Information, Reality and Relics of Cosmic Microwave Background

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Abstract:

"Material objects are more fundamental" is being proposed in this paper; or in other words "IT from Bit" is true. It is well known that there is no mental experiment, which produced material. There were double slit experiments by John Wheeler which show some mental dependencies on electron behaviour, but still he did not produce material from information. Information describes material properties. But a mere description of material properties does not produce material. Similarly creation of matter from empty space as required in Steady State theory or in Bigbang is another such problem in the Cosmological counterpart. As evidence the Bigbang based Cosmologies show the Cosmic Microwave Background (CMB), as relics of Bigbang. In this paper we will see about CMB, how it is generated from stars and Galaxies around us. And here we show that NO Microwave background radiation was detected till now after excluding radiation from Stars and Galaxies. Pictures by COBE and WMAP satellites show variation in CMB intensities in 10^{-4} scales. In Bigbang based Cosmology, these pictures were discussed as though they are the starting information for the formation of future Galaxies. This information is the counter part of "**IT from Bit or Bit from IT**" in Cosmology. This paper shows a way that we can exclude Cosmology from this concept.

IT from Bit:

"Creation Ex Nihilo" or Something from Nothing or in other words, the Bigbang, or creation of matter 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) pictured by COBE and WMAP satellites further added fuel to this confusion. These mathematical singularities and interpretation of WMAP observational data etc., are 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 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. Explaining CMB through Galaxy and Star radiation is a new concept which is entirely different from the earlier published papers on Dynamic Universe Model by me.

Here I will not go into details of the quantum /micro world. Here I will not be considering the Biological and social relations of homo-sapiens. In this way we study the relation between Information and reality about CMB in this paper.

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 Bigbang. 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.

Origin, Propagation and Uniformity Of CMB In Our Dynamic Universe:

This is a new theoretical approach to explain origin, propagation uniformity of CMB in this dynamic universe. It is well known that SUN, planets, asteroids, stars; Galaxies emit radiation in Microwave range. It was checked that the range covers all the frequencies in the Microwave range including the K, Ka, Q, V and W bands as measured in WMAP mission. Here we try to measure the radiation and in turn temperature received in a square degree solid angle at earth theoretically. We find this remarkably uniform. This may represent the averaging done by main lobe of the dish antenna of few degrees diameter. The side lobe pickup of bright sources in the sky depends on the three-dimensional gain pattern of the dish. This is also analyzed which results into large angle multipole-l systematic errors.

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. 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, known as the

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 lets 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.

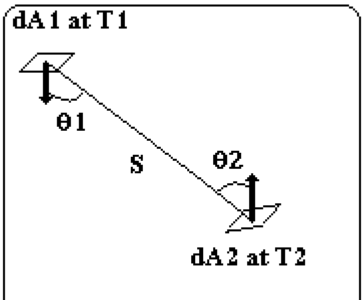

Fig 1. Radiation Heat transfer

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.

$$dQ12 = Ib1. (dA1 \cos \theta1). (dA2.\cos \theta2)/S^2$$

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

$$dQ21 = Ib2. (dA2 \cos \theta2). (dA1.\cos \theta1)/S^2$$

Net heat radiated by dA1 towards dA2 is

$$dQ = dQ12 – dQ21 = dA1.dA2 \cos \theta1.\cos \theta2 (Ib1-Ib2) / S^2$$

In order to determine the total energy radiated from surface1 to surface2 it is necessary to sum the radiation from each dA1 to all dA2. This is accomplished by integrating over A1 & A2 and after substituting for Ib,

$$Q12 = (\sigma (T1^4-T2^4)/ \pi) \int\int (\cos \theta1.\cos \theta2 / S^2)\, dA1.dA2$$

Now lets appropriate 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. Lets us assume the distance S is much larger compared to the radius of star. We approximate the radiating area of star as $\int dA1 = \pi r^2$, cross-section area of star and r is the radius of star. Let θ1 = 0, θ2 = 0 and hence cos θ1 =.1 & cos θ2 = 1.

$$Q12 = (\sigma\, T1^4/ \pi)(\pi r^2 / S^2)\, A2$$

Lets call temperature of the star = Ts = T1 and Radius of star Rs = r

Or

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

Lets call this quantity '(Q12/A2) = V' as Vakradiation. Which 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: 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 centerline 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 Fig 2. Heat radiated from surface A1 towards dA2 is Q12, and is given by…$Q12 = (\sigma (T1^4-T2^4)/ \pi) \int\int (\cos \theta1.\cos \theta2 / S^2)\, dA1.dA2$. 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 = Tcmb = 2.762 degrees Kelvin. Here $\cos^2\theta = [L^2 / (L^2 + x^2)]$ & $y^2 = (L^2 + x^2)$;

$$V = Q12 / dA2 = (\sigma (Tcmb)^4 / \pi) \int_0^R (\cos^2\theta / y^2)\, 2\pi x\, dx$$

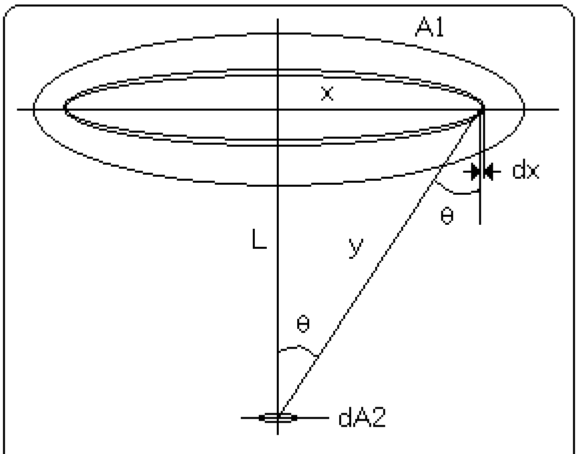

Fig 2: Circular flat disk

$$= Q12 / dA2 = (\sigma\ (Tcmb)^4 / \pi) \int_0^R ([L^2 / (L^2 + x^2)]\ \ [2\pi x / (L^2 + x^2)]\ \ dx$$

$$= (\sigma\ (Tcmb)^4\ \ ((R^2) / (R^2 + L^2))$$

$$= (\sigma\ (Tcmb)^4 /2) \quad \text{when } R = L = 1$$

b) Sensor and a spherical surface dish: 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 Fig 3. Heat radiated from surface A1 towards dA2 is Q12, and is given by…$Q12 = (\sigma\ (T1^4-T2^4)/ \pi) \int\int (\cos\theta 1.\cos\theta 2\ / S^2)\ dA1.dA2$. 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 & cos θ2 = 1, T1 = Tcmb = 2.762 degrees Kelvin.

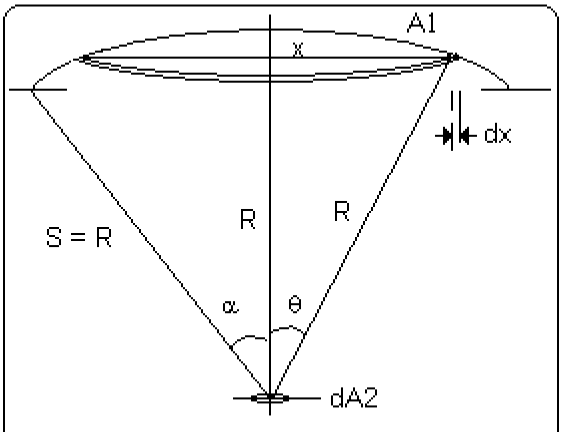

Fig 3 : Sensor with spherical dish

$$V = Q12 / dA2 = (\sigma\ (Tcmb)^4 / \pi) \int_0^\alpha (\cos\theta\ / R^2)\ 2\pi R \sin\theta\ d\theta$$

$$= (\sigma\ (Tcmb)^4 / R)\ \ (\sin^2 \alpha)$$

$$= (\sigma\ (Tcmb)^4)$$

when R = 1 & α = 90°

Table 1 gives the theoretical VAKRADIATION values in watts / meter^2 at various temperatures. The second column gives for a circular flat disk, where as 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.

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

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 $C1 = 8.85 \times 10^{-13}$ Cal.cm^2/Sec 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..

Temperature deg k	Circular disk sensor w / m2	Spherical disk sensor 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 diff sensors at various temperatures.

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
			1.48E-02	2.03E+10	2.75E+09	1.24E-06	0.00312	0.000173	5.37E-05	0.001619	0.006478
K 13	23	5.5	0.013	2.3E+10	5.5E+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
			1.02E-02	2.95E+10	3.50E+09	5.14E-06	0.014053	0.000776	0.000241	0.007293	0.029177
Ka 9.1	33	7	0.0091	3.3E+10	7E+09	7.75E-06	0.021917	0.001211	0.000376	0.011374	0.045506
			8.22E-03	3.65E+10	3.50E+09	1.13E-05	0.032933	0.001819	0.000565	0.017091	0.068379
			8.14E-03	3.69E+10	4.15E+09	1.17E-05	0.034215	0.001889	0.000587	0.017756	0.07104
Q 7.3	41	8.3	0.0073	4.1E+10	8.3E+09	1.73E-05	0.052923	0.002922	0.000907	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
			5.56E-03	5.40E+10	7.00E+09	4.54E-05	0.157763	0.008701	0.002695	0.081867	0.327575
V 4.9	61	14	0.0049	6.1E+10	1.4E+10	6.98E-05	0.260687	0.01437	0.004445	0.135273	0.541289
			4.41E-03	6.80E+10	7.00E+09	9.91E-05	0.396681	0.021856	0.006754	0.205836	0.82368
			3.58E-03	8.39E+10	1.02E+10	0.000194	0.917043	0.05047	0.015554	0.47582	1.904239
W 3.2	94	20.5	0.0032	9.4E+10	2.05E+10	0.000272	1.432995	0.07881	0.024249	0.743501	2.975676
			2.88E-03	1.04E+11	1.02E+10	0.000369	2.182619	0.119948	0.036842	1.132394	4.532404

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

Stars from Hipparcos and Tycho-2 catalogues:

There are 2 x 10^{11} 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. So there are 80,000 layers of stars approximately, which is 2 x 10^{11} stars in Milkyway divided by 2.5 million stars.

Vakradiation contribution in some selected square degrees due to stars:

For a Good star density plot see the "Guide" in Tyco-2 catalog 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 any one who so ever interested, by contacting me. The resulting calculations were shown in the table 4.The table 5 gives the total number of stars and their masses calculated from space densities in Milky Way as shown in encyclopedia 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 ave-rage values. .

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	62429084.78
A, F stars	0.0001	8115781022	2.45	3312563682
dG, dK stars	0.0004	32463124087	0.95	34171709565
dM stars	0.0008	64926248174	0.3	2.16421E+11
gG, gK stars	0.00003	2434734307	1	2434734307
gM stars	0.0000003	24347343.07	0.25	97389372.26
Dark companions	0.00014	11362093430		
White dwarfs	0.0002	16231562044	0.3	54105206812
Long-period variables	3E-08	2434734.307		
RR Lyrae stars	3E-10	24347.34307		
Cepheids	3E-08	2434734.307		
Planetary nebulas	1.5E-10	12173.67153		
Open clusters	0.0000011	89273591.24		
Globular clusters	3E-08	2434734.307		
Total=		1.38089E+11		3.10605E+11
Total Milky way volume =		8.11578E+13 Lightyear^3		

Table 5:Approximate Space densities of stars in Milky way

Vakradiation approximations from external Galaxies:

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
17h45m37.224s	-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
20h36m	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
5h57m	42d49'	Opposite center: Disk 12hr	Auriga	46	6.96E-10	1.25E-08	1	Spiral Galaxy	4.96E-06	0.0375	1.98E-07	1.362402
9h20m	-48d29m	MW Disk 18 hr	Vela	74	2.3E-09	4.14E-08	2	Spiral	1.82E-06	0.0375	1.78E-07	1.325608
12h51m26.262s	27d07'42.01"	Milkyway north pole	Arcturus	21	5.58E-10	1E-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 8. 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.

There are many types of Galaxies. I feel for Ellipticals, Spirals, and Barred Spirals the above approximation will work. They can be due to many reasons. We will ignore other star clusters, Nebulae etc. In Table 6, first column gives the Red shift for W50. We have converted this into MPC by taking Ho = 50 Km/MPC in the relation "v = c z = 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.

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:

Summarizing, 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 us TOTAL up our calculated flux done in different Tables2 to 6. **One can observe stars per square degree sampling given in the 'Guide' (see ref: Hipparcos website) looks very much similar to WMAP outputs!**

Now let us 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 / meter^2). See Table 8. 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 8. The Galaxies given are based on various small public catalogs available on Internet.

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 (w m2 / k4) =	Deviation from average temperature
							3.34E-06	2.76	
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
17h45m37.224s	266.4051	2.14E-07	1.387571	1.40E-06	1.61E-06	1.60E-06	3.21E-06	2.732794	4.54E-03
20h36m	309	1.96E-07	1.357593	1.40E-06	1.60E-06	1.60E-06	3.19E-06	2.728243	-1.59E-05
5h57m	89.25	1.98E-07	1.362402	1.40E-06	1.60E-06	1.60E-06	3.19E-06	2.728954	6.96E-04
9h20m	140	1.78E-07	1.325608	1.40E-06	1.58E-06	1.59E-06	3.17E-06	2.723686	-4.57E-03
12h51m26.262s	192.8594	2.06E-07	1.374551	1.40E-06	1.61E-06	1.60E-06	3.20E-06	2.730783	2.52E-03
1h0m	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 9: 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.

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 (e.g., Byun et al. 1994; Silva et al. 1998; Xilouris et al. 1999; Baes & Dejonghe 2001; Tuffs et al. 2004). 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 (e.g., Draine 2003; see also Gordon 2004 for a recent review).

Here we stress that, as a result of the radiation transfer of photons with different wavelengths through a realistic dusty medium, the attenuation function A_λ (or $\tau_{att,\lambda}$) will be different from the extinction curve assumed for the individual dust grains. The reason is twofold. First, radiation transfer determines both absorption and scattering, for a given extinction curve (see, e.g., Gordon et al. 2003), 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 (see Witt & Gordon 1996). 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). 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 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. (Pierini , Gordon, Witt And Madsen 2004). 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 $\tau_{att,\lambda}$ can be averaged to 2 magnitudes after many lines of sight.

Results and Discussions:

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 9. 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 Bigbang 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 Milkyway 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. Bigbang 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.

With the advent of computer technology, one can simulate many things on computer. Those things can be Scientific, Mathematical, and Information technology, Games or Movies. These simulations are not reality. They are information only. The observations about the surrounding are not just a picture formed in our mind. It is reality. This neighbourhood around the house, around country or around Earth, exists in reality. We observe and collect data about the Universe by our five senses like seeing, touching, smelling etc. We form a picture about that reality in our mind. So when we die, this picture will be completely erased. It does not mean, after ones death, the universe ceases to exist. The universe exists but the person observing it may not exist. That is the reality. We should use our minds to down to earth realistic thinking. There is no point in wasting our brains in total imagination which are never realities. It is something like showing, mixing of cartoon characters with normal people in movies or people entering into Game-space in virtual reality games or Firing antimatter into a black hole!!!. It is sheer a madness of such concepts going on in many fields like science, mathematics, computer IT etc.

Hence we will conclude **IT from Bit** !!

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Table References:

Table 1: Vakradiation numerical calculated from the formulae derived in the paper for different sensors (Page 6)
Table 2: 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.
Table 3A: 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 is for reference only** as there are many such tables which were not shown.
Table 5: "Milky Way Galaxy." Encyclopædia Britannica. 2007. Encyclopædia Britannica Online. 12 Jan. 2007 <http://www.britannica.com/eb/article-68077>.
Table 6: Thermal flux (Vakradiation) from Galaxies like Milkyway and from small Galaxies (Globular Clusters) situated at various distances and redshifts. Formula is from Wikipedia. Numerical Calculations are done by the author. This table is also **for reference only** as this gives guidance at one glance.
Table 8: 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 & Center
Table 9: 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 deg Kelvin.

Technical End-Notes

Table 3A for reference:

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
Star properties given in						Approximate **calculated** Star properties					
tycho2 main	0001 00901 1	0.0448528	0.8639732	12.991	12.54	F3	2.6	954.7331	1.25E-07	1.37E-13	
tycho2 main	0001 00870 1	0.0574866	0.2200304	11.967	11.275	G0	3.8	303.7694	5.11E-08	5.54E-13	
tycho2 main	0001 01167 1	0.1155661	0.2050578	9.81	9.36	F3	2.6	220.7496	1.25E-07	2.56E-12	
tycho2 main	0001 00755 1	0.1180896	0.7361866	11.579	10.741	G5	4.5	171.0472	3.48E-08	1.19E-12	
tycho2 main	0001 01009 1	0.1372426	0.7209969	12.601	12.238	F1	2.2	1002.458	1.64E-07	1.63E-13	
tycho2 main	0001 00800 1	0.1436879	0.1747693	11.646	11.27	F1	2.2	641.5522	1.64E-07	3.99E-13	
tycho2 main	0001 01015 1	0.1629319	0.2229317	9.874	8.284	K9	8.5	8.475786	2.99E-09	4.17E-11	
tycho2 main	0001 01058 1	0.1668039	0.3150526	11.798	11.015	G2	4	244.8533	4.4E-08	7.34E-13	
tycho2 main	0001 00145 1	0.2585043	0.8176925	11.995	11.766	A7	1.7	1021.123	5.03E-07	4.82E-13	
tycho2 main	0001 00704 1	0.2807701	0.798662	12.253	12.171	A2	1	1708.929	2.65E-06	9.09E-13	
tycho2 main	0001 01115 1	0.3510252	0.2515651	11.135	10.608	F5	3	325.1726	9.39E-08	8.88E-13	
tycho2 main	0001 00451 1	0.3650858	0.3015844	10.483	9.34	K1	5.8	48.68846	1.65E-08	6.95E-12	
tycho2 main	0001 00816 1	0.3944708	0.1106492	12.634	12.682	B9	0.25	3070.888	9.78E-06	1.04E-12	
tycho2 main	0001 01040 1	0.3984874	0.4448061	12.343	11.562	G2	4	315.0228	4.4E-08	4.43E-13	
tycho2 main	0001 00976 1	0.4015929	0.2359593	11.855	10.745	K1	5.8	93.11508	1.65E-08	1.9E-12	
tycho2 main	0001 01044 1	0.4530751	0.6049752	12.927	12.619	A9	2	1312.974	2.68E-07	1.55E-13	
tycho2 main	0001 01021 1	0.4841826	0.4348521	12.315	11.885	F3	2.6	706.7405	1.25E-07	2.5E-13	
tycho2 main	0001 00981 1	0.4913939	0.1285824	10.248	9.395	G5	4.5	91.96996	3.48E-08	4.12E-12	
tycho2 main	0001 00603 1	0.4960813	0.869961	12.496	11.66	G5	4.5	261.1873	3.48E-08	5.11E-13	
tycho2 main	0001 00286 1	0.5269883	0.4153483	9.634	9.167	F4	2.8	184.0747	1.09E-07	3.2E-12	
tycho2 main	0001 00867 1	0.5465819	0.4732832	10.774	10.335	F3	2.6	346.0174	1.25E-07	1.04E-12	
tycho2 main	0001 00807 1	0.6229764	0.3915499	12.826	11.362	K7	7.6	53.21671	4.8E-09	1.69E-12	
tycho2 main	0001 00970 1	0.7813873	0.0889827	12.051	11.307	G2	4	280.5485	4.4E-08	5.59E-13	
tycho2 main	0001 00154 1	0.8692585	0.7495286	12.692	12.021	F9	3.6	470.0261	5.8E-08	2.63E-13	
tycho2 main	0001 00558 1	0.9597417	0.6179977	11.644	10.004	K9	8.5	18.67583	2.99E-09	8.58E-12	
tycho2 main	0001 00939 1	0.9607487	0.7756637	10.552	10.187	F1	2.2	389.7894	1.64E-07	1.08E-12	8.14631E-11
tycho 2 supplement bright stars =											
tycho 2 supplement stars near bright stars =											
hipparcos	56	0.1628318	0.222939	9.861	8.276	K0	1.34725		2.99E-09	3.59E-14	
No Galaxies found in many of the catalogs in this square											

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

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. Lets see some definitions (see Lee and Lee 1988 and others). The half power beamwidth (**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 then 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, (see Lee and Lee 1988 for the mathematical proof)

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:

$$S = P/ \text{Area} = P / 4\pi r^2$$

Then the radiation intensity for this isotropic antenna U_i can be written as: $U_i = r^2 S = P / 4\pi$

An isotropic antenna is not possible to realize in practice and is useful only for comparison purposes. **Table 6 for ref:**

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	0.0041727	4.173E-07
10	0.2	3.72E-12	O0-M9	3.88E+10	3876407	4.173E-05	4.173E-09
20	0.4	9.3E-13	O0-M9	3.88E+10	3876407	1.043E-05	1.043E-09
30	0.6	4.13E-13	O0-M9	3.88E+10	3876407	4.636E-06	4.636E-10
40	0.8	2.32E-13	O0-M9	3.88E+10	3876407	2.608E-06	2.608E-10
50	1	1.49E-13	O0-M9	3.88E+10	3876407	1.669E-06	1.669E-10
60	1.2	1.03E-13	O0-M9	3.88E+10	3876407	1.159E-06	1.159E-10
70	1.4	7.59E-14	O0-M9	3.88E+10	3876407	8.516E-07	8.516E-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	5.152E-07	5.152E-11
100	2	3.72E-14	O0-M9	3.88E+10	3876407	4.173E-07	4.173E-11
108	2.16	3.19E-14	O0-M9	3.88E+10	3876407	3.577E-07	3.577E-11
200	4	9.3E-15	O0-M9	3.88E+10	3876407	1.043E-07	1.043E-11
300	6	4.13E-15	O0-M9	3.88E+10	3876407	4.636E-08	4.636E-12
400	8	2.32E-15	O0-M9	3.88E+10	3876407	2.608E-08	2.608E-12
464	9.28	3.72E-16	O0-M9	3.88E+10	3876407	4.173E-09	4.173E-13
500	10	1.49E-15	O0-M9	3.88E+10	3876407	1.669E-08	1.669E-12
600	12	1.03E-15	O0-M9	3.88E+10	3876407	1.159E-08	1.159E-12
700	14	7.59E-16	O0-M9	3.88E+10	3876407	8.516E-09	8.516E-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	5.152E-09	5.152E-13
999	19.98	3.73E-16	O0-M9	3.88E+10	3876407	4.181E-09	4.181E-13
1000	20	3.72E-16	O0-M9	3.88E+10	3876407	4.177E-09	4.177E-13
2500	50	5.95E-17	O0-M9	3.88E+10	3876407	6.676E-10	6.676E-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 6:Thermal flux from Galaxies like Milky way and small Galaxies at different distances

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 directive

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.