

New approach to the theoretical value of the wavelength of the CMB photons

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Paper 6

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Abstract

In this new approach the total number of the photons from the Big-Bang ^[1] and the volume of the entire Universe at the present epoch ^[2], have produced the energy density of the CMB photons.

This energy density shows that the photons of the CMB have a wavelength of:

$\lambda \approx 1cm$. Approximate frequency of 30 GHz with a temperature of:

$T \approx 1.5K$. This new approach indicates that the CMB photons are the force behind the expansion of the Universe ^[3] or the Dark energy.

The peak at 0.2 cm, 160 mega Hertz with a temperature of 2.7 K could either be due to all the galaxies in the Universe giving a peak intensity in the microwave at 2.7 K or according to:

P.J.E. PEEBLES

Principles of physical cosmology (pages144 and145).

“The CBR energy density can be compared to that of other local fields. The luminosity of the Milky Way is $L \approx 10^{10} L_{\odot}$ so at our position near the outskirts, at distance $r \sim 8Kpc$ from the centre, the energy density is $U_* \sim \frac{L}{4\pi r^2 c} \equiv aT_*^4$. This defines an effective temperature for the starlight; the result is $T_* = 2K$.

The interstellar magnetic field is $B \sim 10^{-6} Gauss$.

If we again define effective temperature by the energy density, $\frac{B^2}{8\pi} = aT_B^4$, we get $T_B = 2K$.”

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Text

The total number of the photons in the Universe ^[1] is:

$$n = 1.46529054 \times 10^{88}.$$

And the radius of the radiation content of the Universe ^[2] is:

$$R_{0R} = 2.397618 \times 10^{26} m.$$

Giving a volume of:

$$V_{uR} = 5.773359223 \times 10^{79} m^3.$$

So the number of photons per meter cube is:

$$n = \frac{1.46529054 \times 10^{88}}{5.773359223 \times 10^{79} m^3}$$

$$n = \frac{1.46529054 \times 10^{88}}{5.773359223 \times 10^{79} m^3} = 2.53802073 \times 10^8 ph / m^3$$

$$\underline{n = 2.53802073 \times 10^8 ph / m^3}$$

So by calculating the dimensions of the CMB photons we obtaine:

$$R_{ph} = 1.55534023 \times 10^{-3} m$$

$$\lambda = 2\pi R$$

$$\lambda = 9.772490883 \times 10^{-3} m$$

$$\lambda = 0.9772490883 cm$$

$$\underline{\lambda \approx 1 cm}$$

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Using: $E = KT$

$$K = 1.38064852 \times 10^{-23} m^2 KgS^{-2} K^{-1}$$

$$h = 6.62607004 \times 10^{-34} m^2 KgS^{-1}$$

$$T = 1.47229549 K$$

$$\underline{T \approx 1.5 K}$$

$$f = \frac{c}{\lambda}$$

$$f = \frac{2.99796458 \times 10^8}{9.772490883 \times 10^{-3}}$$

$$\underline{f = 3.067758892 \times 10^{10} Hz}$$

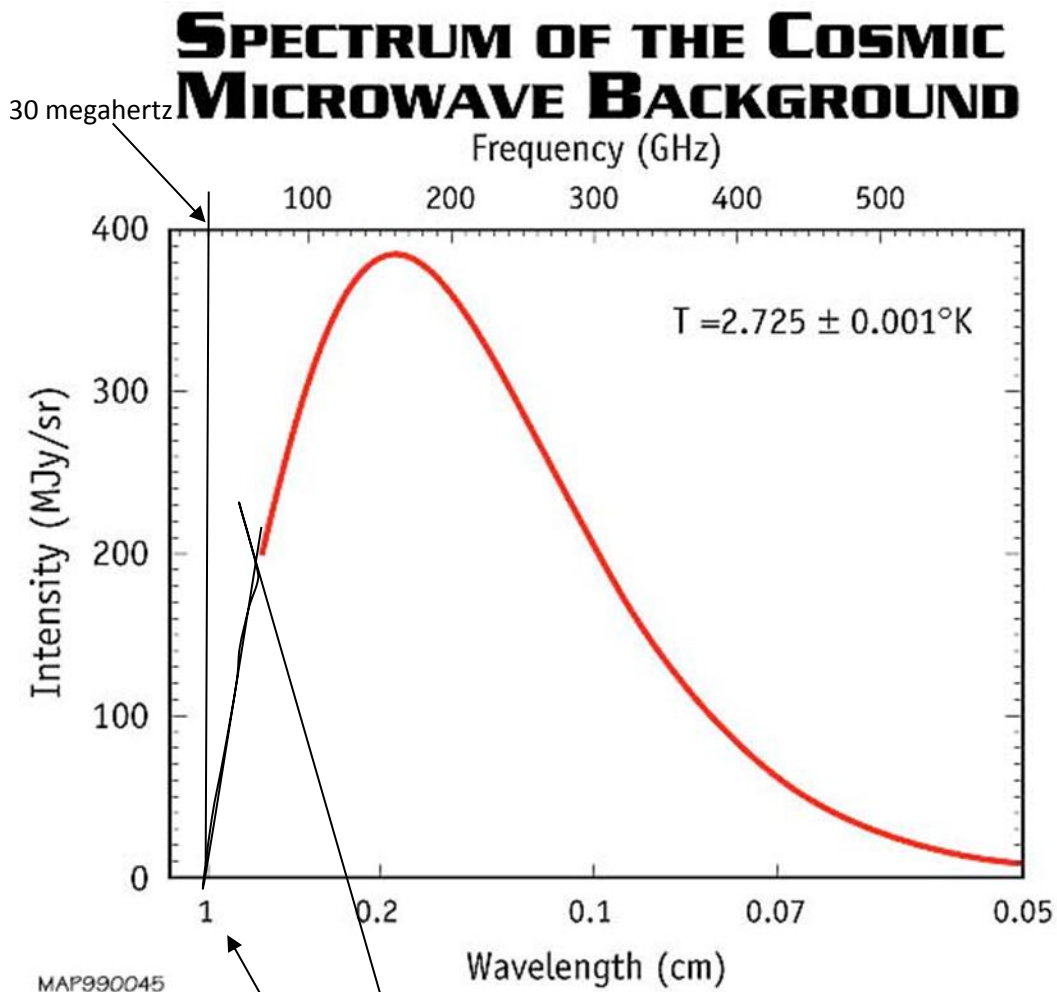
Approximately about 30 mega hertz.

The photons of the Big-Bang are in the inflationary mode and enlarge like a balloon in three dimensions without radiating or transferring energy ^[3].

This inflating process creates more space which is the expansion of the fabric of the space and the galaxies are pulled back by the gravitational force in a slower rate than the expansion of the space.

By extending the spectrum of the cosmic microwave background in fig bellow to reach the zero intensity the curve will reach 1cm wavelength as was calculated above.

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Extension of the curve to 1cm wavelength.

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Conclusion

As in the previous papers the nature of the Dark-Energy was revealed, now the new values for the CMB photons put forward that gives better agreements with observations of the Hot Big-Bang.

The new approach shows that some unknown phenomenon could misguide us on our calculation and create some assumptions that are hard to fit in the theory of the Hot Big-Bang.

References

- (1) <http://viXra.org/abs/1705.0155> (The time prior to the Big-Bang)
- (2) <http://viXra.org/abs/1704.0041?ref=9321691> (Hubble Constant and the Age of the Universe)
- (3) <http://viXra.org/abs/1704.0082> (Wave Particle and Luminiferous Trinity of the Light)