Space-Mass Relation And Gravity In A Geometrically Open Space Universe

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Abstract: Gravity is a property of space-time fabric and not a universal force of attraction between two objects with mass. Considering that energy is distributed in space-time while mass replaces space-time from its place producing a denser or warped space-time around the mass, problems regarding the nature of gravity can be addressed. This paper talks about understanding the nature of gravity as a virtual force created by warped space time and also explains what gives a particle its mass. Irrespective of mass, gravity can exist anywhere in the universe, but can be experienced only by the presence of mass or by distributing of energy through it. Mass is a void in space-time, but in real world matter exists in their smallest form as sub-atomic particles, separated with a space-time. If a particle is said to have a greater energy then it has created a relatively bigger void in space-time.

Index Terms: cosmology, general relativity, gravity, mass, entropy, universe, warping of space-time

1 Introduction

All objects with a mass in this known universe attract each other due to the differences in space-time surrounding them. We know that mass and energy can be converted into one another. It makes sense to put it in such a way that when energy is distributed in space it has no mass, but when it is localized it starts interacting with the space-time surrounding it which results in mass. Mass has to be considered as a void in space, i.e. energy becomes mass when it replaces space-time and occupies that void. When this void increases in size due to addition of more energy, more space-time gets displaced. This displacement causes the surrounding space time to get denser or warped. This warping is highest at the surface of the mass and decreases rapidly away from the surface to become zero at a distance of infinity. Warped space times tries to equalize with its surrounding fabric of space-time, thus when another mass warping space-time will move closer to one another at a rate proportional to the amount of space time being displaced in between them. This rate of movement is addressed as gravity. In order to overcome this displacement of space-time between them and to avoid being pulled into one another, all planets and other massive bodies keep themselves in motion with a specific speed at a given space-time density so the displacement of space-time is nullified. Mass can be created by pulling apart space-time to an extreme extent causing it to rupture. The law of conservation of energy holds true here since the void in space-time or mass created will be proportional to the amount of energy spent in creating the rupture. Similarly when we see energy becomes a particle, we can safely assume that the energy has created enough disturbances in space-time to create a void or mass.

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2 Theories, Observations and Proof

2.1 Streams of matter along the axis of rotation in celestial bodies

An astrophysical jet seen emanating from massive celestial bodies which are spinning is a proof that matter can be created by pulling apart space. Since space-time along the axis of rotation is relatively slower than the equatorial regions, space is warped like a toffee wrapper around a circular toffee. At this axial point space-time is so much disturbed resulting in continuous or intermittent jets of matter shooting out. Massive bodies of matter spinning at sufficient rates in a given space-time-distribution will always emit jets of matter at very high speeds along their axis.

2.2 Early Universe

Early universe should have had all the energy in the form of mass known as singularity, which was surrounded by space. Since there should have not been any other energy or mass around the singularity, time was not into picture yet. The order in such a system was the highest in any known form. This order with the slightest known disturbance should have triggered the big bang, resulting in space imploding on itself and singularity flying out as energy and smaller chunks of mass in all directions. Antimatter is again a void in space time but with space-time around it warped in a manner exactly opposite to matter. This helps us understand that matter and antimatter produced during big bang is not necessarily in same amounts, matter was produced in greater quantities than antimatter. Big bang set things into motion thus bringing time into picture, while space prevails irrespective of the presence of mass or energy.

2.3 Bending of light close to massive objects

The path light rays take follow the curvature of space time. Since mass replaces and pushes space-time onto itself, curvature of space follows the curvature of the mass and so does light travelling in the curved space.

2.4 Super particles, Particles and Universe

The early Universe just after the big bang had a highly dense space surrounding everything, thus creating massive and highly energetic particles. At the present state of the universe where space-time is distributed highly relative to the early universe, creation of such heavy particles might not be possible at all places in the universe. Possibly super massive

black holes which to some point warp space close to early universe levels might create particles seen during big bang. Stability of super particles is very low in the present state of our universe. Similarly the stability of any known particle depends on the space time surrounding it. Space is expanding as we know and the stability of mass is reducing. Once the cosmic inflation reaches a critical level it would no longer support the presence on mass, or any sort of particle with current energy levels. Eventually the space we know will become a place with no mass present in it and energy prevails in the form of disturbances in space. Possibility of a big crunch event doesn't seem to be high in this kind of inflation; rather there is a possibility of a big bang again due to space tearing away at its center of inflation resulting in mass or more appropriately, resulting in a singularity.

2.5 Entropy of the universe

Entropy of the universe is increasing and it will keep on increasing till the inflation of space reaches its critical limit where it can no longer support any sort of particle or mass. At this stage of the inflated universe, energy cannot create a void in space. Also in the universe, the value of maximum possible entropy is equal to the value of minimum possible entropy. Thus when the entropy in the universe is increasing it can also be considered that it is moving towards its least possible entropy state. Once it reaches its least possible entropy state it can no longer inflate but tear apart resulting in mass. Thus the entropy cycle goes on or in other words it can also be said that the big bang ends in another big bang.

3 CONCLUSIONS

Gravity and other basic forces of nature can be explained as a property of a space-time in the presence of mass or matter. All massive celestial bodies and sub-atomic particles get their observable properties from the nature of space-time surrounding them. The geometry of space is open which will eventually result in a big-rip of space, this big –rip is the starting a big bang event. In the Universe maximum possible entropy is equal to the minimum possible entropy thus resulting in an order out of chaos.