DOES THE MICROWAVE BACKGROUND RADIATION SUPPORT THE BIG BANG THEORY?

Vincent W. Carpenter
Billings, Montana
May, 2014

Abstract

Most cosmologists claim that the MBR supports the BB theory. But, does it really? All we know for sure about the MBR is that its temperature is 2.7 degrees Kelvin and its wavelength is about 2 millimeters. However, at the same time we know nothing for sure about the BB. The universe is theorized to have started out as a singularity about 13.7 billion years ago and then to have briefly expanded at different speeds before settling down to just one of them for the long haul of growing out to today's size.

There doesn't appear to be any connection between what we know about the MBR and what we theorize about the BB. But cosmologists have also done some theorizing about the former. I bring that up in this paper and in closing show how it turns out to be very flawed theorizing when you apply what Nobel laureate Steven Weinberg writes about the early universe in his book, "The First Three Minutes".

Foreword

I have used a Regular font for those passages dealing with conventional cosmological theory and a Bold Face Italic font for my comments on that theory.

The Big Bang theory says that when the universe was about 350 thousand years old, it was filled with high energy photons and a hot plasma of protons and electrons. The photons kept colliding with and bouncing back off the protons and electrons and prevented them from joining up with each other and forming atoms. Thus as long as the temperature of the universe was hot enough so that this pattern of behavior was maintained, the electrons and protons acted as sort of a barrier which prevented the photons from getting past them and escaping out into the open space beyond. But as soon as it had cooled to the state where the photons had lost so much energy they could no longer keep the electrons and protons from joining up, the electrons and protons started to do just that. This allowed the photons to begin escaping from a universe that previously had to have been as astronomers today usually describe it, an opaque cloud from which no photons could have left and become the background radiation we can detect and measure today. ***But wouldn't this mean that the universe had to have been opaque from its very beginning because it had always been hotter during all those years going back to then? This joining up of electrons and protons is called recombination by today's astronomers. But the word, recombination,***

implies that these electrons and protons had been combined into atoms once before when the universe was younger, and it is used this way in nearly all the books on cosmology I've ever come across. One exception is found in Steven Weinberg's book, "The First Three Minutes", where he makes the same comment that I made above. It would have been impossible for atoms to have formed in any period before this time because the universe was increasingly hot the further back you track it toward the Big Bang. (Weiberg is an American physicist and Nobel laureate.)

Once out into empty space, the photons moved away from each other in every direction, and because they can act either as particles or waves in the phenomenon known as wave-particle duality, when they grew further apart as particles, as waves their wave lengths had to be getting longer too. And the longer the wave lengths in electromagnetic radiation, the lower its temperature. It had been in the millions of degrees Kelvin before recombination, but today over 13 billion years later it is only about 2.7 degrees Kelvin. ***These photons are now called microwave background radiation because their wave lengths have been stretched out into the microwave band of the electromagnetic spectrum and now are about 2 millimeters in length.***

There are tiny temperature irregularities in the microwave background radiation which match what would be expected if the quantum fluctuations in the spacial distribution of photons which had taken place just after the Big Bang when the universe was less than a millionth of a quadrillionth of a quadrillionth of a

second old had been stretched out by the growth of the universe over the last 13 billion years into their actual distribution as of today as determined by the measurable thermal fluctuations they cause. No model of the universe other than the Big Bang model can account for these thermal variations.

A big problem remains for the "opaque cloud hypothesis" however. Returning to the "First Three Minutes" once more, we find Weinberg writing that when the universe was 3 minutes and 46 seconds old, there were about 1 billion photons for every nuclear particle in it Since this ratio probably held true for the next 350,000 years or so, then the universe never should have gone through an opaque cloud stage. Nearly all of its photons would have kept brushing past the nuclear particles and filling all the space beyond them right from the start. Only a very small portion of them would have been sufficient to keep all the universe's atoms tied up with photon interactions. And since the opaque stage is part of the argument that the microwave background radiation supports the Big Bang theory, then that argument must be flawed and thus fail to support that theory. So the answer to the question posed in the title is "No." The existence of the microwave background radiation does not support the Big Bang theory.