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Uniformity of CMB in our Dynamic Universe

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Abstract

In this paper the experimentally verified Stephan Boltzmann Law and Planks law are used to calculate the Cosmic Microwave Background or CMB radiation received on earth in all directions from the sky. This radiation from SUN, planets, asteroids, stars, interstellar dust and Galaxies is in Microwave range covering all the frequencies including the K, Ka, Q, V and W bands as measured in WMAP mission. This method explains theoretically about the origin, propagation uniformity of CMB in our universe. The reasons for this amazing theoretical uniformity are many. One of the reasons is the uniformity of stars and Galaxies in all most all directions in the sky. Another reason is the averaging done by main lobe of dish antenna for few degrees around the main direction, which is a measuring instrument sensor of WMAP satellite. In addition, the side lobe pickup of bright sources in the sky also adds to the problem, which depends on the three-dimensional gain pattern of the dish. Additional analysis is done, which results into large angle multipole-l systematic errors. It is found that NO additional Bigbang generated Microwave background radiation was there after excluding radiation from Stars and Galaxies in these WMAP CMB measurements.

Keywords: Cosmic microwave background; Galaxies; Microwave range; Vakradiation

History of Microwave Radiation

Dicke and Beringer, reported measurement of Microwave radiation of SUN and MOON at wave-length 1.25 cm, using 18 inch diameter, parabolic reflective antenna during Second worldwar [1]. There were many reports and works from various others about this. Carl Sagan gave the Microwave radiation given by VENUS. Even today, various experiments on CMB, avoid direct radiation from Planets, Sun and Moon [2]. They use some type of computer algorithms to avoid those particular directions. Some recent Balloon experiments used this radiation from Jupiter for the purpose of calibrating the CMB scan of sky. There are numerous incidences in scientific literature that Microwave radiation is observed from interstellar dust, Galaxy center and Stars also. This implies other Galaxies also radiate. What is more interesting is about the CMB is its uniformity in almost all directions in the sky. Penzias and Wilson [3] with a microwave dish antenna found this uniformity in 1965. Now let's discuss how much uniform is our theoretical Microwave Radiation CMB in all the directions, due to various sources like SUN, planets, asteroids, stars, interstellar dust and Galaxies, making this CMBR as truly physical creation.

Mathematical Background

The radiation emitted by Sun, stars and all astronomical bodies can be approximated as blackbody radiation. This radiation is a thermal radiation emitted by a blackbody heated to a given temperature. All blackbodies heated to a given temperature emit thermal radiation with the same spectrum, as given by the **Planck law**. In addition to sources there are Reflectors, Partial transmitters that will retain some portion of incident energy, and multiple sinks. Here in this paper, we will consider the various sources of thermal/electromagnetic radiation (Figure 1).

For this purpose I will define a new word '**VAKRADIATION**' as radiation received per unit area from a distant source in space per unit time over all frequencies. This term is something similar to heat flux or thermal flux. We are defining this new term because, the terms 'thermal flux' or 'heat flux', are commonly used in conjunction with solar heat that is received per unit area per second on earth. The units are same for Vakradiation also. Now let us start with Stefan-Boltzmann law for output intensity of radiation from a source is $Ib=\sigma T^4/\pi$; where σ is Stefan-Boltzmann's constant, π is approximately 3.141592654 and T is the absolute temperature of the black body. It is generally an accepted fact that all the astronomical bodies can be approximated as blackbodies. All blackbodies heated to a given temperature emit thermal radiation with the same spectrum, as defined by Planck law. Now let us see how radiation heat transfer takes place between two black bodies. Now we require a sensor that measures Vakradiation.

The infinitesimally small elemental area dA1 is radiating heat to another dA2 situated at a distance S. This ray of radiation makes an angle θ1 to the normal at dA1 and θ2 to the normal at dA2. Now let's assume that dA1 is situated on the surface of a star, and dA2 is situated in the solar system near earth, or it can be anywhere.

Heat radiated from element dA1 towards dA2 is dQ12, which is nothing but product of Ib1, the Intensity of radiation at dA1; multiplied by projected area dA1 in the line of S and the solid angle made by dA2.

$$dQ12 = Ib1\times(dA1\times\cos\theta 1)\times(dA2\times\cos\theta 2)/S^2$$

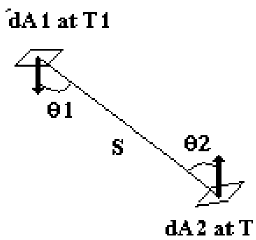

Figure 1: Radiation heat transfer.

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Similarly dQ21 is the heat radiated by dA2, which is at lower temperature (T2 < T1), falls on dA1.

$$dQ21 = Ib2 \times \left(dA2 \times \cos\theta 2\right) \times \left(dA1 \times \cos\theta 1\right) / S^2$$

Net heat radiated by dA1 towards dA2 is

$$dQ = dQ12 - dQ21 = dA1.dA2\cos\left(\theta 1\right)\cos\left(\theta 2\right).\left(Ib1 - Ib2\right) / S^2$$

In order to determine the total energy radiated from surface1 to surface 2 it is necessary to sum the radiation from each dA1 to all dA2. This is accomplished by integrating over A1 and A2 and after substituting for Ib,

$$Q12 = \left(\frac{\sigma\left(T1^4 - T2^4\right)}{\pi}\right)\iint (\cos\theta 1 \cos\theta 2) / S^2 \,)dA1.dA2$$

Now let's utilize this equation to the present situation. A star is radiating. An ideal CMB (dish antenna) sensor is present at some place near earth. This sensor is so ideal, that it does not radiate any energy back to star, hence Ib2=0. Let's us assume the distance S is much larger compared to the radius of star. We approximate the radiating area of star as ∫dA1=πr², cross-section area of star and r is the radius of star. Let θ1=0, θ2=0 and hence cos θ1 =.1 and cos θ2=1.

$$Q12 = \left(\sigma\frac{T1^4}{\pi}\right)\left(\frac{r^2}{S^2}\right)A2$$

Let's call temperature of the star=Ts=T1 and Radius of star Rs=r

Or $V = \frac{Q12}{A2} = \frac{\sigma.Ts^4.Rs^2}{S^2} Watts / Meter^2$

Let's call this quantity '(Q12/A2)=V' as Vakradiation. This is nothing but radiation Q12 seen by a sensor of area A2 at a distance S from the star of radius Rs and temperature Ts when no heat is returned back to the star. This sensor is purely theoretical sensor that can observe the Vakradiation intensity, in the solar system.

Vakradiation sensor

Vakradiation sensor is having a thermal radiation source at CMB temperature; say 2.76 degrees Kelvin, which is a reflective surface of definite geometric shape like a flat circle, part of a spherical shell or a parabolic dish shape and with radius of one meter, with a sensing area at a distance of one meter (focal length). We will try two cases, but many other shapes are possible.

a) Sensor and a circular flat disk (Figure 2): Here A1 is the circular flat disk of radius R, which is at the temperature 2.762 °K. dA2 is the sensor area, placed at a distance L at the center-line of disk. The area dA1 of incremental annular circular ring in A1 of width dx, at a radius x is 2πx.dx. This is as shown in the Figure 2. Heat radiated from surface A1 towards dA2 is Q12, and is given by Q12=(σ ($T1^4$-$T2^4$)/π) ∫ ∫ (cos θ1.cos θ2/S^2) dA1.dA2. For this particular case of this sensor we know, Ib2=T2=0; S=L=1 Meter; A2=dA2=small sensing area and no integration required; θ to be integrated, θ1 =.θ2=θ & cos θ2=cos θ1, T1=T_{cmb}=2.762 degrees Kelvin. Here $\cos^2\theta=[L^2/(L^2 + x^2)]$ and $y^2=(L^2 + x^2)$;

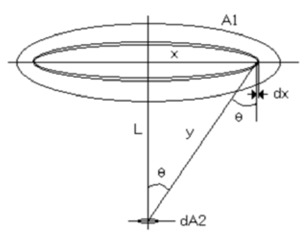

Figure 2: Circular flat disk.

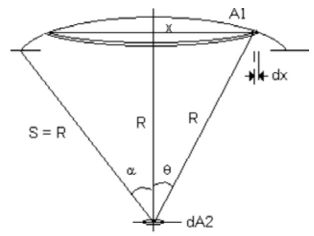

Figure 3: Sensor with spherical dish.

$$V = \frac{Q12}{dA2} = \left(\sigma\frac{(T_{cmb})^4}{\pi}\right)\int_0^R \frac{(\cos\theta)^2}{y^2} 2\pi x dx$$

$$= \frac{Q12}{dA2} = \left(\sigma\frac{(T_{cmb})^4}{\pi}\right)\int_0^R \frac{(\mathrm{L})^2}{(L^2 + x^2)}\left(\frac{2\pi x}{(L^2 + x^2)}\right)dx$$

$$= \left(\sigma\frac{(T_{cmb})^4}{\pi}\right)\frac{(R)^2}{(R^2 + L^2)}$$

$$= \left(\sigma\frac{(T_{cmb})^4}{2}\right) when\, R = L = 1$$

b) Sensor and a spherical surface dish (Figure 3): Here A1 is the spherical surface of radius R, which is at the temperature 2.762 °K. dA2 is the sensor area, placed at a distance R at the center of curvature. The area dA1 of incremental annular circular ring in A1 of width dx, at a radius x is 2πx.dx. And x is Rsinθ. This is as shown in the Figure 3. Heat radiated from surface A1 towards dA2 is Q12, and is given by… Q12=(σ ($T1^4$-$T2^4$)/π) ∫ ∫ (cos θ1.cos θ2 / S^2) dA1.dA2. For this particular case of this sensor we know, Ib2=T2=0; S =Rs=1 Meter; A2=dA2=small sensing area and no integration required; θ1 to be integrated, θ2=.0 and cos θ2=1, T1=Tcmb=2.762 degrees Kelvin.

$$V = \frac{Q12}{dA2} = \left(\sigma\frac{(T_{cmb})^4}{\pi}\right)\int_0^\alpha \frac{(\cos\theta)^2}{R^2} 2\pi R \, \sin\theta d\theta$$

$$= \frac{Q12}{dA2} = \left(\sigma\frac{(T_{cmb})^4}{R}\right)(\sin\theta)^2$$

$$= \left(\sigma (T_{cmb})^4\right) when\, R = 1 \,\&\alpha = 90^\circ$$

Table 1 gives the theoretical VAKRADIATION values in watts/m² at various temperatures. The second column gives for a circular flat disk, whereas the third, gives these values for spherical surface. This means that the radiation received at the sensor due to dish of circular shape or spherical shape at a given temperature is given in this table. For a different type of antenna like parabolic dish, we can very easily calculate theoretically depending on the geometrical shape of dish. This part we will leave it as an exercise to the reader as innumerable shapes and sizes are possible, and can be very easily solved using integration methods in a similar way as above.

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K, Ka, Q, V and W bands of WMAP

In other words Table 1 gives: Vakradiation numerical calculated from the formulae derived in the paper for different sensors.

You can see from Table 2 the intensities for all the frequencies in the Microwave range including the K, Ka, Q, V and W bands (with full band width from starting to ending frequencies) are covered for the particular frequency theoretically using the Planck's Emission law: $E_{b\lambda}=C1\ \lambda^{-5}/(e^{(C2/\lambda T)}-1)$ where $C1=8.85\times10^{-13}$ Cal.cm²/s and C2=1.433 cm. Deg K. This law gives the Radiation intensity (Mono-chromatic Emissive power) $E_{b\lambda}$ centered on wavelength λ, and Temperature T with units same as C1. This is the amount of energy per unit surface, per unit solid angle, per unit time emitted in the wavelength range near λ. From this Table 2, the radiation intensities at 2.76 °K are much lower than the intensities produced by any astronomical body in the universe. Hence in other words, this table proves that the Microwave radiation is emitted by all types of astronomical bodies, like stars, Galaxies, Planets, and Asteroids etc. that are at higher temperature than 2.76 °K at much higher intensities in all bands of WMAP. And all these are not a single source. In our next section we will see how uniformly they are *distributed by seeing the Vak*radiation calculations. In other words Table 2 gives Planck radiations were calculated for different astronomical bodies using Planck's Emission law: $E_{b\lambda}=C1\lambda^{-5}/(e^{(C2/\lambda T)}-1)$ For Microwave Bands of WMAP " K, Ka, Q, V and W", Formula , Frequency values and temperatures of astronomical bodies are from Wikipedia. Numerical Calculations are done by the author.

Temperature	Circular disk	Spherical disk
°K	sensor	sensor
	w/m²	w/m²
2	4.61E - 07	9.22E - 07
2.25	7.38E - 07	1.48E - 06
2.5	1.13E - 06	2.25E - 06
2.75	1.65E - 06	3.29E - 06
2.762	1.68E - 06	3.35E - 06
3	2.33E - 06	4.67E - 06
3.25	3.21E - 06	6.43E - 06
3.5	4.32E - 06	8.64E - 06
3.75	5.70E - 06	1.14E - 05
4	7.37E - 06	1.47E - 05
4.25	9.40E - 06	1.88E - 05
4.5	1.18E - 05	2.36E - 05
4.75	1.47E - 05	2.93E - 05
5	1.80E - 05	3.60E - 05
5.25	2.19E - 05	4.38E - 05
5.5	2.64E - 05	5.27E - 05
5.75	3.15E - 05	6.30E - 05
6	3.73E - 05	7.47E - 05

Table 1: VAKRADIATION from different sensors at various temperatures.

Stars from Hipparcos and Tycho-2 Catalogues

There are 2 ×10¹¹ stars in Milkyway. Some of the largest Star catalogs like Tycho-2 consists of 2.4 million stars and Hipparcos gives 0.11 million stars. It is well known that practically from observatory to observatory, there are slight variations in star positions. Hence combining stars from one observatory to another observatory is a tedious and erroneous large task. Hipparcos satellite is one of the single astronomical observatories in this world or rather outside earth, with less distortions from atmosphere, gives some of the latest and largest star catalogs like Tycho-2. We also find that these two catalogs are not totally mutually exclusive; some stars do exist in common, but in a very small percentage. Hence we have selected these two giving a combined total of 2.5 million stars approximately. Further can be found from NASA's Hipparcos website and ADS catalogs (see the references). Now let's see the details. Main Tycho-2 Catalog consists of 2539913 stars and its supplement 1 is having 17188 and its supplement 2 is having 1146 stars with an index of 9538 stars, giving us a total of 2558647 stars. But there are many empty records! They are due to many reasons. Let's approximate them to be 2.5% of total. That is 63497. It gives final figure of 2495149 stars. Now Hipparcos is having 118000 stars. Consequently both added together gives 2513149 stars (say 2.5 million=one layer of stars around us). Now we go to start of this paragraph. There are 2 ×10¹¹ stars in Milkyway. So there are 80,000 layers of stars approximately, which is 2 × 10¹¹ stars in Milkyway divided by 2.5 million stars.

Vakradiation contribution in some selected square degrees due to stars

From the above discussion we see there are less than 2 from Hipparcos and 16 from Tycho-2 stars per square degree on average. And the actual star density varies from 10 to 150 in these catalogs. For a Good star density plot see the "Guide" in Tyco-2 catalog directory. Now we will calculate the Vak radiation contributions due to these

Band wave length mm	freq GHz	Band width Ghz	wave length meters	freq Hz	Band width hz	Dish at 2.76 deg kel	SUN 5780 kel	Earth 320 kel	Asteroids 100 kel	Dwarf 3000 kel	Bright stars 12000 kel
K 13	23	5.5	1.48E - 02	2.03E + 10	2.75E + 09	1.24E - 06	0.00312	0.000173	5.37E - 05	0.001619	0.006478
			0.013	2.30E + 10	5.50E + 09	2.04E - 06	0.005263	0.000291	9.06E - 05	0.002731	0.010926
			1.17E - 02	2.58E + 10	2.75E + 09	3.09E - 06	0.008158	0.000451	0.00014	0.004234	0.016938
Ka 9.1	33	7	1.02E - 02	2.95E + 10	3.50E + 09	5.14E - 06	0.014053	0.000776	0.00024	0.007293	0.029177
			0.0091	3.30E + 10	7.00E + 09	7.75E - 06	0.021917	0.001211	0.00038	0.011374	0.045506
			8.22E - 03	3.65E + 10	3.50E + 09	1.13E - 05	0.032933	0.001819	0.00057	0.017091	0.068379
Q 7.3	41	8.3	8.14E - 03	3.69E + 10	4.15E + 09	1.17E - 05	0.034215	0.001889	0.00059	0.017756	0.07104
			0.0073	4.10E + 10	8.30E + 09	1.73E - 05	0.052923	0.002922	0.00091	0.027465	0.109885
			6.64E - 03	4.52E + 10	4.15E + 09	2.42E - 05	0.077104	0.004255	0.00132	0.040013	0.160094
v 4.9	61	14	5.56E - 03	5.40E + 10	7.00E + 09	4.54E - 05	0.157763	0.008701	0.0027	0.081867	0.327575
			0.0049	6.10E + 10	1.40E + 10	6.98E - 05	0.260687	0.01437	0.00445	0.135273	0.541289
			4.41E - 03	6.80E + 10	7.00E + 09	9.91E - 05	0.396681	0.021856	0.00675	0.205836	0.82368
w 3.2	94	20.5	3.58E - 03	8.39E + 10	1.02E + 10	0.000194	0.917043	0.05047	0.01555	0.47582	1.904239
			0.0032	9.40E + 10	2.05E + 10	0.000272	1.432995	0.07881	0.02425	0.743501	2.975676
			2.88E - 03	1.04E + 11	1.02E + 10	0.000369	2.182619	0.119948	0.03684	1.132394	4.532404

Table 2: The Planck radiation intensities for astro - bodies in frequencies in K, Ka, Q, V and Wbands of WMAP.

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stars as shown in Table 3. To summarize Table 3: An example Thermal Flux (Vakradiation) and its sum for stars in a square degree is shown. Numerical Calculations are done by the author for stars in the square degree formed from RA=0 to 1 degree and Dec=0 to 1 degree. The data of stars like Identification Number, RA, DEC, Magnitudes, Spectral class etc., were taken from Tycho 2 Catalogue, For data the other Square degrees the author can be contacted or Tycho2 catalogue can be referenced. This Table 3 is for reference only as there are many such tables which were not shown.

Vakradiation contribution in some selected square degrees due to stars

For a Good star density plot see the "Guide" in Tyco-2 catalogue directory. Now we will calculate the Vakradiation contributions due to these stars as shown in Table 3. The other square degrees were calculated in a similar fashion, but due to space availability they were not shown. They can be supplied to anyone who so ever interested, by contacting me. The resulting calculations were shown in a separate table which was not shown in this paper. The Table 4 gives the total number of stars and their masses calculated from space densities in Milky Way as shown in encyclopaedia Britannica. We ignored the stars and low-density components like dark companions, long period variables, RR Lyrae, Cepheids, Planetary nebulas, Open clusters and Globular clusters. All the values in the table are approximate average values. The data in this Table 4 was taken from "Milky Way Galaxy." Encyclopædia Britannica. 2007.

Vakradiation approximations from external Galaxies

To calculate Vakradiation from the external galaxies, the Vakradiation from each star is to be calculated depending on its composition, type, diameter, surface temperature and distance from earth. Total is to be summed. We know well that the properties of Milkyway were studied extensively. For an approximation we will take the external Galaxies also as of same composition as Milkyway as shown in the Table 4. We can take safely; the final difference in Vakradiation values will be negligible, by this assumption mainly because the distances are more. Another assumption is that we will take all the stars in the external galaxy are at the same distance as its center. With these assumptions the following Table 5, was created for theoretical guidance having galaxies of same composition as Milkyway, but with different number of stars and having different external distances from the solar system

There are many types of Galaxies. I feel for Ellipticals, Spirals, and Barred Spirals the above approximation will work. It may not be proper for Globular star clusters and open star clusters, and the approximation

Catalog name	Star Ientification number	Right Asc Deg	Decl Deg	BT Magnitude	VT magnitude	Spectral Class of the star according to (BT - VT)	Absolute Magnitude of the star according to (BT - VT)	Distance=10^((m - M + 5)/5) in parsecs =d	Thermal flux factor = 5.7604e - 8(Ts^4)* (Rs^2)/(pc^2) =f	Theramal flux = 5.7604e - 8 (Ts^4)* (Rs^2)/ (pc^2*d^2)	Thermal flux SUM
tycho2 main	0001 00901 1	0.044853	0.863973	12.991	12.54	F3	2.6	954.7331	1.25E - 07	1.37E - 13	
tycho2 main	0001 00870 1	0.057487	0.22003	11.967	11.275	G0	3.8	303.7694	5.11E - 08	5.54E - 13	
tycho2 main	0001 01167 1	0.115566	0.205058	9.81	9.36	F3	2.6	220.7496	1.25E - 07	2.56E - 12	
tycho2 main	0001 00755 1	0.11809	0.736187	11.579	10.741	G5	4.5	171.0472	3.48E - 08	1.19E - 12	
tycho2 main	0001 01009 1	0.137243	0.720997	12.601	12.238	F1	2.2	1002.458	1.64E - 07	1.63E - 13	
tycho2 main	0001 00800 1	0.143688	0.174769	11.646	11.27	F1	2.2	641.5522	1.64E - 07	3.99E - 13	
tycho2 main	0001 01015 1	0.162932	0.222932	9.874	8.284	K9	8.5	8.475786	2.99E - 09	4.17E - 11	
tycho2 main	0001 01058 1	0.166804	0.315053	11.798	11.015	G2	4	244.8533	4.4E - 08	7.34E - 13	
tycho2 main	0001 00145 1	0.258504	0.817692	11.995	11.766	A7	1.7	1021.123	5.03E - 07	4.82E - 13	
tycho2 main	0001 00704 1	0.28077	0.798662	12.253	12.171	A2	1	1708.929	2.65E - 06	9.09E - 13	
tycho2 main	0001 01115 1	0.351025	0.251565	11.135	10.608	F5	3	325.1726	9.39E - 08	8.88E - 13	
tycho2 main	0001 00451 1	0.365086	0.301584	10.483	9.34	K1	5.8	48.68846	1.65E - 08	6.95E - 12	
tycho2 main	0001 00816 1	0.394471	0.110649	12.634	12.682	B9	0.25	3070.888	9.78E - 06	1.04E - 12	
tycho2 main	0001 01040 1	0.398487	0.444806	12.343	11.562	G2	4	315.0228	4.4E - 08	4.43E - 13	
tycho2 main	0001 00976 1	0.401593	0.235959	11.855	10.745	K1	5.8	93.11508	1.65E - 08	1.9E - 12	
tycho2 main	0001 01044 1	0.453075	0.604975	12.927	12.619	A9	2	1312.974	2.68E - 07	1.55E - 13	
tycho2 main	0001 01021 1	0.484183	0.434852	12.315	11.885	F3	2.6	706.7405	1.25E - 07	2.5E - 13	
tycho2 main	0001 00981 1	0.491394	0.128582	10.248	9.395	G5	4.5	91.96996	3.48E - 08	4.12E - 12	
tycho2 main	0001 00603 1	0.496081	0.869961	12.496	11.66	G5	4.5	261.1873	3.48E - 08	5.11E - 13	
tycho2 main	0001 00286 1	0.526988	0.415348	9.634	9.167	F4	2.8	184.0747	1.09E - 07	3.2E - 12	
tycho2 main	0001 00867 1	0.546582	0.473283	10.774	10.335	F3	2.6	346.0174	1.25E - 07	1.04E - 12	
tycho2 main	0001 00807 1	0.622976	0.39155	12.826	11.362	K7	7.6	53.21671	4.8E - 09	1.69E - 12	
tycho2 main	0001 00970 1	0.781387	0.088983	12.051	11.307	G2	4	280.5485	4.4E - 08	5.59E - 13	
tycho2 main	0001 00154 1	0.869259	0.749529	12.692	12.021	F9	3.6	470.0261	5.8E - 08	2.63E - 13	
tycho2 main	0001 00558 1	0.959742	0.617998	11.644	10.004	K9	8.5	18.67583	2.99E - 09	8.58E - 12	
tycho2 main	0001 00939 1	0.960749	0.775664	10.552	10.187	F1	2.2	389.7894	1.64E - 07	1.08E - 12	8.15E - 11
hipparcos	56	0.162832	0.222939	9.861	8.276	K0	1.34725		2.99E - 09	3.59E - 14	

tycho 2 supplement bright stars = Nil.

tycho 2 supplement stars near bright stars = nil.

No Galaxies found in many of the catalogs in this square degree.

Table 3: Stars in Tycho-2 catalog stars located in a square degree with RA (0 to 1) and Dec (0 to 1).

Object/Type of star	density (solar mass per cubic light-year)	Quantity in solar Masses	Average solar mass per type	Number of Stars
O, B stars	0.00003	2434734307	39	62429085
A, F stars	0.0001	8115781022	2.45	3.313E + 09
dG, dK stars	0.0004	32463124087	0.95	3.417E + 10
dM stars	0.0008	64926248174	0.3	2.16E + 11
gG, gK stars	0.00003	2434734307	1	2.435E + 09
gM stars	0.0000003	24347343.07	0.25	97389372
Dark companions	0.00014	11362093430		
White dwarfs	0.0002	16231562044	0.3	5.411E + 10
Long - period variables	3.00E - 08	2434734.307		
RR Lyrae stars	3.00E - 10	24347.34307		
Cepheids	3.00E - 08	2434734.307		
Planetary nebulas	1.50E - 10	12173.67153		
Open clusters	0.0000011	89273591.24		
Globular clusters	3.00E - 08	2434734.307		
Total=		1.38E + 11		3.11E + 11
Total Milky way volume = 8.11578E + 13 Lightyear^3				

Table 4: Approximate Space densities of stars in Milky way.

Redshift W50 km/s	Distance D (W50) in MPC	Thermal flux for Star "O0" **** See Note	Different spectral Classes of stars in Galaxy	Totals: Stars in Milkyway	Totals: Stars in Small Galaxy reduced by 0.0001	Watts/m^2 galaxy radiation at Sun	Watts/m^2 small galaxy radiation at Sun
1	0.02	3.72E - 10	O0 - M9	3.88E + 10	3876407	0.004173	4.17E - 07
10	0.2	3.72E - 12	O0 - M9	3.88E + 10	3876407	4.17E - 05	4.17E - 09
20	0.4	9.3E - 13	O0 - M9	3.88E + 10	3876407	1.04E - 05	1.04E - 09
30	0.6	4.13E - 13	O0 - M9	3.88E + 10	3876407	4.64E - 06	4.64E - 10
40	0.8	2.32E - 13	O0 - M9	3.88E + 10	3876407	2.61E - 06	2.61E - 10
50	1	1.49E - 13	O0 - M9	3.88E + 10	3876407	1.67E - 06	1.67E - 10
60	1.2	1.03E - 13	O0 - M9	3.88E + 10	3876407	1.16E - 06	1.16E - 10
70	1.4	7.59E - 14	O0 - M9	3.88E + 10	3876407	8.52E - 07	8.52E - 11
80	1.6	5.81E - 14	O0 - M9	3.88E + 10	3876407	6.52E - 07	6.52E - 11
90	1.8	4.59E - 14	O0 - M9	3.88E + 10	3876407	5.15E - 07	5.15E - 11
100	2	3.72E - 14	O0 - M9	3.88E + 10	3876407	4.17E - 07	4.17E - 11
108	2.16	3.19E - 14	O0 - M9	3.88E + 10	3876407	3.58E - 07	3.58E - 11
200	4	9.3E - 15	O0 - M9	3.88E + 10	3876407	1.04E - 07	1.04E - 11
300	6	4.13E - 15	O0 - M9	3.88E + 10	3876407	4.64E - 08	4.64E - 12
400	8	2.32E - 15	O0 - M9	3.88E + 10	3876407	2.61E - 08	2.61E - 12
464	9.28	3.72E - 16	O0 - M9	3.88E + 10	3876407	4.17E - 09	4.17E - 13
500	10	1.49E - 15	O0 - M9	3.88E + 10	3876407	1.67E - 08	1.67E - 12
600	12	1.03E - 15	O0 - M9	3.88E + 10	3876407	1.16E - 08	1.16E - 12
700	14	7.59E - 16	O0 - M9	3.88E + 10	3876407	8.52E - 09	8.52E - 13
800	16	5.81E - 16	O0 - M9	3.88E + 10	3876407	6.52E - 09	6.52E - 13
900	18	4.59E - 16	O0 - M9	3.88E + 10	3876407	5.15E - 09	5.15E - 13
999	19.98	3.73E - 16	O0 - M9	3.88E + 10	3876407	4.18E - 09	4.18E - 13
1000	20	3.72E - 16	O0 - M9	3.88E + 10	3876407	4.18E - 09	4.18E - 13
2500	50	5.95E - 17	O0 - M9	3.88E + 10	3876407	6.68E - 10	6.68E - 14
**** Note : - Thermal flux for Star of Type "O0" for example, is shown in this table							
using the formula 5.7604e - 8 (Ts^4)*(Rs^2)/(d^2)							

Table 5: Thermal flux from Galaxies like Milky way and small Galaxies at different distances.

may not hold. And Nebulae, gaseous Nebulae, diffuse Nebulae etc, may not come into the class of Galaxies at all due to many reasons. Sometimes there may not be stars at all. They can be at varying low temperatures even. We will consider Galaxies in this paper. We will ignore other star clusters, Nebulae etc.

In Table 5, first column gives the Red shift for W50. We have converted this into MPC by taking Ho=50 Km/MPC in the relation “v=cz=Ho D”. Using the Vak radiation relation we calculated the third column for O0 stars. Similar calculations were done for the other types of stars O1 to M9 and multiplied by number of stars in that type. A total gives the galaxy radiation in that distance. A smaller galaxy is having lesser number of stars by the star factor. In other words Table 5 the Vakradiation (Thermal flux) from Galaxies like Milkyway and from small Galaxies (Globular Clusters) situated at various distances and redshifts. Formula is taken from Wikipedia. Numerical Calculations are done by the author. This table is also for assistance only as this gives

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guidance at one glance.

Absorption of Radiation from Inter Stellar and Galaxy Media

The radiation coming from external Galaxies gets absorbed partially, en-route to solar system by interstellar or intergalactic media. This radiation at first gets partially scattered and partially gets absorbed, later the remaining part only passes through. All these are non-linear processes, and are very difficult to approximate. Incidental energy is always higher, and only a portion of it gets pass through.

Total Vakradiation Approximation Due to Stars and Galaxies

Let's summarize what we have done till this point. We saw in Table 1, the Vakradiation emitted by circular disk or a spherical disk at a temperature from 2°K to 5°K to a sensor. Now let's sum up our calculations done in different Tables 2-5. From the above discussion of "Stars from Tycho-2 and Hipparcos" these catalogs represent only a small portion (1 part in 80,000) of Milkyway stars. There is no way of calculating the total by using properties all 10^{11} stars in Milkyway, due to insufficient data. This set of catalogs has the highest number of stars from a single source "Hipparcos satellite", away from earth's atmosphere, over which I could put my hands. The star densities from Hipparcos and Tycho-2 catalogs, stars per square degree sampling given in the 'Guide' (see ref: Hipparcos website) looks very much similar to WMAP outputs!

Now let's prepare a table showing VAKRADIATION form sensors and at that point of measurement (Note that VAKRADIATION does not depend on frequency, it is total radiation in watts/m^2). See Table 6. It gives some selected square degrees all over the celestial sphere, their descriptions and constellation names. Next section gives number of stars present in those square degrees from Hipparcos and Tycho-2 catalogs. Vakradiation contribution due to stars and Vakradiation approximations from external Galaxies in those square degrees, are also given in Table 6. The Galaxies given are based on various small public catalogs available on Internet. Effects of absorption of radiation from inter stellar media was approximated based on fact "The stars in the Galaxy, especially along the Milky Way, reveal the presence of a general, all-pervasive interstellar medium by the way in which they gradually fade with distance. This occurs primarily because of interstellar dust, which obscures and reddens starlight. On the average, stars near the Sun are dimmed by a factor of two for every 3,000 light-years. -Encyclopedia-Britannica ".

Effect of Interstellar Medium (dust) on Vakradiation and Absorption

Dust absorbs, scatters, re-radiates, and reflects parts of incidental radiation and the remaining portion will be transmitted. Dust clumps are non-uniformly placed. There is a lot of work has been done on this subject. Some of the important deductions by earlier authors relevant to our case can be as follows. Firstly the radiative transfer models for realistic dust/stars configurations simulating late-type galaxies, including multiple scattering, have been computed either via analytical approximations [4-8]. D*ust scattering is not isotropic*: the scattering angle is smaller the shorter the wavelength of a photon, as described by the scattering phase function asymmetry parameter [9,10].

Here we stress that, as a result of the radiative transfer of photons with different wavelengths through a realistic dusty medium, the attenuation function $A\boldsymbol{\lambda}$ (or $\boldsymbol{T}_{att,}\, \boldsymbol{\lambda}$) will be different from the extinction curve assumed for the individual dust grains. The reason is twofold. First, radiative transfer determines both absorption and scattering, for a given extinction curve [11], taking into account the relative distribution of stars and dust within the system and with respect to the outside observer, and the structure of the dusty medium [12]. Second, the transfer of radiation is investigated throughout the whole system, so that even lines of sight different from the observer's one can contribute to the observed radiation. For a more extensive explanation, we refer the reader to Calzetti (2001) [13]. For the light received by the outside observer and produced either in the bulge or in the disk at a given wavelength, the fraction that is scattered by the dust corresponds up to

Square degree				VAKRADIATION from stars of (Hipparcos + Tycho - 2)			VAKRADIATION from External galaxies				VAKRADIATION from Stars and Galaxies	
RA hr m s	Dec deg m	Description	Constellation	No of stars	from stars in sq degree	Effective 18 layers	No	Type	VAKRADIATION	Effect of inter - Galaxy dust	VAKRADIATION Total	Temperature from Stars and Galaxies degK
											3.34E - 06	2.76
0	0	Start	Pisces	26	8.15E - 11	1.47E - 09	1	Spiral	4.96E - 06	0.0375	1.88E - 07	1.343313
6	0	1st qr	Orion	44	1.25E - 08	2.24E - 07	1	Open star cluster	1.67E - 10	0.0375	2.25E - 07	1.405048
12	0	2nd qr	Virgo	22	4.71E - 10	8.48E - 09	2	Spiral	2.13E - 06	0.0375	1.68E - 07	1.306957
18	0	3rd qr	Ophiuchus	43	4.82E - 09	8.68E - 08	1	Spiral Galaxy	2.61E - 06	0.0375	1.85E - 07	1.337983
17 h 45 m 37.224s	- 28d56'10.23"	Milkyway center	Sagittarius	83	1.19E - 08	2.14E - 07	1	open star cluster	4.64E - 10	0.0375	2.14E - 07	1.387571
20 h 36 m	49d35'	MW Disk 6 hr	Cygnus	30	4.22E - 12	7.59E - 11	2	Spiral	2.61E - 06	0.0375	1.96E - 07	1.357593
5 h 57 m	42d49'	Oppositecenter: Disk 12 hr	Auriga	46	6.96E - 10	1.25E - 08	1	Spiral Galaxy	4.96E - 06	0.0375	1.98E - 07	1.362402
9 h 20 m	- 48 d 29 m	MW Disk 18 hr	Vela	74	2.30E - 09	4.14E - 08	2	Spiral	1.82E - 06	0.0375	1.78E - 07	1.325608
12 h 51 m 26.262s	27d07'42.01"	Milkyway northpole	Arcturus	21	5.58E - 10	1.00E - 08	2	Spiral	2.61E - 06	0.0375	2.06E - 07	1.374551
1h0m	- 38d31'	Milkyway Southpole	Sculptor	21	3.43E - 10	6.18E - 09	2	Spiral	2.61E - 06	0.0375	2.02E - 07	1.368064

Table 6: VAKRADIATION from some selected square degrees from stars and external Galaxies. For each sqare degree, its RA & Dec, description, constallation, and no. of stars from Hipparcos and Tycho - 2 Catalogs. I assumed some Galxies as I could not get some bigger catalogs to indicate its effect. Dust attenuation is getting to half for every 3000 light years.

20%-30% of the fraction that reaches the observer without being affected by the dust, for the face-on bulge, and up to 10%-95% for the face-on disk, as a function of the opacity and the structure of the dusty ISM [14]. All these simulation approximations are as seen by an observer outside the Galaxy. Here we are observing from inside of Milkyway, and we will approximate the final resulting values. Depending on frequency, the total attenuation $\boldsymbol{T}_{att,}\,\boldsymbol{\lambda}$ can be averaged to 2 magnitudes after many lines of sight. In other words Table 6 gives total Vakradiation and CMB temperature due to stars and Galaxies after absorption in inter stellar/ Galaxy media and uniformity of theoretical CMB per square degree in selected places Milkyway disk for Bulge, Poles and Center.

Total Vakradiation approximation due to stars and Galaxies after absorption in inter stellar/ Galaxy media and uniformity of theoretical CMB per square degree in selected places Milkyway disk for bulge, poles & center Main lobe averaging done by dish antenna according to gain patterns Side lobe contributions from remaining parts of sphere CMB Dish antenna Radiation Pattern

CMB Dish Antenna Radiation Pattern

The dish antenna used in the CMB measurements is a directional antenna, which receives/radiates more power in some directions and less power in other directions. The radiation pattern plot of a generic directional antenna is shown in Figure 4. Here in Figure 4, the dish antenna gain, in the Main lobe region of half power beam width (HPBW) of the main beam show that it is not a pointed single line. It is having conical structure of some fixed solid angle, with its point towards the antenna separated by various nulls. The other half of the gain curve is having parabolic solid curvature. Hence, it is evident that the Main lobe does averaging of what it sees in its half power beam. As a matter of fact, the antenna sees in all the directions, and gives out a total of all its signals from all directions. Let's see some definitions [15]. The half power beam width (HPBW) can be defined as the angle subtended by the half power points of the main lobe. Main Lobe: This is the radiation lobe containing the direction of maximum gain. Minor Lobe: All the lobes other than the main lobe are called the minor lobes. These lobes represent the radiation in undesired directions. The level of minor lobes is usually expressed as a ratio of the power density in the lobe in question to that of the major lobe. This ratio is called as the side lobe level (expressed in decibels). Back Lobe: This is the minor lobe diametrically opposite the main lobe. Side Lobes: These are the minor lobes adjacent to the main lobe and are separated by various nulls. Side lobes are generally the largest among the minor lobes. In most antenna systems, minor lobes are undesired. Hence a good antenna design should minimize the minor lobes. And another important point to note that transmitting and receiving gains and antenna patterns are identical [15].

If the total power radiated by the isotropic antenna is P, then the power is spread over a sphere of radius r, so that the power density S at this distance in any direction is given as:

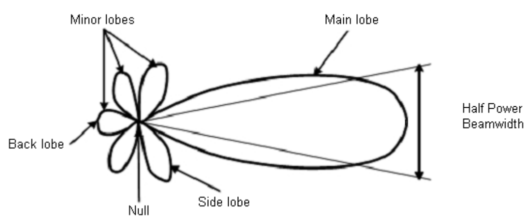

Figure 4: Radiation pattern of a directional antenna.

$$S = \left(\frac{P}{Area}\right) = \left(\frac{P}{4\pi\ r^2}\right)$$

Then the radiation intensity for this isotropic antenna U_i can be written as:

$$U_j = r^2 S = \left(\frac{P}{4\pi}\right)$$

An isotropic antenna is not possible to realize in practice and is useful only for comparison purposes.

Directivity

The directivity of an antenna has been defined as "the ratio of the radiation intensity in a given direction from the antenna to the radiation intensity averaged over all directions". $D=U/U\ i=4\pi U/P$ where D is the directivity of the antenna, U is the radiation intensity of the antenna. Sometimes, the direction of the directivity is not specified. In this case, the direction of the maximum radiation intensity is implied and the maximum directivity as, $D_{max}=U_{max}/U\ i=4\pi U_{max}/P$ where D_{max} is the maximum directivity, U_{max} is the maximum radiation intensity. Directivity is a dimensionless quantity, since it is the ratio of two radiation intensities. Hence, it is generally expressed in dBi. The directivity of an antenna can be easily estimated from the radiation pattern of the antenna. An antenna that has a narrow main lobe would have better directivity, then the one which has a broad main lobe, hence it is more directives.

Gain

The gain of an antenna in a given direction is the amount of energy radiated in that direction compared to the energy an isotropic antenna would radiate in the same direction when driven with the same input power. Usually we are only interested in the maximum gain, the direction in which the antenna is radiating/receiving most of the power. An antenna with a large aperture has more gain than a smaller one; just as it captures more energy from a passing radio wave, it also radiates more energy in that direction.

Aperture efficiency/efficiency

Consider a dish antenna pointed at an isotropic antenna transmitting some distance away. We know that the isotropic antenna radiates uniformly in all directions, so it is a simple matter of spherical geometry to calculate how much of that power should be arriving at the dish over its whole aperture. Now we measure how much power is being received from the dish (at the electrical connection to the feed) - never greater than is arriving at the aperture. The ratio of power received to power arriving is the aperture efficiency. How much aperture efficiency should we expect? For dishes, all the books say that 55% is reasonable, and 70 to 80% is possible with very good feeds.

The radiation pattern of an antenna is a plot of the far-field radiation properties of an antenna as a function of the spatial co-ordinates which are specified by the elevation angle θ and the azimuth angle φ. More specifically it is a plot of the power radiated (or received) from an antenna per unit solid angle which is nothing but the radiation intensity. Let us consider the case of an isotropic antenna. An isotropic antenna is one, which receives or radiates equally in all directions. Suppose an antenna has 20 dB of gain in some direction. That means it is receiving 100 times as much power in that direction compared to radiation from an isotropic receiver, which is uniformly distributed over the in all directions (all solid degrees) which surrounds it. If all the energy from the 20 dB gain antenna were beamed from the center of that same sphere, then it would pass through an area 100 times smaller than the total surface of the sphere. Since there are 41,253 solid degrees in a sphere, the radiation must be concentrated in 1/100th of that, or roughly 20 degrees beam width. The larger the gain, the smaller is the beam width. Let's suppose that we take our case, an antenna with a 1 degree beam width, and in all other directions the average radiation was 40 dB down from the main lobe. This seems like a pretty good antenna! Yet when we do the calculation, only 19.5% of the energy is in the main lobe, with the rest in the other 41252/41253 of a sphere. Obviously the maximum efficiency this antenna can have is 19.5%.

Results and Discussion

Results of calculations

Let us take the Main lobe averaging done by dish antenna according to gain patterns and Side lobe contributions from remaining parts of sphere before going into the final summation result in Table 7. Theoretical VAKRADIATION (for calculating the theoretical CMB) from stars and Galaxies after dust attenuation, scattered light received in this direction due to interstellar and inter Galaxy dust, averaging done dish antenna due to main lobe, minor-lobe radiation received from all the directions other than main lobe. All these factors contribute to actual measured CMB; actual values depend on place to place, direction to direction. Major powerful/prominent sources of microwave radiation like Sun, Planets, Moon and asteroids etc are avoided. We can now see clearly with all these physical contributing factors to measured CMB, hence no pure mathematical entity like Big bang singularity is necessary to create the actual measured CMB. The measured CMB radiation is also fairly uniform, in all over the sky in all the directions. This is mainly because stars and Galaxies seen in all the directions from earth. It will not be uniform if we shift our observing position to the edge of Milky way or to some position outside of it, but not to inside of some other Galaxy. There it can be highly lumpy or directional.

Now it is shown that theoretical CMB (using Vakradiation) is uniform. Big bang based cosmologists did not exclude Star and Galaxy radiation actual measurements. The measured CMB created the thoughts of Decoding Reality for the last 20 years. Additionally, there is no experiment that shows creation of matter from Information or human thinking or artificial thinking by a machine or even from empty space. Hence the concept Universe as being made from just information is wrong. Information describes the Universe. Universe is materialistic. The working of Universe depends resultant vectorial Universal Gravitational Force acting on a particular body for creating movements in the body relative to the other bodies, at that instant of time but not on information.

Table 7 gives the final summation results. Theoretical VAKRADIATION from stars and Galaxies after dust attenuation, scattered light received in this direction due to interstellar and inter Galaxy dust, averaging done dish antenna due to main lobe, minor-lobe radiation received from all the directions other than main lobe. All these factors contribute to CMB, actual values depend on place to place, direction to direction and from time to time. TIME variations depend mainly on radiation scattering, and Major powerful/prominent sources of microwave radiation like Sun, Planets, Moon and asteroids etc. These radiations and their directions are well known, and they are avoided by computer calculations. We can now see clearly with all these physical contributing factors to CMB, no pure mathematical entity like Big bang singularity is necessary to create CMB. In other words Table 7 is the concluding final table showing the calculations done by the author for TEN different square degrees spaced uniformly all over the Celestial sky calculated from the data available from Tycho2 Star catalogue and Galaxy Catalogues giving a CMB temperature of 2.76 °Kelvin.

The CMB radiation is also fairly uniform, in all over the sky in all the directions. This is mainly because stars and Galaxies seen in all the directions from earth. It will not be uniform if we shift our observing position to the edge of Milkyway or to some position outside of it, but not to inside of some other Galaxy. There it can be highly lumpy or directional.

Evidences

The grate cosmological-voids and bright spots present in the in the CMB observations are the grate evidences for this theory. These can be seen in the WMAP observations as published.

The Great Cosmic Nothingness and WMAP Extra galactic point sources/Bright spots provide grate evidence for the above basis.

Discussion

Creation of matter from empty space: "Ex Nihilo" or Something from Nothing or in other words, the Bigbang, or creation of matter

Square degree		Stars and Galaxies		Scattered radiation		MW DISH Antenna		CMB Temperature	
RA hr m s	Dec deg m	VAKRADIATION Total	Temperature degK	Scattered radiation due to ISM or dust	total after addition of dust scattering	Additional radiation due to minorlobes	Total after addition of minorlobe	Final CMB Temp = sigma (wm^2/k4) =	Deviation from average temperature
0	0	1.88E - 07	1.343313	1.40E - 06	1.59E - 06	1.59E - 06	3.18E - 06	2.726171	- 2.09E - 03
6	90	2.25E - 07	1.405048	1.40E - 06	1.62E - 06	1.60E - 06	3.23E - 06	2.735575	7.32E - 03
12	180	1.68E - 07	1.306957	1.40E - 06	1.57E - 06	1.59E - 06	3.16E - 06	2.721166	- 7.09E - 03
18	270	1.85E - 07	1.337983	1.40E - 06	1.58E - 06	1.59E - 06	3.18E - 06	2.725413	- 2.85E - 03
17 h 45 m 37.224 s	266.4051	2.14E - 07	1.387571	1.40E - 06	1.61E - 06	1.60E - 06	3.21E - 06	2.732794	4.54E - 03
20 h 36 m	309	1.96E - 07	1.357593	1.40E - 06	1.60E - 06	1.60E - 06	3.19E - 06	2.728243	- 1.59E - 05
5 h 57 m	89.25	1.98E - 07	1.362402	1.40E - 06	1.60E - 06	1.60E - 06	3.19E - 06	2.728954	6.96E - 04
9 h 20 m	140	1.78E - 07	1.325608	1.40E - 06	1.58E - 06	1.59E - 06	3.17E - 06	2.723686	- 4.57E - 03
12 h 51 m 26.262 s	192.8594	2.06E - 07	1.374551	1.40E - 06	1.61E - 06	1.60E - 06	3.20E - 06	2.730783	2.52E - 03
1 h 0 m	15	2.02E - 07	1.368064	1.40E - 06	1.60E - 06	1.60E - 06	3.20E - 06	2.729801	1.54E - 03
		Total X 0.805 (minor lobes) = 1.28E - 06				CMB Average Temp = 2.728259			

Table 7: Concluding table showing THEORETICAL CMB temperature obtained from some selected square degrees using totals of VAKRADIATION from Stars and Galaxies, Scattered radiations due to interstellar and Inter Galaxial dust and addition of radiation due to Minorlobes of a dish antenna of accuracy one square degree. Here we took about 10 selected square degrees. The more accurate measurements will give better theoretical results.

from empty space as stated by Steady State theory is the start of chaotic physics that generated confusion in the minds of innovative thinkers in the field of Cosmology. Words from Bible and mathematical singularities were combined together to create this chaotic situation! Then the so called relics of Cosmic Microwave Background (CMB) **INTERPRETTED** from the pictures by COBE and WMAP satellites further added fuel to this confusion. The mathematical singularities are wrongly **IMPOSED** on WMAP observational data/information. The WMAP pictures are neither memories nor indications of future formations of Galaxies in the Universe. They are nothing but Star and Galaxy radiation in Microwave region, measured by various satellites or Balloon Experiments, which is reality. In these experiments while doing measurements, nobody could point their radar to a direction where there is NO Planet, Star or Galaxy etc. The earlier situation in late 1940's before 1970's was different. The known stars and Galaxies at that time were very less. That time they thought this microwave radiation is probably from space. But today the star and Galaxy catalogues show tens of thousands or even few hundreds of thousand times more entries in those catalogues. So that way, there was no Bigbang generated CMB measured till now. Whatever the CMB radiation we have measured is nothing but Star and Galaxy light.

One can see a supporting paper on CMBR by the author in a FQXi forum in the references.

I want to say a few words about Dynamic Universe Model. This may be a little off track to the theme of this paper. The Macro Universe is very orderly as shown by Dynamic Universe Model. No singularities and no collisions between bodies. No Dark matter, No dark energy, No Big bang. No Creation of matter from empty space. Virtual realities are not required to explain any concept. There are no chaos in this physically existing Astrophysical and Macro-physical Universe; hence laws of Thermodynamics are not applicable to the motions of Stars and Galaxies. In Dynamic Universe Model no imagination or imaginary numbers or imaginary time are used. Any calculations done in Dynamic Universe Model are based on real hard observations. There are no integral and differential equations used in the tensors used in Dynamic Universe Model. That way those thousands of equations used in Dynamic Universe Model give only one set of coordinate values for the set of point masses at that moment of time. Dynamic Universe Model uses flat Cartesian coordinates in three dimensional space and linearly moving time. Further data on Dynamic Universe model can be found in references. Let us come back into our discussion on CMB.

Dynamic universe model introduction: Dynamic universe model is different from Newtonian static model, Einstein's [3,16] Special & General theories of Relativity, Hoyle's [17] Steady state theory, Bekenstein's MOND [18], M-theory and String theories or any of the Unified field theories. It is basically computationally intensive real observational data based theoretical system. It is based on non-uniform densities of matter distribution in space. There is no space time continuum. It uses the fact that mass of moon is different to that of a Galaxy. No negative time. No singularity of any kind. No divide by zero error in any computation/calculation till today. No black holes, No Big bang or no many minute Big bangs. All real numbers are used with no imaginary number. Geometry is in Euclidian space. Some of its earlier results are non-collapsing non symmetric mass distributions. It proves that there is no missing mass in Galaxy due to circular velocity curves. Today it tries to solve the Pioneer anomaly. It is single closed Universe Model.

Hymn of Creation in Rugveda slokas [19] can be the starting point of Dynamic universe model. This Hymn says nobody knows how the universe started including Gods, which can safely be concluded as there was no start to the Universe at all. We can clearly see that our universe is not a Newtonian type static universe. There is no Big bang singularity, so "What happened before Big bang?" question does not arise. Ours is neither an expanding nor contracting universe. It is not infinite but it is a closed finite universe. Our universe is neither isotropic nor homogeneous. It is LUMPY. But it is not empty. It may not hold an infinite sink at the infinity to hold all the energy that is escaped. This is closed universe and no energy will go out of it. Ours is not a steady state universe in the sense, it does not require matter generation through empty spaces. No starting point of time is required. Time and spatial coordinates can be chosen as required. No imaginary time, perpendicular to normal time axis, is required. No baby universes, black holes or warm holes were built in. The author published on Dynamic Universe model, four books in Germany [20-24] and many papers were published by him USA and Canada [25-30].

Dynamic universe model evidences: Presence of Blue shifted galaxies in the universe, is the main evidence. HUBBLE DEEP SPACE houses thousands of Blue shifted Galaxies which is one of the greatest mysteries for expanding universe models could not explain.

Our galaxy the Milky way is moving with a speed 454 ± 125 km/s towards l=63° ± 15° and b=-11° ± 14°relative to distant part of samples and 474 ± 164 km/s towards l=167° ± 20° and b=5° ± 20° relative to nearer part of samples. The local group comprising of Milky Way, NGC6822, Andromida galaxy and other dwarf elliptical galaxies, Magellanic clouds rotate about their centers and revolve around a common center. S.M.Faber and David Burstain in their paper " Motions of galaxies in the neighborhood of Local group " {presented in a symposium,' Large scale motions of universe' Princeton 1988,p118} described the STREEMING motions towards the Great Attractor (located at l=309° and b=+18°) by the local group, Virgo cluster, Ursa major, Centaurus, Camelopardalis, Perseus-Pisces etc., clusters with speeds ranging up to 1000km/sec. PLEASE NOTE THE DIFFERENCE IN DIRECTIONS OF MOVEMENT AS WELL AS SPEEDS. All these clusters form a super cluster which also rotate and revolve about each other. Groups of super clusters form Filament structures and to grate walls and so on. This is how our universe is LUMPY and anisotropic even at large scale.

Another piece of supporting evidence for the Dynamic Universe Model was there. There is a considerable discussion was as to whether GA: the Great attractor exists at all. For example D.A. Mathewson, V.L. Ford, M. Buckhorn have measured the peculiar velocities 1355 spiral Galaxies. They find no backside in fall into GA region, rather a bulk flow of about 400 km/s on the scales of 100 ho^{-1} MPC. Thus there is a considerable doubt about the existing of an attracting mass there. Both the parties find streeming motions or bulk flow. If there is NO attracting MASS, then why they are moving? This super cluster must be in revolution motion.

Conclusion

In everyday physics, we use the "Stephan Boltzmann law" and "Planks law". These same laws only are used in this paper to calculate the Cosmic Microwave Background or CMB radiation received on earth in all directions from the sky. No other equation from Dynamic universe model or Einstein equations are used in this paper to do these calculations.

This method explains theoretically about the origin, propagation uniformity of CMB in our universe. Here we theoretically measure the radiation and in turn temperature received in a square degree solid angle at earth. We find this level of radiation is remarkably uniform.

Dicke and Beringer in 1946 and Carl Sagan in 1960 and many others observed and reported Microwave radiation from Sun, Moon and Venus and many astronomical bodies. There are numerous incidences in scientific literature that Microwave radiation is observed from interstellar dust, Galaxy center and stars also. All these incidents tell us Microwave radiation comes from these astronomical bodies.

When Penzias and Wilson in 1965 detected CMBR, the known stars and Galaxies at that time were very less [3]. That time they thought this microwave radiation is probably from space. But today the star catalogues show 2.5 million stars. These catalogued stars are 80 thousand times less than the stars in Milkyway. At that time known the Galaxies are only few hundreds. Now the know Galaxies are thousands of times high.

Here we calculated the radiation and in turn temperature received in all the square degree solid angles at earth theoretically. We find this level of radiation is remarkably uniform. We find the measured values of CMB radiation from various physical experiments and the theoretical calculated values of CMBR from astronomical bodies are same at about 2.76°K.

In addition the extra Galactic Bright spots in CMB (or "Extragalactic Sources" as described by Bennett) are explained by this approach. The dynamic moment of the astronomical bodies around earth will result into small ripples of CMB.

As evidence the Big bang based Cosmologies show the Cosmic Microwave Background (CMB), as relics of Big bang. In this paper we saw about CMB, how it is generated from stars and Galaxies around us.

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