

Relativity Theories – the greatest blunders of Einstein

Jose P Koshy josepkoshy@gmail.com

The Relativity Theories are based on the concept of spacetime, which has no physical meaning. The theories are partial, applicable only to limited areas, and remain a stumbling block for the unification of physics. Here I show that an alternate concept, 'energy is motion, and force is reaction to motion', can explain all phenomena that are now being explained using Relativity Theories. This renders the tests for Relativity theories irrelevant. The alternate concept is physically meaningful and is applicable to all areas from particle level to cosmic level. So I conclude that the Relativity theories, which were in vogue for a century, can now be discarded.

Key words: gravitational dragging, gravitational frame, absolute motion, invariant speed of light, speed limit, relative mass, mass- energy equivalence, gravitational collapse, time dilation, precession of orbits

1. Introduction:

Einstein remarked, "The Special Theory of Relativity was ripe for discovery in 1905". The back ground: Maxwell explained light as electromagnetic waves. The measured speed of the wave was found to be independent of the direction of motion of Earth, indicating the possibility of dragging. The problem was how an electromagnetic wave could be dragged by Earth. So, 'aether dragging' was proposed as a possible solution. But, even after repeated attempts, an aether with the required properties could not be identified. Meanwhile, Lorentz came up with his equations that could explain the observed speed of the waves irrespective of whether there was aether or not. Einstein, who was there at the 'right' time, proposed his Theory of Relativity based on spacetime; the theory could satisfy Lorentz-equations and did not require any aether. That was an instant success, and the concept was subsequently accepted by the scientific community.

Spacetime, however has no physical meaning. How can it be then part of physics? Here I put forth an alternate concept: motion, at speed 'c', is a fundamental property of matter, and force is reaction to this motion; that is, force and energy are properties of matter and are equal to $mc^2/2$. So light is not energy, but is particles of matter in motion, and so have gravitational fields. So aether dragging can be replaced by gravitational dragging, and the problem gets solved. It is also possible to arrive at a suitable [particle model of light](#) ¹. Based on these, I propose that the concept of spacetime should be discarded.

2. A philosophical approach towards 'spacetime':

Let us start with a philosophical statement: Any concept in physics should be physical (not mathematical) and should have a clear [physical meaning](#) ². A weak version of this philosophy was followed by classical Newtonian physicists; they adopted mathematical concepts as physical concepts, provided the concepts have physical meaning. Newton's first law of motion is a classic example for this. It is a mathematical law that serves as a physical statement, and we assume that bodies follow straight-line paths if left alone. In the strong version I propose, a mathematical concept, even if it has physical meaning, cannot automatically qualify as a physical concept. Based on this, the first law of motion is just a mathematical law regarding motion; hence, before arriving at the conclusion that bodies follow straight-line paths (if left

alone), we have to rule out all other possibilities. For example, it is possible that bodies actually follow spiraling motion in three-dimensional space; even then, we can use the first law for calculations.

So all physical concepts directly deduced from mathematical concepts but not independently verified (like straight-line motion, spacetime, entropy, independent fields, etc.) should be reexamined and corrected. Spacetime is a mathematical concept and has no physical meaning; so it should be replaced by absolute space and absolute time.

3. Light contains matter particles:

Motion is a property of matter; the [fundamental particles](#)³ of matter move at speed 'c'; light contains rotating pairs of such particles. A ray of light is a stream of rotating pairs, and so has a three-dimensional wave structure. So light shows the properties of both particles and waves. The path of individual particles in a pair is helical. In empty space, the speed along the helix and the speed of forward motion tend to be equal. This creates a small precession that the forward path of the pair bends slightly, and ultimately becomes circular. That is, [light follows a circular path](#)¹ of very large radius. In other media, the forward speed decreases, but the speed along the helix is unaffected; thus, the energy of a pair is invariant in any media.

Being particles, [light has gravitational field](#)¹ also (in addition to electromagnetic field). The distance moved by light in absolute space is altered by external fields in two ways: inside the field, the forward speed decreases, and a moving field drags light along with it. The observed nature of speed of light can be explained based on these.

4. Motion of light in the field of Earth:

Earth's field drags light along with it. Earth being massive, this gravitational dragging is total close to the surface, but decreases with altitude. At the same time, the speed of light inside the field increases with altitude and is always less than 'c'. Thus at any given altitude, light has a certain speed and certain dragging. So the relative speed of light, with reference to an observer on the surface of Earth, is different at different altitudes: close to the surface, the speed is independent of direction of motion of Earth (because of total dragging), but at higher altitudes, speed depends on the direction of motion of Earth (because of partial dragging).

The moving gravitational field acts like a frame that drags light. As gravity decreases with altitude, the frame can be viewed as layers moving along with Earth, the higher layers progressively lagging behind, and the dragging effect on light decreasing proportionately. As the surface having the same gravitational potential is spherical, these layers are curved; or, the gravitational frame is curved. However the curvature is negligible for short distances, and so any point in the field is mathematically an inertial frame, and the vacuum-speed of light with reference to and passing through that point is 'c' – same as proposed by Special Relativity.

5. Inertial frame and local time as proposed by Lorentz:

Hendrik Lorentz obtained equations that could satisfy the observed nature of the speed of light on Earth using the concept of moving frames of references. Compared to a rest frame, a moving frame has an additional time factor. Naturally his equations contained a time factor which he called 'local time'. His equations were valid for total dragging of light, as in the case of the surface of Earth; but at higher altitudes, the equations required modifications, now known as Lorentz transformations.

Like 'linear motion', a linearly moving frame of reference (an inertial frame) is a mathematical construct, a tool for calculating. Physically, there are no inertial frames; there are only bodies moving at different speeds along curved paths; bodies invariably have gravitational fields, and so there are moving gravitational frames. Lorentz has clarified that 'inertial frame' and 'local time' are mathematical artifices that help calculations. He visualized an absolute frame of reference having an absolute time as the physical reality, and his equations are in conformity with that.

6. The Relativity Theories of Einstein:

Einstein, however took inertial frames as physical, and argued that the most fundamental thing in physics is the 'invariance' of the speed of light in inertial frames, and arrived at the Special Theory of Relativity, based on flat spacetime. Later, he incorporated gravity into it stating that mass/energy curves spacetime, and that gravity is due to this curvature and so light bends in gravitational fields. As at present, SR and GR remain accepted by the scientific community, and no viable alternative has come up so far.

Gravitational dragging, proposed in this paper, provides a strong alternative to spacetime. With an absolute frame of reference (absolute space and absolute time) and gravitational dragging, the observed nature of speed of light can be explained using Lorentz transformations. That is, keeping the mathematical part of the Relativity Theories in tact, the physical part 'spacetime' can be discarded.

Viewed in retrospect, Einstein took a round about path through inertial frames, spacetime and then curved spacetime to state that gravity affects light. He could have directly stated that light has gravitational field, and replaced aether dragging with gravitational dragging; his quantum concept for the particle nature of light would have agreed very well with that. Had he stated that, the bending of light by strong gravitational fields would have been hailed as proof for the gravitational field of light.

7. Absolute space, time and motion:

Once we drop the concept of spacetime, we have to revert back to absolute time and space. Then motion has to be absolute. How can we know a body is moving? Simply by measuring its G. As proposed, force is reaction to motion, and so [G of a moving body is directly proportional to the square of its speed](#) ⁵. The so-called universal G is actually the [G for the speed of Earth](#) ⁴ and it can be theoretically deduced from 'c' and the electrostatic constant. G will be zero for a body at absolute rest. So the Principle of Relativity (the starting point of SR), which states that 'absolute motion cannot be determined', is wrong.

Newton put forth the 'laws of motion' and 'law of gravity', but did not consider the possible relation between motion and gravity. Similarly, Einstein proposed SR for inertial systems and GR for gravitational systems. Now, by proposing that force is reaction to motion, a gap is closed; force thus becomes well defined and can be measured using energy units. Gravity affects motion and motion affects gravity. G increases with speed, and so motion and gravity have the same effect on a system.

When gravity is taken as reaction to motion, the gravitational interaction of two bodies moving in different directions can be interpreted as follows: the attractive force tries to bring them in the resultant direction, but the velocity components perpendicular to that direction

oppose it. So [Newton's equation requires correction](#)⁵ to accommodate this. Based on the new equation, if a body of mass 'm' orbits a body of mass 'M', the force between them is equal to $(GMm/d) - mv^2/2 = mv^2/2$; that is, force is balanced by kinetic energy of the orbiting body.

8. Relativity Theories have no conclusive proof:

Time-dilation tests are regarded as proof for SR, and the three classical tests proposed by Einstein, as proof of GR. However, these can be explained in alternate ways based on the proposed concepts of motion/force, and so do not provide any conclusive proof for SR/GR.

(i). *Time dilation:*

Any device for measuring time depends on some kind of periodic process. An increase in gravity slows down this process. As G increases with speed, motion also has the same effect. Thus any clock is slowed by motion/gravity. Time-dilation test is based on the wrong assumption that there are 'absolute clocks' using which we can measure time dilation. No clock is absolute; clock slowing is the fact, time dilation is fiction.

(iii). *The perihelion shift of mercury:*

Based on Newton's laws, the orbit of a planet is explained as a consequence of straight-line motion and its aberration due to gravity; thus a static orbit is expected. Actually it is [force- energy balance](#)⁵ that keeps the planet in the orbit. With just two opposing forces, the orbit cannot be static in three-dimensional space. The equilibrium is dynamic, and elliptical orbits invariably exhibit precession. This precession can be calculated based on 'curved gravitational frame', using Lorentz transformations. GR has no role in it.

(iv). *Deflection of light by sun:*

Based on Newton's particle model of light, [Soldner](#)⁶ calculated the deflection in 1801 itself, but got a smaller value. He did not include the 'dragging effect' by the moving field of sun. The dragging is also proportional to gravity, as G depends on the speed of Sun. So the deflection should be twice, as found experimentally. GR is not required.

(iii). *Gravitational red-shift:*

[Red-shift of light](#)¹ can be explained in an entirely new way using the new particle model proposed. A quantum is a physical structure having a certain length containing a certain number of particle-pairs. When the distance between adjacent pairs increases (either due to cooling or due to the gravitational field becoming weaker) some particle-pairs move out from the quantum, and the energy of the quantum decreases, causing a red-shift.

7. Explanations based on the alternate assumption:

The success of the Relativity Theories depends on the fact that it can explain a number of phenomena, some of which cannot be explained otherwise. However, based on the alternate assumption proposed in this paper, all those phenomena can be clearly explained (perihelion shift, gravitational red-shift and deflection by sun have already been explained).

(i). *Invariant speed of light:*

Light contains particles having kinetic energy equal to $mc^2/2$. The particles emanate from bodies after acquiring the required energy (neither less nor more). Neither the speed of the source nor the speed of the medium in which it moves affects its kinetic energy; it always moves at speed 'c' along a helical path. Fields alter the forward speed, but not the speed along the helix.

(ii). *Relative speed of light:*

Due to total gravitational dragging, the relative speed of light close to the surface of Earth (a massive body) is independent of the direction of motion of Earth.

(iii). *Speed limit:*

The speed-limit depends on an arbitrary property of matter: fundamental particles of matter move at speed 'c'. In heavier particles (electron, proton and neutron), [half of the energy remains as internal energy](#) ⁷ and so their natural speed is less than 'c', or 'c' is the speed- limit for these. A body, made up of atoms, will not attain the speed of light, even if it acquires the maximum excess energy possible.

(iv). *Equivalence principle:*

As proposed, force is reaction to energy (motion); so both are equal. This equivalence principle is wider and includes all forces. Charge is a relative value (for mass of electron) that suits the arbitrary electrostatic constant now used; in cases where charge- mass ratio is different, the present constant will mislead us (for example, the size of proton).

(v). *Relative mass:*

This is a case of wrong interpretation. As force is reaction to motion, [G increases with speed](#) ⁵. When speed increases, GM increases, and this is observed. But at present, the increase in G is wrongly interpreted as an increase in relative mass.

(vi). *Mass- energy equivalence:*

Another case of wrong interpretation. The agreement of 'mass defect' with 'frequency of gamma ray released' is taken as a proof for the mass- energy relation $E = mc^2$. As proposed, light has kinetic energy, and so $h\nu = E = mc^2/2$. Even if we use this equation, there will be no dispute regarding 'the frequency of the gamma ray' released. The dispute will be about the actual amount of energy released, which is inferred from the respective equations, and not measured.

(vii). *Gravitational collapse and singularity:*

A wrong conclusion based on GR. Force and energy are finite and equal to $mc^2/2$. Energy acts as repulsive pseudo-force, and at all levels attractive and repulsive forces remain balanced. Gravity is not infinite, and cannot lead to any collapse. Infinities and singularities disappear in the alternate model.

(viii). *Quasars:*

Light follows a circular path of very large radius. So the rays are convergent, and the intensities of distant sources are highly magnified. This makes quasars visible. They are only just as bright as our nearby stars and galaxies. No gravitational collapse is involved.

(ix). *Expanding universe:*

The metric expansion based on GR is wrong. Expansion is due to actual motion of galaxy-clusters. The energy of a galaxy-cluster remains divided as speed and internal-energy. As a static equilibrium is impossible between the two, the ratio remains changing from one extreme to the other. When speeds increase, the clusters move outwards along spiral paths, causing expansion. Once it reaches the limit, the reverse process takes place, and the universe contracts. Thus the [universe remains pulsating](#) ⁸.

(x). *Black holes:*

[Black holes](#)⁹ represent a symmetrically opposite state to that of stars. Stars have high internal-energy compared to speed, and blackholes have low internal-energy compared to speed. In an expanding universe, internal-energy changes into speed, and so stars eventually become blackholes. No gravitational collapse is involved in this.

(xi). *Farthest objects in the universe:*

As light follows circular path, our [observation limit is about 5 billion light years](#)¹. The so-called [farthest quasar is not so far](#)⁸; we are now observing the rays that are coming back, and its present position is just beyond our observation limit, and not 28.85 billion light years as predicted by metric expansion of GR. (We can observe the direct rays also, and so the same quasar will be observed at two different distances; so this is verifiable).

(xii). *Gravitational Waves:*

Electromagnetic wave theory is a mathematical description of radiations like light. Physically, the so-called electromagnetic waves are streams of rotating particle-pairs; these have both electromagnetic and gravitational fields. At very low frequencies, gravity is prominent; at higher frequencies, electromagnetic force becomes prominent.

(xiii). *Gravitational red-shift and gravitational lensing:*

Gravitational interaction exists between light and massive bodies. These phenomena provide direct proof for the gravitational field of light.

(xiv). *Fizeau experiment, Sagnac effect:*

Both these reveal the dragging of light by moving media. The mass of the medium being low, the dragging is partial. In the case of partial dragging, relative speed of light depends on direction, and this explains Sagnac effect.

(xvi). *Half-life of muons:*

The stability of a particle depends on the force with-which its constituents are held together. An increase in speed increases the gravitational force towards the center of the particle, giving it more stability. Thus the half-life of muons increase with speed, and this is observed. No time dilation is involved in this.

8. Where Einstein went wrong:

From the time of Newton, mathematical concepts having physical meanings were being adopted as physical concepts. By the time of Einstein, physicists had gone a step further, and were willing to accept even physically meaningless mathematical concepts, provided it could solve a theoretical problem. Einstein succeeded in such an attempt: he proposed 'spacetime' and solved a real problem in theoretical physics. All the basic requirements including the mathematics required for it were already available, and he needed only to suggest 'spacetime' and declare the case is closed. He considered that as a right step taken at the right time. But that indeed was his wrong step: he adopted a physically meaningless concept.

Spacetime led to even more such physically meaningless concepts like gravitational collapse, singularity, metric expansion, mass-energy equivalence, relative mass and time dilation. Together with all these, the 'Relativity Theories' have become a stumbling block in the unification of physics. This problem arose as a natural consequence of the wrong step taken by Einstein, and this can be rectified only by discarding the Relativity Theories.

10. Conclusion:

The mathematical part of the Relativity Theories is based on the equations of Lorentz, which were introduced earlier. From the available mathematics and data, Einstein arrived at two wrong conclusions: (i). There is spacetime, not space and time (ii). Spacetime is curved by matter/energy, and gravity arises from this curvature. The role of the Relativity Theories thus remains limited to the introduction of 'spacetime'. The Principle of Relativity, which stated that 'absolute motion cannot be determined', justified the introduction of 'spacetime'. But as explained, 'absolute motion can be determined' by measuring G, and so there is no justification for introducing 'spacetime'.

The 'spacetime' of SR can be replaced by gravitational dragging based on [particle model of light](#)¹ and the 'curved spacetime' of GR can be replaced by curvature of the gravitational frame, gravity itself being redefined as [reaction to motion](#)⁵. The Lorentz Transformations, however, will be valid even with these replacements. As shown, the various phenomena that can be explained using Relativity Theories can be explained based on the alternate model also. The relative merits of the alternate model are (i). It is physically meaningful unlike spacetime, (ii). It effectively eliminates all physically meaningless concepts that followed spacetime, and (iii). It is applicable at all levels, from quantum to cosmic.

The Relativity Theories are thus the greatest blunders of Einstein, and should be discarded. With that, a great stumbling block in the path of unification of physics will disappear. Why did Einstein go wrong? The obvious reason is that he happened to be here at the 'wrong' time.

Ref:

- [1]. Jose P Koshy, *Newton was right: Light is particles*,
<http://vixra.org/abs/1505.0042>
- [2]. Jose P Koshy, *Physical Reality and the Mathematical Laws a New Philosophical Approach*,
<http://vixra.org/abs/1311.0118>
- [3]. Jose P Koshy, *The Fundamental Particle of Matter - Let's call it Photon*,
<http://vixra.org/abs/1401.0135>
- [4]. Jose P Koshy, *Theoretical Deduction of Universal Gravitational Constant*,
<http://vixra.org/abs/1510.0155>
- [5]. Jose P Koshy, *The Inherent Relation Between Motion and Force (Motion Creates the Forces of Nature)*, <http://vixra.org/abs/1312.0176>
- [6]. Soldner, J. G. v. (1801/4), *On the deflection of light ray from its rectilinear motion*,
"On the deflection of a light ray from ...".
- [7]. Jose P Koshy, *Unification of Forces: a Complete Model with Theoretical Proof*,
<http://vixra.org/abs/1402.0103>
- [8]. Jose P Koshy, *Synchronized-motion of Galaxy-clusters – a Pulsating model of Universe*,
<http://vixra.org/abs/1602.0069>
- [9]. Jose P Koshy, *Black holes have 'Cold Energy'*
<http://vixra.org/abs/1312.0092>