The Standard Model Big Bang Age of the Universe Confused for Special Relativity Absolute Time Dilation Barrier

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Abstract

There is a crisis with the standard model of cosmology at its outer limits. Why are developed galaxies rich in elements, as observed by the James Webb Space Telescope (JWST), existing only 300 million years from the beginning of the 13.8-billion-year-old universe? A potential solution is proposed, invoking Albert Einstein's 1905 theory of special relativity and time dilation. A potential solution is proposed, invoking Albert Einstein's 1905 theory of special relativity and time dilation." Are observations near the cosmic microwave background limit a time dilation barrier where time slows and stops? Special relativity says that time will run slower for a moving body approaching the speed of light relative to time measured by an observer. If the body is moving at the speed of light, time will appear to stop to the observer. It also says that bodies, by length contraction, appear smaller from the observer's perspective. The solution to the crisis is that the JWST galaxies are on the Hubble Sphere, accelerating away at or near the speed of light relative to Earth observations. Due to special relativity, we observe time dilation: a barrier where time stops, and previous history cannot be discerned. This barrier suggests that the universe can be much older, and we may never know how old it is because of this barrier. By time dilation and length contraction, the universe may be older and larger than thought, making the standard ΛCDM model of cosmology in need of review.

Keywords: JWST, Hubble-Lemaitre Law, ΛCDM, redshift, Einstein

1 Introduction

Recent observations from the James Webb Space Telescope (JWST) have challenged the standard —'lambda, cold dark matter' (ΛCDM) — model of cosmology with observations of well-developed galaxies some 300 to 500 million years before the Big Bang origins of the universe[1]. The standard model claims the universe's age is estimated to be 13.787 billion years old[2]. The most recent and farthest galaxy, JADES – GS – z14-0, is placed only 300 million years after the Big Bang. The problem is that this galaxy contains elements, such as oxygen, so there would have to be time for nuclear synthesis to produce these elements. There is no cosmological 'deep time' concerning the universe's evolution. As it stands, the universe is three times older than the solar system: this is young. Something is wrong with the standard model.

Is what is being observed at the outer limits of the observable universe the slowing — and then stopping — of time due to, and evidence of, Albert Einstein's 1905 special relativity[3], time dilation?

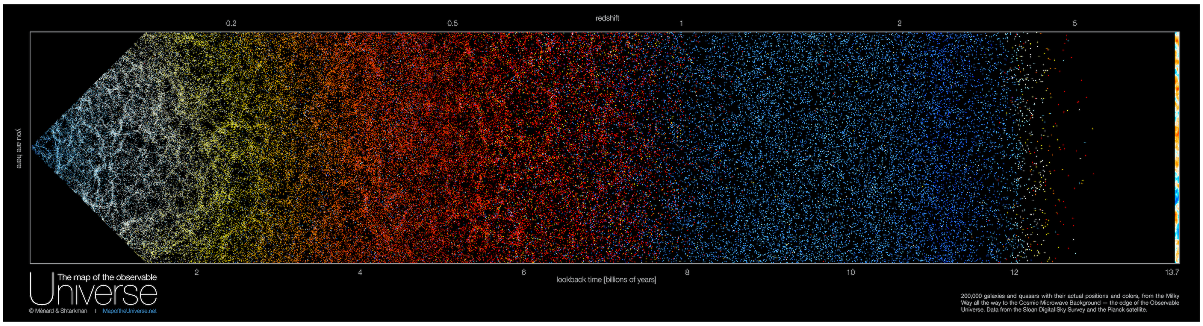
The JWST observations are before or at this barrier, before or when time stops. If so, the universe is older and possibly larger than modelled.
By special relativity, clocks on a moving body will slow relative to an observer. At the speed of light, clocks stop for moving bodies relative to the observer. The theory also claims that a body travelling at the speed of light will be shorted or contracted (Length Contraction) in the direction of movement.

We know the universe is expanding—first observed using redshifting by Edwin Hubble and Humason [4] and predicted by Lemaitre[5] — and as a consequence (of this Hubble-Lemaitre Law), galaxies are receding from Earth observers. Due to this expansion, galaxies at some distance back in time (the Hubble Sphere) are expanding at and beyond the speed of light. Expansion in conjunction with the cosmic microwave background (CMB)[6] measurements determines the universe's age, which is also in (Hubble tension) crisis.

To analyse for any validity to this 'solution', redshift (z) values for light speed and the location of the Hubble sphere will plotted on the current map of the universe. Proximity to this location of the JWST galaxies receding at the speed of light at or near the outer universe would be supportive.

2 Red Shift and the Hubble Sphere

Redshift (z) is a measure of the expansion of the universe. It would be easy if redshift were linear with distance; however, it is not and tends to towards large numbers— near 1000— at the CMB (cosmic microwave background) edge of the observable universe. We know that a z value of 5 is 0.97 of the speed of light (c). Figure 1 shows the 2020 DESI Map of the observable universe and reveals Observed galaxies and quasars with respective Redshift values. The redshift (z) value of approximately 5, near the speed of light (c), is close to the CMB edge (far right).



This is a photo showing the observable universe observed from Earth (left) to the cosmic microwave background (right). Redshift values are shown above the map, and lookback time in billions of years is shown below. The speed of light is approximately z=5.

Figure 1. The 2020 DESI Map of the Observable Universe [7]

The Hubble Sphere is calculated by using the current Hubble constant[8] and is estimated to be from different sources[9] using basic geometry from 13.6 to 13.8 billion years out. On the map of the universe the Hubble Sphere is also located to the far right, just inside the CMB.

3 Discussions and Conclusions

Absolute time dilation, a barrier to light and information, is observed at the edge of the observable universe. This barrier is caused by the near and absolute light-speed expansion of space upon which the observed galaxies are carried. The JWST galaxies are located where they are travelling, relative to Earth observers, at the speed of light, and as a consequence, their histories are hidden behind this time dilation barrier.
It must be more than a coincidence that the observed distance to the Big Bang CMB and the inferred universe's inferred age is at and around the exact location in time as the Hubble Sphere, where galaxies are said to be travelling at the speed of light away from us observers.

The Earth's observation of these galaxies, and all others before, will comply with the effects of special relativity. Due to these effects, we observe a distorted picture of them, which requires reinterpretation to fully understand their history.
It is open to discussion whether the 'Big Bang' CMB edge of the universe itself may be only part of or a consequence of this barrier, created by time dilation, and that the universe, as a consequence, has an undefined history from our Earth observation position.

There is also the issue of special relativity and the effect of length contraction with respect to recession speed. As an object approaches the speed of light, its length diminishes to an observer. If special relativity is applied, the large-scale universe that we observe is larger—exponentially larger.

Finally, cosmologists may have biased themselves by focusing on General Relativity and the standard model. They should have addressed the foundation principles that would, on their own, in independence, if accepted, explain the phenomenon associated with the crisis. If applying special relativity principles to the model explains current large-scale cosmology problems, then there exists another problem, one of cosmological dissonance: the current standard model will require updating to include these principles. These outer edge problems are modern problems brought about by modern technology. The architects, Einstein and others, were unaware of these problems; however, if they were alive today, they would surely apply these principles, as should we.

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