A New Theory of Cosmology
Without the Curving Spacetime of the Equivalence Principle
James Carter

The Andromeda Galaxy (M 31)

The above photo is definitive proof there is absolutely no change in the momentum vectors of any photons when they pass through the extended gravitational fields of stars. If each photon in this picture was not lined up perfectly in Euclidian space and time with its emitting star, the photo would appear as a quite dim homogenous grey cloud. Any photons moving through a non-Euclidian curving gravitational spacetime would completely blur astronomical observations beyond recognition. There can be no gravitational deflection of any photon's path through empty space without the ultimate destruction of astronomy. All photons, from gamma rays to radio waves, would be jumbled together and coming to us on trajectories far removed from their original emission vectors.

Actual physical measurements of the solar deflection of photons show the effect to be an optical illusion without any change in a photon's actual path through Euclidian space. The apparent angle of curvature is measured as changes in the gravitational momentum of Earth and not by any gravitational effect of the sun. These measurements show conclusively that the downward pointing gravity of Einstein's equivalent principle is false and verify that *Earth falls up*.

Experimental Rejection of the Equivalence Principle

It is ironic that the 1919 experiment measuring starlight appearing to curve as it passed the sun was what gave General Relativity its tremendous burst in popularity and now today in 2019, it is this same experiment that provides the ultimate disproof of its experimental validity.

If the Einstein deflection of starlight really was caused by the curving of non-Euclidian space at the sun, it would make most astronomy impossible. Beyond the planets, the whole of the cosmos would appear as an impenetrable gray fog of diffuse starlight. We would still be able measure the dominant background of the 2.7 K blackbody photons and the directions of cosmic rays but most other cosmic observations would be blurred beyond recognition. The following experimental measurements conclude that the apparent deflection is an optical illusion caused by measured changes in the geometry of Earth's gravitational momentum and not by imagined changes in a gravitational spacetime continuum surrounding the sun.

Author's Note

I must state here that I am exclusively an experimental physicist. I do conduct actual physical experiments but my primary activity is in the calculations of experimental values before they are measured. While my predictions might be classed as thought experiments, I accept all measurements at face value and I never engage in the speculations of theoretical physicists that predict results that are contrary to the conservation laws of the scientific method of physical measurement. All of my measurements are primarily based on changes in momentum vectors as measured by force and calculations of force and energy as measured by changes in both linear and angular momentum and radial gravitational momentum. Gravity is represented here as a single accelerometer measurement. No theory of gravity beyond the extrapolation of accelerometer readings is used in this explanation. This model of starlight deflection contains only local measurements of gravitational deceleration and cosmic measurements of mass, space, and time. These are principles of physical measurement that are the opposite of theories. Theories are used to make predictions of measurements based on metaphysical assumptions. A theory is used before the measurement of any assumption. If the prediction is correct, the theory becomes a principle of measurement and if the prediction is wrong the theory remains a metaphysical assumption. I make no metaphysical assumptions other than in the physical accuracy of my accelerometers, clocks, and measuring rods.

Experimental Measurements of Solar Deflections and Time Delays

The following thought experiments are based on calculations of the Einstein's predicted bending of starlight as it passes the sun and other bodies of mass. The first two show the calculated angles for General Relativity's starlight deflections. The third is an actual measurement of the apparent deflection of photons as they pass by the surface of the sun and the fourth is a measurement of the Shapiro Time Delay in which radar signals appear to curve and slow as they pass near the sun back and forth between Earth and Mercury. These last two measurements conclusively show that gravity has exactly no effect on the perfectly straight Euclidian momentum vectors of all photons. The measured deflection results from the curvature of the gravitational space and time of Earth and not from any curvature of the inertial space and time of photons.

A Space Alien's View of Our Solar System

In the first observation, space aliens on a planet orbiting Alpha Centuri have focused in on our solar system with a 200 inch telescope identical to the Hale telescope on Palomar mountain. They are attempting to measure the mass of our solar system by measuring the gravitational deflection of starlight photons that passes outer edge of the solar system at Pluto's orbit.

Einstein's Predictions

Deflection at sun's surface $= 4GM/C^2R = 1.75$ arcsecond

Deflection at Pluto's orbit $= 4GM/C^2R = .0002072$ arcsecond

Deflection at 1 LY from sun $= 4GM/C^2R = .000001286$ arcsecond

the At their location, 4 light years from the sun, the starlight deflection at Pluto's orbit (.0002 arc sec) would displace the photons from their telescope's mirror by a horizontal distance of 38,000 km. They still might be able to see photons from the sun but the background stars would appear as a homogeneous grey fog.

2. A Photo of the Andromeda Galaxy

In this observation, we will observe and photograph photons from the Andromeda galaxy with the 200 inch Hale telescope. In this measurement, we will consider only photons emitted by Andromeda stars that have passed within at least one light year of another star. These photons will all be deflected in one direction or another by a horizontal distance of at least 1,004,216 km by the time they reach Earth after their 2.5 million light year journey. The deflection of photons by Einstein's maximum of 1.75 arc seconds for a sun sized star would be displaced by 12.2 light years from their original trajectories by the time they reached the Milky Way. For photons to be able to record the position

of their emitting star within Andromeda, they could not be deflected by even as much as a millimeter. If photons were to undergo any gravitational deflection as they traveled through Andromeda, the above photo would appear as a dim grey blob and not as a galaxy with billions of individual stars. While the same number of Andromeda photons will reach our reflector, none will be on their original momentum vectors and all will appear as a grey blob of light. No photons would be lined up in the direction of their emitting stars.

3. Actual Measurement of Einstein's Apparent Bending of Starlight

This explanation of the apparent deflection of photons as they pass the sun is calculated entirely from the values of three complimentary principles of measurement:

Earth's escape/surface velocity, its deceleration of gravity, and its radius.

The Gravitational Expansion of Mass, Space, and Time
$$V_{es} = \sqrt{2gR} = 11,200 \text{ m/s} \quad \& \quad g = V^2/2R = 9.807 \text{ m/s}^2$$
$$\text{Gravitational Constant } G_P = \sqrt{2gR}/V_{es} = 1.414 \text{ kg m/sec}$$

A body's escape/surface velocity V_{es} is measured as the square root of two times its deceleration of gravity g at its radius R. & A body's deceleration of gravity g is measured as its escape/surface velocity squared V^2 divided by two times its radius R.

The gravitational constant equation ($G_P = \sqrt{2gR}/V_{es} = 1.414$ kg m/s) is a unit of momentum and not a quantity of force or a curvature of spacetime as it is in Newton's gravitation or Einstein's relativity.

This gravitational constant is used to calculate the physical gravitational parameters for all bodies. With this constant, each of a body's three gravitational parameters can be determined from the measurement of the other two, ($V_{es} = \sqrt{2gR}$), ($g = V^2/2R$), and ($R = V^2/2g$). For the purposes of this explanation, these equations are used to measure Earth's gravity as $g = 9.807 \text{ m/s}^2$ to determine the apparent Einstein bending of starlight. It is then used to calculate the sun's surface gravity of 274.2 m/s^2 to measure the apparent Shapiro's time delay of photons passing the sun.

These values are measured with accelerometers, clocks, and measuring rods here on Earth and are all that is needed to calculate the angle at which starlight appears to curve as it passes the sun and the apparent measured time delay of radar photons that are reflected off Mercury and return to Earth. Only the Euclidian geometry of the Newtonian laws of force and momentum are used to arrive at a value of 1.74 arc-second for the apparent deflection of starlight and .000190 second for the apparent round trip photon time delay between Earth and Mercury. These measured Euclidian geometry values are

basically exactly the same as General Relativity's calculated values using non-Euclidian geometry and the equivalent momentum vectors of photons. In these measurements, photons undergo no actual deflection within Euclidian inertial space. It is the changing geometry of gravitational momentum within the Earth and sun that only gives the appearance of starlight curving and time delay.

General Relativity theorists could explain these results by simply assuming correctly that their idea of curved spacetime did not curve the paths of photons. However, this assumption would allow them no way to validate their original assumption of curved space for the equivalent momentum of atoms.

Photons are not effected in any way by gravity except when they are emitted, reflected, or absorbed. They only appear to curve or slow when they are viewed relative to the changing gravitational momentum of the Earth and sun. The extent of a body's changing gravitational momentum extends only to its physical surface and it can have no effect on passing photons.

Einstein's Gravity is Upside Down, Backwards, and Inside Out

The whole counter-intuitive theory of General Relativity is based on the imaginary metaphysical assumption that downward radial gravitational force and motion are equivalent and not equal to the real gravitational inertial upward force and momentum that is measured at Earth's surface.

Einstein assumed with his unmeasurable equivalence theory that his imagined downward pointing equivalent force and momentum produced by an infinite gravitational field was real and that the upward force and momentum measured at Earth's surface was just an imaginary idea used by his subconscious mind to constantly maintain his body's balance against gravity's "perceived" upward force.

Apparently, even Einstein wasn't smart enough to even consider and believe in his own subconscious mind's interpretation of gravity developed from monitoring his body's five senses since birth. How was it possible that Einstein could lie in bed next to a Newtonian accelerometer and not imagine and then calculate that his bed was accelerating upward with decelerating time to maintain a constant upward velocity of 11,200 m/s.

The Astrophysical Disaster of General Relativity

The Einstein apparent bending of starlight is caused by the changing geometry of gravitational momentum. In the theory General Relativity, it is perceived as unmeasurable changes in the geometry of a universal spacetime continuum. In the principle of the Expansion of Gravitational Momentum, photons undergo no changes in trajectory or momentum as they pass the sun or other mass bodies. The apparent measured deflection comes from the perspective of

relativity theorists trying to calculate their imagined effects of equivalent force and momentum using non-Euclidian geometry.

If the inertial momentum vectors of photons were actually changed by gravity fields or curving space, as relativity theorists have always imagined, it would be a disaster for astronomical observations. Consider the photons that Eddington failed to capture on his photographic plates in 1919. They are now a hundred light years away moving through the Milky Way on the trajectories of Eddington's measured angle of 1.75 arc-seconds. These photons are all believed to move at slightly different angles depending on their distance to the sun when they passed. A simple calculation shows that these photons are now at a horizontal distance of 128,000,000,000 km away from their original momentum vectors before they passed the sun. This is just for the photons that pass the sun near its surface. Virtually every photon passing the sun at other radii out to infinity will have its own unique deflection angle and altered momentum vector.

In General Relativity, the gravitational field of every atom in the cosmos is constantly changing the momentum vectors of every photon in the cosmos. In the principle of absolute gravitational momentum the linear and angular momentum of photons is absolute and unchanging.

The only change that has ever been measured in a photon's momentum vector occurs at absorption where its momentum is conserved or by reflection where its momentum is conserved by the Compton effect and changes are measured as Doppler effects.

If according to General Relativity, the presence of gravitational mass was able to change a photon's straight line path by even the slightest amount, the photons from distant stars and galaxies would be far removed from their original Euclidian vectors and would appear as a diffuse cloud of random photons everywhere we looked. Each photon would slightly change its path many times as it passed through and around galaxies. With all this random light pollution, the whole cosmos would appear as a dim gray fog and it is doubtful if the Hubble telescope could even see beyond the solar system. Even the random light pollution from streetlights here on Earth makes certain astronomical observations impossible near cities.

The Lorentz Transformation of Mass, Space, and Time

Besides the Einstein bending of starlight, General Relativity's only other calculated measurement is the gravitational red shift. This is caused by the Lorentz transformation of mass, space, and time and has nothing to do with General Relativity's fundamental assumption of equivalent or relative momentum. In fact, the Lorentz transformation is actually a disproof of equivalent momentum. Lorentz transformations are a measure of changes in a body's absolute momentum. The equivalent momentum at Earth's surface would not cause a gravitational red shift. See Pound-Rebka Experiment.

The Lorentz transformation is not a theory. It is the calculation of physical measurements used to calculate and measure the conservation of momentum $P = ms/t$. It consists of three equations for calculating the measured values of mass in kilograms ($m = M/\sqrt{1-v^2/c^2}$), space in meters $s = S\sqrt{1-v^2/c^2}$), and time intervals in seconds $t = T/\sqrt{1-v^2/c^2}$). M, S, and T represent the measured values of Mass, Space, and Time at a position of the Zero Momentum Rest for the entire cosmos.

General Relativity's Cosmological Paradox

Ever since Einstein first proposed the theory, the great unexplained paradox for General Relativity theorists has always been their complete inability to confirm the validity of the experimental physicist's measurements of photons appearing to curve their paths as they pass the sun. Although the measurements appeared to be real, their validity could not be confirmed by measurements of photons in general. While the measured photons appeared to curve away from their emitting stars, the rest of the photons in the cosmos did not curve away from their original emission vectors.

The paradox is this. If each photon's path is slightly changed when it passes a body of mass, how is it possible the Hubble telescope is able to view each photon in the exact direction of the star that emitted it? Except for the cosmic blackbody radiation, the cosmos contains almost no spectral photons that cannot be potentially identified with their source.

In General Relativity theory, photons are calculated to slow to less than c- as they approach the sun and then speed back up to c after they pass it. This is thought to be the cause of the observed Shapiro time delay of photons passing near the sun. The electrodynamics of Special Relativity has no explanation of how these photons are able to slow and then speed back up or how if ever they are able to get back to their original Euclidean momentum vectors.

According to electrodynamics, photons are potentially blue shifted as they approach the sun and potentially red shifted as they move away. This is a transverse gravitational Doppler shift (Lorentz transformation) relative to the sun's gravitational momentum but it has no actual effect on the inertial motion or the wavelengths of the photons themselves. This blue shift would only be real when the photons are absorbed on the sun by atoms with slowed time dilation caused by the upward gravitational momentum at the sun's surface. The photons themselves are not changed in any way but are perceived by the atoms as blue due to the atoms' slowed clocks. These photons would be reflected or emitted as red for the same reason. Transverse shifted photons have the same red shifts in all directions when emitted and the same blue shifts when absorbed.

The quandary here among relativity theorists is that because of the Shapiro time delay, a postulate of Special Relativity (the constant speed of light) must be abandoned to account for a General Relativity calculation that is only based on an equivalent calculation rather than a physical measurement.

General Relativity "physicists" all seem to imagine that the above effects are perfectly explained by the equivalence principle. While all experimental physicists are able to accurately measure absolute force and momentum, no one has ever been able to measure "equivalent" or "potential" force and momentum.

Einstein's Bogus Bending of Starlight

To understand the mechanics of apparent bending of starlight, we must look at it purely from the perspective of the experimental physicist's physical measurements rather than the imagined metaphysical calculations of theoretical physicists. If the effects are explained in terms of actual measured changes in the Earth's and sun's gravitational momentum, it is plain to see that no changes in individual photon momentum vectors are required to account for the bogus observation of General Relativity's curving spacetime continuum.

No theory at all is required to account for Einstein's imagined deflection of photons by curved space because no such phenomenon can be measured to occur within the measurements and calculations of Euclidian geometry's space and time.

There can be no "theory" of gravity beyond the simple description and extrapolation of the measurements of Earth's force, momentum, and radius.

The angle of the Einstein non-deflection of light can be calculated from just accelerometer measurements of force and momentum at Earth's surface. The acceleration of gravitational momentum and the deceleration of gravitational time is not a new "theory of gravity" because it is just a principle of measurement. The only other measurements needed to calculate the apparent deflections are the radius of Earth and radius of its orbit around the sun. None of General Relativity's metaphysical non-Euclidian complex mathematical baggage is needed to produce precise calculations for the measurements of apparent photon bending.

The Apparent Solar "Bending" of Starlight

Einstein Angle = 1.74 arc-second @ Apohelion

Earth

Sun
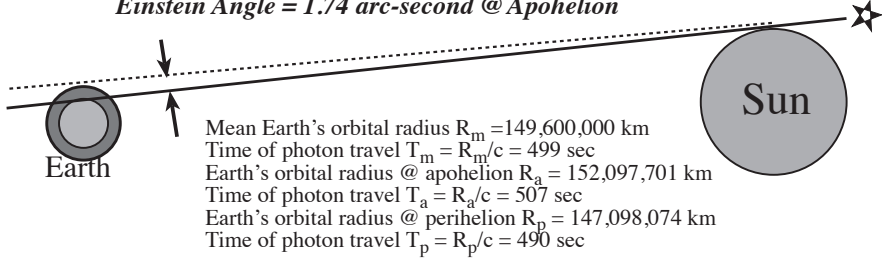
Mean Earth's orbital radius R_m =149,600,000 km
Time of photon travel $T_m = R_m/c = 499$ sec
Earth's orbital radius @ apohelion $R_a = 152,097,701$ km
Time of photon travel $T_a = R_a/c = 507$ sec
Earth's orbital radius @ perihelion $R_p = 147,098,074$ km
Time of photon travel $T_p = R_p/c = 490$ sec

Earth gravity $g = 9.807$ m/s^2
Distance $D = gT^2/2 = 1221$ km 725 km per arc-second
Einstein angle @ mean R_m = 1.68 arc-second
Einstein angle @ apohelion = 1.74 arc-second
Einstein angle @ apohelion = 1.62 arc-second

What the observer on Earth actually sees is a star that according to the Euclidian geometry of the empty inertial space, should be hidden just behind the solar disk. What has actually happened is that in the 8 minutes it takes for the photons to reach Earth from the sun, Earth's gravitational momentum has carried its surface upward a distance 1221 km so that the observer can now see the star just outside the solar disk. This effect has nothing to do with solar gravity deflecting photons and is caused completely by the measured upward gravitational momentum of Earth's surface. It is the same basic effect with the Shapiro Time Delay except thai it is the changing geometry of the sun's gravitational momentum that causes the measured illusion of deflections and time delays of photons passing between Earth and Mercury.

Gravitational Expansion's actual measured values of mass, space, time, and gravity of are identical to the metaphysical calculations of General Relativity. Both begin with the same physical measurements of the force, velocity, and radius of Earth's gravity. The difference is that General Relativity calculates radial gravitational momentum to be equivalent but not equal to absolute linear and angular momentum. To do this, Einstein had to imagine a virtually infinite gravitational continuum field that physically connected the force of every atom in the cosmos with the force of every other atom. With gravitational expansion, the force of each atom's gravity extends no farther than its surface.

Both Gravitational Expansion and General Relativity, describe gravity as the changing geometry of space. In General Relativity it is the infinity of external gravitational space surrounding atoms and photons that changes and curves with non-Euclidian time and geometry. In Gravitational Expansion, it is the internal gravitational space within atoms that expands and curves. The force and momentum of gravity points up and not down as in General Relativity.

The Shapiro Time Delay

The Shapiro Time Delay of .000190 second is determined by calculating the hypotenuses of four right triangles formed by the orbital radii of Earth and Mercury and the upward gravitational fall of the sun's surface. General Relativity's prediction of this value is between .000199 s and .000180 s depending on how various physical parameters are tweaked in the calculations. My calculations do not allow for the tweaking of parameters or the bending of space.

Shapiro Time Delay from Earth to Mercury
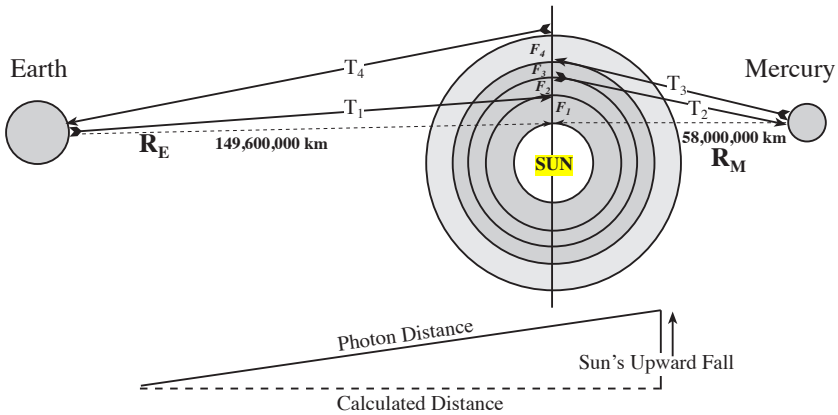
Shapiro Time Delay Values & Calculations

Sun's Surface Gravity-- $.2742$ km/s^2
Sun's upward excape/surface velocity -- $V_{es} = \sqrt{2gR} = 617,800$ km/s
Radius of Earth orbit -------------------------- $R_E = 149,600,000$ km
Radius of Mercury orbit ----------------------- $R_M = 58,000,000$ km
Geometric Distance @ T_0 ---------------- $R_E + R_M = 207,600,000$ km
Calculated Time of travel Earth to Sun R_E/c ------- $T_0 = 498.67$ sec.
Calculated Time of travel Mercury to Sun R_M/c --- $T_0 = 193.33$ sec.
Calculated Time of travel Earth to Mercury -------- $T_0 = 692$ sec.
Calculated round trip travel Earth to Mercury ------ $T_0 = 1384$ sec.
Upward *F*all of Sun's Radius $F_1 = gT^2/2$ during --- $T_0 = 34,092.44$ km
Upward *F*all of Sun's Radius $F_2 = gT^2/2$ during---- $T_2 = 5,124.49$ km
Upward *F*all of Sun's Radius $F_3 = gT^2/2$ during --- $T_3 = 5,124.49$ km
Upward *F*all of Sun's Radius $F_4 = gT^2/2$ during --- $T_4 = 34,092.44$ km
Photon distance Earth to Sun ------------ $T_1 = 149,600,003.9$ km $= 498.66668$ s
Photon distance Sun to Mercury -------- $T_2 = 58,000,013.3$ km $= 193.33338$ s
Photon distance Mercury to Sun -------- $T_3 = 58,000,017$ km $= 193.33339$ s
Photon distance Sun Earth --------------- $T_4 = 149,600,020.6$ kim $= 498.66674$ s
Total measured round trip time ------- $T_1+T_2+T_3+T_4 = 1384.000190$ sec
Calculated round trip travel Earth to Mercury ------ $T_0 = 1384.000000$ sec

Shapiro Time Delay to Mercury and Back = .000190 second
General Relativity calculations for the delay are between .000180 & .000199

Philosophical Considerations

The theory of General Relativity and the principle of absolute gravitational force and momentum are based on opposite geometries of space and time. Both begin with the same "non-existent" universal three-dimensional Euclidian void of inertial zero momentum empty space. General Relativity superimposes its four-dimensional spacetime continuum on this void and allows it to continually curve in four dimensions around the centers of both moving and stationary bodies of mass. This proposed spacetime continuum serves as the "aether" through which photon and gravitational waves travel. The paths of photons are predicted to bend with the non-Euclidian curvature of this potentially infinite continuum.

In the principle of absolute gravitational force and momentum it is not the external void of space that curves but rather the internal inertial gravitational space within atoms that appears to expand and curve with time. The upward force of gravity is an acceleration in space and a deceleration in time that maintains a constant upward escape/surface velocity $V_{es} = \sqrt{2gr} = 11,200$ m/s at Earth's surface.

In the concept of General Relativity, the gravitational force exerted by each atom extends continuously and unalterably to every other atom in the universe. Compare this to absolute gravitational momentum where the gravity of each atom and mass body in the cosmos is measured to extends no further than its outer surface. The measured gravitational expansion of Earth is caused by the individual expansion of each atom and does not cause the whole of the universe to expand as a unit like it does with Einstein's expanding space.

All electrons, protons, and photons expand with near perfect synchronicity throughout the whole universe. The only difference is that electrons expand slightly faster than protons and this is a yin/yang dichotomy that causes the continuing evolution of matter, energy, and gravity and gives life to the Cosmos as a growing entity. (see the Living Cosmos)

Peculiar Gravitational Psychologies

In the fifty years or so that I have been trying to promote the principle of the Gravitational Expansion of Mass, Space, and, Time, I have had to contend with the peculiar phenomenon I call *adverse gravitational psychology*, in which everyone absolutely refuses to believe in or even consider my empirical measurements of gravitational expansion. Even though everyone can feel or measure the surface of Earth constantly pushing them upward, no one but small children and experimental physicists seem capable of believing that it is true. Even otherwise very intelligent people prefer to believe in magical ideas like infinite gravitational attractions or a universal but undetectable curving spacetime continuum. The actual measurement and bodily feeling of gravity is much simpler and far easier to understand and calculate than the bazaar theories of infinite attractions and curving spacetime. General Relativ-

ity's metaphysical gravity of universal reach is infinitely more complex and counter-intuitive than a physical gravity that is measured to extend no further than the edge of each proton and electron. It is the individual local expansion of each atom that is the true quantum of gravity and not waves of gravitons or local distortions in infinite gravitational fields.

Gravitational Philosophy and Scientific Logic

I hate to think what William of Oakham would say to all these people who believe in complex General Relativity calculations instead of actual gravitational measurements.

Even Isaac Newton couldn't figure it out, even though he said; ***"We are to admit no more causes of natural things than such are both true and sufficient to explain their measurements."***

Newton invented the concept of the accelerometer as a principle of measurement but for some unknown psychological, emotional, or politically correct reasons, he could not bring himself to believe that his accelerometer readings always measured the true direction of force and momentum vectors.

I have been told by several people that it would be impossible for matter to keep slowly expanding forever. However, these same people have a firm belief that the Guth inflation once caused the whole cosmos to expand from the point of a singularity to nearly its present size in a tiny fraction of a second.

Actually, gravitational expansion is really a very slow process. Let's assume that you could transform yourself into one of Maxwell's demons and shrink down in space and time to the size of a proton, where you could watch the circlon structure of its Compton wavelength (1.321×10^{-15} m) spinning at the speed of light. You assume that this reciprocal motion has something to do with the proton's gravitational expansion, so you sit back and start counting revolutions to determine how long it takes for the size of the proton to double in size. You find it takes 8,000 quadrillion revolutions before the proton has doubled its size.

Compare that to Big Bang's proposal of the Guth inflation where the cosmic singularity began at a diameter of less than one millimeter and then expanded in size by 130,000,000,000,000,000,000,000,000 times in a tiny fraction of a second.

Now, compare these ideas to the very popular many worlds interpretation of Quantum Mechanics where the whole cosmos, space and all, bifurcates instantly every time an atom emits a photon. These examples show quite conclusively that an experimental physicist's measurements of gravitational expansion are simple indeed when compared to the cherished beliefs of all those turkeys who call themselves theoretical physicists. Philosophically, belief in the simple measurements of gravity is nearly insignificant when compared to the many adverse unmeasured metaphysical assumptions of the Standard Model Theories of Physics and the Big Bang.

The Gravity Cannon Test
*The gravity cannon is a definitive experimental test that can easily differentiate between the four possible general theories of gravity. This test is so simple and basic that once it has been performed, the results can be put on **You Tube** to make it possible for the true nature of gravity to be understood by everyone. Even the small child will be able to clearly see and understand just how gravity really works.*
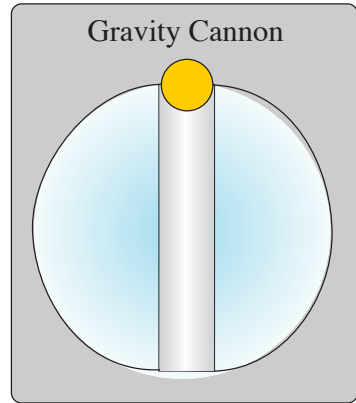
The Gravity Cannon Experiment

The Gravity Cannon experimental is the ultimate test to either validate the Gravitational Expansion of Mass, Space, and Time or falsify General Relativity's metaphysical assumption of a curving spacetime continuum. The test will show conclusively whether the force of gravity is internal to matter of external to the cosmos.

The gravity cannon is an extremely simple and inexpensive mechanical device with only two moving parts. It has the absolute ability to differentiate between the *equivalent downward inertial momentum* calculated and predicted by General Relativity and the *absolute upward gravitational momentum* measured with accelerometers.

The only thing difficult or expensive about the Gravity Cannon experiment is that it has to be performed in outer space. The cannon itself is a large clear glass sphere with a round shaft drilled through it at its center. A round cannonball of some heavy material such as Gold is machined to loosely fit inside the shaft. To begin the test, the cannonball is held briefly at one end of the barrel and then released.

If General Relativity's idea is correct, equivalent momentum will be added to the ball and it will accelerate down the barrel, reach maximum velocity at the cannon's center an then decelerate to a stop at the other end of the shaft. The process will then repeat itself in reverse with the ball accelerating back down the barrel and then slowing to a stop at the opposite surface of the glass sphere. If the absolute momentum of measured gravitational expansion is correct, the Gold ball will move toward the center with decreasing acceleration until it eventually appears to stop just short of center.

The results of this test will be completely unambiguous and will decisively separate the measurements of absolute gravitational momentum from all equivalent momentum and attraction theories of gravity.

In conclusion, there are basically only four metaphysical assumptions in the Standard Model Theories of Physics and the Big Bang and I have found them all to be totally bogus and unverified by the measurements of any experimental physicist. If these four unmeasured ideas are rejected as bogus, all of physics and cosmology can be explained in terms of physical measurements and no theories based on metaphysical assumptions are necessary to describe any basic physical phenomena.

1. The Massless Photon
The momentum, angular momentum, and energy are measures of photon mass.
2. The Equivalence Principle
Gravitational force and momentum are measured to point up and not down.
3. The Intrinsically Uncertain Location and Momentum of Point Particles
The Circlon Shape of electrons and protons is the same size as their uncertain locations $h/2\pi$.
4. The Universal Eternally Constant Electron/Proton Mass Ratio of 1/1836
Cosmologist's unquestioned belief in a constant and eternal electron/proton mass ratio has completely prevented them from developing a reasonable theory for the creation and evolution of the cosmos.

In the Living Cosmos, the rotational Energy/Mass = C^2 of the electron has been gradually decreasing from an e/p mass ratio of 1/1 at the beginning to today's value of e/p = 1/1836. In this process, the electron's decreasing rotational E/M = C^2 is converted to the linear E/M = c^2 of atoms and photons. The total Energy/Mass of the cosmos as well as total momentum has remained constant and conserved from the beginning of creation to today.

This slow evolution of the electron's mass presents a precise step by step creation and evolution for the cosmos that explains all of its major features without resorting to Big Bang theory's metaphysical assumptions like a singularity, Guth inflation, or expanding spacetime.

Electron evolution is a long and slow process that begins with the gradual creation of galaxies, then the slow conversion to stars within galaxies and finally the sudden creation of electrons and protons from the neutrons within stars. At e/p ratio of 1/146.5, electron and protons coupled into atoms and emitted a sudden burst of 2.7 K cosmic blackbody photons throughout the cosmos at the same time. As the electron's mass continues to decrease, spectral photons decrease in wavelength and increase in momentum. This is the cause of the Hubble red shift. Billions of years ago, atoms with more massive electrons than today emitted photons with much longer wavelengths than they have today. Dark energy is also explained by electron evolution. Millions of years ago thermal photons from supernovae had less energy than they do today and are observed to be less intense than local supernovae.

Gravitational Expansion of Mass, Space, and Time

Accelerometers that measure force to calculate momentum, energy and velocity are the only instruments available to modern experimental physicists. All measured values eventually break down into individual changes in momentum. When we watch TV our eyes measure the individual variations in momentum of the photons emitted by the screen. When we measure gravity with accelerometers and clocks, we can only conclude that it is a three-dimensional upward pushing force that produces three-dimensional outward momentum. There are no accelerometer measurements that show gravity to be a two-dimensional downward pulling force.

Gravity Forces Mass Through Time
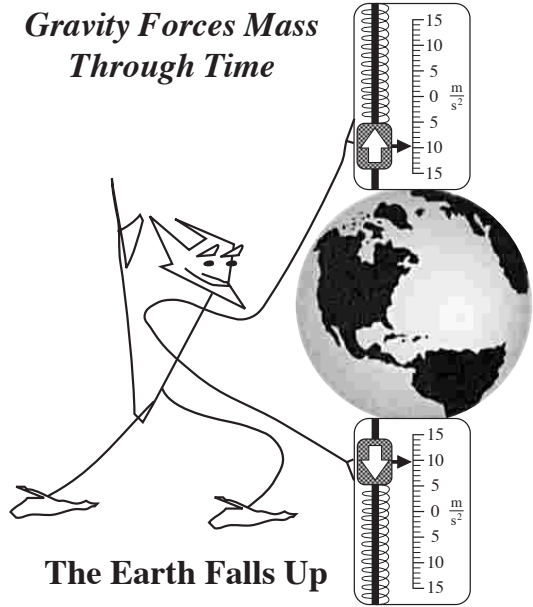
The Earth Falls Up

Upward Force of Gravity Produces Inertial Motion (Radial Gravitational Momentum)

Accelerometer Measurements of Force and Change in Momentum

There are four basic quantities in the Newtonian experimental measurement process: Mass, Space, Time, and Gravity. All conceivable experimental measurements are made with Newtonian accelerometers to quantify individual values for Mass, Space, Time, and Gravity. These values are combined together in the calculations of momentum, angular momentum and measurements of centrifugal and centripetal force, and linear and rotational kinetic energy. Energy is the idea used to divide the equal momenta produced by of a single force into multiple values. Gravity is the measure of force used to calculate radial gravitational momentum. Linear momentum and force exist on individual one-dimensional vectors, angular momentum and centripetal force exist on two-dimensional planes and the force and momentum of gravity are measured and calculated at the surface of three-dimensional spheres.

Einstein's imaginary ideas about equivalent force and momentum causing inertial space to curve have only been measured with null results.