

Universal Gravity for Perfect Completeness

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Abstract

The Universe is a finite system possessing a cyclic behavior and its density is subjected to continuous variations. The density increases from particles like photons and neutrinos to dense objects like black holes. This behavior is the reason that local groups are gradually becoming denser. But objects cannot have infinite density so they reach a state where they become unstable and explode. This means that black holes will explode into particles photons and neutrons, and the density increasing behavior starts again.

Analyzing requires an observer which is itself a part of this Universe and possesses capabilities to analyze information. But everything is a part of this Universe and to analyze an object (a part of this Universe), we must do it in the function of another object.

This means A is perceived differently by B and different by C. The a, b or c may or may not be observers. However, in practice we need at least one observer otherwise we would not be able to calculate. This observer is of course an object that influences the objects that are being analyzed by it. The energy of an object in relation to another object is given as:

$$\textit{Energy of A in relation to B} = \textit{change in acceleration} * \textit{difficulty to move}$$

There nothing exists in the Universe that has a constant value and everything can be described by the interaction of one object in relation to another. The difficulty to move is equivalent to difficult to become denser. That is the black hole that has low difficulty to move also has low difficulty to become denser. If it is translated to the bendable space which is difficult to move, we can say that A bends space in a way to B and in another way to C also. The difficulty to move can be defined by the following equations as:

$$E = \Delta a * \textit{difficulty to move}$$

1.0 Principles with Universe Behavior:

In this Universe, the observers are humans and they are limited to the physical observation ability only, thus, it is designed in such a way that it cannot be understood by its observers. This works like a computer program in which observers are just machines and they are sharing information with each other. This means that observer precision is limited by its structure in direct relation to its environment. This research is founded on the fragmentation of widespread theories of the physics and motivated by forming the 'Universal unification efforts' with theory shreds of evidence proof based on mathematical equations.

2.0 Mass of Universe

The mass of an object explains its tendency to move, possess size, density, cosmic location, and energy during its movement. The mass also describes properties of objects that help us to explain how objects made from matter interact with the other objects in terms of soft or hard interaction from one object to another object. The idea of transmission inconvenience arises from the use of already existing words to describe a new interpretation rather than from the Universe's actual behavior.

Mass is the difficulty for an object to move (or be moved) caused by the configuration of objects that are in relation (but not limited) to how "near enough / dense enough / fast enough" so that their influence can be detected, like positron-electron interaction is not matter-matter interaction so that has some differences which are dependent on their architecture, in other words, matter-antimatter interactions can also use the word "mass" to describe their interactions but in those cases that mass should not be understood as 100% equivalent to matter-matter mass, due to their behavior when interacting (this may be better understood when reading the whole document and understanding the philosophy of this interpretation). The rest mass of the earth is zero as this is determined by the rest position of the objects lying inside the Universe.

In terms of gravity, the mass is determined as the local gravity in which an object's gravity is a relation between it and other objects or "group of objects". If my mass as an observer is counted then in relation to earth is 60kg but my mass in relation to someone that is on another local group is almost zero, due to our distance. This means mass, as well as gravity, decreases when distance

increases in fact it decreases more than we think when describing objects that have a “big enough” distance between them, like local groups do.

So, in the same way, gravity is a lot stronger on “short distances/dense objects” it is also a lot weaker, in comparison to our thinking, in long enough distances, this is (in a few words) galaxies accelerate easily faster than light because they have “a lot of distance and speed” between them and as I described that means they have "a lot less" mass (compared to other local groups) and that allows them to “move easier or require less energy to move”, at the same time that if an object that is “big/fast” enough (local groups) and/or is far enough compared to the rest of the universe is very capable of accelerating easier than we think, this behavior can be seen in what we know today as “galaxies (easily) moving at a very fast speed in relation to other galaxies”.

In Universal behavior, the gravity is taken as the all scale behavior of a structure that changes its shape forever. In this research, the gravity is also taken as the attraction behavior which includes nuclear forces and electromagnetism, but they are seen as "gravity from the electron era" and "gravity from the quark era”, etc. This behavior is the same but we observe them as different due to their different scales. The mass of an object in relation to other object changes depending on the distance objects "structure" and density. This can also be explained on the basis of the inverse square law but can be explained as the inverse square law is applicable only to the small distance objects. But when this is assumed for the longer distance then force becomes weaker due to the cosmic expansion.

3.0 Theory Observations:

3.1 Contradiction with Einstein’s Views

The following observations are presented and this theory would very compatible with Einstein’s view with some differences given below:

- I. Galaxies go faster than light.
- II. Space does not expand; expansion tells us how gravity works.
- III. Universal Gravity is what determines the speed limit that we know as speed of light, which is: "the local difficulty for an object to accelerate and move in general".
- IV. Universal Gravity value changes depending on the structure of the Universe

- V. When the "event" that caused this big explosion, Universal Gravity was weak enough to allow today's galaxies to accelerate faster than light.
- VI. Most of a photon's energy has a "momentum" shape, but objects that are dense
- VII. enough suggest that light has a very small portion of its energy as mass that energy
- VIII. is "activated or transformed" into mass when in influence of a dense enough object
- IX. like a black hole like when mass de accelerates regular objects.
- X. Einstein's space time bending translates to "properties of gravity".
- XI. Local gravity limits photon speed so its "excess" energy is transformed in oscillation frequency increase rather than speed increase.

3.2 Resemblance with Einstein's Views

At many points the presented theory agrees with the points presented by the Einstein. These points are presented in below:

- I. Description of events is always relative to the observer.
- II. Accelerating rest objects near the "speed limit inside galaxies" make them gain mass, but they do it for different reasons and require a lot (but not infinite) energy or a different structure (neutrinos) to break that limit and accelerate more like galaxies do.
- III. Thus, it suggests that if we were able to apply enough energy to break the "local group gravity" it would be like an escape velocity from our local group.

4.0 Energy Conservation in Presented Theory

This theory strictly follows the principle of conservation of energy. In this sense, everything gets "translated" let's start with small currently known particles like the constituents of the human body that when separated into the smallest pieces we can, they have less mass than when combined. That means in order to "bond" particles we need energy which results in gain or loss of mass depending on the actual architecture of what we are building compared to what the architecture of what the universe allows for at a given state of its "cyclic evolution". In other words, the amount of energy of the universe is constant and that energy can be "converted" from mass to movement and vice versa because the amount of mass of an object represents how hard is it to move that object. This also gives the justification for the attraction of the objects. In

addition to this energy conservation is also followed for the unstable objects and their explosion mechanism

5.0 Stable selection of particles for theory:

Initially, on a finite universe with this behavior every part of it influences (or is "connected to") every other part of it because of object attraction, it can be imagined as one object like a regular cloud in the sky, with the difference that this cloud is the only thing that exists. In this sense, every object is connected to every other object like nodes of a graph or a spider web we understand as the high field and movements on that spider web which are today seen as gravitational waves. The ability for a part of the cloud (universe), to produce motion in respect to the "rest of the cloud" is determined by:

- Its configuration.
- The rest of the cloud configuration.
- Energy levels possessed by the particles

The density of an object is only one of the possible ways that interaction can be defined, an example of this is, "A photon does not seem to have mass in relation to the earth, but it does seem to have mass in relation to a dense enough object like a black hole".

In other words, the earth is not massive/dense enough to "slow down" a small object like the photon so the photon bounces back as a ball bounces back from a wall. But the black hole has enough density in relation to the photon's ability to escape, so it "captures" it. Now, there is a need to explain that the real way particle works are like computer programs, their interaction not only depends on the amount of stuff they have but also on how that stuff (or information) is organized.

6.0 Information Organization in Theory:

Black holes do not destroy information, information can only exist on an observer's mind, information loss is determined by the observer's ability to observe. If we take a black hole and make it less dense but it still has the same amount of stuff it may not be "strong enough" to capture light, in part because to make an object denser we have to "put more stuff on it" the

compressing "force" actually gets translated to mass, in the same way, small particles that get their mass by interacting with the "Higgs field" can get even more mass when they form "structures" due to the force used to make those structures, that force is transformed into mass, due to the market share of how big and dense it is compared to near structures.

In addition to that, the information also changes the interaction, for example in the case of a particle and its antiparticle they both have the same mass and the same force, energy, etc (analogous to the same number of bits of information). But their "information organization" is such that when interacting with one another they find it quite easy to become photons.

So, when an observer "observes" that event is defined by the relationship between the observer as an object and the object that is being observed and the relationships between them and as I described previously, to the rest of the "UNIVERSE".

7.0 Mathematical Formulation:

The mathematical equation for the theory is not finalized. However, it should closely resemble the equation of Einstein's relativity. Einstein's equation is presented below:

$$e = mc^2$$

That "difficulty" is analogous to "Universal Gravity", so for earth would be the earth's mass (which is determined mostly by its "solar system" and "local group" and not a lot by other local groups due to the "large distance" to them). Thus, this can be represented as:

$$c = f(G)$$

This can be simply rewritten as:

$$c * c = f(G) = e/m$$

Every region of the universe has a different value of G, which is "approximately proportional" to the "average density" of that local region compared to the rest of the "regions" of the universe and of course, it changes with time as the universe evolves and its whole "density" changes.

8.0 Quantum Level in Theory

There must be a limit for an observer, at this level we have an important lack of information in comparison to large scales, as a solution to predict behavior at this level we use probabilities. The quantum theory suggests that the energy of the photons is quantized and is present in the form of packets of energy. This quantized energy can be given as:

$$E = hf$$

In the above equation, E is the energy, h is the plank's constant and 'f' is the frequency possessed by the photons.

Comparing, above two equations:

$$mc^2 = hf$$

$$m = \frac{hf}{c^2}$$

If the speed of the object changes, the mass also varies with the speed variation.

8.1 Double Slit Experiment

This experiment comprises an electron gun, two slits, and a detector screen after both slits. Thus, in this experiment, any kind of observation at this scale modifies the trajectory of the electron. The electron actually is like a cloud with most of its density at a small portion of it, imagine the electron as an atom. The electron has a low-density cloud around it, that cloud can be pictured as a tail of a comet in this way that tail interacts with the other slit to change the electron's trajectory and producing a wave-like interference behavior, the idea of "electron position/trajectory is a superposition" is useful to do calculations and predictions of a probabilistic scale due to lack of information but it is not physical at all. Thus, quantum entanglement not as an action at a distance but as two Turing machines that are capable of programming one another is due to their compatibility to do that.

"They are so small that are capable of changing so fast that is impossible to accurately predict how they change".

9.0 Summary

The Dark energy is motion produced by the big bang, that tell us how gravity works on a big enough explosion. On a place with a lower local gravity it is easier to accelerate, high energy photons may or may not accelerate, but it will require less energy to reach the current speed of light exactly as galaxies do.

Instability and explosion can come from escape velocity motion as what happens when electrons produce photons or it can also come when the speed requirement of density grows more than the supply of material, like a supernova, or it can also be more silent like when a black hole says "I am not big enough to be a big bang right now so let's emit some hawking radiation to allow another black hole to try to be a big bang" a black hole explosion is a new level of explosion, a black hole is dense enough that the rest of objects disturb it very little, cause the larger/denser you are the smallest the rest of the universe is so it can influence less on you, I don't know what particles will be produced from a black hole explosion, of course, it depends on the size of the explosion particles may be like neutrinos and photons, that will form matter-antimatter combinations like those we see today.

The Universe will collapse into itself because of gravity and produce what we call "The Big Bang Singularity" so a cyclic universe that is finite in the amount of "material and movement" which changes its shape forever due to gravity, and that is all the universe is capable of doing because everything depends on the configuration of everything else. There can be one big bang or more than one at a time it all depends on the structure of the universe. Light is like an electron that has a lot less mass and has an osculation behavior that can be seen as an electron orbiting a proton but with a lot less energy, which structure is not felt as mass by "low dense matter".

10.0 Extra Random Information

Some ratios or numbers like 137, 1.36 have appeared in my calculations when comparing "measured constants" that suggest should be somehow equivalent, I am still learning about it, so far, I can suggest that math is enough to explain the universe. Supernovae occur because they are not big/dense enough or have the required structure/local gravity to become a black hole.

Neutron stars are strong enough to electrons with protons and make neutrons and black holes can mix neutrons with neutrons and even light which also charges less. Photons can make electrons, electrons can combine and make quarks, quarks can combine to make protons, protons and electrons can combine to make neutrons can combine to become dense enough that light can also be combined like in black holes, black holes can combine to a large degree to increase its density and start a chemical reaction in which they need sustained density increase until they become unstable and explode, cause they as every object follow a law: “every object must be always increasing or decreasing its density”.

Knowing that the universe is finite it may be possible to calculate how dense a black hole needs to be in order to start needing sustained grow to prevent an explosion, the acceleration force of such explosion is a lot stronger than low dense explosions like supernovae, the smallest the local gravity the easier for an object to increase its density and become a black hole, in the same way, the smallest the local gravity (difficulty to move) the easier for a black hole to become denser and explode. This can also be used to think that the largest the local gravity the harder for a black hole to become denser, that is instead of increasing its density and explode it has more probability of evaporating via Hawking radiation. The whole’s structure defines which particles (clouds) are allowed as stable and how stable they are, this may someday be discovered as a mathematical ratio, which is related to local gravity, Planck’s constant, etc.

Magnets are the purest way of gravity we know of like poles repel actually means that magnets are arranged like waves in which like poles are the outer part of a wave and they don’t allow magnets to get close, but different poles attract like holes produced by the outer protuberance, >> is opposite charges and << is like charges, all is defined by their structure and relation between them.

In order to understand gravity, we need to understand magnetism because magnetism is a more visible form of gravity. and fills the hole produced in a chain reaction this means it oscillates due to at least 2 components causing a chain reaction that is fast due to their low interaction to regular matter, in this sense at this level a high energy photon does not allow one component to separate a lot from the other but a low energy photon allows for a large separation that means lower frequency, these changes of frequency related to the energy required to produce high energy and a low energy photon should be related to the local “difficulty to accelerate”, high

energy photons can produce an electron which is a magnetic cloud that interacts with slits and changes its trajectory.

Thus, at this scale, we see that structure defines gravity or attraction force in relation to another object. All of these facts were easily connected by me due to the minimal nature of my principles if it assumed that if Einstein saw the cosmic expansion as acceleration produced by a large enough explosion.