

# How the Pound-Rebka Experiment Shows Einstein's Two Relativity Theories to be Incompatible

*When Einstein first calculated the transverse gravitational red shift of Earth's gravitational potential field, the effect was so small that many thought it would be impossible to measure.*

It was not until 1959, four years after Einstein's death, that Robert Pound and Glen Rebka made very accurate measurements of both direct Doppler and transverse shifts in the momentum of emitted and absorbed photons. At the time, theorists realized they had discovered and measured Einstein's long predicted gravitational red and blue shifts caused by Lorentz transformations in the intervals of clocks. Einstein believed gravitational transformations were produced by unmeasured equivalent motion whereas the Lorentz transformations in special relativity are a measure of absolute inertial motion of mass. Einstein was a fool to believe in equivalent motion because transformations in mass and time are caused by measured and not imagined gravitational inertial motion.

Pound-Rebka measures transverse and direct Doppler shifts in the absolute momentum of photons and the absolute momentum of gravity. Transverse photon shifts result from Lorentz transformations in the intervals of emitting and absorbing clocks. Direct Doppler shifts are produced by relative motion such as the movement of actuators.

Careful examination of the experimental results shows the measured shifts to be simple Newtonian transverse and direct Doppler shifts caused by changes in momentum and not by the effect of Einstein's imagined gravitational potential field or his equally implausible electromagnetic field. Photons are shifted by absolute motion but only measured relative motion. Photon shifts can be calculated in Einstein's imaginary spacetime continuum to be exactly as measured. Einstein's calculations are correct but they are based on the metaphysical assumptions of two otherwise unmeasurable quantities.

Although Einstein's followers were able to correctly calculate the measured values of the Pound-Rebka shifts, they only did so by ignoring the Newtonian laws of measured force and motion.

While Einstein accepted the quantum mechanical and electrodynamic measurements of atoms and photon motion to be true, he declared the mechanical measurements of gravitational motion and force to be not equal to but only just equivalent to the force and motion of atoms and photons. Einstein's equivalent anti-principle of force and motion says that gravitational force and motion can never be measured. They are not equal to but only just equivalent to the motion and force of atoms and photons that can always be measured. The Pound-Rebka experiment clearly shows that the force and motion of gravity is equal to the force and motion of photons and not just their equivalent. Pound-Rebka proves that gravity and inertia are equal and not equivalent.

## Pound-Rebka Physical Values

This drawing depicts the actual values for photon momentum and wavelength measured by the Pound-Rebka experiment.

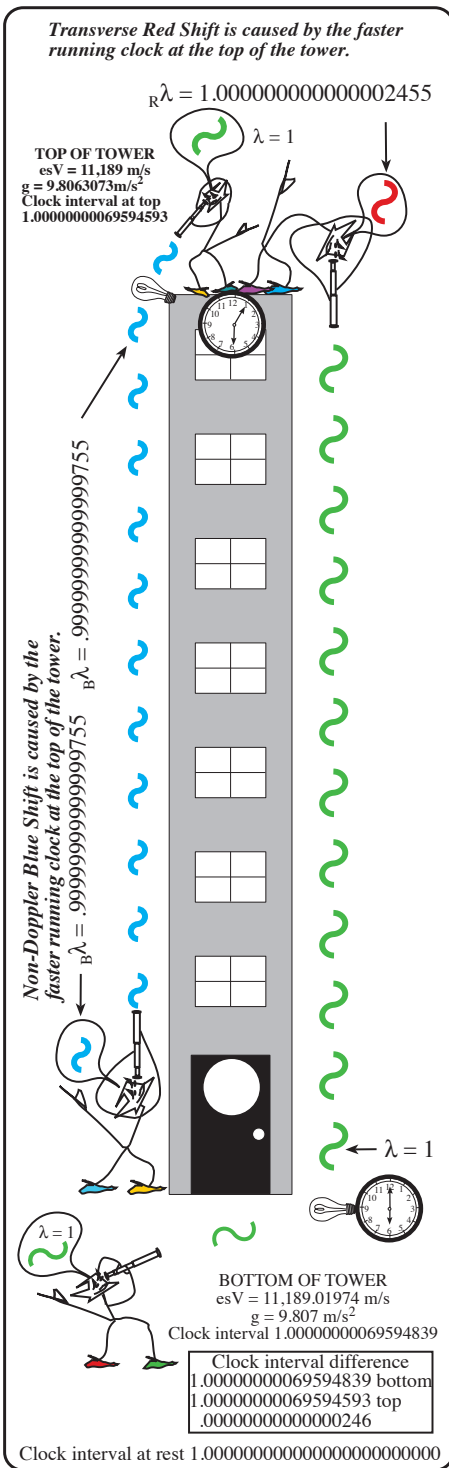
Observers at the bottom and on the top of the tower observe the photons from green light bulbs located at the tower's top and bottom. The bottom observer measures the bottom green light photons as green and the top observer sees these green photons as red but sees the photons from the top green light as green even though they are measured as blue by the bottom observer.

These are the indisputable measurements of the experiment and everyone believes them to be true. Where the disputes arise is in the many ideas that theorists have to explain the physical mechanisms underlying these measured shifts in photon momentum.

Several mainstream Harvard type theoretical physicists have strikingly different explanations of these red and blue shifts and numerous crackpot theorists also have several different metaphysical theories of gravity and photon momentum.

The absolute motion explanation of the experiment presented in this book is not a "theory" of gravity or photons. It just presents physical measurements of mass, space, time, and gravity that require no theories.

Metaphysical theories are only needed when theorists like Einstein and other crackpots want to change the interpretation of the measurements in ways that cannot be detected.



General Relativity theorists have developed two completely different and contradictory explanations of the Pound-Rebka shifts that both calculate the same results but neither of which is likely to be true. Even though only one of these descriptions can be correct, the relativity enthusiasts declare them to be “equivalent” and thus feel justified to use them interchangeably. The actual mechanical motion and force of gravity measured by the experiment does not require either of the relativity theorists’ metaphysical assumptions to explain the shifts.

## **The Pound-Rebka Experiment**

*The Pound-Rebka experiment is a pure quantum mechanical demonstration of the gravitational expansion of mass, space and time. It is a precise set of measurements of the force and motion of gravity and their interactions with the momentum of photons.*

This experiment is a simple mechanical process for the measurement of transverse and direct photon Doppler shifts and does not suggest any theories of aethers, fields, or Einstein’s continuum. The results can be explained completely without the need for any metaphysical assumptions of multiple dimensions or equivalent continuum fields. The interactions between gravity and photons are mechanical physical measurements of mass, space, and time. The red and blue shifts measured by Pound-Rebka are both direct and transverse Doppler shifts caused by differences in the emitter’s and receiver’s velocity.

In the process by which an atom emits and absorbs a photon, the photon undergoes four separate Doppler shifts depending on the quantity and direction of the atoms’ absolute motion. First, it has a direct Doppler shift based on the atom’s vector of absolute motion relative to the universal position of photon rest. This direct shift is different for each direction. Second, the photon has a transverse Doppler shift based on the absolute quantity of the atom’s motion relative to the speed of light. Transverse shifts are the same in all directions. A third shift occurs from the observers motion relative to photon rest. The fourth shift is transverse resulting from the observer’s absolute momentum. In most cases, these four separate shifts cannot be separated from within the single measured shift. Pound-Rebka is one example where transverse and direct Doppler shifts can be experimentally separated.

Transverse shifts are absolute and have the same value in all directions. They are always a red shifts for emitted photons and equal blue shifts for absorbed photons. The transverse shift changes with each momentum increase or decrease in a body’s absolute motion. Only atoms at absolute rest emit and absorb photons with no intrinsic Doppler shifts and even these photons can have a slight shift from the atom’s recoil.

## **Pound-Rebka Theories**

The Pound-Rebka experiment is a simple and elegant definitive scientific measurement of the relationship between the momentum produced by the force of gravity and the momentum of photons. The experiment clearly separates the relative motion and equivalent force proposed by both Newton and Einstein's gravitational force field theories from the measured momentum of photons and the measured motion and force of gravity.

The experiment uses accelerometers and linear actuators to clearly demonstrate that the gravitational motion and force of matter is in the opposite direction from the force and motion of Einstein's imaginary gravitational field theories. Motion and force are measured to be equal and opposite to the equivalent unmeasured force and motion assumed by the equivalence principle. Inertial force produces relative acceleration and gravitational force produces absolute deceleration.

The mechanical details of Pound-Rebka are quite simple. Fe-57 crystals were used as high-energy gamma photon emitters and receivers. They were placed at the top and bottom of Harvard's Jefferson Tower to emit and absorb photons of a single and very precise momentum and wavelength. As these photons moved back and forth between the top and bottom of the tower, they were carefully measured. It was found that photons received at the top were measured as red shifted and those received at the bottom were measured as blue shifted. These red and blue shifts were extremely small but precisely measured with the Mossbauer effect to be equal.

Ever since the Pound-Rebka experiment was first performed in 1959, no one has ever disputed the extreme accuracy of the results. However, a number of gravitational theorists have tried to use their own various preferred pet theories of gravity to explain the measurements in terms of gravitational fields, potential energies and other unmeasured metaphysical entities like aethers, or a spacetime continuum.

As soon as the results of the experiment were in, many theorists claimed that it had proven both Einstein's equivalence principle and the general theory of relativity. The problem was that there were two opposing camps within general relativity proponents and both calculated the same measured values for the shifts but offered different equations and two completely different metaphysical mechanisms to explain them.

One camp imagined that higher gravitational potentials at the top of the tower caused recorded clock intervals to decrease and cause a measured red shift in the photons. The Fe-57 atom's faster clock caused un-shifted green photons from the bottom to be measured as taking a longer time to be absorbed and thus saw them as red. Gravity does not shift photon momentum and wavelength but changes the conditions under which they are measured.

A transverse shifted clock emits red photons and absorbs green photons as blue. Upward gravitational velocity  $V_{es}$  at the top of the tower is less than the  $V_{es}$  at the bottom. The clock at the top has less transverse mass and runs faster from the conservation of angular momentum. The faster top clock emits blue-shifted photons with greater energy and shorter wavelengths and absorbs green photons as red shifted .

While Einstein's calculations for these shifts were verified by the Pound-Rebka experiment to fifteen orders of magnitude, the actual direction of the measured force and motion of gravity was completely ignored by his followers when they tried to explain the physical dynamics of the measured parameters. They imagined and believed that gravity and inertia were equivalent but the experiment measured gravitational shifts to be equal to inertial Doppler shifts and no equivalence was found.

Other relativity theorists also ignored gravity measurements and claimed that as photons move through the varying potentials of their imagined gravitational field, they either gained or lost momentum and energy to the field and thus changed their wavelengths while in flight. Most believed that this effect was accomplished without any change in the photon's velocity at  $c$ .

A few theorists even believe that photons slow down or speed up as they pass through their own peculiar gravitational field. Most believe photons fall in Earth's gravitational field exactly like any other material bodies. All of these theorists make calculations with their ideas that match Pound-Rebka values. Some theorists believe in the Lorentz transformation of a photon's momentum and some don't. Most believe in the time dilation of clocks but some don't.

Many general relativists even believe that *all* photons throughout the universe are constantly being red-shifted as they pass through expanding and curving gravitational spacetime potentials. Cosmologists use this assumption of a curving and expanding gravitational medium to explain the red-shifted Hubble photons from distant galaxies as peculiar non-motion induced Doppler effects in which photon momentum and energy are not conserved.

Hard core Einstein enthusiasts and the fools who believe in the eternal  $1/1836$   $e/p$  ratio imagine the assumption of curving and expanding space justified their metaphysical belief that the  $2.7^\circ\text{K}$  Cosmic Blackbody Radiation can cool without violating the laws of thermodynamics. They believe that these photons were emitted when their blackbody distribution curve had a temperature of about  $3000^\circ\text{K}$ . The photons had a thousand times more momentum and their wavelengths were a thousand times shorter than they are today but their numbers have not changed significantly. Relativity theorists believe that more than 99% of the photon momentum and energy ever produced by the cosmos has simply disappeared down their imagined cosmic rat hole of an expanding spacetime continuum.

Relativistic cosmologists imagine the enormous amount of momentum and energy lost from this cooling process was not transferred to the rest of the cosmos, was thus not conserved. They imagined that it just disappeared into their imagined expanding spacetime continuum as if it never existed. This idea for a massless expanding dimension is in complete violation of the conservation laws for momentum and energy/mass. It is opposite the Doppler effect because these shifts in momentum and energy do not involve any change in the relative velocity between photon and observer. One major problem with relativity theorists is that they go off in theoretical tangents and are then unable to make up their minds. They seem satisfied that since all of their different ideas are equivalent they must all be correct.

Either gravity shifts a photon's momentum in flight or it does not. Quantum electrodynamics has long established that Doppler shifts only occur at the emission and absorption of photons yet there is a substantial group of Einstein's followers who believe photons can be Doppler shifted as they travel through expanding spacetime fields or a gravitational continuum.

### **Einstein Believed in Gravitational Waves**

Einstein imagined the universe to be filled with graviton particles/waves that caused the gravitational interactions of matter. Some theorists believe that gravitons can interact with photons to change their momentum and energy. Others believe that gravitons only effect the momentum of matter and not photons. There is no direct evidence for either of these metaphysical assumptions. All experiments clearly show that all photon shifts originate at either emission or absorption and not in the medium in between, be it aether or glass.

Either the force and motion of gravity originates inside of atoms as measured or it exists as imagined and calculated varying potentials far outside the physical boundaries of atoms. It cannot be both ways. Either photons are Doppler shifted by moving atoms or they are non-Doppler shifted as they move through a stationary continuum field. Again, it cannot be both ways. Relativists have to make up their minds.

The principle of equivalence must be a great philosophical paradox to the logical and common sense minds of children who can't sense equivalence and are not yet able to comprehend its paradoxical nature. Since infancy, children have constantly felt the force of gravity pushing them upward. No sensual being would conclude anything else be it elephant, or microbe. Certainly the subconscious mind that controls a child's sense of balance would never be fooled into believing in equivalent force. How do you maintain your balance against an equivalent unmeasured force?

Einstein however, was able to completely ignore his own sense of balance, at least on a conscious level, and fool himself into imagining and then

believing that gravity pointed down. By using clever mathematics, he was able to fool other theoretical physicists into believing that the force of an atom's gravity of pointed down toward Earth's center from deep in the cosmos. He completely ignored the experimental physicists who were only able to measure gravity as an outward push from within Earth and who could measure no gravitational force beyond its surface.

Imagining an undetectable universal gravitational attraction caused by curving space seems to present no problems for the typical general relativity theorist. It is a standard opinion among relativists. Because the parameters can be calculated in opposite ways, they are believed to be equivalent and relative and just represent different aspects of a single gravitational continuum. What this double speak means is that because gravity can be calculated in the two opposite directions of *up gravity* and *down gravity*, the calculations are "equivalent" and thus both are thought to be intrinsically true.

### ***Up Gravity versus Down Gravity***

Einstein used Galileo's measurements and calculations for *up gravity* to fantasize about Newton's equivalent unmeasured *down gravity*. Einstein was able to fool his conscious mind into believing that *down gravity* was true. However, he was never able to convince his subconscious mind that *down gravity* was real because it kept compensating for and reacting to *up gravity* in order to maintain Einstein's balance while he drew equations on the blackboard. Just because the calculations for *up gravity* and *down gravity* are equivalent, does not mean they can both be true. Everyone believes in *up gravity* because they can feel it and see it happening all around them. If they didn't believe and react to it they would fall flat on their faces. To all but theoretical physicists, the four-dimensional nature of *down gravity* always remains an elusive idea that cannot quite be contemplated by a three-dimensional mind.

To believe that *up gravity* is true, you merely need to observe and measure bodies of matter undergoing the very slow mechanical process of the gravitational expansion of mass, space, and time. By contrast, if you want to imagine and then believe in *down gravity* you must open a whole can of wormholes and metaphysical assumptions. With *down gravity*, an atom's gravity does not extend from just its center to its surface, as in *up gravity*. In *down gravity* each atom has an eternal unbroken connection with every other atom in the universe. It might be easy for gullible theoretical physicists to believe in and calculate *down gravity* interactions but none have ever come up with a reasonable explanation of how it all really works. They say the ultimate "truth" is buried deep in their four-dimensional mathematics and cannot be visualized with a three-dimensional mind.

The experimental truth of *up gravity* is far easier to visualize than the



virtual truth of *down gravity's* n-dimensional math. While Einstein's calculations may perfectly match measurements, his equations contain non-physical parameters like waves in potential fields that only exist in the predictions of his metaphysical ideas. Einstein was a fool to think he could take the *up gravity* measurements of experimental physicists and then turn them upside down and inside out to create a *down gravity* theory that is perfectly equivalent to *up gravity* values. Certainly his counter-intuitive, mathematical theory of *down gravity* works beautifully, but why would he bother. The real mystery here is why he chose to abandon the *up gravity* his body and subconscious mind had intimately experienced his whole life.

### **Gravitational Expansion is a Principle and Not a Theory**

*The principle of gravitational measurement calculates the values of its parameters and needs no theory to explain it. Gravitational expansion is simply what we feel gravity to be and the measurement of what gravity does. You only need a theory of gravity to explain an opposite downward gravitational force field like Newtonian's universal gravitation or Einstein's general relativity.*

The gravitational expansion of mass, space and time is not even an assumption. It is just calculations based on physical measurements of  $F = ma \cdot d$ . Force equals mass times a combination of absolute acceleration and deceleration. This is not a theory of gravity, but rather just the substantive values of the physical measurements of mass, space, time and gravity.

Falling bodies do not change their state of motion until they are hit by Earth's upwardly decelerating surface. Photons do not change the state of their motion or momentum until they are reflected or absorbed by atoms. The gravitational expansion of Earth is measured to be a simple local mechanical process of constant upward force and momentum.

### **Gravity is Child's Play**

While Einstein's theory of equivalent gravitational force can only be fully understood through his complex and infinite mathematical equations, the gravitational expansion of mass, space and time is a simple, local, and mechanical process that can be explained to and completely understood by the smallest child. Ask a child to repeatedly jump off a chair, watch the floor rushing up, feel it strike them and then continue pushing them upwards. The simple upward force and motion of gravity will quickly become apparent to a child because he or she have both felt it and seen it happening their whole lives. The gravity that children feel is easily measured, calculated, explained and understood. By contrast, no child or even Einstein himself could completely understand and visualize the workings and mechanics of an opposite senseless and unmeasured universal multi-dimensional spacetime continuum field.



## **Equivalent Momentum as a Cause**

*Einstein imagined that physical momentum continually flows out from the equivalent momentum of the gravitational field and into falling bodies to increase their downward velocity.*

When Galileo first made experimental measurements of gravity, he may even have understood the true upward motion and force of gravity. Certainly, his dropping of different weights from the top of the Tower of Pisa would indicate upward gravitational motion of Earth's surface. Then just a year after Galileo died, Newton was born and began inventing equations and calculations to turn Galileo's measurements upside down. Many years later, Einstein imagined his version of the equivalence principle and invented equations to turn gravity inside out and backwards with his calculations of a curving gravitational continuum field that altered the scientific method's measurement principle by reversing the temporal direction for cause and effect. Einstein offered no mechanism of how the physical effect of momentum could just appear from apparently empty space without an initial physical cause other than an undetectable equivalent force caused by curving spacetime.

## **Planck's Constant**

This mechanical explanation of the Pound-Rebka's gravity and photon measurements is not meant to be some new theory of gravitational force and motion. It is strictly a measurement of the gravitational expansion of mass, space and time using photon electrodynamics and the Newtonian laws of force and motion. This is a simple description of the Pound-Rebka apparatus used to measure mechanical force and motion and no "theory" of gravity is involved.

There are only three mathematical equations used in this explanation. One for the force and momentum of matter  $F = ma \cdot d$ , Newtonian Force is equal to mass times a combination of absolute acceleration and deceleration. One for the Lorentz transformation of mass and time  $\sqrt{1-v^2/c^2}$  and one for the constant mass and wavelength of photons  $h = m\lambda c$ . Planck's constant  $h$  is equal to the photon masslength constant  $m\lambda$  times the speed of light  $c$ . The value Planck's constant  $h = 6.6260755 \times 10^{-34}$  is the mass of a photon in kilograms with a wavelength of one meter or the wavelength of a photon with a mass of one kilogram.

## **The Nature of Photon Momentum**

*The only aspect of the photon measured in the Pound-Rebka experiment is its momentum  $p = mc + \gamma v$ . All theories of the photon use momentum as its primary parameter of measurement, as do all theories of matter consider momentum as the primary parameter in which measurements of the motion of mass are made.*

This explanation of Pound-Rebka is not meant in any way to be a new theory of photons. The photon model used in this description is strictly a generic photon made up from simple photon measurements of momentum, wavelength, velocity, and energy. Regardless of what your theory of the photon might be, you must use these same measured values of momentum to quantify your version of the photon. A photon's wavelength and energy are determined from measurements of its momentum. It makes no difference whether you believe the photon to be a massless wave of "pure energy" or a particle of mass with the kinetic energy of its motions. Whether or not the photon has mass is irrelevant to this experiment. Any body's rest mass is a calculated quantity that is only implied through the measurement of its momentum. Momentum is a relative quantity and we can never measure a photon's exact mass or energy because we cannot separate the Doppler effects of its absolute momentum of  $mc$  from its relative momentum of  $mv$ .

The sole measurement made in the Pound-Rebka experiment is the relationship between the relative momentum of photons and the changing absolute momentum of gravitational escape/surface velocity  $V_{es}$ . Photon energies and wavelengths can be calculated from these results but they are secondary photon parameters and not part of this experiment that only measures momentum. The Doppler shift of photons is purely a measurement of momentum.

The photon model used in this experiment is simply a moving point of momentum  $p = mc$ . All photon theories begin with this measured point of momentum. How or why these points move or what kind of medium they move through has no bearing on how we measure a photon's momentum. In my illustration of the experiment, I show the photons as *masslengths* of cosmic string with wave-like motion. While these illustrations may represent some aspects of truth, the energy and wavelengths of photons are not used to explain the Pound-Rebka results.

## Measuring Relative Motion in Space Travel

*If we could travel in a photon powered rocket at one-third the speed of light, the photons emitted and absorbed by atoms in the direction of our motion would have twice the momentum and half the wavelengths of the photons absorbed and emitted against the direction of the rocket's motion.*

However, within your space capsule, these photons would be measured to have the same momentum  $p = 1$  and wavelengths  $\lambda = 1$  as they had when the capsule was at rest on Earth's surface. Even though the photons emitted and absorbed within the capsule are highly red and blue shifted with both transverse and direct Doppler shifts, these shifts cancel each other and cannot be detected with measurements inside the capsule. Photons emitted and absorbed within the capsule are measured to have an un-shifted wavelength of  $\lambda = 1$ .

If we could travel much faster to very near the speed of light, we would measure the forward facing 2.7°K CBR microwave photons to have a very high temperature with the momentum of X-ray photons and gamma photons. By contrast, the backward facing 2.7°K CBR photons would have the momentum of radio wave photons and a temperature of very near to absolute zero.

All calculations of a photon's mass, wavelength, energy and frequency are based on the measurement of its momentum. Only at absolute photon rest (located at a velocity of 375 km/s in the direction of Aquarius) would we be able to measure a photon's true non-Doppler shifted momentum, wavelength, and mass. At such a point within zero momentum frame of photon rest, all of the CBR photons from all directions would have the same blackbody wavelength distribution curve and the same overall temperature of 2.726°K.

### **Transverse Doppler Shifts in Momentum and Time**

All randomly moving bodies such a clocks, bullets and photons possess a single absolute momentum  $mv$  vector relative to the stationary space of photon rest. As a body's momentum is increased from zero at photon rest, it accumulates kinetic energy  $e = mv^2/2$ . As each body's individual momentum is increased from zero at rest, its energy/mass constant increases with velocity  $e/m = E/M/\sqrt{1-v^2/c^2}$  in direct proportion to momentum. A body's energy/mass increases and decreases with each acceleration and deceleration of its absolute momentum vector. At any position within photon rest, an atom's mass is at its minimum value of one  $m = 1$ , its momentum is zero  $p = mv = 0$  and its photon clock has the maximum rate of one  $t = \lambda/c = 1$  and emits a  $\lambda = 1$  photon. Any accelerated motion away from this position of zero momentum rest requires kinetic energy and increases an atom's energy/mass with the added momentum but does not change its angular momentum. As a result, the increased mass slows the atom's clock interval to  $t = 1+$  and it emits a  $\lambda = 1+$  photon. As a body's absolute velocity vector is increased, its mass increases  $m/\sqrt{1-v^2/c^2}$  to greater than one  $m = >1$  and the rate of its photon clock slows to intervals  $t/\sqrt{1-v^2/c^2}$  of greater than one  $\lambda/c = >1$ .

### **Lorentz Transformation of Mass and Time**

When a clock is accelerated to a high velocity, its mass is increased and the length of its recorded intervals increase by an equal amount and when it is decelerated, its mass decreases and it ticks faster. This effect is a result of the conservation of angular momentum. In the case of a bullet, its energy is the combination of the momentum of its linear path and the angular momentum of its rifled spin. The bullet's total measured energy combines the relative kinetic energy of its velocity  $e = mv^2/2$  and the absolute rotational kinetic energy  $e = I\omega^2/2$  of its spin. A photon's total energy is like a bullet except that the rela-

tive energy of its momentum is equal to the absolute spin energy of its angular momentum:  $e = mc^2/2 + mC^2/2 = mcC$ . Doppler effects shift a photon's linear relative energy but not the absolute energy of its spin.

In the direct Doppler effect, the photon's momentum is increased or decreased in direct proportion to the direction of the emitting atom's absolute momentum vector. Photons emitted or absorbed with the atom's direction of motion will be blue-shifted and photons emitted or absorbed against its motion will be red shifted. Photon paths at right angles to its vector of motion will have no direct Doppler shifts but will undergo transverse Doppler effects. The transverse Doppler effect is the same in all directions and it red shifts emitted photons and blue shifts absorbed photons.

In a transverse Doppler effect  $\sqrt{1-v^2/c^2}$ , an emitted photon's momentum is decreased in direct proportion to increases in the atom's linear momentum. The increased momentum of an accelerated atom does not change its conserved angular momentum  $I\omega = mvr = \text{time}$ . When a rotating body's mass is increased and its radius remains constant, its rate of rotation must decrease. This increases intervals of the atom's clock and it slows. The time dilation of moving clocks is caused by the conservation of angular momentum as the atom's linear momentum is increased.

Theoretical physicists claim the equivalence principle has been measured to be correct many times and to a precision of many orders of magnitude. However, all of these confirmations have been with null results. An example of such an experiment would be to place a very accurate accelerometer on a falling body within a vacuum. When it is determined that the accelerometer registers no downward change in motion, the claim is made that the equivalence principle had been proven to the limits of the accelerometer's accuracy. The Pound-Rebka experiment has long been claimed to be a proof of the equivalence principle but here again the verification is in the form of null results. All failures to detect a downward force and motion of gravity are seen as experimental proofs of equivalence. The equivalence principle basically says that "gravity cannot be directly measured". Whenever an experimenter fails in an attempt to measure gravity, relativists declare it as a "proof" of Einstein's equivalence principle.

## **The Mossbauer Effect**

*The Mossbauer effect is the phenomena that Pound and Rebka used to make their very accurate measurements separating transverse and direct Doppler shifts.*

Atoms emit photons that travel an unlimited distance at  $c$  to other atoms that either absorb or reflect them. Atoms reflect most photons and can only absorb a limited number of wavelengths. This number decreases as the momen-

tum and energy of the photons increase. The greater the photon's momentum and energy, the less likely it can be absorbed and not reflected by an atom. In the longer wavelengths, like visible and radio photons, a very wide range of photons can be absorbed and emitted. In the shorter wavelengths like X-rays and gamma photons only a very limited number of wavelengths can be emitted and absorbed by a particular atom.

As the momentum and energy of photons increase, atoms can absorb fewer and fewer photons until finally they can only emit and absorb a single photon of a precise wavelength. In the case of the Pound-Rebka measurements, the atom used is Fe-57 and the photon is a gamma ray photon that has a momentum, energy and wavelength of exactly one  $\lambda = 1$ . An Fe-57 atom at rest can only emit or absorb this gamma photon. The Fe-57 atom reflects all similar sized photons and is only able to emit or absorb this single exact photon. When this photon travels from the bottom of the tower to the top, it maintains its wavelength of  $\lambda = 1$ .

When two of the Fe-57 crystals used in the Pound-Rebka experiment are placed apart horizontally on level ground, they are each able to readily absorb the  $\lambda = 1$  photons emitted by each other. However, if either crystal is put into even a slight amount linear motion, all absorption of  $\lambda = 1$  photons stops. It doesn't matter which crystal is moving. Even the tiniest amount of relative motion between the crystals produces direct Doppler shifts that prevent the photons from being absorbed.

When Pound and Rebka placed two Fe-57 crystals apart vertically in the Jefferson Tower, there was no photon absorption at either the top or bottom crystal even though they appeared to be at rest and maintained an exact vertical distance of 22.5 meters. There are only three possible ways to explain this effect. Either the photons acquired Doppler shifts instantly at emission or absorption or they acquired the shifts gradually as they traveled from emitter to receiver.

The receiving and emitting clocks at the top of the tower are moving at a lower escape/surface velocity  $V_{es}$  by than the clocks at the bottom. This difference in absolute gravitational momentum causes clocks at the top of the tower to be less massive and have shorter intervals than clocks at the bottom. This slower upward gravitational motion has red-shifted the receiver to a wavelength of  $\lambda = 1.0000000000000025$ . The  $\lambda = 1$  green photon from the bottom can no longer be absorbed by an Fe-57 atom at the top of the tower that can only see red.

## **Linear Actuator Measurements**

A simple measurement with an accelerometer reveals the true value of the motion producing the shift. Both crystals are found to be decelerating upward

with the force of gravity.

In order to make the transverse blue shifted Fe-57 atoms at the top of the tower absorb the photons from un-shifted green atoms at the bottom, it is necessary to put the bottom emitter on a very slow linear actuator that can move upward at the precise velocity of  $V = 1$ . As the actuator speeds up to this velocity, it direct Doppler blue shifts the photons by the same amount as the receiver's transverse blue-shift. When the blue shifted actuator photons are absorbed by the blue shifted receiver they are measured as green due to the observer's faster clock.

In the case of the blue photons moving from the top emitter to the bottom receiver, the linear actuator is set to move downward at  $V = 1$ . The blue transverse shifted photons from the top emitter are measured as green by the direct Doppler red shifted bottom receiver moving down at  $V = 1$ .

In the first case, direct Doppler blue shifted photons are canceled to green by a transverse blue shifted receiver and in the second case, transverse blue shifted photons are measured as green by a direct Doppler red shifted receiver. Both of these shifts occur from measured absolute linear velocity. The direct shifts are caused by the actuator's relative velocity of  $V = 1$  and the transverse shifts are caused by the absolute differences in escape/surface velocity between the top and bottom of the tower.

*See the back cover of this book for an illustration of these shift measurements.*

### ***The Basic Measured Values of the Pound-Rebka Experiment***

Earth radius at bottom of tower -----	$R_B = 6,371,000$ m
Earth radius at top of tower -----	$R_T = 6,371,022.5$ m
Gravity at bottom of tower -----	$g_B = {}_{es}V_B^2/2R_B = 9.807$ m/s <sup>2</sup>
Gravity at top of tower -----	$g_T = {}_{es}V_T^2/2R_T = 9.8069308$ m/s <sup>2</sup>
Acceleration of gravity at Bohr radius-----	$g_{ao} = 8.018 \times 10^{-17}$ m/sec <sup>2</sup>
Escape/surface velocity at Bohr radius -----	${}_{es}V_{ao} = G_v = 9.2116 \times 10^{-14}$ m/s
Escape/surface velocity at bottom of tower---	${}_{es}V_B = \sqrt{2gR_B} = 11,178.5864$ m/s
Escape/surface velocity at top of the tower ---	${}_{es}V_T = \sqrt{2gR_T} = 11,178.5667$ m/s
Difference in ${}_{es}V$ ( ${}_{es}V_B - {}_{es}V_T$ ) between top and bottom-----	.0197 m/s
Transverse Doppler shift of ${}_{es}V$ difference $\lambda = \sqrt{1 - v^2/c^2}$ -----	$2.5 \times 10^{-15}$ $\lambda$
Photon transit time between emitter and receiver $22.5m/c$ ----	.000000075 sec
Velocity increase of receiver during photon transit $V = gd/c$ ---	.000000736 m/s
Direct Doppler shift of transit velocity = $gd/c^2$ -----	$2.5 \times 10^{-15}$ $\lambda$
Transverse Doppler shift of ${}_{es}V_B$ $\lambda = \sqrt{1 - v^2/c^2}$ -----	1.0000000006959484 $\lambda$
Transverse Doppler shift of ${}_{es}V_T$ $\lambda = \sqrt{1 - v^2/c^2}$ -----	1.0000000006959459 $\lambda$
Difference in transverse shift between top and bottom-	.0000000000000025
Clock time interval at top of tower $T_T$ -----	1.0000000000000000 s
Clock time interval a bottom of tower $T_B$ -----	1.0000000000000025 s
Deceleration of gravity during photon travel time-----	$V = 1 = .000000736$ m/s

## **Principle of the Gravitational Expansion of Mass, Space, and Time**

*When we measure and calculate the physical mechanics of gravitational motion and force with Newtonian accelerometers and cesium clocks we logically and philosophically arrive at the gravitational expansion of mass, space and time.*

Gravitational expansion is a physical principle of measurement and not a metaphysical theory of gravity because it makes no assumptions other than the accuracy of accelerometers and  $F = ma \cdot d$ . Force is equal to mass times an unknown combination of deceleration and acceleration. This is the only equation necessary to explain the physical mechanics of the principle of gravitational expansion. Any “theory” of gravity must present metaphysical assumptions to explain why the physical measurements of upward gravitational motion and force are false. Einstein’s attempt at falsifying experimental measurement was his theory of equivalence.

Gravitational expansion is a principle of measurement. Its how we feel the force of gravity with our bodies and what gravity does and looks like when we measure it. Skydivers in free-fall feel motionless as they watch Earth rush up to meet them. This is a simple common sense observations that employ all their senses. Skydivers have no sensory input that would lead them to believe they were being accelerated towards Earth. They can easily feel the air pushing them upward as Earth’s surface rushes toward them.

For skydivers to invent a “theory” of gravity to counter the upward principle of gravity based on their own sensory observations, they must first psychologically overcome their sensual feelings of watching a rising Earth. To defeat these feelings, skydivers must try to imagine they are somehow being unfeelingly pulled toward a stationary Earth by an otherwise undetectable force field. To do this, they can imagine different ideas like gravitons, aethers, dimensions, continuum fields and spacetime. They can use one or a combination of these intangible mathematical ideas to create a mechanism that will invalidate the workings of gravity they see and feel as they float above Earth on a rising column of air. This mechanism would be used to invalidate the measurements of Newtonian accelerometers and Cesium-133 clocks.

## **Philosophy of Gravity**

*The philosophical problem with all gravitational field and particle theories is that no gravitational fields or particles have ever been detected and measured and the physical problem with these theories is that they completely ignore the actual experimental measurements of gravitational motion, force, and time that are made with accelerometers and clocks.*



The metaphysical assumptions and mathematical calculations behind the Einstein apologists' explanation of the Pound-Rebka duplicate the measured values of the experiment perfectly. The only problem is that the math incorporates the unmeasured force and motion and equivalent momenta of both electromagnetic and gravitational field potentials. Einstein imagined gravity and inertia to be equivalent but not equal. He believed that the measured inertial force and motion of electromagnetic photons was always equivalent to the unmeasured motion and force of gravity. Einstein's purpose in inventing the equivalence principle was an attempt to invalidate Galileo's measurements of gravitational force and motion as demonstrated by Newton's pendulum clock. Even though the pendulum's motion is obviously a pure measurement of upward acceleration, Einstein imagined that gravity was an unmeasured downward force caused by the curving of an unseen substance called a four-dimensional spacetime continuum. However, gravity is always measured as a four-dimensional absolute motion of mass and time through the void of space.

The essential difference between general relativity and gravitational expansion is that with relativity, gravity is caused by the imagined curvature of the spacetime surrounding matter and photons and with gravitational expansion, it is the mass-time within atoms and photons that is measured to actually curve.

Both general relativity and gravitational expansion explain gravity with opposite four-dimensional geometries of curving space and time. In the first idea, it is Einstein's imagined dimension of spacetime that curves inward and with gravitational expansion it is the actual measured dimensions of atoms that curve outward.

If the upward force of gravity doesn't produce real upward inertial motion, how is it that the measured inertial motion of the linear actuators is able of to Doppler shift the gravitational motion of photons? Pound-Rebka clearly shows that the inertial motions of both photons and gravity are one in the same equals and not equivalent opposites.

### **Gravity Comes from the Inside of Atoms and Not the Outside**

*The motion and force of gravity come completely from within the interior of the atom's mass, space, and time and not from other atoms in the universe at large. The upward force of gravity extends only to the outer surface of each photon, atom, moon, planet, star, and other solid bodies of matter.*

While the rates clocks are a measure of transverse shifts, it is changes in momentum and not changes in time that is the true physical parameter of the transverse shift. Time is just an imaginary parameter to quantify momentum  $p = ms/t$  and like the idea of space has no separate physical existence. Space

and time are just the imaginary handles for the measurement of mass. Photon momentum  $p = mc$  and angular momentum  $m\lambda c/2\pi$  are the two separate configurations of mass, space and time.

Protons and electrons are measured as individual bodies of circlon shaped mass. Each projects a circlon shaped charge chain “field” that pulls them together, or pushes them apart. All of their interactions are primary transfers of momentum and secondary transfers of energy/mass. Momentum and energy are not separate things. Momentum is the primary entity and energy is the interaction between momentum and force. Whereas momentum is absolute, eternal, and conserved, energy is relative and momentary. Total energy is conserved but the conservation law for energy is secondary to the primary momentum conservation law. Moving bodies with identical conserved momenta can have greatly different values of conserved kinetic energy. The cannonball has far more energy than the cannon but their momenta is the same. A single force measured as energy  $e = mv^2$  is divided into two equal momenta  $mv = mv$  that produce two unequal energies  $e = mv^2/2 + e = mv^2/2$ .

A moving body with a momentum of one  $p = 1$ , a mass of one and a velocity of one has a kinetic energy of one-half  $e = mv^2/2$ . Another body with a momentum of one can have a mass of 1/10, a velocity of 10, and an energy of 5. A heavier  $p = 1$  body with a mass of ten and a velocity of 1/10 would have an energy of 1/20.

Momentum is the constant motion of mass and energy is the measure of any change in that motion. Energy provides the force to create momentum and change in momentum produces the force necessary to create energy. Energy is the relative, positive or negative measure of a body’s change in momentum. Energy is absorbed when a body is accelerated and energy is produced when a body is decelerated.

The gravitational expansion of mass, space and time might be called a “dynamic dimension” but it is not in any way a field, an aether, a spacetime continuum or anything else that would give substance to space. There is no theory required for gravitational expansion because gravity is just a physical measurement and physical principles of measurement cannot be theories. There is no question as to what gravity does experimentally. Gravitational theorists try to believe in a field that cannot be measured. Relativity theorists all claim that the equivalent force and motion of gravity point down yet the physical results of Pound-Rebka and all other accelerometer measurements show conclusively that gravitational force and motion point up, not down.

## **Photon, Transverse and Gravitational Times**

*The standard for inertial photon time is the one-dimensional conservation of momentum. The natural interval of photon time is the light year. The*

*standard for inertial transverse time is the two-dimensional conservation of angular momentum. The natural interval of transverse time is the angular momentum of the photon  $h/2\pi = m\lambda c/2\pi$ . The standard for gravitation time is the constant upward three-dimensional escape/surface velocity, force, and momentum of Earth's surface. The natural interval of gravitational time is the year.*

The natural interval of Earth's gravitational time clock is one year and the natural interval of Earth's transverse rotational time is the day. Common forms of gravitational clocks like pendulum clocks do not produce pure intervals of gravitational time because on Earth, pendulum clock intervals are changed at different latitudes by the opposite transverse time of the centripetal forces produced by Earth's inertial rotation. Only at the poles do pendulum clocks produce pure gravitational time intervals.

The synchronization of a pendulum clock and an atomic clock can usually only be accomplished at two or three orders of magnitude but the Pound-Rebka measurement is a unique example where the two time flows can be synchronized to within fifteen orders of magnitude 1.00000000000000025.

Gravitational time and photon time flow in different directions. The flow of gravitational time is up and the flow of inertial time is down. The upward force of gravity that drives the speed of the pendulum is counteracted by Earth's downward centripetal force that slows the pendulum. Earth's upward force is gravitational time and its downward centripetal force is inertial time. These two times merge into the recorded intervals of a pendulum clock.

The intervals of transverse rotational time are the angular momentum of the photon and the angular momentum of the electron  $I\omega = m\lambda C/2\pi = e_{m_0} \alpha C$ . The recorded intervals of all clocks are based on the conservation of angular momentum. In atomic clocks it is the internal rotations of the atom that is the standard of time. When an atom is accelerated, its momentum and mass (energy/mass) increase but its angular momentum remains constant. This causes the rotations within the atom to slow and the clock's recorded intervals to become longer.

## **Acceleration and Deceleration of Gravitational Time**

*The force we measure with an accelerometer is usually an unknown combination of absolute acceleration and deceleration.  $F = ma*d$ . With the Pound-Rebka experiment, we are able use gamma photons to precisely measure the difference between the acceleration and deceleration of gravity.*

Einstein imagined gravity as an unmeasured force that produces virtual acceleration of mass within a four-dimensional spatial force field surrounding all bodies of mass. This is a metaphysical description because it completely ig-

nores the actual physical measurements of gravitational force and motion. It is based on equivalent acceleration that produces none of the changes in motion that we measure with accelerometers. What Newton and Einstein failed to understand was that there is no way for an accelerometer to distinguish between absolute acceleration and deceleration and that their equivalent acceleration of gravity was actually measured to be deceleration. Gravity is an acceleration/ deceleration dichotomy that is equal and opposite but not equivalent.

The problem with both special and general relativity is that they never embraced deceleration as being a real and distinct equal to acceleration. If all linear motion is assumed to be relative, there can be no physical distinction between acceleration and deceleration. The contradiction that exists within both Einstein's theories is that the Lorentz transformation and Pound-Rebka provide experiment measurements of absolute linear motion. Many experiments have measured that linear acceleration causes energy/mass to increase and clocks to slow while deceleration causes energy/mass to decrease and clocks to speed up.

The Pound-Rebka experiment makes very precise Doppler shift measurements of the momentum transfers between matter and photons produced by the combined complimentary acceleration and deceleration of the gravitational expansion of mass, space and time. These experimental measurements of momentum transfer show the clear distinction between gravity's upward accelerated motion and the equal and opposite deceleration of Earth's surface/escape velocity.

An example of the deceleration of gravity is a rocket engine in a fast low Earth orbit such as a space shuttle orbit. For the rocket to move a satellite to a much higher orbit such as a GPS orbit, it must decelerate it to both a lower orbital velocity and a lower escape/surface velocity  $V_{es}$ . The positive energy of the rocket fuel is used to decelerate the satellite and remove its kinetic energy as it slows to lower escape/surface velocity  $V_{es}$  and orbital velocity  $V_o$ . This example is experimentally verified by atomic clocks onboard GPS satellites that increase their rates when they are decelerated into higher and higher orbits with less and less escape/surface velocities and orbital velocities.

## **Earth Falls Up**

*The Pound-Rebka experiment provides definitive proof that Einstein was wrong about both the direction of gravitational motion and force and the relativity of photon motion. The Pound-Rebka values are not the result of some otherwise hidden transformation of space and time. The measured results are a combination of transverse and direct Doppler shifts produced by measured changes in actual inertial motion.*

Mathematics can never be used as proof of a theory of physical measurement. Experimental measurement is the proof and mathematics is just a tool used to quantify that truth. The metaphysical assumption is a tool to mathematically counter the results of experimental measurements. The only mathematics needed by Pound-Rebka to quantify gravity and photons are  $F = ma \cdot d$ ,  $p = mc$ , and  $h = m\lambda c$ .

The true nature of gravity is a dichotomy between the equal and opposite inertial acceleration of matter and the deceleration of gravitational momentum and time. What is usually referred to as the “acceleration” of gravity is, in reality, always measured as a balance between the acceleration of mass and the deceleration of time.

### **The Harvard Fantasy of Equivalent and Relative Motion**

Harvard physicists often tout Pound-Rebka as an actual measurement of the hidden gravitational potential produced by the curvature of gravitational space that is calculated and predicted by general relativity’s equivalence principle. However, the use of actuators to produce direct Doppler shifts to cancel the transverse shifts of gravitational motion proves quite conclusively that there can be neither a gravitational potential field nor a curved gravitational spacetime continuum. No gravitational potential is required for the measured direct shifts and if such a “potential” were actually to exist, it would change the measured values.

The only space that curves is not the four-dimensional external spacetime continuum space surrounding atoms but rather the three-dimensional internal gravitational space defining the shape and intrinsic inertial expansion of atoms. The gravitational expansion of mass, space and time is the true measure of gravitational motion and force and it extends only to the surface of each atom. No measurement has ever been made of an occult gravitational attraction between atoms resulting from an all-pervasive gravitational potential field or from a curvature of spacetime. All such fanciful ideas may be psychologically and emotionally pleasing fantasies for Harvard theoretical physicists but they are definitely not philosophically pleasing for Harvard’s experimental physicists. In reality, these ideas are nothing more than the purest of metaphysical speculation. The simple true nature and cause of gravity revealed by the Pound-Rebka experiment is that Earth’s surface falls up with a constant upward velocity that is accelerating and decelerating at the same time.

### **The Common Sense Principle of Cause and Effect**

*The basic physical components of atoms and photons are mass, space, time and gravity. Their measurable physical parameters are force, acceleration, momentum, wavelength, and energy. These are calculated for each event*

*with scientific method's common sense principle of cause and effect.*

The terms physical, metaphysical, assumption, principle and theory are used in several different combinations throughout this book and a proper understanding of their meanings is essential for the comprehension of the ideas presented herein. The philosophy of physics combines the principle of physical measurement with the metaphysical assumptions of imagination to create theories to define reality. Philosophy is the structural relationship between the common sense measurements of physical parameters and the non-sensory and mathematical interpretations of these measurements in terms of metaphysical assumptions that cannot be measured or do not obey the principle of cause and effect.

### **Cause and Effect of Gravity and Photon Momentum**

*The most important principle of physical measurement is the temporal direction of cause and effect. The direction in time of Newtonian force and motion runs counter to the temporal direction of cause and effect in Einstein's equivalence principle.*

The Pound-Rebka experiment establishes that change in momentum is both the cause and effect of force. Momentum's direction in time is always measured from cause to effect. In the equivalence principle, the directions in time for cause and effect are turned upside down. Einstein's equivalent gravitational force becomes the cause and downward equivalent gravitational motion becomes its effect. The Pound-Rebka experiment does not detect or measure either equivalent force or downward motion.

Active force changes timeless momentum into energy. Change in momentum is the cause and effect of force and energy is divided between the two changed momenta. This is a simple cause and effect temporal principle of measurement and not a theory. A metaphysical theory would say that force can also be a cause when it constantly appears from within a continuum to make the momentum of falling bodies into an effect.

In his general relativity theory, Einstein imagined reversing cause and effect so that the force of gravity causes the increasing momentum of falling bodies. This transformation in direction from *cause and effect* to *effect and cause* is nothing short of trying reverse time itself. *Momentum>force>energy* is the physically measured direction of time for cause and effect. In Einstein's upside down idea of *energy>force>momentum*, energy from space causes equivalent force that produces momentum as an effect. This idea creates contrary non-experimental definitions of the concepts and calculations of *momentum, force, and energy*. Certainly, Einstein was able to imagine and calculate his reversal of physical time but he was never able to find any experimental evidence

of gravitational energy coming out of space. All measurements show gravitational energy to be the result changes in gravitational momentum at Earth's surface.

All measurements of energy contain differing portions *relative energy* and *absolute energy*. Photons have exactly equal quantities of *relative energy* and *absolute energy*. They all move at  $c$  on one dimensional vectors and their momentum is calculated to have relative energy. Photons also spin at  $C$  and their angular momentum is calculated to have absolute energy. Two moving atoms have the relative energy of their linear velocity at  $c$  and the absolute energy of their internal rotational velocity at  $C$ .

### **Momentum and Force are the Primary Parameters of Reality**

Momentum and force are measurable entities. They are individual quantities of mass, space, time, and gravity. Momentum and force are the primary parameters of existence and energy is the secondary concept of their measurement. Energy is the relationship between momentum and force and has no independent existence of its own. Energy is the interaction between force and momentum and cannot exist independently of momentum or be measured independently of force. Force and energy are always relative to momentum and momentum is always absolute to the Zero Momentum Photon Frame. All photons move at  $c$  relative to the ZMPF. This is not a "preferred" rest frame. ZMPF is measured to be the *only* possible stationary frame. All other frames move relative to ZMPF and are subject to the direct Doppler shifts and Lorentz transformations caused by inertial motion. Even though the ZMPF is just an imaginary void of space, its absolute location can be accurately measured by finding a point of rest  $-c$  for the photons of the 2.726°K Cosmic Blackbody Radiation. This point has been measured to move relative to Earth at about 375 km/s in the general direction of Aquarius.

Cause and effect defines the temporal direction of time for both gravitational time and photon time. There is no question as to the direction of cause and effect time in photon interactions in which a photon's momentum is the cause that always precedes the effect of a photon's force and energy. Momentum is the primary absolute quantity of cause and force is the secondary effect of a change momentum that is quantified as energy. Momentum is an unmeasured passive cause and force is the active effect for the measurement of energy and mass. Force alters both the quantity of a body's momentum and the direction of its vector of motion. Momentum is necessary to produce force. Force is an absolute quantity and can only be measured as a change in momentum.



General relativity proposes the cause of gravity to be a momentum-less point of mass located at Earth's center that projects momentum causing downward force to all bodies on Earth and in the surrounding universe. In aether and field theories like general relativity, the temporal direction of cause and effect is reversed. Gravitational energy and force are imagined to pop out of the gravitational field and cause the effect of acceleration of bodies toward Earth. In the gravitational expansion principle, upward momentum is the cause of the effect of upward gravitational force. Gravitational energy comes up from Earth's surface and not down from the sky.

### **The Common Sense Direction of Time**

*The common sense directions of cause and effect are imagined to be reversed in Einstein's non-sensual field theory of gravitational mass, space, and time. There is no logical, philosophical or physical reason to believe that energy and force can ever precede momentum in any cause and effect interaction.*

In general relativity, unmeasured force is assumed to be the cause of the unmeasured increasing momentum of falling bodies. In such field theories, inertial photon time and gravitational time move in opposite directions for purposes of cause and effect. This is the backwards Newtonian cause and effect of  $F = ma$ . The cause and effect direction of Newton's formula is  $ma = F$ . The effect of force can never precedes the cause of accelerated or decelerated momentum as it does in relativity theories where unmeasured force is imagined to create the equivalent momentum of falling bodies.

The Pound-Rebka measurements establish momentum as the cause of both the forces of gravity and photons. There is no evidence for an unmeasured downward force of gravity being the cause of unmeasured downward momentum. In the principle of the gravitational expansion of mass, space and time, upward gravitational momentum  $p = mV_{gs}$  causes the measured effect of upward gravitational force. In both the principle of gravitational expansion and the principle of photon dynamics, change in momentum is always the cause of force and energy effects.

When a stationary "falling" body impacts the ground, force is produced by Earth's upward momentum. The force is quantified as energy of the "fall". When a photon is absorbed by an atom, its momentum is added to the atom by a force that is measured as an increase in the atom's kinetic energy. The mass of the photon is added to the atom as an equal part of the energy. Mass, momentum, and energy are all conserved independently. Energy/mass is the single conserved component of atoms  $e/m = CC$  and photons  $e/m = cC$ .

Both momentum and force are dynamic entities and energy is the conserved quantity of an individual momentum/force interaction. Momentum and force are principles of measurement and energy is their measured value.

Einstein tried to turn this relationship around by imagining that “pure energy” was the primary autonomous substance of existence. He believed energy itself that could produce force, create momentum, and even transform into the mass of atoms. No experimental physicists have ever measured Einstein’s pure energy transforming into force and momentum. Newton understood the primary physics of force and momentum and did not include energy in his measurements and calculations. Energy is not a real physical quantity like force and momentum. Energy is merely the calculation used by experimental physicists to quantify measurements of force and momentum. Physically, energy is the equal inseparable half of the energy/mass duality of matter  $e/m = CC$ .

### **Common Sense is a Philosophical Principle of Measurement**

*We sense and measure gravity as a simple mechanical upward pushing force. There is way too much complex, mathematical, conceptual, philosophical, and emotional baggage involved in turning the simple measured push of gravity around into a metaphysical pull that we can’t even sense or measure.*

We experience the world through a combination of measurements made with what we generalize as our senses. We are all aware of our five senses through which we contact and “feel” the outside world. All that we know is what we have learned from the common perception of the senses of Feeling, Hearing, Smelling, Tasting and Seeing.

Touch or feeling and balance is our most basic sense. It is the way that our bodies measure Newton’s laws of force and motion  $F = ma$ . Our sense of feeling and balance differentiates between the directions of push and pull forces. Hearing is the way our bodies measure vibration waves passing through matter. These are sensed as repetitive push and pull forces and motions of our ear drums. Smell and taste are the passive and active components of a single sense that measures vast numbers of different individual chemical reactions that ultimately depend on interactions between electrons and protons. Our sense of sight measures individual photons from a tiny slice of the electromagnetic spectrum. They are sensed as the momentum of individual photons being absorbed and measured within our eyes.

These senses have much in common with each other but were all developed independently over the last few billion years of our genetic existence. Each of us is the final link in an unbroken genetic chain passing through each of our ancestors. The essence of what is alive within us has been part of a living organism for billions of years. While water may come and go within our bodies, there is an extremely good chance that some of the original water molecules and other atoms within the genetic structure of our bodies have been within every link of our ancestral chain from the time we were primitive

creatures crawling out of the ocean. The number of links in our genetic chains is small indeed compared to the number of water and other molecules within this creature's reproductive structure. Some of these original atoms are passed at each generational link in our billion-year-old living genetic chains.

As the chain progressed from within our past, we developed our senses. Each evolved at different rates and became specialized to better suit the survival of individual organisms. As we look back at our genetic past we could say that our life began with our most distant ancestor's first sensory input. A single celled organism was first able to "see" when it could feel itself absorbing photons. Later, multi-celled organisms were able to distinguish between photons of different wavelengths. Eventually eyes were developed to measure the trajectories and energies of all the photons from a very narrow spectrum of wavelengths.

The five categories of sensory inputs are gathered together in each of us to form the common sense of our consciousness. At the center of each of our beings is the common sense of consciousness that we glean from all of our other senses. Seeing and feeling is believing. What we experience, remember, and believe in our world comes to us from combining our separate senses into the common sense of our conscious imagination. Imagination allows sensory information to be processed in non-sensory ways. Our sense of consciousness is our total reaction to the memory of our body's five sensory measurements.

Imagination can ignore information from our push and pull senses and imagine forces that are neither pushes or pulls. Our imaginations can calculate theories for forces and motions that are either beyond the range of our senses or outside of all sensory input.

We experience and interpret our sensory information in many different ways that may or may not have any relationship to the true meaning of that sensory memory. In this way, common sense and imagination are opposites. The essence of imagination is to arrange one's sensory inputs in nonsensical ways that allows us to bridge gaps in our sensory information. We imagine the sun passing overhead each day even though our senses reveal Earth rotating under a stationary sun. It is the power of our non-sensory imaginations that allowed Einstein to imagine and then believe in a form of gravitational force and motion that is the opposite of what he felt and experience with his senses. It is non-sensory imagination that allows theorists believe that photons have no mass when their eyes use the photon's individual energy/mass (momenta) to detect and measure them. How can a photon have momentum and not have mass? Momentum without mass can be imagined but not measured. Mass is just the idea we use to quantify momentum.

Energy/mass is the structural component of matter  $e/m = CC$  and photons  $e/m = cC$ . Energy and mass are the equal and inseparable parts of electrons,

protons, and photons and neither can exist without the other. Where Einstein went wrong was when he imagined his equation  $E = MC^2$  by believing he could intrinsically separate energy and mass and put them on opposite sides of the equation and then foolishly combine the rotational speed of light  $C$  with the linear speed of light  $c$ .

In experimental physics the reach of our senses has been extended many fold. Whereas our eyes can only see a narrow band of photon wavelengths with the momentum of the reddest photons only about half the momentum of violet photons, the experimental physicist can measure photons from the entire electromagnetic spectrum that have momenta and wavelengths many orders of magnitude greater and smaller than visible photons. We can measure very short gamma photons as well as extremely long photons far past the radio spectrum. With the naked eye we can barely see visible photons from galaxies like Andromeda that are only about a million light years away. Telescopes can extend our senses to a wide spectrum of photons from stars and galaxies many billions of light years away.

The enormous range of experimental measurement provides physicists with an extremely broad foundation of “common sense” on which to base physical principles that can be developed by theorists into theories. Unlike the human organism, the body of scientific physical measurement has no imagination. The common sense of physical principles does not depart from or contradict that which is measured. This principle of common sense is adhered to throughout these contemplations of physical principles. The physical parameters of common sense measurement serve as the basis of each physical principle and the tool of imagination need only appear in a theory’s final conclusions. Theories are based on imaginary metaphysical parameters that cannot be detected by physical measurement or comply to the principles of the common sense knowledge of physical evidence.

### **Theoretical Physicists Ridicule the Philosophy of Common Sense**

The principle of common sense measurement was been virtually ignored by Einstein and the group of people who put together the standard model theories of physics and the Big Bang. In fact, in the academic world of Harvard theoretical physics, the idea that deep physics problems might have common sense solutions is often treated with great derision. They can only imagine physics to be a deep and magical paradoxical mystery that can only be understood in terms of metaphysical assumptions and abstract mathematical equations. Only a mental midget with an insufficient imagination or a Harvard experimental physicist would attempt to explain natural phenomena just in terms of their physical measurements. In the case of Harvard’s Pound-Rebka experiment, the experimental physicists made the measurements of gravita-

tional and photon motion and then the theoretical physicists invented several different calculations to describe what was happening. Since these different counter-intuitive calculations were “equivalent” with one another, the theorists decided that they were all correct even though they contradicted the common sense values that the experimental physicists had measured.

A prime example of this kind of thinking is Einstein’s famous statement, *“Imagination is more important than knowledge”*. Here he clearly shows his preference for using magical thinking and metaphysical ideas to try and contradict experimental facts. Just one example of this was his adoption of the equivalence principle so that he could imagine that the direction of gravitational force pointed downward in contrast to all experimental measurements of it pointing up. Einstein didn’t even try to measure gravity, which he could have easily done without any scientific instruments. All he had to do was to lay back in bed and with his sense of touch and consciously feel the force of gravity pushing him upward. Because he was a daring, imaginative, and foolish fellow, Einstein ignored his own common sense experience and then went on to fool other theorists into believing in his complex and paradoxical notion that gravity extended to the farthest reaches of the universe instead of just to the sensors inside the seat of his pants.

Ever since Einstein was able to get away with ignoring common sense experimental principles and construct theories based of metaphysical assumptions, this method of theorizing has become the dogma of Harvard’s theoretical physicists. They begin by imagining a metaphysical principle that cannot be established by experiment. They then begin constructing their theories by arranging and compromising common sense experimental facts in such a way that they are compatible with their imagined underlying metaphysics. A successful theory is one in which a large numbers of experimental facts can be arranged around a basic metaphysical principle without internal contradiction. A theory becomes suspect when contradictory conclusions or new data require the adoption of new metaphysical principles to make the old theory work. This has happened to the attraction theories of gravity that were forced by experimental measurements to imagine and adopt new metaphysical assumptions like Dark Matter and Dark Energy existing within an imagined spacetime continuum laced with vast but separate quantities of “energy” and “mass”.

The principle of the gravitational expansion of mass, space and time conforms to all sensual input and establishes philosophical principles of measurement and logic that predict and confirm all measurements of mass, space, time, and gravitational force and motion. By contrast, Einstein reverses, curves and calculates the philosophical principles of measurement and logic in such a way that his imagined downward force and motion of gravity can always be thought about and calculated in precise detail but never felt or measured.

In conclusion, when the Pound-Rebka results are taken at face value, there are no experimental, philosophical or logical reasons to believe that the gravitational theories of Newton or Einstein have any validity in our own personal sensory reality. The only reason that anyone would believe in any such fanciful ideas would be the purely emotional and psychological desire to feel secure in their perception of an eternally unchanging and unmoving world.

Einstein's foolish belief in a downward pull of gravity was merely a throw-back and extension to the flat Earth and geocentric theories of former times. The flat Earth people didn't want to believe Earth could curve, the geocentrists didn't want to believe Earth could move, and today, the relativists don't want to believe Earth can move from within. Even though they feel and experience it their whole lives, most foolish people are unwilling to even consider they are constantly being pushed upward by an absolutely real velocity of 11 km/s. This upward velocity and the force it produces are responsible for everything we feel and measure gravity to be. Gravity is Earth moving through the fourth dimension of space and the second dimension of time.

### **Pure Energy is the Irresistible Imaginary Fantasy of Theorists**

*Standard model physicists, Big Bang theorists, and virtually all of the other crackpot theoretical physicists all use Einstein's upside down and backwards idea of "pure energy" as both the primary component of reality and the prime mover in physical dynamics. In Special Relativity, pure energy is represented by the massless photon and in General Relativity pure energy takes the form of the momentum of falling bodies and the equivalent force that accelerates them. The many dissident aether theorists that dispute Einstein also usually adopt his idea of pure massless energy and then try to adapt the concept to their own peculiar spacetime aether medium.*

. The Big Bang people all want to believe the universe began as a singularity containing only pure energy and no momentum. Nuclear physicists all seem to believe that pure massless energy can be divided into pure energy-less particles of matter and then converted back into massless energy photons. In experimental physics, pure massless energy has never been measured and there seems to be no way that it could be detected even if it did exist.

Einstein's imaginary idea of pure massless energy was the opposite of Newton's measured parameters of force and momentum. Newton never acknowledged the concept of energy as the primary component in the measurement of force and momentum. Energy is always measured as the unequal division of a force in the equal division to two momenta. The cannon and the cannonball have exactly equal quantities of momentum but greatly differing amounts of energy.























