constructs in order that physics may be

examined within their domains. Abstract space and time have to be realized as measurable physical reality before they could be incorporated into the study of physics. Absolute space and time have no attributes; they have no metric of length nor any measurement in units. Only the theoretical models give space and time attributes and set rules for measurement of quantities and assigning physical units to measures. How is it done?

Logic demands that only absolute physical space and time may represent absolute metaphysical space and time.

2.1 Standard Unit of Length

We now examine the significance and implication of defining a standard unit of length - say the meter. It is a linear distance standard. It may be implemented as a standard bar prototype or as the distance traversed by light in a certain duration of time measured in the standard second. The actual manner of implementation is irrelevant to an examination of theoretical physics as it is only a technical issue outside of the domain of physics theory.

First consider a typical determination of a physical distance of length between two fixed points in space. Points in space could only be specified after a coordinate system has been established - not before. So all specification of positions in space may only be realized only relative to a coordinate frame. Instead of saying two fixed points A and B in space, it is more convenient to just imagine a rigid bar AB with its ends to be the points A and B in space.

Without loss of generality, consider a standard bar AB lying on the ground stationary in a fixed Euclidean coordinate system. The ground coordinate system is in units defined by the standard bar. Let us measure the ground bar AB in a general coordinate frame that may have general motion and rotation relative to the ground. As we want measurements only in the consistent standard meter, the general coordinate system has to be standardized in some manner. Theoretically, it is a trivial matter - it is sufficient that a single reading of AB be done at any moment in time. Once a reading of AB is known, then the coordinate system could easily be standardized to also be in the standard meter. So it is trivial that a definition of a standard unit of length has the subtle implication that the standard measures the same in any general Euclidean coordinate system - it becomes a true absolute universal standard of length.

The definition of a standard of length makes the standard absolute and universal in Euclidean space.

The implementation of a standard of unit of length is purely a technical issue and has nothing at all to do with a physics theory that uses it. Reading the length of the bar AB from a general moving coordinate system may be technically difficult just as there is difficulty in an earth laboratory trying to measure the length of a moving rod - the sensible way is to stop the rod from moving for taking a measurement. For an observer aboard an airplane trying to measure the bar

AB on the ground, the sensible thing to do is for the observer to land, go to the bar and measure it.

The principle of absolute space then extends also to the physical space of physics:

Physical space is absolute and three dimensional Euclidean.

The principle above is not arrived at due to a preference for any particular philosophical viewpoint. Nor is it mysterious. The principle is commensurate with the innate faculties of man the created being as well as the constraints nature imposes on how man may understand, view and measure space.

2.2 Standard Unit of Time

We now come to examine the significance and implication of a definition for the standard unit of time - the second. Just as with the definition of standard length, it is a purely technical issue outside of the purview of physics theory.

There is only one way to measure time in physics - through the use of clocks; there is no other way. We could termed time in physics to be physical time because it is a count of motion of clocks. As time is the unfolding of the reality of the present, the unfolding of the present of local clocks is the basis of representing time. In order to obtain a physical time, a system has to be implemented to quantify the reality of the clock's present.

Historically, the standard unit of time had at times been defined with the rotation of the earth as the standard clock. The second is 1 / (24 x 60 x 60) of the mean solar day. All clocks could then be calibrated to give time in standard seconds. The exact definition used is irrelevant in an examination on how the standard second is incorporated in a system of physical measurements.

2.2.1 Local Coordinate Clocks and Synchronization

First, it is helpful to examine the notion of ***local coordinate clocks*** of an Euclidean coordinate system. It is conceptualized that for every position $P(x, y, z)$, there is a real clock attached. It is this local clock that gives reading in real physical standard seconds - but only and strictly for the point P.

Let us now synchronize all coordinate clocks to be the same to that at the origin $O(0, 0, 0)$. Clock synchronization, too, is also only a purely technical issue outside of the purview of physics theory. Any method may be used. A simple method would be through transporting a clock to O, do the synchronization and transporting it back to its original position. After synchronization, we have a coordinate system replete with a coordinate clock system that reads in standard time - real, physical and universal.

An Euclidean coordinate system together with synchronized coordinate clocks implements a system of universal physical timekeeping.

Strictly, we have only implemented universal timekeeping only for a specified coordinate system. We now attempt to make it general for any coordinate system.

Let P be a stationary point in a coordinate system S. The coordinate clock at P is representative of the time of the system S. Consider another general coordinate system S' that may have motion and rotation relative to S. It is theoretically trivial to synchronize the coordinate clocks of S' with that of S. It is only necessary to synchronize, by simple comparison, just one coordinate clock P' of system S' where P' is coincident to P (the assumption here is that two clocks with relative motion may be synchronized by simple comparison when they coincide in space). With times of P' and P synchronized, the times of system S' and S are synchronized. What is achieved is we have implemented an absolute universal timekeeping in standard second. Every position in Euclidean space has a unique time that may be measured from any general coordinate system.

Physical time is absolute and universal.

The system of physical timekeeping that we have implemented is only as good as the method of synchronization of clocks.

2.2.2 Simultaneity

Simultaneity is metaphysical and unknowable just as real time is metaphysical and unknowable. Philosophical speculation about simultaneity is only as good as speculation on what time really is. Physics deals only with empirical reality, not metaphysical reality. It was Einstein who unwittingly and incorrectly made simultaneity an issue of physics - if special relativity is indeed physics. There indeed is simultaneity in physics - but only "physical simultaneity". But it is curious that such a formal term is needed when what it means is the simple idea "when two clocks show the same time".

In the world today with the internet, most everyday clocks are synchronized through a system by comparison with computer time servers. This system serves time that is good enough for the everyday world - universal throughout the "universe" surrounding the planet earth. This system shows that there is a real moment of a universal present - the "now"; it is universal throughout our everyday world. Though all clocks have their own local reality of the present, our empirical experience somehow shows that the local realities too are consistent with a universal reality. Our physical time is a good model of the unceasing unfolding of the one reality of the universal present.

Local realities are consistent with the absolute universal reality of the present.

A simple experiment could be done. A person informs another that he would make a telephone call to the other at 11.00 am. When the phone rings at the other end, the person indeed finds that the time would be 11.00am. What this

shows is that our current method of clock synchronization serves the world well with our UTC timekeeping system.

All experimental measurements have inherent physical errors that cannot be eliminated and it is just the reality of the natural world. The method of clock synchronization does not establish metaphysical universality, but it does establish an empirical universality that is found to be satisfactory based on experience. Since it works well for the world, it could conceptually be extended to the whole universe so that we now have an absolute universal timekeeping system for the universe.

Physical time is absolute for the whole universe.

There is no reason to question that extending the method of clock synchronization throughout the universe is not valid unless there are sound arguments otherwise based on empirical evidence.

2.3 Covenant of Physical Reality

The reality of space time is metaphysical, absolute, unknowable and without attributes. We have set forth a system on how metaphysical space and time may be represented as physical space and time measurable with standard units. Such a system is based on the adoption of set of conventions and rules. In this manner, it may be said that there is physical reality only because of an implied covenant on what physical reality mean.

There is a covenant of physical reality which sets forth in a determinate way what constitutes a physical quantity.

The manner of measure of a standard length has been set forth and agreed upon. What a unit of time in second is also set forth clearly. Only such measures of length and time are physically real - not otherwise.

Physical reality has absolute three dimensional Euclidean space and absolute universal time.

3 The Speed of Light Cannot be a Universal Constant

The concept of speed cannot be made simpler, but there may be ways to make its meaning complicated and incomprehensible to the extend that it could only be resolved by saying that that something is "counter intuitive". Speed is simply defined by the formula : $speed = distance/time$. There is no way a speed may be obtained without making a measurement to get the distance and to read a physical clock to get the time. Even if a speed value may be determined only indirectly, it has to be representative of a value that strictly be computed from measured physical distance and time when the right conditions are obtainable. The greatest blunder in physics in the twentieth century is Einstein's postulate that the speed of light is a universal constant.

The speed of light cannot be a universal constant.

Let's assume that there is an experiment done and it is claimed that it verifies that the speed of light is a universal constant. The experiment can only imply either :

1. The speed of light is a universal constant and the established system of physical measurement has to be repudiated.
2. The experiment is flawed and unacceptable.

The first conclusion 1) above involves two statements that are mutually exclusive:

1. The speed of light is a universal constant.
2. The established system of physical measurement is to be accepted.

Consider measuring a pulse of light between two fixed points A and B on the ground. The distance AB is measured and the time duration is taken and we obtained the speed of light to be c. Let's say a moving observer also measures the same light experiment. The observer has a speed w relative to the ground in the reverse direction BA. As time is absolute, both observers measure the same time duration, but the distance measured by the moving observer in his moving frame is greater so that the observer measures a speed of $c + w$.

There is no magic involved that the speed of light in the moving frame is $c + w$ and not a universal c as postulated by Einstein. It is simply based on the acceptance of our system of measurement that has a clearly defined standard of length and the standard second. The speed $c + w$ is nothing other than a computed value of a measured physical distance divided by a measured physical time duration. So an acceptance of our established system of physical measurement would imply that the speed of light cannot be a universal constant - the experiment is flawed and unacceptable.

If the speed of light is a universal constant, it would imply that the system of physical measurement applicable cannot be that of classical mechanics. Special relativity has rejected the system of physical measurement of classical mechanics and could only have an alternative system of physical measurement representing a ***"special physical reality"*** different from the physical reality that is implied by our current SI system of physical units and rules of usage. No one from the mainstream physics community has ever come out to say that our current established system of physical measurement is no longer applicable nor was there ever any suggestion for an alternative.

The physical reality of Newtonian mechanics and the physical reality of special relativity are mutually independent.

As the physical reality of Newtonian mechanics and special relativity are different, there is no sensibility to put the two theories side by side to make comparisons. If there is to be only one physical reality in physics, the acceptance of one theory means the repudiation of the other - the two theories cannot coexist.

If Newtonian mechanics is accepted, all of physics based on Minkowski spacetime had to be rejected; if physics based on Minkowski spacetime is accepted, all of physics not based on Minkowski spacetime had to be rejected.

4 Conclusion

Currently, there is only one working system of physical reality, the one founded on absolute Euclidean space and absolute universal time together with a covenant of physical reality implied when a system of physical measurement is established with defined standards of physical units. The physics based on Minkowski spacetime has not come out with any alternative working system of physical reality.