

# **The Push of Gravity**

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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.

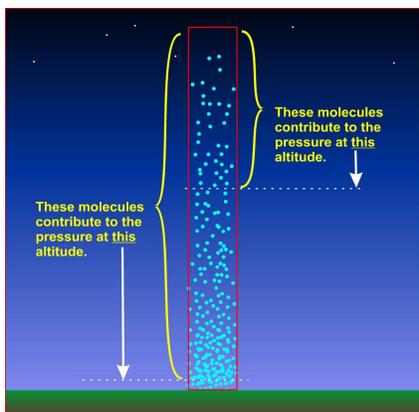
## **Air Movement and Pressure**

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 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

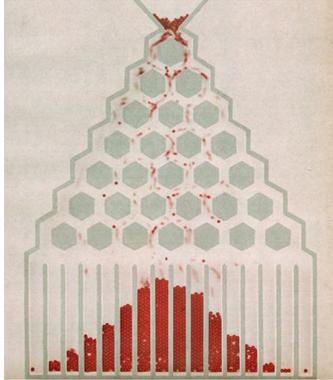
some form of energy that travels in all directions. When that energy strikes something, it has the effect of reversing direction and pulling whatever it touches back to the original atom. The problem with this model is that a form of gravitational energy has never been found that strikes something, and 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 m/s) 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 billions 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 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 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 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 billions 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 in one direction 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.

In addition, the same way that an electromagnetic wave has its direction changed as it passes through matter as evidenced by a rainbow, I believe a neutrino has its direction changed when it passes through matter as evidenced by the rings that surround a planet at its equator where more neutrino waves would exit the planet than any other location on the spinning sphere.

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 is the result of the movement of the second most common substance in our universe!



Tennis Ball with water flying off



Storm Clouds



Spiral Galaxy