Did the Big Bang fizzle?

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The universe is probably much older than it is thought to be. The cosmological redshift may be explainable with a gravitational version of the Aharonov-Bohm effect.

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I. INTRODUCTION

Since the velocity of a receding particle cannot exceed c, it had to be at least half way to where it is now when it emitted the signal. It could be more than twice as far away if it is accelerating away from us. The most distant objects visible to us are more than 20 billion light years away now, if they still exist. The age of the universe could not be less than that. On the other hand, no matter how far away a particle was when it emitted a signal, it could be nearby now. The behavior of approaching and receding particles is very different when the velocity is high. This asymmetry is the basis of the superluminal jets of some astrophysical objects. The big bang theory inappropriately attributes the behavior of approaching particles to receding particles. It is doubtful that we can see more than about half way back to the moment of creation.

There can be one observer and many particles, or one particle and many observers. When there is one particle and many observers, each observer is not free to choose their own coordinate system. Astrophysical doppler measurements are not relative to us. They are relative to the barycenter of solar system. Interplanetary spacecraft navigation software incorporates corrections from the general theory of relativity, which corrects the doppler shift in a different way. There is a transverse doppler term even when there is no radial velocity[6]. Radial velocity measurements relative to ourselves usually require corrections. We are not a satisfactory reference point.

The Lorentz transform is a vector equation. It does not include the expansion factor within a stationary mass shell. The expansion factor of the cosmos is not zero. The Lorentz transform is not the right equation for transforming to the Hubble distance. It has been established that the transform is missing symmetric terms, symmetric terms that are not representable with vector equations[1].

If a particle is at rest inside a moving mass shell, does the shell tend to drag the particle along with it? We should know, but we don't. The Coriolis term of the Lense-Thirring effect[5] is similar, but that solution is not directly applicable. We cannot know whether the particle or the shell is moving, so there would be a retarding force when the particle is moving within a stationary mass shell.

Consequently, for a photon traversing the cosmos, it would be uphill all the way.

The interior Lense-Thirring effect is analogous to a shear term. The derivatives of a constant acceleration vector inside a moving mass shell would be everywhere zero, but that does not necessarily mean that there is no vector. It is sometimes necessary to obtain the solutions for differential equations from boundary conditions. For this reason, the absence of such a solution for the Einstein tensor is inconclusive until a constant of integration is determined.

The symmetries of gravitational and electrical solutions are as different as the symmetries of space and time, but there appears to be an electrical dual of the dragging force that is developed in the last section of the paper in Refs. 2-4. Unlike the gravitational solution, the electrical solution is subject to laboratory evaluation.

This paper is archived at `vixra.org/abs/1801.0124` The home page is `s-4.com` These relationships will be developed further in future papers.

[1] C. W. Misner, K. S. Thorne, J. A. Wheeler, *Gravitation*, (W. H. Freeman and Co., New York, 1973)
[2] G. Osborn, `http://s-4.com/ab`
[3] G. Osborn, `http://vixra.org/abs/1707.0344`
[4] G. Osborn, `https://figshare.com/articles/An_approximate_non-quantum_calculation_of_the_Aharonov-Bohm_effect/5477056`
[5] `https://en.wikipedia.org/wiki/Lense%E2%80%93Thirring_precession`
[6] `https://en.wikipedia.org/wiki/Relativistic_Doppler_effect`

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