The Unification of Gravity, Inertia, and Centripetal Force

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For generations, humans have experienced the pull of gravity and we have endeavored to find the source of this unwavering constant energy. For an object to pull something, it must usually be attached to the object. Other than magnetism, gravity appears to be the only other force that reaches out and effectively pulls objects to it, but unlike magnetism, the source of this energy has been elusive. Under current theory, some force is sent out from every atom, and when that force reaches another atom, it causes that atom to be pulled back toward the original atom.

For years we have studied the most common substance in the universe, photons, which can be called electromagnetic waves when referring to the wave nature of the particles, and we have found countless uses for those particles. They are used for light, heat, lasers, magnets, and every form of electricity you can think of. Although the primary source of light was the sun, we have learned how to harness this form of energy and we can now produce light on demand and, using lasers, we can melt steel with it.

In contrast, we know very little about the second most common substance in the universe, the neutrino (pronounced: new-tree-no). If we have found so many uses for the most common substance and we can see the effects of it all around us, then why has so little been done to understand the second most common substance? Also, we see the effects of light, electricity, and magnetism all around us (all three are part of the same substance) but what are the effects of neutrinos? To think the most common substance has so many effects, and the second most common substance has almost zero effects seems odd and counterintuitive. It does not make sense that such a common substance that is ubiquitous throughout the universe has almost no effect in how our universe works.

In the universe two common things seem to dictate a great deal of how things work: electromagnetic energy and gravity. If photons are responsible for all of the electromagnetic effects that we see, can neutrinos be responsible for all of the gravity we see? I believe the answer is yes and through this paper I will lay out the logic and observations I have used to arrive at this conclusion.

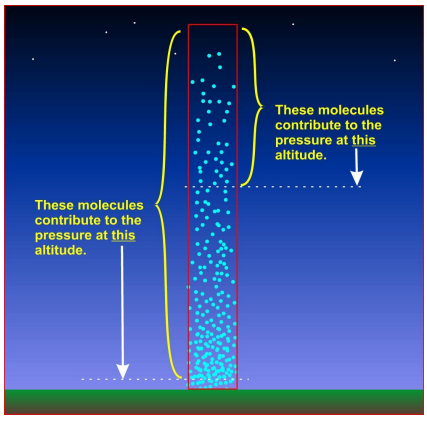
I am neither a scientist nor a writer, so please be understanding if this paper is not perfect in detail and flow, and please try to see the bigger picture that I am attempting to show you.

Air Movement and Pressure

Movement. We have all seen a vacuum cleaner pull dirt and other objects into itself and we have all used a straw to pull liquid into our mouths. Though this form of movement seems to be causing objects around us to be pulled towards the point of suction, the movement is actually being caused by air moving to the area of lower pressure. In the case of the liquid being pulled into your mouth through a straw, it is still the air that is trying to move to the area of lower pressure, but the liquid is in the way and so it is **pushed** into your mouth.

Let's look at what causes air pressure here on earth. Air is a composition of individual gas molecules bouncing around in all directions. Due to gravity, the air molecules are being pulled down to the ground, but due to other air molecules already being below the air molecule being pulled down, the molecule is held off the ground by all of the molecules that are below the original molecule. However, being a gas molecule that has energy to travel in all directions, if the molecule is held up it will try to move sideways. If there is a molecule beside it that keeps it from moving in that direction, the molecule will remain "suspended" above the ground and not move side to side. If there are fewer molecules in any direction, the air molecule will move in that direction due to a lack of anything pushing back on it.

(As a side note, when you walk outside, you have the weight of every air molecule from the top of your head up to the boundary with space pushing down against your head. The air molecule directly beside you is also holding the weight of every air molecule above it. In order to move out of the way of the air molecules that are pushing down on it, an air molecule that is right next to your body tries to push sideways into you and the pressure inside your body pushes back on the air molecule.)



If pressure on an air molecule is held equal in all directions, the relative position of the molecule will remain unchanged. If, however, there are fewer air molecules in any one direction, the air molecule will be pushed in that direction. The fewer the number of air molecules in any direction the more rapidly the air will move in that direction to fill the void.

Water

Water also acts in an identical way. A submarine physically pushes against the water in all directions. If a leak occurs, it is not the air in the submarine that pulls the water in, it is the water molecules that are pushed into the sub by the rest of the water molecules in the ocean due to no equal force pushing back on them.

Let's look at water flowing in a river. As you stand on the shoreline, you see water rushing past you. Now put your fist in and you feel the force of the water pushing past your hand. If you open your hand all the way up with your palm facing the current, the amount of force against your hand increases and it becomes more difficult to hold your hand in place even though the speed of the water never changed. It is obvious to you that the water is moving as you can feel it moving past your hand.

This is similar to gravity. The more atoms that interact with the moving force of gravity (hand open in the water), the more strength is needed to hold the object in the same place even though the force of gravity (or the speed of the water above) has not changed.

Now, you jump into the water (don't worry- it's not too cold) and you are suddenly being pushed along by it. But a funny thing happens, you can no longer feel how fast the water is moving because you are moving along at the same speed. You can tell, however, how fast the shore is moving because you can suddenly see it whizzing by. In the same way, if you jump from a plane you and anything you are holding suddenly feels weightless even though the ground now appears to be rushing up to you!

I believe that to understand large things, you can study small things and extrapolate to the larger scale. Nature has a way of replicating itself and following the same patterns in multiple mediums. By studying one field of science, the same patterns will hold true with little deviation in other fields of science. As an example, many of the properties of liquids can be applied to gases and can be grouped together using fluid dynamics.

Electromagnetic Waves

Moving forward, we are going to look at some of the properties of electromagnetism. An electromagnetic wave is said to pass through a vacuum at a set speed, and at slower speeds when passing through matter. When you look at a long board that is both in and out of the water, the board appears to bend right at the point that it enters the water. This is due to the electromagnetic waves (in this case, visible light) traveling at different speeds in the different mediums. Because water has more molecules for the electromagnetic wave to pass through than air and the wave must pass into and then out of every molecule in its path, it takes longer for the wave to go through water as there are many more molecules to enter and exit than there are in air.

To better understand the incredible amount of electromagnetic waves that are around you please try this following exercise. Place the tip of your finger about six inches from your face. Look past the tip of your finger (yes, you now appear to have two fingers) and see all of the things that are behind it. Now, keep your finger still and move your head side-to-side and up-and-down while observing all of the things that are past the tip of your finger as far as the eye can see. The point of the exercise is this: the electromagnetic waves from all of the objects that you saw past your finger tip in all those different directions are all passing through the point in space that is just above your finger tip at virtually the same time.

As you have seen from the board that appears to bend when it enters the water, electromagnetic waves pass into and then out of every molecule in its path. That means the oxygen molecule that is directly above your finger has electromagnetic waves that come from all different directions and are passed through the oxygen molecule which faithfully passes each incoming wave along in the exact opposite direction as the incoming wave.

To drive this point home and see all of the waves passing through the point in space above your finger, some more visualization will be useful. As I write this, I have a Wi-Fi network that has a 2.4 and a 5.0 gigahertz channel. One hertz means one cycle in one second. 2.4 gigahertz is equal to 2,400,000,000 hertz and 5,000,000,000 hertz for the 5.0 gigahertz channel. So, the Wi-Fi router is creating electromagnetic waves that pass through the point above your finger in a distinct morris code fashion (think dot-dot-dot, dash-dash-dash, dot-dot-dot) that changes 2.4 AND 5 billion times in one second. Add to that all of the cell phone tower, radio, and T.V. signals as well as all of the cell phones around you that are receiving and transmitting data and you can begin to understand how busy the air molecule above your finger is taking in and then sending out each individual wave in each direction billions of times per second.

As numerous as the sources of human made electromagnetic radiation is, it pales in comparison to the number of sources that exist in the universe. Our sun not only emits visible light, but it also emits electromagnetic waves in many other frequencies and those waves are sent out into space in all directions. The most recent estimate put the number of galaxies in the universe at around 2 trillion each containing billions of stars. Every sun in all those galaxies transmit electromagnetic waves that make it to the earth from every direction.

Neutrinos and Gravity

Now let's switch the subject matter to neutrinos. Neutrinos are small subatomic particles with a very small amount of mass that are considered to be the second most common particle in the universe next to photons, which are the particle representation of an electromagnetic wave. Billions of neutrinos pass through your body every second and they continue on right through the center of the earth and out the other side. Though there are billions of neutrinos passing through your body from all directions including up through the earth, they are said to usually not

interact with normal atoms. Like photons, Neutrinos are created inside suns and sent out in all directions.

Next, we will focus on gravity. The Law of Universal Gravitation states that every object in the Universe attracts every other object. This means that gravity works by every atom sending out some form of energy that travels in all directions. When that energy strikes something, it has the effect of reversing direction and pulling whatever it touches back to the original atom. The problem with this model is that a form of gravitational energy has never been found that strikes something, and by hitting the object, it causes it to go in the opposite direction. Additionally, the planet we are on and the sun we revolve around are all moving at approximately 517,000 miles per hour (143 miles/second) as they orbit around the Milky Way galaxy. So if an atom sends out energy in all directions that will cause whatever it strikes to be pulled back to it, it may have already moved thousands of miles from the original position it was in when the energy was sent out, so how does the energy know where to pull the atom that was struck back to?

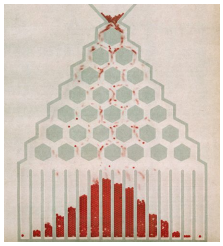
I would like to propose a different model that is based on how the world we observe around us seems to work. As was demonstrated above, nature pushes things from areas of high pressure to areas of lower pressure. Equal pressure is maintained by pushing on a molecule with equal force from **all** directions. We on earth have electromagnetic waves that strike our body from all directions except upwards from inside the earth. This creates more waves striking your body from space and pushing down on you than you receive from the earth that push up on you which would create a net downward force that would have the effect of pushing you down to the earth.

Electromagnetic waves do not penetrate all the way through the earth. If electromagnetic waves where the only things that were striking us from above and those strikes where the source of gravity, then gravity would not exist once you were underground, so these incoming waves are not the source of gravity.

To find something that penetrates all the way through the earth, we can look at neutrinos. Though it is thought that neutrinos rarely interact with normal matter, they are the second most common substance in the universe next to photons. There are currently trillions of neutrinos with a tiny amount of mass that are passing through your body every second. One example I have read is that there are 100 billion neutrinos that pass through your fingernail every second, but one will only interact with you on average every 70 years. The vast majority of neutrinos are created out in space and pass through the planet from every direction.

Neutrinos are said to pass through matter in the space that is not occupied by electrons, protons, and neutrons and seem to only rarely smash into one of these three atomic particles (as mentioned before, once every 70 years in your body, so very rare). I think the neutrinos may be bouncing off of these atomic particles as they move past them like a ball bouncing off the pegs of one of those machines that demonstrate a bell curve. I believe as the neutrinos are pushing past the atomic particles, a slight bit of energy is imparted against the atoms.

Increasing the density of an object (think lead versus air) would increase the atomic particles that would be pushed past by neutrinos just like increasing the number of pegs in the bell curve machine would slow the descent of the ball due to the increased number of pegs that would be hit before the ball could reach the bottom.



I believe that particles such as neutrinos pass through matter and are slowed (somewhat like the board in water that appears to bend where it enters the water due to the slower electromagnetic waves) and somewhat absorbed by the matter they pass through. I say somewhat absorbed because if they were completely absorbed like electromagnetic waves, then gravity would not exist deep underground. I also say somewhat absorbed because the denser the object is, the more that is absorbed and the higher the force of gravity is. The net effect on earth would be more neutrinos passing down into the earth than are passed up through the earth and back out into space.

The above explanation may work to explain why things on the surface of the earth are being pushed down, but more explanation is needed to move off of the Earth's surface and show how this theory affects all objects throughout the universe.

To further illustrate how this effect is manifested in planets I will use another visualization. Picture a solid ball spinning on a string. If you try pass something directly straight through the spinning ball along the same line as the string, this can be done with little difficulty. If, however, you are not directly on top of the ball aligned with its axis and try to pass something on a straight line directly through the ball you will quickly find that the path that is taken is in a spiral pattern and you will most likely NOT end up on the exact opposite side of the ball straight across from the entry point.

Next, imagine a wet tennis ball. If you throw the ball into the air and spin it, you will see that the water on the ball quickly flies off, but the water only leaves the ball at the relative equator of the ball at a 90 degree direction from the axis of the spin. The water leaves the ball at the equator because it is being forced outwards. Due to the spin, the water that is near the relative north and south poles that tries to move outwards can do so without leaving the ball until it has reached the equator where there it can no longer move outwards without leaving the ball.

Now imagine a neutrino that is trying to pass through a spinning planet. It too would have a difficult time passing in a straight line through the planet. The inability of neutrinos to pass in a straight line would lead to an increased number of neutrinos leaving at the equator than would be leaving at the poles, just like the water on the tennis ball.

Above we talked about how stability of a molecule in a pressurized environment relies on the pressure being equal from all directions. The greater the imbalance the more rapidly the molecule is moved in the direction of the imbalance.

If gravity is the imbalance of incoming versus outgoing neutrinos, then there would be more gravity pressure at the poles where fewer neutrinos leave the planet and the gravity would be slightly less at the equator where the highest concentration of neutrinos leave the planet. This imbalance would mean that the slightly lower pressure at the equator would lead to things that orbit the planet to orbit around the equator at the lower pressure point and not around the higher pressure poles.

I believe that it is the above effect that causes the rings around the planets to be concentrated at the equator. Over time, the components that make up the rings have been concentrated at the equator that has lower pressure because they have been pushed in their orbit to the point where the least amount of gravity pressure exists around the planet.

Next, we will look at gravity at a distance. Assuming neutrinos are coming from all directions, if they are blocked or reduced from coming from any direction, then that direction would have lower relative pressure which would cause matter to be pushed in that direction.

Picture, if you will, a room that is filled with light that is coming from all directions and this will represent the neutrinos that are coming from all directions. In that room are several objects moving around that are all suspended in the air. If two objects are really close to one another, they will both cast a dark shadow on each other and the shadow represents gravity pressure. The bigger or the closer an object is, the darker the shadow and, with this analogy, the greater the gravity pressure. As the objects move apart, the darkness of the shadow (strength of gravity) is reduced, but it never truly goes to zero effect as one object will still reduce the total amount of light that reaches the other object. In this way, one object will always have a slight effect on how many light waves reach the other object because it absorbs the visible light and thus reduces the number of electromagnetic waves that reach the other object.

We have been told that gravity from every object affects every other object, even if in the slightest way. If it is true that the reason one object's gravity affects every other object is because to each object some of the neutrino gravity pressure was absorbed by the other object before it could reach the first object, then it is understandable how it can be said that every object affects every other object if only in the slightest way. With this model, no energy is sent out from every atom to every other atom, but instead, every atom affects the number and strength of neutrinos that reach every other atom. The denser an object is, the darker the neutrino shadow becomes and the stronger the gravitational pressure.

To our knowledge, neutrinos very rarely strike and interact with normal matter, so how could they be responsible for gravity? As was noted earlier, neutrinos have a slight amount of mass and trillions of them are passing through our bodies every second. Have you ever seen something that is moving really fast, like a superhero running or flying down a city street in a movie? You will see that the things on the street are violently moved in the same direction that the superhero is moving because the air that the superhero moves through is sped up and that sped up air pushes the things on the street forward in the wake of the fast movement.

I believe that a neutrino that is traveling through matter creates the force that we call gravity. As the neutrinos travel in the space between electrons and the nucleus of an atom, I believe they create a sort of wind (moving particles that hit and bounce past an object) that pushes the nucleus of the atom along. If the wind that is created by the neutrinos is equal in all directions, the nucleus of the atom will not be pushed in any direction. If, however, there are fewer neutrinos coming from any direction, then the wind from the other neutrinos will push the nucleus in the direction of the fewer neutrinos.

In the same way a shadow is cast by the absorption of electromagnetic waves, a gravity field is cast by the slowing of neutrinos through matter. The speed of light (electromagnetic waves) in a vacuum is constant but the speed changes when the light passes through matter as was pointed out by the board that appears to bend where it enters the water. In the same way, I believe the speed of a neutrino is slowed when it passes through matter.

Weight, Inertia, and Centripetal Force

Next we will look at what causes weight, inertia and centripetal force using this model.

I would like you to picture yourself back at the river that is flowing by you and this time you have one of those fishing nets with the metal ring that is used to pull a fish into a boat. When you put the net into the water, you see it being pulled along with the current even though the metal ring you are holding remains in the same place. If you move the ring along with the current, the net is no longer being pulled and it just falls down loose hanging from the ring. You pull the ring against the current and the net is now behind the ring again and you feel even more resistance to the movement as you move against the current. Now, increase the amount of netting that the

ring holds so that the water has a much more difficult time passing through it. You put the ring back in the water and now it is harder to keep the net from moving due to so many more strings that the water has to pass through. Once again you let the ring move at the same speed as the current and the net goes loose until you pull the ring against the current and it is now REALLY hard to pull the net forward and you feel much more resistance to your movement even though the current is still traveling at the same speed. Now you pull the net out of the water to look inside and, of course, there is nothing in it even though it was so difficult to move in the water.

I believe gravity works in an identical fashion to the example above with some slight modifications that I will explain shortly. For now, picture the atoms in normal matter as the net. The more or denser the atoms are (styrofoam vs. lead) the more it will resist movement against a gravity field (i.e. moving up from the earth) and the more it will weigh, but when the atoms move at the same speed as the gravity field (i.e. falling to earth) the atoms do not appear to have any weight just like the net moving along with the current in the river.

You are currently traveling at 143 miles per second around the Milky Way Galaxy, so you would think you would be able to tell if you had a river flowing through you! The very thought that we are traveling at that incredible speed and do not feel it seems extremely counter-intuitive.

To understand how you can move so fast and not feel it, I want you to picture something that is moving at a constant speed (no acceleration). As the object moves, it has just as much chance of being struck by neutrinos from all directions regardless of the speed it is traveling just so long as the speed is constant (i.e. standing still or traveling at 143 miles per second). Each neutrino strike from one direction cancels out the neutrino strike from the opposite direction which has the effect of not pushing the object in any direction (think fishing net moving with the river so that the pressure of the water against the net is equal on all sides and the water does not push the net in any direction).

Now I am going to use a new example to explain acceleration. To simplify things, reduce the number of neutrino strikes to an object from trillions per second down to just 10 strikes to the object from each direction. With 10 equal and canceling strikes from each direction, no net force is felt on the object. If the object is accelerating it will have more of a chance of striking additional neutrinos in the leading direction and less chance of them striking it from the trailing direction. The acceleration will lead to, in this example, 12 neutrinos striking the leading edge of the object but only 8 striking the trailing edge. The net difference is 4 neutrino strikes against the leading edge of the object with 0 strikes from the trailing edge so the atoms in the object will feel like they are being pushed in reverse. This is the cause of inertia and why matter resists a change in its direction regardless of the speed it is currently traveling.

In my theory, the earth redirects neutrinos and slows them down. Using the above example, 10 neutrino strikes occur down towards the earth from all directions. Due to the earth's (matter's) effects on neutrinos, only a net force of 8 neutrinos leave up through the earth and back out to space. With 10 neutrinos coming in and 8 going out, there is a net difference of 2 neutrinos

coming in. This net difference in neutrino strikes is identical to what is seen during acceleration and that is why it can be said that gravity is perceived as a constant acceleration.

Lastly we will look at centripetal force. Although it is not considered a real force, I will explain the mechanism behind it to show how it is related.

As an object is rotating, the neutrinos that enter at the poles of the object do not pass straight down through it to cancel out the neutrinos that enter from the opposite direction. Instead, they are redirected out of the equator due to the spin. As the neutrinos that entered near the poles are redirected from the center of the ball out towards the sides they push past the atoms near the equator which pushes the matter at the equator outwards creating a bulge at the equator. At the same time, fewer neutrinos leave out of the poles, so the atoms of the poles are pushed down towards the center of the object. This redirection of neutrinos from the pole and out the equator instead of passing straight through is what we call centripetal force.

In summation, we must study the small things to understand the big things. When we see a pattern in both something small and something large, it is almost always caused by the same OR similar forces. The force of gravity is not some form of unknown energy that reaches out from everything, touches something, and then by striking it, it causes the object to be pulled back to the original source. Instead, the force of gravity, inertia, and centripetal force are the result of the movement through matter of the second most common substance in our universe!

Tennis Ball with water flying off

Storm Clouds

Spiral Galaxy

The Theory of Neutrino Pressure

1. An object in uniform motion will be struck by a relatively equal number of Neutrinos from all directions and remain moving in the same direction.
    a. Being struck with an equal number of neutrinos from opposite directions has the effect of canceling out the acceleration that would be caused by each striking solo neutrino.
    b. The reason you can travel at 143 miles per second and not feel it is because an object has just as much chance of being hit from all directions regardless of how fast or slow it is going, just so long as the speed remains constant with no acceleration.

    c. This is why a drop of water or a water balloon takes on a round spherical shape when it is suspended in mid air.
2. An object will be pushed in the direction of the least number of entering neutrinos if the incoming neutrinos are not balanced.
    a. This creates gravity due to an imbalance of incoming neutrino strikes on the top of your body vs. outgoing neutrino strikes that are coming up through the earth.
    b. This is identical to the way a shadow works in that the closer you are to the shadow source the darker the shadow. The shadow quickly fades as you move away from the object but the object will always reduce the amount of light that is coming from its direction no matter how far you move away from it.
        i. This is why all matter affects all other matter gravitationally, because every piece of matter slows or redirects the neutrinos that would have reached a different object had the neutrinos not gone through the first object.
        ii. This is what causes galaxies to cluster together.
3. Matter may change the course of the neutrinos that are passing through it.
    a. This is similar to light having its course changed when it passes through a prism.
4. When neutrinos attempt to pass through a rotating object, they are directed on average away from the poles of the rotation and exit out of the equator of the rotation.
    a. This is just like the water spinning off of the rotating tennis ball.
    b. This is why a water balloon is squashed down at the poles and out at the equator when the balloon is spun while it is thrown in the air, because the incoming neutrinos from all directions are redirected out the equator
        i. Example: If a value of 10 neutrinos come in from every direction towards a spinning sphere they do not all pass straight through and cancel each other out as they would in a non rotating sphere. Instead some of the neutrinos that enter near the poles are redirected towards and exit at the equator. Let's say an average of 6 neutrinos exit at the poles but an average of 8 neutrinos leave at the equator. That would mean that the net difference of neutrinos would be 4 downward at the poles but only 2 downward at the equator (Poles: 10 in - 6 out = 4 in Equator 10 in - 8 out = 2 in).
        ii. This will give rise to gravity pressure being less at the equator.
    c. This is currently referred to as centripetal force and it is simply the redirection of the neutrinos that are passing through the object.
        i. As neutrinos pass down through the poles and out through the equator, it has the effect of pushing the net of matter at the equator outwards as the neutrinos exit.
        ii. The poles of the spinning object are pushed towards the center of the object because fewer neutrinos exit the poles to provide the counterbalancing neutrino strikes.
    d. Neutrinos continue outwards after leaving the equator of a spinning object which reduces external neutrino pressure around the equator.

        i. This is why rings around planets are located at their equators.
    e. Centripetal force feels identical to gravity because it is caused by the same mechanism of neutrinos pushing past the net of matter.
        i. The current method to create artificial gravity in space is to rotate a ring on a ship and walk around on the outside of the ring. This feels identical to gravity because they are both caused by the same mechanical effect.
5. If matter is accelerated more neutrinos strike the leading direction of the matter than strike the trailing edge and this imbalance of neutrino strikes leads to the matter being pushed in the reverse direction as it is accelerated.
    a. This is what is currently referred to as inertia.
    b. Example: If an object is in uniform motion it will receive an average of 10 neutrino strikes from all directions. If the object is accelerating it would then receive, in this example, 12 neutrino strikes from the leading edge but only 8 strikes on the trailing edge, leading to a net backwards push of 4 neutrino strikes.