

Normalisation of CMB Redshift with Local Hubble Redshift Values Increases the Age of the Universe to 8.8 Trillion Years

Blair. D. Macdonald

fractalmomics@gmail.com

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Abstract

In an attempt to reconcile the problem of developed galaxies observed near the cosmic microwave background (CMB) limit of the observable universe, the author normalised the age of the universe. Local Hubble expansion redshift values were projected out to correspond with the redshift value of the CMB, some 1090 times greater. It is thought that due to space expanding at the speed of light at this location, the Hubble's sphere, special relativity effects may distort observations.

The new value places the universe's age at 8.8 trillion years old.

Keywords: JWST, Hubble Tension, Special Relativity, z values, Big Bang

1.1 Introduction

This paper is supplementary to a recent paper published by the author titled The Standard Model Big Bang Age of the Universe Confused for Special Relativity Absolute Time Dilation Barrier[1]. In it, it was argued that there is an optical illusion — a 'light barrier' — due to special relativity effects at the Hubble's sphere, where galaxies recede at the speed of light due to the expansion of space. Our image of these galaxies is frozen in time, all

This paper complements the former and concludes by offering a complete solution to reconcile current tensions or crises at the limits of the observable universe, currently observed by the James Web Space Telescope (JWST)[2]. This paper aims to reconcile the difference between the redshift values of galaxies at and near the location of the cosmic microwave background (CMB) and the CMB itself.

At the outer limit of the observable universe, the CMB has cooled from a temperature of around 3000 K, or when the universe was approximately 379,000 years old[3], to the current 2.72548 ± 0.00057 K[4] and, as a consequence, now redshifted to the microwave; however, the JWST galaxies are observable in near-infrared, only some 300,000 years from the CMB limit. This is a redshift difference of some 1092 z values at a similar location and the same expansion timeframe. Redshift z values quickly increase from $z = 1$ to $z = 3$ at 12 billion years out from Earth observations to a value of $z = 1100$ at 13.8 billion years out — the edge of the observable universe where it is expanding at the speed of light. Something is wrong. There is a dissonance here — a cosmic dissonance.

A solution to reconcile this discrepancy is to adjust or normalise the CMB redshift value of $z = 1100$ to fit local to Earth Hubble expansion z values out to 8 billion years from observations from planet Earth. In this paper, the author hypothesised that the universe's age will be substantially greater than assumed.

1.2 Methods

Using the Look Back Time by Redshift diagram [5]— derived from redshift calculators [6], and in the public domain— a line was drawn through the local Hubble expansion data from Earth origin to $z=1$, point a, Figure 1. This line was extended out to include the CMB $z=1100$ — point b on the diagram.

1.3 Results

The projected line age is — 1100 times 8 = 8800 billion or 8.8 trillion years old.

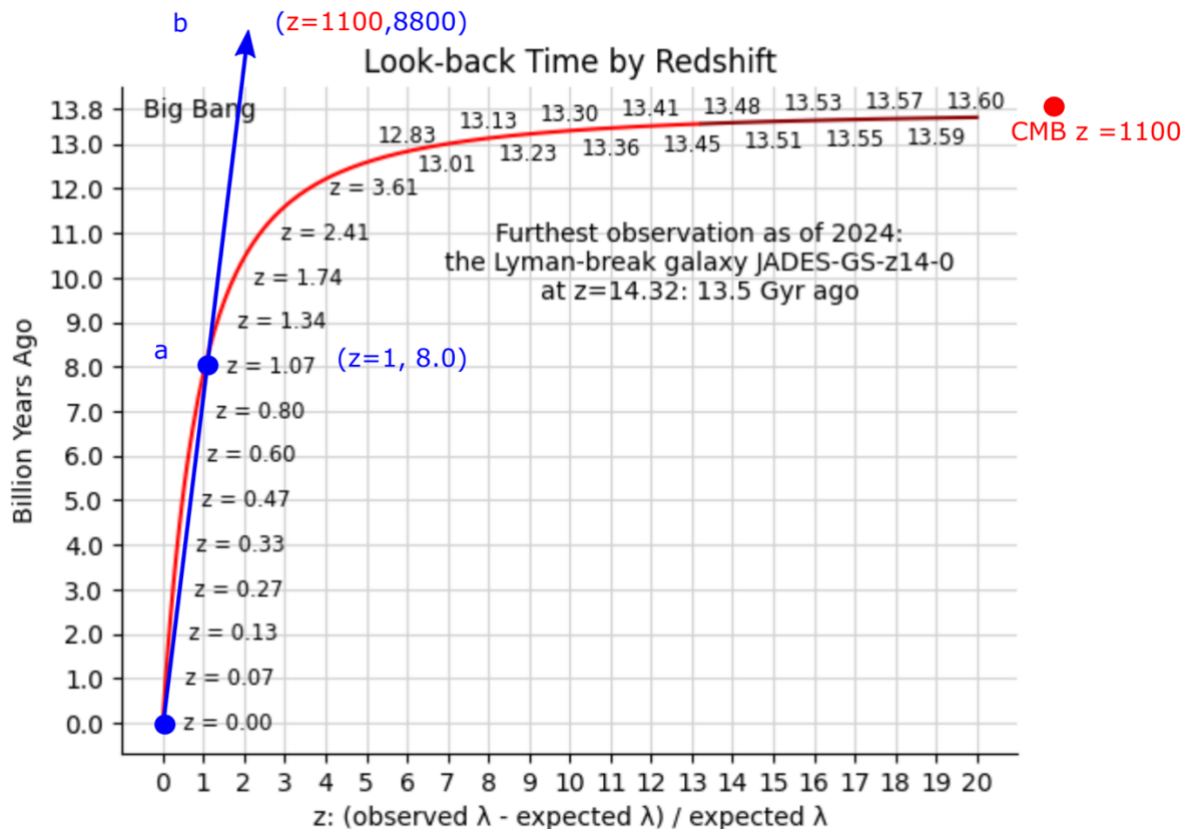


Figure 1. Look-back Time by Redshift [5] with projected universe age line. Point a is where Z values depart from regular Hubble expansion to the CMB Redshift value of $z = 1100$. Point b is the projected age of the universe using constant Hubble z values. The projected age of the universe is 8.8 trillion years old.

1.4 Discussions and Conclusions

We live in an older universe than we think. The recalculated 8.8 trillion-year-old age of the universe solves the paradox from observations the discrepancy in z values at the CMB location. It will for instance help us make sense of why our Milky Way Galaxy has stars that are much the same age as the universe's (13.8 billion years old) current age.

It is acknowledged that the means of calculation may be crude, and the end value may be more—or less—than the calculated. It is also acknowledged that the recalculation dismisses the current Hubble's Law derivation of the universe's age. In response, the author argues that the current problems at the CMB location may be due to a light speed-induced time dilation illusion, 'a frozen picture in time' due to its proximity to the Hubble's sphere where space is expanding at the speed of

light. We may make incorrect assumptions from current observations, hence the attempt to correct this bias. The current Hubble's sphere location of the CMB may be thought as a light pit: it gathers all information and does not distinguish between age. As a consequence of this, the Hubble tension will not be resolved, and it too may be part of this illusion.

The adjusted age better allows time for cosmic evolution. The current age of the universe — near 13.8 billion years[7] — net of the solar system formation time — 4.5 to 5 billion years — is too little time for it to evolve as modelled by collisions and mergers. When this time — 9 billion years — is compared with the Milky Way's next predicted galactic collision with the Andromeda Galaxy — in 4.5 to 5 billion years — this pre-solar system time seems too little, inconsistent, and paradoxical. Though the following argument is no longer needed, by developments on observations of merging neutron stars, the recalculation, nonetheless, allows for more time for spread nuclear synthesis.

8 trillion years allows time for cosmic evolution and is consistent with the progression in estimates of the geological age of the Earth. It is in line with Hutton's concept of geological 'deep time'. 8.8 trillion years is cosmic deep time. This concept of cosmic deep time, though calculated crudely, in conjunction with special relativistic effects should at least be open for discussion.

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