

COSMIC MICROWAVE BACKGROUND RADIATION

According to 'MATTER (Re-examined)'

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Abstract: Various types of irrational inflationary models of universe were introduced to oppose possible accumulation of all material bodies at a point due to gravitational attraction between them. As no logical mechanism could produce inflationary universe and maintain its stable state, diverse assumptions including big bang origin of universe were proposed. As no known origin to CMBR was readily available, it was accepted as a proof to these assumed theories. However, CMBR has a logical reason and definite mechanisms of production. These are not linked to big bang creation or inflationary state of universe but to its steady state of existence.

Keywords: Background radiation, photons, big bang, steady state of universe.

Introduction:

Advent of theories on gravitational attraction necessitated all material entities gather at a point. This was contrary to common sense and observation of universe as a whole. As no known physical phenomena could explain widespread and somewhat even distribution of macro bodies, it became necessary to invent new phenomena that could neutralize actions by gravitational attraction between macro bodies in large scale universe. Different proposals were considered by physicists at various times and discarded as their creditability could not be maintained for long. Although quite opposed to common sense, current phenomena that have wider appeal are those related to cosmic inflation theories and 'Big bang' creation of universe. Many physical phenomena are currently misinterpreted to provide creditability to these theories.

One of the misinterpreted phenomena is the presence of cosmic microwave background radiation (CMBR or relic radiation), discovered during 1960s. Three of the most prominent irrational assumptions by which presence of CMBR are misinterpreted and exploited to support inflation theories of universe are: 1). Although space has neither form nor objective existence, it is linked to functional entity, time, to create another form-less entity, space-time continuum, that is able to deform and expand. 2). Although it is believed that on cooling, material bodies contract in size, universe is considered to cool during its expansion. 3). Although light is assumed as mass-less entity that radiates through vacuum, it is considered to behave like sound, which is wave motions of pressure differences in material medium. Many other phenomena, like; chronological development of universe, gravitational waves, photon decoupling, etc. are also assumed at various stages to support these theories.

An alternative concept, presented in the book 'MATTER (Re-examined)' [1], provides logical and consistent explanations to presence of CMBR, gravitational attraction and steady state of universe. This article is a very brief summary taken from the same. All conclusions expressed here are from it. For details, kindly refer to the same.

Radiation:

Radiation may be classified into two – radiation of energy (work) not associated with 3D matter and radiation of 3D matter with associated energy (work). Electromagnetic waves are examples of radiation of energy (work) not associated with 3D matter. They transfer work (distortions) in universal medium from one place to another in the form of cyclic variations in distortion-density. Radiation of 3D matter is in the form of continuous flow of photons in universal medium. Heat rays, light rays, X-rays, gamma rays and cosmic rays are examples of radiation of 3D matter with associated energy (work).

Electromagnetic wave:

Due to self-stabilizing latticework-structures of universal medium, distortions in it cannot remain in one locality. They are transferred from higher distortion-density region to lower distortion-density region. Once the movements of distortions have begun, it can be stopped only by external intervention. Cyclic variations of distortions in universal medium create moving wave-like difference in distortion-density of universal medium. Except for production and reception, they are not associated with 3D matter-particles. Hence they are transmitted through universal medium at the highest possible speed in straight-line paths. Highest possible linear speed through universal medium is that of light. As both electric and magnetic information are associated with waves of difference in distortion-density, they are generally known as electromagnetic waves.

Photon:

Photons are corpuscles of light or other radiations of 3D matter with associated energy (work). Each photon has a segmented spherical (disc-shaped) core of 3D matter, formed by group of quanta of matter under compression from universal medium. Matter-core of each photon is surrounded by a distorted region in universal medium, called inertial-pocket. Inertial-pocket continuously moulds matter-core into appropriate shape, maintains its integrity and stability, moves it at highest possible linear speed and spins it about one of matter-core's diameters at spin speed proportional to its matter-content. Inertial-pocket, being distortions in universal medium, is transferred at the highest possible linear speed through universal medium. Moving inertial-pocket carries 3D matter-core of photon along with it. Distortions in inertial-pocket in any transverse plane (to its linear path) appear similar to electromagnetic wave. Thus photon (light and all other types of radiations) came to be equated with electromagnetic waves. However, radiations of 3D matter have dual nature consisting 3D matter as matter-cores of photons and distortions in inertial-pocket (separately in each plane) as electromagnetic waves. Photon's matter-core spins about one of its diameters, perpendicular to photon's linear path.

Stability of matter-core is sustained by maintaining its internal pressure (due to tendency of constituent quanta of matter to expand) equal to external pressure on it by gravitational actions from universal medium. In stable state of photon's matter-core, its internal pressure is the highest that 3D matter can be compressed to and at which matter-density of 3D matter is equal to matter-density of quantum of matter. Enlargement of matter-core, due to any reason, lowers its internal pressure and permits quanta of matter to escape from photon's matter-core. Similarly, tendency to increase its internal pressure support assimilation of quanta of matter from surrounding universal medium.

In order to maintain stability of photon's matter-core, gravitational actions by universal medium is aided by external pressure created by movements of matter-core through universal medium. All actions on photon's matter-core, including its movements, are carried out by gravitational actions of universal medium. Stable photon has synchronized movements between its inertial pocket and matter-core. Attempts to deflect its path or vary linear or spin motions of matter-core destabilizes photon and initiates stabilization process by universal medium (inertial-pocket). Deflection of photon's path compels universal medium to produce additional distortions in inertial-pocket, so that additional stress produced tends to straighten its path. Variations in (linear or spin) speeds of matter-core change its internal pressure and results in assimilation or abandonment of matter-content.

Inertial-pockets, being distortions in universal medium, unattached to superior 3D matter-particles, can move only at critical speed of light. Attempt to move matter-core faster, with respect to inertial-

pocket, tends to enlarge it by increasing internal pressure. Forward part of matter-core presses into inertial-pocket and assimilates quanta of matter from universal medium into it. As a result, matter-content of photon increases to neutralize action of external effort. Increase in matter-content increases photon's spin speed (frequency). Thus, attempts to increase photon's speeds increase its frequency rather than its speeds. Similarly attempt to slowdown matter-core with respect to inertial-pocket, reduces external pressure on matter-core so that few quanta of matter from matter-core escape into universal medium. As a result, matter-content of photon decreases to neutralize action of external effort. Reduction in matter-content reduces photon's spin speed. Thus, attempts to reduce photon's speeds reduce in its frequency rather than its speeds.

Tired light:

Matter-core of a photon is disc-shaped and it spins about one of its diameters, while moving in linear direction at the speed of light. Due to super-positioning of photon's linear and spin motions, forward spinning segment of its matter-core moves slightly faster and rearward spinning segment moves slightly slower, so that average linear speed of whole photon is stable at critical linear speed. Centrifugal action on matter-core maintains faster moving (forward spinning) segment slightly larger than rearward spinning segment. Centre of spin motion is displaced from geometrical centre towards forward spinning segment. Hence, in stable state of photon, difference of linear speed, with respect to critical speed of light, is lesser for forward spinning segment compared to rearward spinning segment.

During photon's travel through large distances in space, faster moving segment of its matter-core slowly and gradually assimilates quanta of matter from universal medium into its matter-content. At the same time, slower moving segment of its matter-core slowly and gradually discards quanta of matter into universal medium from its matter-content. Magnitudes of differences in speeds are reflected in quantities of quanta of matter accumulated into forward spinning segment and discarded by rearward spinning segment. Every half-spin, roles of segments of matter-core reverse. Thus, there is a gradual but steady funnelling of quanta of matter (matter-content) through matter-core of stable photon.

Change in quantity of 3D matter in photon's matter-core is sum total of quanta of matter assimilated into it and discarded from it. Resultant linear speed of rearward turning segment of photon's matter-core differs by greater margin from critical linear speed. Hence, rate of loss of quanta of matter from photon's matter-core through rearward spinning segment is greater than rate of gain of quanta of matter through forward spinning segment. Rate of exchange of photon's matter-content is too small and facilitates only a gradual loss of its matter-content during photon's travel through very large distances in space. Thus, photons traveling very large distance in space gradually lose their matter-content and thereby lower their frequency. This (is one of the reasons that) gives rise to phenomenon of 'red-shift' noticed in frequency of light, radiated from regions near macro bodies at great distances.

Red-shift is a phenomenon by which original frequency of light or other types of radiations are lowered during course of their travel through large distances in space. Greater the distance of a macro body from observer, larger is shift in frequency of radiation, received from region near that macro body. Frequency of light gradually shifts towards red-side of visual spectrum. Light appears exhausting during its travel and lower its frequency due to lose of matter-content. Hence this trend is also known as phenomenon of 'tired light'.

Higher-frequency photons have greater speed difference between forward-spinning and rearward-spinning segments of their matter-cores. Hence, higher-frequency radiations are red-shifted by greater rate compared to lower-frequency radiations. If distance traveled is very large, many photons lose their entire matter-content and cease to exist, in this way. Hence, depending on their frequency, there is a limit on range of transmission of photons. Phenomenon of red-shift causes reduction in magnitude of light, received by us on earth (presumably) from distant macro bodies in universe, making night sky dark ('Olbers' Paradox').

Radiations of light from macro bodies beyond certain distance do not reach us, on earth. They would lose all their matter-contents (so that constituent photons do not exist anymore) during their travel

(presumably) from regions of distant macro body towards earth. Case is similar with respect to all other radiations (of 3D matter). Consequently, there is a limit on distance in space to any macro body, from which observer on earth may receive information. This sets a limit on extent of universe for the observer. Extents of universe for an observer are equal in all directions and observer is always at the centre.

Resisted light:

As photons of a radiation are already moving at highest possible linear speed, no external effort in the direction of their linear motion can act on them. However, external efforts in other directions are able to affect their motions. External efforts may try to increase or reduce their linear speeds. Gravitational attraction between matter-cores of photons, radiated away from the region of a very large macro body (like black hole) tends to resist linear motions of photons. Attempts to reduce linear speeds of photons compel them to lose matter-content and reduce their frequency.

CMBR:

If distance traveled by photons is large enough or resistance to their linear motions is sufficiently strong and lasts long enough, they may lose all their matter-contents during travel. At the instant of complete loss of matter-content, all photons have minimum (and equal) matter-contents and they are supported by smallest possible inertial-pockets. After loss of matter-contents by photons, they cease to exist as corpuscles of radiation any more. However, they leave their minimal inertial-pockets as their residue in universal medium. Inertial-pockets in any plane appear as electromagnetic waves.

Due to even distribution of macro bodies in space, radiation (of light) from all regions of space are uniform and residue inertial-pockets, left by dead photons in all directions, are equal towards any point in space. Hence, electromagnetic waves, apparent from residue inertial-pockets, are uniform in magnitude from all directions. As there is no definite origin and their magnitudes more or less remain constant in any direction, they are assumed to originate in general cosmos and called (cosmic) background radiation - CMBR. These are not related to any particular region, star, galaxy or any other configuration in universe.

Although distribution of macro bodies and radiations in all directions are assumed uniform, presence of very large macro bodies (black holes) are not very uniform around any point. Moreover radiations from these macro bodies produce very high magnitude of resisted light to create higher quantity of background radiation from their direction. These radiation, although identical with those received from tired light, adding with others may produce small fluctuations in magnitudes of CMB radiation received from various directions.

Due to various other reasons, occasionally photons of higher matter-contents also may lose their matter-contents and leave stronger inertial-pockets as their residue. These may give rise to higher-frequency electromagnetic waves in the background to mix with cosmic background radiation.

Conclusion:

Production and distribution of CMBR have definite mechanisms, not related to inflationary models of universe. If big bang and inflationary models of origin of universe are avoided, equating magnitude of CMBR to cosmic temperature/heat-level and age of universe has no meanings.

Reference:

- [1] Nainan K. Varghese, *MATTER (Re-examined)*, <http://www.matterdoc.info>

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