Can the Cosmic Microwave Background Radiation be Doppler Shifted Light from Receding Superluminal Galaxies ?

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21 August 2019

Abstract

In this paper we propose a new idea that the Cosmic Microwave Background Radiation (CMBR) could be Doppler shifted light from receding superluminal distant galaxies. One immediate objection to this idea is that superluminal velocities do not exist in nature. However, we know that superluminal galaxies have already been observed. Moreover, in my recent paper entitled " Absolute Motion, Light Speed Limit, Superluminal Galaxies and Star Light Bending " , I have shown how absolute motion, light speed limit and superluminal galaxies can co-exist in the universe. Hubble's law also predicts superluminal galaxies at sufficiently large distances. A new exponential law of Doppler effect is introduced: $\lambda' = \lambda\, e^{V/c}$ and $f' = f\, e^{-V/c}$, where e is Euler's constant. Using the new law of Doppler effect, CMBR frequency and Hubble's law we estimate the distance and speed of the superluminal galaxies the CMBR radiation is mainly coming from.

Introduction

The CMBR is a faint cosmic background radiation filling all space. I will just quote parts of the first two paragraphs of the Wikipedia article " Cosmic microwave background " below [4]:

. . . . . With a traditional optical telescope, the space between stars and galaxies (the *background*) is completely dark. However, a sufficiently sensitive radio telescope shows a faint background noise, or glow, almost isotropic, that is not associated with any star, galaxy, or other object. This glow is strongest in the microwave region of the radio spectrum.

CMB is landmark evidence of the Big Bang origin of the universe. When the universe was young, before the formation of stars and planets, it was denser, much hotter, and filled with a uniform glow from a white-hot fog of hydrogen plasma. As the universe expanded, both the plasma and the radiation filling it grew cooler. When the universe cooled enough, protons and electrons combined to form neutral hydrogen atoms. Unlike the uncombined protons and electrons, these newly conceived atoms could not scatter the thermal radiation by Thomson scattering, and so the universe became transparent instead of being an opaque fog.[3] Cosmologists refer to the time period when neutral atoms first formed as the *recombination epoch*, and the event shortly afterwards when photons started to travel freely through space rather than constantly being scattered by electrons and protons in plasma is referred to as photon decoupling. The photons that existed at the time of photon decoupling have been propagating ever since, . . .

In this paper I will just present an alternative to the standard, mainstream explanation.

Superluminal galaxies

In my recent paper [5], I have proposed how the phenomena of light speed limit and superluminal galaxies can co-exist in the universe. A ramification of this new idea is that the observed Cosmic Microwave Background Radiation (CMBR) can be explained as Doppler shifted light of receding distant superluminal galaxies.

Superluminal galaxies have already been observed and in fact this has become one of the evidences against the special theory of relativity.

Moreover, Hubble's law can be seen as predicting superluminal galaxy velocities at sufficiently large distances.

$$V = H_0 d$$

where H_0 is Hubble's constant. $H_0 \approx 70$ Km /s per megaparsec

We start with the observed CMBR frequency of 160 GHz ($\lambda = 0.1875$ cm). Let us consider one of hydrogen atom emission lines, $\lambda \approx 650$ nm. Assume that the hydrogen atom emission line from a receding superluminal galaxy is what is observed as the CMB radiation.

Next we estimate the receding velocity of the galaxy, from which we can also determine the distance of galaxies the CMB radiation is mainly coming from.

Exponential Doppler Effect law of light

We will first introduce a new law of Doppler effect of light [1][2][3].

$$\lambda' = \lambda e^{\frac{V}{c}} \quad and \quad f' = f e^{\frac{-V}{c}}$$

where *e* is Euler's constant. *V* is the relative velocity of the light source and the observer. *V* is positive for receding relative velocity.

Velocity of receding superluminal galaxy

Now we will determine the velocity of the receding galaxies by using the new Exponential Doppler Effect law of light.

Receding galaxy emits light at , $\lambda = 650$ nm

Observed wavelength (CMBR) , $\lambda' = 0.1875$ cm

$$\lambda' = \lambda\, e^{\frac{V}{c}} \quad \Longrightarrow \frac{\lambda'}{\lambda} = e^{\frac{V}{c}} \Longrightarrow \ln\left(\frac{\lambda'}{\lambda}\right) = \frac{V}{c}$$

$$\Longrightarrow \ln\left(\frac{0.1875\ cm}{650\ nm}\right) = \frac{V}{c}$$

$$\Longrightarrow \ln(2884.6) = \frac{V}{c}$$

$$\Longrightarrow V = 7.967\ c$$

According to Exponential Doppler Effect of light, therefore, light emitted at $\lambda = 650$ nm from a receding galaxy will be observed as a microwave radiation of $\lambda' = 0.1875$ cm if the velocity of the galaxy is 7.967 times the speed of light.

Given the fact that galaxy velocities of about nine times the speed of light have already been observed, this result seems realistic.

Now we determine the approximate distance of the galaxy from Hubble's law.

$$V = H_0\, d \quad \Longrightarrow \quad d = \frac{V}{H_0} = \frac{7.967\ c}{70\ Km/\sec\ \ per\ megaparsec}$$

$$\Longrightarrow \quad d = \frac{7.967 * 300000\ Km/sec}{\frac{70\ Km/sec}{1000000\ x\ 3.26\ lightyears}} = 111.31\ billion\ lightyears$$

The actually observed CMBR comes from galaxies from a range of distances with a range of velocities.

CMBR spectrum

The blackbody spectrum of CMBR may be just red-shifted spectrum of light from galaxies.

Conclusion

We have seen a new speculation that the CMB radiation could be just Doppler shifted light from receding galaxies. Receding superluminal galaxies cannot be seen by optical telescopes because the visible light they emit will be red-shifted down to microwave frequencies. This means that the space between optically visible galaxies (the "background") may be filled with receding superluminal galaxies from which the CMBR is coming. The new theory proposed in this paper seems plausible when considering the fact that it tries to explain the CMBR phenomena based on known facts (Hubble's law, Doppler effect), without making new assumptions, and when considering the fact that there is no other alternative explanation so far other than the Big Bang.

Thanks to God and His Mother Our Lady Saint Virgin Mary

References

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