About The Geometry Of Cosmos (3)

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Abstract

The current paper examines the nature of the Big Bang together with the possibility of travelling using an alternative way, which would exceed the problem with the speed of light limitation. This paper is the extension of the "About the Geometry of Cosmos" and "About the Geometry of Cosmos(2)"

1 Preliminaries

In this paper we further examine the consequences of the peculiar "speed" $\frac{c^3}{G}$ in cosmology as it was presented in [2]. Moreover we process some interesting elements concerning the nature of Big Bang that comes naturally from [2]. We have to point out that the current paper may stand alone as a first reading approach, but at the end one has to read the original work "About The Geometry of Cosmos" [1], otherwise our thoughts may sound heretical, crazy or science fiction. Everything discussed or suggested in our papers comes directly from DIFFERENTIAL GEOMETRY and how we build this geometry.

2 Big bang

We have to distinguish the creation of Cosmos in two states, the one "before" Big Bang, and the one "after"(meaning $t \geq 0$). From the metric we examined in [2]

$$ds^2 = (1 - e^{-2r})dr^2 + (e^{2t} - 1)dt^2 + r^2(d\theta^2 + sin^2\theta d\varphi^2)$$

we noticed that for $t = 0$ we do not have a singularity. In this case ($t = 0$) we have the presence of the M space(meaning mass-coordinates and T), where T represents, as we saw in [1]) the diameter of Cosmos, which coincides with our usual notation R(t)($H = \frac{\dot{R}}{R} = \frac{\dot{T}}{T}$). Moreover, in [1],[2] the mass space leads necessarily to the "birth" of vacuum (which obviously, is not "nothing") with dimension units in kgr and is different from zero(it is initial condition!). In the case of $T = 0$ we will have only the vacuum as a fixed, stable, non-dynamical state or just an initial condition. The interesting point is when we set $t = 0$: from [1]

$$< T >= \frac{\sqrt{2}}{2}\frac{c}{H}e^t$$

and for $t = 0$

$$< T >= \frac{\sqrt{2}}{2}\frac{c}{H}$$

This element states that at the moment the Big Bang occurred, Cosmos had already a certain diameter of $\frac{\sqrt{2}}{2}\frac{c}{H}$ and a mass vacuum. Definitely in the moment of the Big Bang, we have the initial conditions. Regarding the vacuum domination period ($t \geq 0 \longrightarrow t = t_v$) we have an exponential growth of the diameter. In usual Cosmology one of the biggest problems is the isotropy of our Cosmos and the horizon one. Specifically, the existence of speed of light as an upper bound in velocity, would lead to a non-isotropical Cosmos where different regions of the universe could not have "contacted" each other because of the great distances between them, but nevertheless they have the same temperature together with other physical properties. However, as we have presented in [2] the key to the evolution of Cosmos could be the propagation velocity of information $\frac{c^3}{G}$ where with this velocity EPR problem seemed to be solved. $\frac{c^3}{G}$ is a velocity which comes naturally from mass space M ($\frac{c^3}{G} = 4.03709x10^{35}kgr/sec$) with units kgr/sec, which means that by this velocity we travel in kgr and not in meters. Unfortunately we are used to thinking and understanding velocity in m/sec and the above statement could be considered as crazy and irrational, but it seems promising. The distances of our Cosmos not only seem, extraordinary but also meaningless, due to the fact that we are unable to surpass the speed of light. What could happen if we instead use the speed $\frac{c^3}{G}$?With $\frac{c^3}{G}$ we do not care about how many meters are in front of us but how much mass lies ahead of us. Let us consider an area in Cosmos with diameter 2,500,000 light years (as the distance between Andromeda and the Milky Way). We need 2,500,000 years travelling by c in order to trespass it. But we are aware that this area is almost empty(one hydrogen atom per cubic meter). For our convenience let us suppose that it is not so empty but rather has a total mass of $10^{35}kgr$. With $\frac{c^3}{G}$ we need only one second to trespass it. Suddenly our Cosmos is not so large or Cosmos "himself" feels "small" and "young". With this propagation velocity $\frac{c^3}{G}$ of "specific" information all areas in the Planck period could communicate and the problems of horizon and isotropy no longer exist. Our Cosmos seems extremely ordered and deterministic. The above picture agrees with the fact that our Cosmos can be expanded with velocities bigger than the speed of light. Now, let us presume that an observer of our usual spacetime(spacetime observer SO) an observer of mass space M (mass observer MO) and an observer of Cosmos $K = R^8 = C^4$ (Cosmos observer CO).

• An SO observes a Cosmos with diameter $10^{26}m$ and with velocity c "needs" $\simeq 10^{18}$sec to tresppas it.
• An MO observes a Cosmos with diameter 10^{53} kgr and with velocity $\frac{c^3}{G}$ needs $\simeq \frac{10^{53}}{10^{35}}sec = 10^{18}sec$ to trespass it
It is obvious that both SO and MO need the same time. KO can choose to move either with c or $\frac{c^3}{G}$ or with his velocity $\frac{c^2}{G}$ which is the same. We can observe that we somehow have an invariance principle, as concerning to those three observers. The invariance principle comes from our original metric with (4,4) signature as is cited in [1]:

$$ds^2 = d\overrightarrow{r}^2 + dT^2 - \frac{G^2}{c^4}d\overrightarrow{m}^2 - c^2dt^2$$

where the invariance quantity is $\frac{c^2}{G}$. Someone could begin with this invariance principle and derive the metric(as it happens with c and the metric of Minkowski). It is simple to see that this invariance is valid by comparing the Planck and today period.

- Planck period:$\frac{m_p}{l_p} = \frac{c^2}{G} \simeq 1.3x10^{27}kgr/m$

- Today period :$\frac{M}{T} \simeq \frac{10^{53}}{10^{26}} \simeq 10^{27} = \frac{c^2}{G}$

Although all observers (MO, SO, CO) need the same time to trespass all Cosmos, a big opportunity lies ahead of us. There is a tremendous difference between how meters and how kilogrammes are distributed in Cosmos. We have huge concentrations of mass in small areas and small concentrations in huge areas. For instance in our planetary system we have a big amount of empty space between the Sun and the Earth. The same happens in bigger scale in galaxies. An MO can travel between galaxies extremely "fast" almost instantaneously. On the other hand an MO needs much more time to travel through the galaxy. As a result, practically an MO can explore much more easier Cosmos, due to the fact of how mass is distributed. And now the important question. Can an SO be alter to an MO? Nature seems to provide the possibility, but is it "physically" possible for us or is it just a forbidden dream? In the case that things are in favour of us, the scenarios as appear in science fiction could be possible. Maybe the warp speed in STAR TREK SERIES is our next step. We have to admit that the property of MO is magical and it seems like he jumps from a galaxy to another. Maybe nature or the big ”architect” decided to give us a sort of a ”cheat”, giving us the opportunity to fulfil our destiny, ”to explore”. Maybe the time that Cosmos will become ”small” is not that far away. It will be then, when we will manage to ”bring” infinity to us.

3 References

References

[1] D.Mastoridis,K.Kalogirou http://vixra.org/abs/1509.0215

[2] D.Mastoridis,K.Kalogirou http://vixra.org/abs/1602.0312