Cosmic Microwave Background Radiation is NOT a Relic of Universe Expansion

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Abstract—**Cosmic Microwave Background Radiation (CMBR) evolved from early Big Bang models by Gamow. Only later in 1965 did Penzias and Wilson discover the microwave radiation coming from space as black body EM radiation with a temperature of about 10 K. Dicke did not believe that the radiation came from a cold source, and instead proposed the cold temperatures were produced during the Big Bang in the expansion of the Universe. But Penzias and Wilson were most likely measuring microwaves from the Oort Cloud at 10,000 AU naturally cold at ~ 2.7 K instead of the CMBR. In this paper, the CMBR and local anisotropy is proposed to be blackbody radiation from Oort cloud debris in thermal equilibrium with the Sun suggesting the Big Bang never happened.**

***Keywords*—**Big Bang, CMBR, debris, Oort cloud.

I. INTRODUCTION

The CMBR evolved from models of the Big Bang by Gamow beginning in 1948. Only later in 1965 did Penzias and Wilson discover the microwave radiation coming from space. Dicke and others concluded the CMBR would still be present in the Universe as blackbody EM radiation with a temperature of about 10 K not from a cold source, but rather from the Big Bang expansion of the Universe. Today, the CMBR is thought to be blackbody ration at temperature ~ 2.7 K at 160 GHz. Indeed, the 2019 Nobel prize in physics was awarded J. Peebles for interpreting the CMBR and integrating dark matter and dark energy into the cosmological framework.

However, the Nobel committee apparently ignored temperatures ~ 2.7 K are a natural consequence of our Solar System. Beyond the Planetary System, the Oort Cloud at 10,000 AU is naturally cold at ~ 2.7 K. Unlike the disk-like Planetary System in the ecliptic of the Sun, the Oort cloud is spherical about the Sun. The equilibrium temperature T of the Oort Cloud debris at distance D from the Sun having radius Rs and temperature Ts may be estimated by assuming blackbody thermal radiation absorbed without reflection by,

$$T = T_s\sqrt{\frac{R_s}{2D}}$$

Of importance is the temperature T of Oort cloud debris is independent of size, i.e., the debris may be spaced discrete nanoscopic cosmic dust or macroscopic particles allowing light from the Universe to be observed on Earth. Clearly, the Oort cloud need not be an opaque spherical shell.

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II. PROBLEM

The CMBR is locally anisotropic comprising dipole and higher order harmonics of primordial density fluctuations present at the time of recombination. How can the Oort cloud account for CMBR anisotropy?

III. ANALYSIS

The dipole anisotropy is caused by the Doppler shift motion of the Earth orbital velocity relative with respect to the rest frame of the CMBR from the Oort cloud. The CMBR photon having wavelength λ_o is redshift z to wavelength λ_f by, where, V is Earth velocity and c the velocity of light.

$$z = \frac{V}{c} = \frac{\lambda_f - \lambda_o}{\lambda_o} = \frac{\lambda_f}{\lambda_o} - 1$$

With Earth orbital velocity V = 30 km/s, z = 0.0001. Microwave photons at 160 GHz have wavelength λ_o = 1.875 mm are therefore redshift to wavelength λ_f = 1.8751875 mm and 159.98 GHz. But redshift only occurs for CMBR photons in trailing edge of Earth motion. CMBR photons in the leading edge of the Earth motion are blueshift to a frequency 160.0085 GHz. Hence, the CMBR shows dipole anisotropy.

IV. CONCLUSIONS

What Penzias and Wilson were measuring in 1965 was blackbody radiation from the Oort cloud that today is known as CMBR given by the black body temperature of ~ 2.7 K at frequency 160 GHz.

Gamow's Big Bang model advanced by Dicke and Peebles concluding the CMBR was the relic of Universe expansion is highly questionable as the CMBR created in the Oort cloud of our Solar system suggests the Big Bang never happened.

Thermal equilibrium of blackbody radiation between the Sun at 5800 K and the Oort cloud at temperature ~ 2.7 K is a far more credible rationale than Universe expansion.

Blackbody theory does not require the Oort cloud to be continuous and opaque to absorb and emit blackbody radiation. Discrete particulate and debris are acceptable black bodies separated by large spaces to allow light of the Universe to reach the Earth.

The Oort cloud as the source of the CMBR allows microwave emission from discrete debris to be a natural explanation for the observed higher order CMBR anisotropy.