An Explanation of the Ecliptic Alignment of CMB Anisotropy

Mueiz Gafer KamalEldeen

mueizphysics@gmail.com

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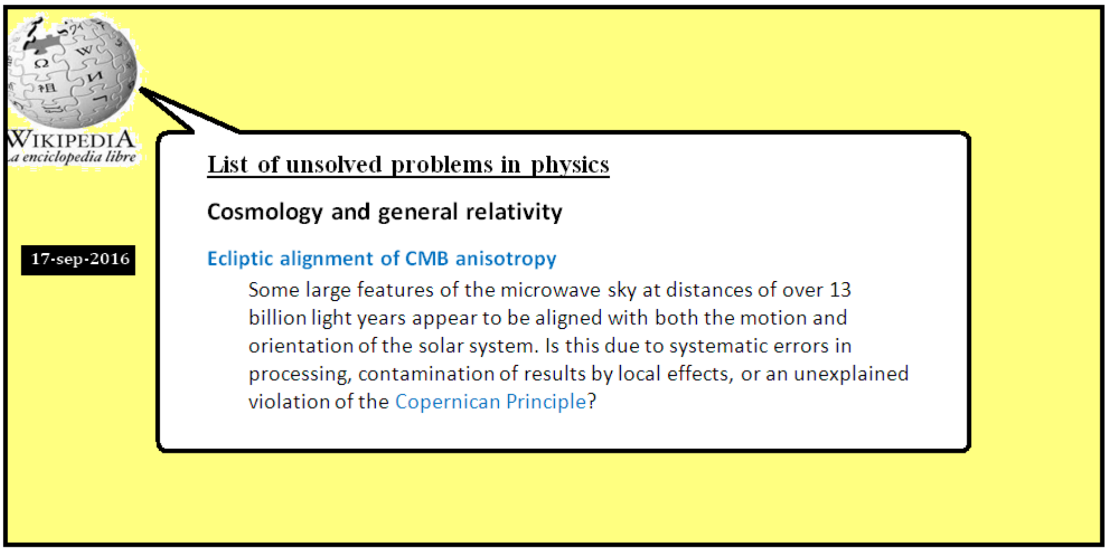
(Only to those possible intelligent creatures out of our solar system who use only logic and observation to evaluate scientific claims)

Abstract

A simple and clear explanation to the seemingly strange observed phenomenon of the ecliptic alignment of CMB anisotropy is presented. The proposed explanation is based on the wrongly excluded cosmological model of spherical space and radial time.

The Seemingly Strange Experiment Result

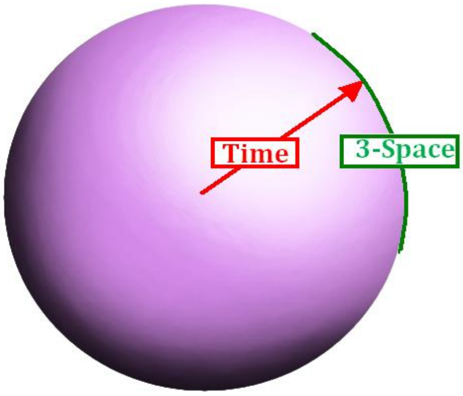


The Wrongly Excluded Cosmological Model Which Can Explain This Aligment

The proposed resolution which is also proved to be successful in resolving other major problems of cosmology such as the Cosmological Constant Problem (as shown in details in other papers by the author) is based on two assumptions, each of them contradicts the results of general theory of relativity but , interestingly, they are consistent with these results when they are taken together. An unintentional disregard of this fact made physicists wrongly exclude both of them although they are very straightforward.

The first assumption is concerned with the cosmological model :

The space-time is a 4-ball in which the 3-dimensional surface represents the 3-space of the universe and the radius represents the cosmological time.



There must be a part of the cosmological constant associated with this model which is the curvature of the space of this spherical shape. This part of the cosmological constant depends only on the age of the universe .

In spite of its simplicity and attractions , it is clear that this assumption contradicts the result of the global application of Einstein's field equation because the assumption implies that the global geometry of the universe depends only on the age of the universe and has nothing to do with the average density of the universe as supposed to be implied by the field equation of general relativity. On the other hand, this model of the universe also seems to contradict the acceleration of the universe which is supported by the observational data about the cosmological redshift because a model of a spherical 3-space with radial time implies a steady expansion of the universe.

Now , instead of hurriedly excluding this model, let us try to overcome these difficulties ,firstly, by adding another assumption:

Beside the geometrical part of the cosmological constant mentioned above , there exists also a material part subtracted from the right hand side of the field equation. This material part is the average stress-energy tensor of the universe.

Thus, we can rewrite the field equation of general relativity to be in the form:

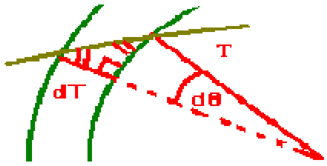
$$G_{\mu\nu} - G_{\mu\nu}^{global} = k\,T_{\mu\nu} - k\,T_{\mu\nu}^{average}$$

So, when we apply this form of the field equation on the universe as a whole we obtain:

$$G_{\mu\nu} = G_{\mu\nu}^{global}$$

Which means the independence of the global geometry of the universe from its average density which is in agreement with our beautiful model of spherical 3-space and radial time.

Now, let us turn to the second difficulty with our model of the accelerating expansion of the universe or more precisely the cosmological redshift which is supposed to be a result of the acceleration of the expansion of the universe. Surprisingly, our model of spherical 3-space with radial time offers to us other interpretation of this cosmological redshift. It can be proved that the world line of light (c = 1) as it travels through such 4-dimensional space-time between the source of light and the observer is a logarithmic spiral (tends to straight line in large values of the age of the universe) this is because it keeps making an angle (Π / 4) with the 3-dimensional surface in every time because the speed is equal to the tangent of this angle. Thus the relation between the time of emission (T*e*) and the time of observation (T*o*) and the angle between the world lines of the observer and the source (ɵ) can be obtained as follows :



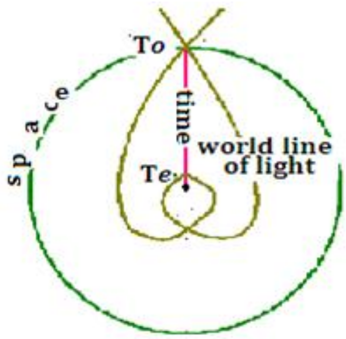
We have : $dT = T\ d\theta$, then by integration from $T = T_e$ to $T = T_o$, we arrive at the important result:

$$T_o = T_e\,(e^\theta)$$

The red-shift (z) resulted from this relation between the time of emission and the time of observation is:

$$z = (e^\theta) - 1$$

This relation, agrees with Hobble's law and can also be used to explain redshift data claimed to be results of the accelerated expansion. This can also resolves the *Horizon Problem* (The problem with the standard cosmological model that different regions of the universe have not contacted each other but have the same physical properties. The cosmic background radiation which fills the space between galaxies is precisely the same everywhere).



According to the above equation of the world line of light: $T_o = T_e\,(e \wedge \theta)$, all the radiation emitted from a source whose world line is at angle nΠ (where n is any integer) with our world line reaches us at time $T_o = T_e\,(e \wedge n\,\Pi)$ from all directions. This provides us with a simple definition for cosmic background radiation as the radiation that emitted from our own galaxy in the past to reach us today from all direction.

Now, according to this model we can easily explain the ecliptic alignment of CMB anisotropy by assuming that the features of the microwave sky which appear to be aligned with motion and orientation of the solar system is the radiations that emitted from the sun and therefore now reach the sun again from all directions, this makes any observer on the earth or any planet or any place around the sun see these radiations aligned with the direction to the sun.