The Fabrics of the Cosmos

S. Opoku - Inkum

Abstract

We explore how the properties of the fabrics at the different manifold levels of the cosmos affect the cosmic gravitational force in those respective manifolds, how the different intensities of the force and the difference in the elasticity of the fabrics at the various manifold levels give the manifolds their properties, and subsequently, how these properties and their interactions give rise to other phenomenon in physics.

1. Introduction

General Relativity establishes that gravity is as a result of curvature of the properties of spacetime, which changes the straight path that an object will naturally follow [1]. This paper adopts the theory of General Relativity to the notion of the cosmos existing in manifolds of varying dimensions [2]. This in turn will aid us in going into the details of the various other forces with the multi-manifold cosmic gravitation explanation.

We will first establish the existence of the cosmos as a result of manifestations of energy which in turn manifest the various manifolds of the cosmos. We will then further explore how the different fabrics of the manifolds interact intricately to give rise to the cosmos as we know it. This will then be used to delve deeper into the happenings of the fabrics of the higher manifold levels. As the curvature in General Relativity is caused by the energy-momentum of matter, an adaptation of the stress-energy-momentum tensor for all the five manifold levels will be given to help us examine how these properties affect the remaining manifolds of the cosmos aside the physical manifold.

2. Energy and Space

The cosmos exists as a result of manifestations of energy [1][3]. The cosmos started with a finite amount of energy, and this energy went on to create every phenomenon within it, including space and time itself and all matter within it. As the cosmos expanded, there was an uneven distribution of energy [4], that caused some portions to have higher energy densities than other portions. This organized the cosmos into layers of manifolds of varying dimensions [2].

Portions of the cosmos with higher energy densities will tend to operate in manifolds with higher number of dimensions, whiles those with lower energy densities will tend to operate in manifolds with lower number of dimensions [2]. There exists a minimum energy density for a system that when matter crosses, it gains an additional spatial degree of freedom and transitions into a higher manifold level with a higher number of dimensions.

We will consider the space in a system created by the energy in the system as its fabric. This reconciles us with the theory of General Relativity, with the implications of General Relativity taking over the explanation from here. However, in our case, the spatial fabric of the different manifold levels will undergo different degree of bending even under the same quantity of matter, because of the fabrics operating in different number of dimensions [2], giving rise to gravities of different intensities.

The concept of elasticity of space is not new [1][5][6], but we will re-establish the elasticity of space as the property that is responsible for the difference in the effects of the cosmic gravitational force across the different manifold levels. Space at different manifold levels will tend to have different values of elasticity, with manifolds at the same level and with similar properties tending to have similar properties.

$$G_{\mu\nu} = \kappa_x T_{\mu\nu} \tag{1}$$

We come to the realization that the elasticity of space is describing the variable gravitation constant κ_x in the Modified Einstein Field Equation (MEFE) [2]. We therefore conclude on the premise that the elasticity of space is the underlying principle that gives the variable gravitational constant in the MEFE its variability across the various manifold levels.

3. Fabrics of Higher Dimensions

We will explore the interactions of matter at the different manifolds on each other. When matter operating in a higher manifold level system is introduced into a system of a lower manifold level, it causes a curvature on the fabric of that system which creates a potential at that point in the system [6], that is inversely proportional to the elasticity of the system.

General relativity shows us how the matter curves the fabric of spacetime to give rise to the concept of gravity. As John Archibald Wheeler puts it: spacetime tells matter how to move, matter tells spacetime how to curve [7]. This case of General Relativity is a special case in the multi-level-manifold with varying-dimensions-cosmos, where systems of the atomic manifold is interacting with the physical manifold.

When higher manifold level matter is removed from a point in a lower manifold system, the fabric at that point under the effects of the potential caused by the matter on the fabric tends to return to its mean position. This causes a perturbation on the fabric that generates a wave that radiates outwards from the source of the disturbance. In ethereal and physical systems, this produces the phenomenon of gravitational waves. Though, ethereal gravitational waves will be weaker than physical gravitational waves, and will further decrease in intensity as they diffract through physical systems.

In atomic and quintessential systems, the orbiting cloud of a system is able to form two independent orthogonal accretion discs in two planes without interacting with each other, due to the system operating in four and five dimensions respectively [2]. When matter is removed from the atomic manifold's fabric as they orbit around the system's nucleus in the accretion discs, atomic gravitational waves or quintessential gravitational waves are generated on their respective fabrics. Since there are mostly always two sources for the waves, two waves are thereby generated which are orthogonal to each other. This also produce the phenomenon of electromagnetic waves.

It is worth emphasizing that the law of conservation of energy strongly applies in all instances provided here. The introduction and removal of energy in a system doesn't imply energy popping into existence out of nothingness, but rather the transfer or transport of energy or matter in and out of the said system.

4. Stress – Energy – Momentum (SEM)

T^{00}	T^{01}	T^{02}	T^{03}	T^{04}	T^{05}	T^{06}	T^{07}	T^{08}	T^{09}	T^{0A}	T^{0B}	T^{0C}	T^{0D}	T^{0E}
T^{10}	T^{11}	T^{12}	T^{13}	T^{14}	T^{15}	T^{16}	T^{17}	T^{18}	T^{19}	T^{1A}	T^{1B}	T^{1C}	T^{1D}	T^{1E}
T^{20}	T^{21}	T^{22}	T^{23}	T^{24}	T^{25}	T^{26}	T^{27}	T^{28}	T^{29}	T^{2A}	T^{2B}	T^{2C}	T^{2D}	T^{2E}
T^{30}	T^{31}	T^{32}	T^{33}	T^{34}	T^{35}	T^{36}	T^{37}	T^{38}	T^{39}	T^{3A}	T^{3B}	T^{3C}	T^{3D}	T^{3E}
T^{40}	T^{41}	T^{42}	T^{43}	T^{44}	T^{45}	T^{46}	T^{47}	T^{48}	T^{49}	T^{4A}	T^{4B}	T^{4C}	T^{4D}	T^{4E}
T^{50}	T^{51}	T^{52}	T^{53}	T^{54}	T^{55}	T^{56}	T^{57}	T^{58}	T^{59}	T^{5A}	T^{5B}	T^{5C}	T^{5D}	T^{5E}
T^{60}	T^{61}	T^{62}	T^{63}	T^{64}	T^{65}	T^{66}	T^{67}	T^{68}	T^{69}	T^{6A}	T^{6B}	T^{6C}	T^{6D}	T^{6E}
T^{70}	T^{71}	T^{72}	T^{73}	T^{74}	T^{75}	T^{76}	T^{77}	T^{78}	T^{79}	T^{7A}	T^{7B}	T^{7C}	T^{7D}	T^{7E}
T^{80}	T^{81}	T^{82}	T^{83}	T^{84}	T^{85}	T^{86}	T^{87}	T^{88}	T^{89}	T^{8A}	T^{8B}	T^{8C}	T^{8D}	T^{8E}
T^{90}	T^{91}	T^{92}	T^{93}	T^{94}	T^{95}	T^{96}	T^{97}	T^{98}	T^{99}	T^{9A}	T^{9B}	T^{9C}	T^{9D}	T^{9E}
T^{A0}	T^{A1}	T^{A2}	T^{A3}	T^{A4}	T^{A5}	T^{A6}	T^{A7}	T^{A8}	T^{A9}	T^{AA}	T^{AB}	T^{AC}	T^{AD}	T^{AE}
T^{B0}	T^{B1}	T^{B2}	T^{B3}	T^{B4}	T^{B5}	T^{B6}	T^{B7}	T^{B8}	T^{B9}	T^{BA}	T^{BB}	T^{BC}	T^{BD}	T^{BE}
T^{C0}	T^{C1}	T^{C2}	T^{C3}	T^{C4}	T^{C5}	T^{C6}	T^{C7}	T^{C8}	T^{C9}	T^{CA}	T^{CB}	T^{CC}	T^{CD}	T^{CE}
T^{D0}	T^{D1}	T^{D2}	T^{D3}	T^{D4}	T^{D5}	T^{D6}	T^{D7}	T^{D8}	T^{D9}	T^{DA}	T^{DB}	T^{DC}	T^{DD}	T^{DE}
T^{E0}	T^{E1}	T^{E2}	T^{E3}	T^{E4}	T^{E5}	T^{E6}	T^{E7}	T^{E8}	T^{E9}	T^{EA}	T^{EB}	T^{EC}	T^{ED}	T^{EE}

Figure 1. Stress-Energy-Momentum (SEM) tensor for manifold level-1 to manifold level-5.

Manifold Level	Manifold's Dimensions	Range of manifold's local μ and ν components
1	1	0
2	2	1, 2
3	3	3, 4, 5
4	4	6, 7, 8, 9
5	5	A, B, C, D, E

Table 2. Manifold levels, their corresponding dimensions, and their local μ and ν components

Let us first go over some inferences from the SEM tensor for the range of the components of the manifold levels.

1. Components $T^{0\nu}$ and $T^{\mu 0}$, correspond to momentum density.
2. Components $T^{\mu\nu}$ where $\mu = \nu$, correspond to normal stress of a manifold level.
3. Components $T^{\mu\nu}$ where $\mu \neq \nu$, and where μ and ν are local manifold components, correspond to shear pressure of a manifold level.

The universal manifold has a single component – T^{00}, which usually represents energy density [8]. But we can see that it also corresponds to a normal stress or pressure component, and also corresponds to a momentum density component. We thereby conclude on the premise that time is a one-dimensional pressure point with a one-dimensional momentum.

We also notice that elements of the universal manifold component run through the momentum density components of all the remaining manifolds. This gives the implication that the universal manifold is intrinsic to all the momentum density components of the other manifolds. This will also serve to give the reason why our three spatial dimensions of our physical manifold are intrinsically bounded to the time dimension, and will further indicate that all spatial dimensions of all manifold levels are intrinsically bounded to the time dimension.

5. Conclusion

Now, let us analyse some trends across manifold levels, most of these have been made obvious by now.

1. Energy density of systems increases with higher manifolds.
2. Elasticity of a system's fabric decreases with higher manifolds.

As usual, this paper does not seek to disprove the myriads of theories and models that are already doing the outstanding job of explaining physics as we know it. Rather, we hope for the reconciliation of the current explanation in this paper with all the tested theories out there.

References

[1] Poisson, Eric. 27 May 2004. The Motion of Point Particles in Curved Spacetime. Living Reviews in Relativity. 7 (1). 6. [arXiv:gr-qc/0306052].

[2] Opoku-Inkum, Samuel. 2020. The structure of the universe. [viXra:2012.0132].

[3] Weinberg, Steven. 1972. Gravitation and Cosmology: Principles and Applications of the General Theory of Relativity, John Wiley.

[4] Unruh, W.G.; Semenoff, G.W., eds. 1988. The early universe. Reidel.

[5] Ehlers, Jürgen. 1973. Survey of general relativity theory, in Israel. Werner. ed., Relativity, Astrophysics and Cosmology, D. Reidel, pp. 1–125.

[6] Grøn, Øyvind; Hervik, Sigbjorn. 2007. Einstein's General Theory of Relativity: With Modern Applications in Cosmology, Springer Science & Business Media. p. 201.

[7] Wheeler, John A. 1990, A Journey Into Gravity and Spacetime. Scientific American Library, San Francisco: W. H. Freeman.

[8] Misner, Charles W., Thorne, Kip S., Wheeler, John Archiblad. 1973. Gravitation. W.H. Freeman and Company.