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Rethinking the CMBR according to Augmented Newtonian Dynamics: (AND)

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Abstract: ***For nearly a century, the CMBR (Cosmic Microwave Background Radiation) has been central to our understanding of the Universe. This paper critically examines its status as relic radiation from the Big Bang, yielding unexpected results. Instead of confirming the long - held view of the CMBR being relic radiation from the time of the Big Bang, the findings provide compelling evidence that the CMBR originates from the present - day Universe. If the CMBR is not the true relic radiation, then what is? This research proposes that dark matter, rather than the CMBR, is the actual remnant of the Big Bang.***

Keywords: Dark Matter, aether, photons, electrons, photon emission, photon absorption, CMBR, Big Bang, Planck.

1. Introduction

Discovery of the Cosmic Microwave Background Radiation (CMBR)

In 1964, Arno Penzias and Robert Wilson, working at Bell Labs in New Jersey, were testing a highly sensitive microwave antenna designed for satellite communications. They encountered an unexplained background noise that persisted no matter what they did — whether they pointed the antenna at different parts of the sky, accounted for urban interference, or even removed pigeon droppings from the equipment.

At the same time, physicists Robert Dicke and Jim Peebles at Princeton University were theorizing that if the Big Bang had occurred, it should have left behind a faint thermal radiation, now cooled to just a few kelvins. When Penzias and Wilson learned of this idea, they realized that their mysterious signal was precisely this predicted relic radiation—the Cosmic Microwave Background Radiation (CMBR).

Why Was This Important?

The CMBR provided the first direct confirmation of the Big Bang theory, supporting the idea that the universe began as a hot, dense state and has been expanding ever since. Competing theories, like Fred Hoyle's Steady - State Theory, suggested the universe had no beginning and was in a continuous state of creation. The discovery of the CMBR (Cosmic Microwave Background Radiation) contradicted this model. The CMBR is thought to arise from a time about 380, 000 years after the Big Bang, when the universe cooled enough for neutral atoms to form, allowing photons to travel freely. Studying it reveals information about the universe's composition, structure, and evolution.

For their groundbreaking discovery, Penzias and Wilson were awarded the 1978 Nobel Prize in Physics. Today, detailed observations of the CMBR, such as those by the COBE, WMAP, and Planck satellites, have provided even deeper insights into the universe's age, composition, and geometry.

The CMBR today:

The above passage in short, is a summary of the discovery of the Cosmic Microwave background radiation and why it was important. In this sense, the CMBR underlies most of modern astrophysics and is used as evidence for many of the modern theories of the Universe, such as the evidence for dark energy and the expansion of the Universe. Here are some details concerning the CMBR, it has a temperature of around 2.7 Kelvin degrees and a peak frequency of around 160.2 GHz. It is an almost perfect black body radiation. The CMBR is thought to be relic radiation from the Big Bang that has undergone a dramatic red - shift due to the expansion of the Universe, today the temperature of the CMBR measures 2.7 degrees Kelvin, which is a temperature of almost absolute zero. The CMBR is thought to be one of the most perfect examples of Black Body radiation to be found anywhere. Given the size and scale of the Universe, it is not surprising that it should possess such a perfect black body signal.

Could the CMBR theory be wrong?

But, what if the whole theory behind the CMBR (Cosmic Microwave Background Radiation) is wrong? If the factual data is examined some amazing conclusions are reached. Consider that a fairly well - established estimate of the density of the Universe is that only 5% of the Universe, including gaseous matter, consists of solid baryonic matter. This means that 95% of the Universe is just empty space with a density of about one particle per cubic metre of space. If one reflect on what a massive discrepancy exists between matter and empty (or almost empty) space some interesting thoughts arise. One of the thoughts that comes to mind is that the 95% of the Universe that is almost devoid of matter (one particle per cubic metre) must have an extremely low temperature. Taking the particle to be Hydrogen, which seems a likely assumption, a free hydrogen atom in deep space, with no significant external influences, would continue losing energy until it reaches an equilibrium state near absolute zero. In the vast, nearly empty regions of space, with a density of just one particle per cubic meter, there are essentially no collisions to maintain a significant kinetic energy. However, even if the atom itself has an extremely low translational velocity, the electron remains bound in its orbit around the nucleus. This motion contributes to the internal energy of the atom but does not imply significant translational motion through space. The circumstances that prevent the atom from collapsing into an ultra - cold state which would effectively, still even the motion of the orbiting electron, are insignificant but manifold.

A free hydrogen atom in deep space, with no significant external influences, would continue losing energy until it reaches an equilibrium state near absolute zero. However, as has been pointed out, it could never truly come to a complete stop. The continued existence of the atom, especially considering its internal energy due to electron motion, implies a temperature above absolute zero. Given the vastness of space, the electron would never be in perfect isolation; radiation, from the 5% of the universe that contains galaxies, stars, and other sources of energy would be present, similar to the radiation received on earth but on a vastly attenuated scale. While deep space is extraordinarily cold, it is not a perfect vacuum devoid of all energy. Any stray photons or interactions from the remaining matter in the universe would provide minimal, but nonzero thermal energy, preventing the temperature from dropping all the way to absolute zero.

But is it possible to determine the temperature of deep space to a greater degree of accuracy? An attempt is made to determine the temperature of Deep space using Wien's law of displacement and the peak frequency received: Starting with **Wien's Displacement Law for frequency**:

$$T = \frac{\nu_{\max} \times h}{k \times 2.821}$$

where:

- $\nu_{\max} = 160.2 \times 10^9 Hz(given\ peak\ frequency)$
- h = 6.626 x 10^{-34} J·s (Planck's constant)
- k = 1.381 x 10^{-23} J/K (Boltzmann's constant)
- 2.8212.821 (dimensionless Wien's constant)

Multiply frequency ν by Planck's constant h
$(160.2\times10^9) \times (6.626 \times10^{-34})$
= 1.06153 x 10^{-25}

Multiply k by Wien's constant
$(1.381 \times 10^{-23}) \times 2.821 = 3.897 \times 10^{-23}$

Divide the results from Step 1 by Step 2
$T=1.067 \times10^{-25} / 3.897 \times 10^{-23}$
$T= 0.27 \times10^{-2}$

Final Answer:
T ≈ 2.72 K

The answer may be double checked using the same Wien's displacement law to determine the frequency:

The peak frequency of the Planck radiation spectrum can be found using **Wien's Displacement Law** for frequency:

$$\nu_{\max} = \frac{kT}{h} \times 2.821$$

Substituting the values:

$$k = 1.381 \times 10^{-23} J/K$$

$$h = 6.626 \times 10^{-34} J \cdot s$$

$$T = 2.7K$$

2.821 is a dimensionless constant from Wien's Law

Let's compute: $\nu_{\max}$

$$\nu_{\max} = \frac{kT}{h} \times 2.821$$

First, calculate the term inside the brackets:

$$\frac{kT}{h} = \frac{(1.381 \times 10^{-23}) \times (2.7)}{6.626 \times 10^{-34}}$$

$$= \frac{3.7287 \times 10^{-23}}{6.626 \times 10^{-34}} = 5.627 \times 1010 = 5.627 \times 10^{10}$$

Multiply by 2.821

$$\nu_{\max} = (5.627 \times 10^{10}) \times 2.821 = 1.587 \times 1011 Hz = 1.587 \times 10^{11} \text{ Hz}$$

Final Answer:

$$\nu_{\max} \approx 1.59 \times 10^{11} \text{ Hz} \quad (\text{or } 159 \text{ GHz})$$

2. Conclusion

The figures of approximately 159 GHz and 2.7 K arrived at by calculations is very close to the peak frequency of the cosmic microwave background radiation at 2.7 K which is measured to be 160.2 GHz. The question is, could it be a coincidence that the peak frequency radiation of the present - day distribution of matter in the Universe just happens to coincide with the so - called relic radiation from the Big Bang called the CMBR (Cosmic Microwave Background Radiation). The notion that the 160.2 GHz signal represents relic radiation from the Big Bang collapses under scrutiny when considering that 95% of the Universe consists of regions with an average density of just one particle per cubic meter, effectively making these regions of the Universe extremely cold, near absolute zero. Given this reality, the observed black body radiation at 2.7 K is not a leftover imprint from billions of years ago but rather the natural thermal signature of the present Universe itself. The idea that this radiation is somehow a relic from the Big Bang is untenable; in truth, what has been labeled as "relic radiation" is simply the black body radiation continuously emitted by the current Universe, entirely independent of any primordial event. To reiterate this point, black body radiation attributed to relic radiation from the Big Bang is in fact due to thermal radiation being emitted by the present - day Universe and has nothing to do with relic radiation from the Big Bang.

If not the CMBR then what:
A far more suitable candidate for relic radiation from the Big Bang is "**dark matter".** A fuller description of how this is possible can be found in my paper: "Dark Matter according to Augmented Newtonian Dynamics: (AND) Paper ID: SR241209164228"

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