

A Definitive Test for the Law of Gravity

The gravity cannon experiment is a very simple test that can provide decisive confirmation or falsification of the various gravitational theories.

Although it would have to be performed in the weightlessness of outer space, this experiment could otherwise be executed very easily and inexpensively. A Gold ball would loosely fit inside of a hole passing through the center of a solid, clear glass sphere. When a motionless ball is placed at the barrel's mouth, the gravitational force and motion that occurs is measured and recorded with a video camera.

Besides being able to differentiate between the four possible theories of gravitational force and motion, this experiment would also provides the means to verify and calibrate earthbound measurements and calculations of both the Newtonian force constant G and the gravitational velocity constant G_v . This is a definitive test to identify the physical differences between the four theories of gravity. This test measures the speed of gravitational motion without the influence of any other gravitating bodies or electric and magnetic fields and compares these values to the predictions of gravity theories.

The Four Gravity Theories

There are four different basic gravity theories. These include the two pulling medium theories of homogeneous and infinite particle aether. The other two are the internal and external pushing particle theories.

These four ideas each use different complementary equations to explain the many measurements that have been made of gravitational force and motion. Depending on their various assumptions, all these theories can be made to account for most gravity measurements.

This test is based on the Newtonian momentum measurement principle of $F = ma$. This principle shows that the direction of gravitational force and motion points up at Earth's surface and produces an upward acceleration of about 10m/s^2 and an upward escape/surface velocity of about 11 km/s . Newtonian force and motion is not a theory. It is the principle of measurement that theories of gravity attempt to explain. Both the aether theories and the external pushing particle theories base their ideas on the unmeasurable premise of a metaphysical gravitational force that extends to infinity but points downward toward the centers of all bodies. This force is calculated to be equivalent to and opposite of the upward force of gravity that is measured as Newtonian acceleration.

Aether Gravity Theories

Aethers and fields are defined as any description or condition of space that is not an eternal dimensionless void. Fields are local conditions of aether or spacetime that extend between and connect atoms. They can be either be local to the atoms or they can extend to infinity.

The homogeneous aether theories explain gravity as a single, universal, solid or liquid all pervasive aether continuum. Curvatures, ripples, and waves within this universal

substance cause bodies of matter to move toward one another. In the infinite particle aether theories, gravity is explained by a potentially infinite number of gravitational fields that are usually called gravitons. These calculated wave-particle dualities are generated at the center of each body of mass and then spread out in all directions to infinity at the speed of light.

General Relativity is a homogeneous aether theory that has been mathematically crafted into several interpretations. Its equations usually calculate a four-dimensional spacetime continuum that connects all matter and interacts with an apparent but otherwise undetectable force that causes gravitational force and motion. The presence of a body of mass causes the continuum to curve and produce motion in the body. General Relativity is sometimes classed as an infinite particle aether theory because in some versions the force of gravity is spread from atom to atom across the universe by great numbers of tiny wave-particle dualities called gravitons. These wavelike particles move through the continuum at the speed of light and are calculated to cause portions of the spacetime to curve in such a way as to cause the appearance of gravitational motion between bodies of matter.

Pushing Particle Gravity Theories

The pushing particle theories are divided into the external theories and the internal theory of the gravitational expansion of mass, space, and time. The external pushing gravity theories explain gravity by assuming that large bodies of matter like Earth are constantly being pushed inward toward their centers by great numbers of tiny undetectable particles impinging on them from all directions of space. The internal pushing particle principle explains gravity as the measured outward force caused by protons and electrons pushing on one another.

External pushing gravity theories claim that the imagined downward motion of falling bodies is produced by the absorption of tiny undetectable extremely high speed particles that are assumed to exist uniformly distributed throughout all of space. Some of these theories predict particle speeds many orders of magnitude greater than the speed of light. When these particles strike matter, they give it a slight push. These omnidirectional particles push the surfaces of large bodies towards their centers. Such theories predict that the Gold ball would be pushed back and forth from one side of the glass sphere to the other in a similar manner to the predictions of pulling gravity aether theories.

An external pushing gravity theory was first proposed by Nicolas Fatio in 1690. Later, similar theories were proposed by Le Sage and others. Rene Descartes had a pushing gravity theory in which numerous tiny whirlpools within the aether pushed on matter.

While external pushing gravity theories have never gained much credibility among the physics establishment, they have a wide following among alternative gravitational theorists. These theories have no explanation for the equivalence principle and generally ignore the concept altogether. The external pushing particle theories all predict the Palladium ball would move back and forth from one side of the glass sphere to the other

in a similar manner to the predictions of pulling gravity aether theories.

In the internal pushing particle principle, the particles that do the pushing are the well established protons and electrons within atoms. This explanation of gravity is a principle of measurement and not a theory because the outward force of gravity is easily measured with accelerometers. The motion of the gravity cannon ball can easily indicate the truth between the external and internal pushing particle explanations of gravity. In the internal pushing particle principle of the proton and electron, the Palladium ball would move from the surface of the sphere to its center where it would gradually slow to a stop. All of the pushing forces are contained within the glass sphere and the Palladium ball and there is no force between them.

Three Possible Gravities

Gravity can only be a downward pull, a downward push or an upward push. Almost everyone imagines it to be a downward pull, a few believe it to be a downward push, and all measurements show it to be an upward push.

There can be only two possible outcomes to the gravity cannon experiment. This test decides the absolute physical truth between whether gravity points down with equivalent acceleration as has always been imagined and calculated or whether the force of gravity points up as has always been felt and measured. Either the Palladium ball will appear to move to the center of the sphere and stop or it will be pulled back and forth from one end of the barrel to the other. Does equivalent force add to and then subtract equivalent momentum from the Gold ball as it moves through the glass sphere or does the momentum of both ball and sphere remain separate and conserved?

The internal proton/electron pushing principle of absolute gravitational force and motion predicts that the ball will appear to begin accelerating toward the center and then slow to a stop with decreasing deceleration at the sphere's center. The ball remains at rest while the outer surfaces of both ball and sphere move away from their inertial centers. There is no absolute motion between the inertial centers of ball and sphere.

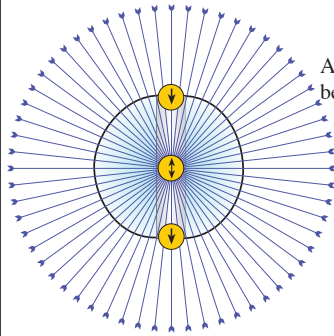
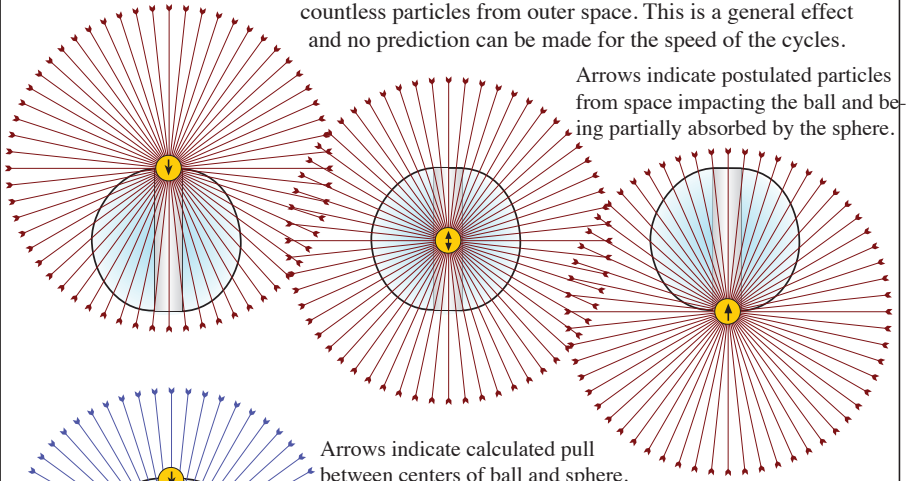
Principle of the Gravitational Expansion of Mass, Space, and Time

Absolute gravitational motion and force is not a theory of gravity. It is just the measurement of gravity that reveals why we have always felt the upward push of Earth's surface falling up!

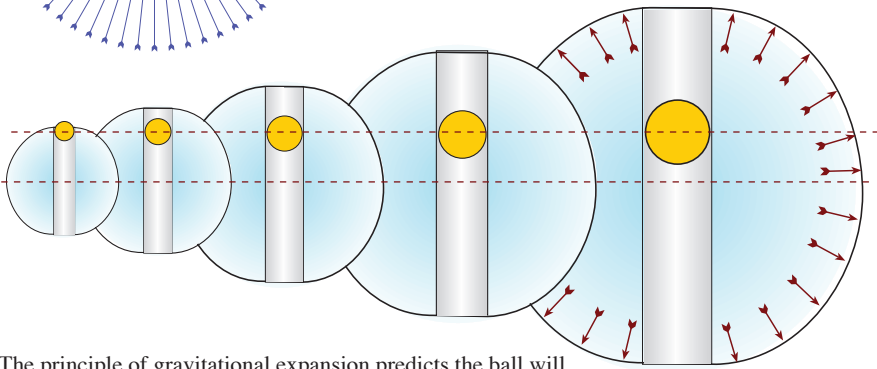
The principle of gravitational expansion reveals gravity totally in terms of its physical measurements with no metaphysical assumptions such as aethers, fields, actions at a distance, or unseen impinging particles from space. Expanding mass, space, and time show that our measurements of gravitational force are real and that the acceleration of gravity produces true upward motion. Gravity is merely the outward force produced by the gradual and constant dimensional expansion of mass, space, and time. A falling body does not accelerate downward because no such change in motion can be measured. Like

Gravity Cannonball Motion

The external pushing particles theories predict that the ball will be pushed from one side of the sphere to the other by countless particles from outer space. This is a general effect and no prediction can be made for the speed of the cycles.



The aether theory of General Relativity predicts the same back and forth motion as above but the equivalence principle requires exact accelerations and velocities based on the mass of the system. Any deviation from these predicted speeds would favor the pushing gravity theories.



The principle of gravitational expansion predicts the ball will appear to move toward the center of the sphere with decreasing deceleration. The speed of this motion is a principle of measurement where no actual inertial motion exists.

Arrows indicate measured outward force and motion at the surface of the sphere.

The Gravity Cannon Ball

The gravity cannon is a simple apparatus with two movable parts that react to the force and acceleration of gravitational motion in the weightlessness of outer space. One of the two possible opposite motions of the cannonball will clearly determine which gravity theory is correct. Relativity has long claimed that gravity was the relative motion between two bodies caused by the undetectable curving of the spacetime continuum. Perhaps the golden cannonball will show that gravity is the measurable curving of matter itself. If gravity is not the infinite pulling and curving of spacetime throughout the universe then maybe the quantum nature of gravity is that it is just the purely local event of one atom pushing against another.

the Gold ball in the gravity cannon, falling bodies do not change their state of motion while the surface of Earth moves upward with measured Newtonian acceleration and velocity. Gravity and inertia are not just equivalent. They are exactly equal.

The gravity cannon test will provide a decisive experimental and mathematical difference between both aether theories and the many pushing gravity particle theories. While most previous experimental measurements of gravity such as GPS clocks rates and the Pound-Rebka shifts tended to yield the same predicted results for different gravity theories, this experiment will yield different results depending on which theory might be correct.

The ultimate benefits of putting a gravity cannon in orbit could be enormous. Hundreds of millions of dollars have been spent to test one or another of General Relativity's many predictions. Just one example is the LIGO experiment that seems to so far have been unsuccessful in detecting Einstein's continuum of gravitons and gravity waves. The gravity cannon would either verify General Relativity's curved space interpretation of gravity or prove the opposite curving matter interpretation of absolute Newtonian force and motion. What this experiment actually determines is the true intrinsic up or down direction of gravitational motion and force and whether gravity is a push or a pull.

The Orbiting Chain

To demonstrate an orbit around the Earth, we will first describe an experiment that was available even in Galileo's time. A powerful cannon is fired over the surface of the Earth and the path of the cannonball is recorded. The cannon is then again fired from the point where the first cannonball struck. This process continues until the cannonball has traveled all the way around the Earth. In each shot, the cannonball traveled in a straight line until it was struck by the upwardly moving Earth. However, any photos of

the cannonball's path would show it to have followed a parabolic curve. In this digital orbit of the Earth, the cannonball always travels in a straight inertial line but at the same time its path always seems to curve downward. This apparent non-inertial curvature of the Earth's internal space results from the expanding dimensions of matter.

The orbiting chain is another possible model for creating an orbit around the expanding Earth. The chain is wrapped around the Earth and then spun at a high velocity. As the chain goes faster and faster it tightens up and goes into an Earth orbit defined by its length. The faster the chain is spun beyond its orbital velocity, the tighter it becomes due to its increasing centripetal force.

To better understand how orbits work around gravitationally expanding bodies of matter, we can cause the chain to slow until its centripetal acceleration becomes less than the acceleration of gravity. The individual links slacken and lose their tension with one another. However, the slack chain as a whole still maintains its overall orbit while each loosely connected link maintains its own individual orbit without physically touching other links. The dynamics of this orbiting chain satellite are the same whether we use the mechanics of gravitational expansion or the gravitational field theory of Newton or the curved spacetime of Einstein.

