

The frequency and temperature of this radiation as it should exist today is accurately predicted. Measurements have confirmed the existence of the background radiation. The background radiation is considered to be near positive proof of the big bang. Actually this discovery does not necessarily confirm the big bang. What it does confirm is that there was a time when atoms first formed. This confirmation is no shock to anyone's theory. The evidence that does appear to confirm a big bang origin is the red shift of light according to Hubble's formula.

There is, however, another interpretation in conformity with this new theory. This interpretation of the red shift of light is that the speed of light has increased over time. In other words, an accelerating speed of light would cause the energy of photons to decrease over time and distance. This effect is analogous to that which affects light moving away from the earth. What this idea suggests is that the universe may not be expanding now or ever. The origin of the universe could have occurred over an expanse of space that cannot be distinguished from infinity.

Perhaps the origin of the universe can be thought of as occurring when the velocity of light became non-zero over the entire universe. Placing a cautionary restriction on this, I will say over the entire known universe. This interpretation is consistent with the premise that all effects in the universe are the result of a single primary cause.

For this theory the single primary cause is always the variation of the speed of light. In the interest of keeping this theory simple, I assume the speed of light has changed over time, but only because the universe has been expanding. As the average density of matter has gone down, the speed of light would have risen.

So a major impact of this theory on the expansion of the universe is to allow for a significant portion of the red shift to be due to an increasing speed of light. This means the universe would be expanding at a lower rate than is currently thought. In other words, the universe is considerably older than the current big bang model would predict.

It is possible for red shift effects to be caused by the speed of light changing with time. These would also then come into play. They would be combined with the effects of a changing speed of light due to a decreasing average density of matter. I don't see a reason to try to introduce any time effects. However, since this possibility exists, the expansion red shift by itself does not prove the big bang theory.

Energy and Momentum

I have defined force as the ratio of two values of acceleration. I now expand this definition to include the concepts of continuity and discontinuity. Force is the local acceleration of the continuous nature of light divided by the local acceleration of the discontinuous nature of light. Force is necessarily invariant when it is considered to exist at a point. However, it is the effect of force that is of great interest to us. The effect of force is acceleration. Acceleration is the mechanical interpretation of change in the

universe. When matter is accelerated it does so across a distance and during a period of time. The effect of force does not exist at a point.

It is useful to make an accounting of the effect of force, meaning the acceleration of matter, both across a measure of distance and during a period of time. The accounting of the effect of force across a distance we have named energy. Momentum is the name of the accounting of the effect of force over a period of time.

When a calculation of energy is used to interpret the effect of force across a distance it is necessarily dependent upon the length of a photon. When a calculation of momentum is used to interpret the effect of force over a period of time it is necessarily dependent upon the period of time for a photon to pass a given point. A dependency upon distance causes variance. A dependency upon time guarantees invariance.

For example, momentum is the measure of force applied over a period of time. Therefore, momentum is automatically invariant because time is invariant. In other words, the law of the conservation of momentum can always be defined in terms of mv . It doesn't matter whether the law is applied from the local or the remote perspective. The general form mv is always correct.

The length of a photon is variant. The measure of force applied across a distance will then also be variant. Energy is then necessarily variant. For example, gravitational potential energy measured remotely must be calculated using:

$$E = \frac{1}{2}mv_c^2$$

The same gravitational potential energy measured from the local perspective must be calculated using:

$$E = mv_c^2$$

Kinetic energy is also calculated differently depending upon its measurement being made either locally or remotely. As is well demonstrated, a remote observer who is measuring the effect of a constant force to accelerate an object will find that the effect of the force diminishes as the velocity of the object increases. However, a local observer, traveling with the object, will measure the effect of the force across a distance to be independent of the object's velocity.

The definition of energy as the accounting of the effect of force across a distance refutes the current belief that energy can be thought of as a physical substance. Currently energy is given a status tantamount to declaring it to be the primary substance of which the universe consists. This new theory argues that energy is not the substance from which the universe is constructed. Energy has no independent physical existence any more than does momentum.

Energy and momentum are on a similar footing because they are both measurements of the effect of force. They can both be either kinetic or potential. Where one exists the other exists. If one is to be considered more primary than the other, then momentum deserves the nod. Momentum is simpler in form and is invariant.

It can also be conjectured that momentum is more primary than energy from a combination of math and philosophy. Energy is force times distance. At the time before the universe formed there was no distance in existence. Therefore, it can be argued that energy cannot exist without distance already existing.

However, momentum is force times time. Before the universe came into existence, time could have already existed. Therefore, speaking mechanically, momentum could have existed prior to creation. I am not insisting this is true. I am pointing to the need to address the cause of the existence of force. What is the nature of force? Why does it exist? How does it exist? Of what does it truly consist that it can lead to recognizable life and intelligence?

For the sake of this argument, I am disregarding quantum mechanics' uncertainty or fuzziness. Quantum based reasoning leads to illogical conclusions such as something can come from nothing. For example a possible logical conclusion of quantum uncertainty at the moment of creation is that nothing is actually something, or, that a system of effervescent universes gave birth to ours. To the contrary, there is no primary wave nature in this theory, and, I am certain, it is safely postulated that something can only come from something. In the essays, I develop more fully the argument in favor of this position.

As far as the physics theory is concerned, there is a great deal more to be done. However, first the fundamentals must be made correct. No theory can be more correct than are the fundamentals from which it is derived. Completing the new set of fundamentals is the most challenging task. It requires original work and original work takes time.

The theory is still being developed and new additions are continuously being added. Its development seems to have a direction of its own. Its framework is built around a solid core of unity. This requires that all new additions must fit smoothly with all that has come before them. Compartmentalization is forbidden. The point is: There can be no theoretical shortcuts taken such as introducing new independent forces or other unique and unexplainable properties.

The first principle of this theory is: There is a single cause for the existence of the universe. This cause manifests itself in various ways that account for all effects. The cause does not divide itself down or separate its parts. It has no phase changes. It cannot contain or cause confusion. It is whole. It is constant. It is responsible. It is purposeful. It is successful. It is intelligent. It is everything revealed in the universe.

The Universe is under control. It has achieved great things. It has given rise to life and intelligence. A unified theory of physics must be able to demonstrate this control, and show at least the first step of how it leads to parts of itself that are capable of appreciating itself. That first step will be the *real* first step in understanding the operation of the universe.