Rigorous analysis of the universal space expansion

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Abstract

Expansion of the universal space was never directly observed. It is an unproven assumption. Measurement of the gravitational redshift proves only gravitational redshift and nothing more. Gravitational redshift is proven by the Mossbauer experiment. Claiming that gravitational redshift proves universal space expansion is false because there is no causality between gravitational redshift and hypothetical expansion. Even if universal space would expand, gravitational redshift could not be taken as proof of expansion. The Doppler effect was never observed in an expanding space and claiming that cosmological redshift is partially caused by the Doppler effect caused by the expanding of space is an unproved assumption. The discovery of CMB proves only that the entire universal space radiates CMB. CMB is not proof of the existence of the recombination period.

Keywords: methodology of scientific thinking, universe expansion.

1. Introduction

The geocentric system believed that Earth is the centre of the universe. The Sun and planets are orbiting around the Earth. The system was functioning well, everything was calculated and nobody has doubt that the geocentric system might be wrong. Greek astronomer and mathematician Aristarchus of Samos that has lived in 310 – 230 BC developed a heliocentric model that we all know is the real one [1]. The same is the case with the Big Bang model, mainstream science believes it is right despite there being no single scientific proof that this model is right.

In the Big Bang model, a way of thinking was adopted that does not fulfill the rigorous scientific request that the existence of a given physical phenomenon can be accepted as real only after is observed and measured:

observation of phenomenon → measurement → acceptance that phenomenon is real

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Expanding of universal space was never observed and never measured. Claiming that gravitational redshift is proof of expansion is a cognitive simplification that is outside of the realm of scientific thought. Between gravitational redshift and hypothetical expansion is an unbridgeable cognitive abyss, these two phenomena are not related by some physical means. This is the classical example of "forced theory" where something serves as proof of something else that was never observed and measured:

no observation → no measurement → acceptance of phenomenon as a fact

We observe that light from distant galaxies has a loss of energy. We call this loss of energy "gravitational redshift":

loss of energy → gravitational redshift.

Between the name "gravitational redshift" and the observation of the loss of energy, there is a strong cognitive bond. In the Big Bang model we have the following way of thinking:

loss of energy → gravitational redshift → expansion of the space

The loss of energy of the photon has no phenomenological relation with the theoretical expansion of space. Also, gravitational redshift has no phenomenological relation with the expansion of space. Expansion of space even when real could not cause gravitational redshift. The use of gravitational redshift as proof of universal space expansion is one of the biggest errors of science.

Also, if the expansion of space would cause the Doppler effect is questionable. There is no model in physics which world describes how the expansion of space could cause the Doppler effect that occurs when the source of light is moving closer or away from the observer in a stationary space. Between the Doppler effect and universe expansion, there is no phenomenological relation. Doppler effect on the Earth was done in a stationary space. How the Dopler effect works in an expanding space was never tested. Claim: "Gravitational redshift is proof of universal space expansion" is not falsifiable and so is not real science.

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CMB is the radiation of the universal space. The entire universal space radiates CMB that is highly uniform throughout the entire space. CMB has a thermal black body spectrum at a temperature of 2.72548±0.00057 K. This is the result of the measurement that allows us to conclude that universal space radiates CMB. The interpretation of CMB as the relict radiation of the recombination period is only an unproved hypothesis, it is not a scientific fact. Again, the wrong methodology for building the hypothesis was adopted:

CMB measurement → CMB is the radiation of the entire universal space → CMB is the relict radiation from the recombination period.

Between measuring CMB and the statement that the entire space radiates CMB is a strong phenomenological bond. Between the CMB measurement and the existence of the recombination period, there is no phenomenological bond. The only proof of CMB is what is measured; the entire space emanates CMB radiation.

The third proof that the Big Bang model is an error has a mathematical character. FLWR metric is not valid for Euclidean space and NASA has measured universal space has a Euclidean shape. The metric of Euclidean space is such that it cannot expand and cannot shrink: "In FLWR metric, the density parameter Ω ultimately governs whether the curvature is: negative ($\Omega < 0$), positive ($\Omega > 0$), and flat ($\Omega = 0$). When the density parameter Ω is 1 in the FLWR metric, universal space has a Euclidean shape and FLWR metrics predict that such a space can expand. This is against the metrics of Euclidean geometry where the distance between two points is always constant. In a 4-dimensional Euclidean space, the distance d between points ρ and q is calculated as follows:

$$d\sigma = (\sum_{i=1}^{4}(\rho_i - q_i)^2)^{1/2} \qquad (1).$$

We do not have any possibility in the frame of Euclidean geometry that the distance d would be changed. We cannot expand or shrink Euclidean space" [2].

The next phenomenological weakness is that we experience the universe in a frame of phycological time "past-present-future", and the universe itself is timeless. The universe exists in a time-invariant space where there is no past, no presence, and no future. Thinking that the universe has started in some remote physical past is wrong because time has no physical

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existence. Some hypothetical "beginning in time" is excluded because the universe is developing in time-invariant space where there is no time [3,4]. This means the universe is non-created, it is eternal.

2. Demystification of Big Bang cosmology

Big Bang cosmology is a school case of how science should not work. The idea of some beginning with a big explosion is a myth, and all astronomical data are interpreted in a way that fits well with the myth.

The first step of demystification is to bring awareness of your inner image of Big Bang cosmology. The first picture you see in your inner vision when someone mentions cosmology is below:

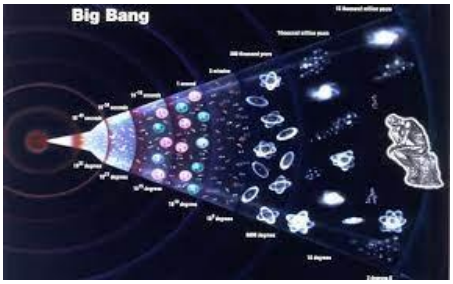

Figure 1: Your inner vision of cosmology

Only a five-year-old child can have such magic, irrational imagination to think that the universe has exploded from nothing. And this is the time when your indoctrination has started. When you hear the word "CMB" you imagine a recombination period, when you hear the word "cosmological redshift" you imagine the galaxies are moving away from each other, and the universe is expanding. If you are an adult person free of imposed ideas from your childhood, you see that Big Bang cosmology is a childish idea.

Why do you never ask yourself a question about the fact that the redshift of light was never observed in an expanding space? We only observe light in a space that is stationary, we do not have a theoretical model that would be describing how light moves in an expanding space and has an energy loss. You never ask because you do not want trouble. Big Bang cosmology is the main frame in which your life run and you are not willing to doubt it. Since your early childhood, the Big Bang model is with you, especially if your parents are scientists.

People very rarely doubt what they perceive and experience in their first six years of life. Big Bang is encoded in your mind with the same strength as your nationality and faith.

Eminent physicists wrote articles about weak points of Big Bang cosmology [6,7,8,9], and still today in 2022 we teach this model at universities. Stationary cosmology explains well all astronomical data and has no unbridgeable problems with the beginning and still, it is not yet back in power. In the stationary model developed by our research group, SMBHs are rejuvenating systems of the universe. In the centre of SMBHs energy density of space is so low that atoms become unstable, and they fall apart into elementary particles that form huge jets. [2,5]. Our model is developed by "bijective research methodology" [3], where all elements in the model are observable and measurable. Huge jets out of SMBGs are well-documented [10]. The variable energy density of space that governs gravity and causes atoms' transformation back into elementary particles in the center of SMBHs is precisely measured by the rate of clocks at a one-meter distance [11].

The Hubble Space Telescope (HST) was launched into Earth orbit in 1990 and still is in operation. Since 1990 we can observe the entire observable universe. The pictures we receive from HST are confirming that the universe is stationary. Positions of the galaxies are unchanged despite the huge velocity of galaxies, for example, the Virgo cluster with a recession velocity of ~ 1000 km/s [12]. One could think that the expansion of the universe should slightly change the picture of the observable universe over 30 years. Astronomers should put more attention to this interesting astronomical fact.

3. Conclusions

Our scientific mind is a prism through which we experience the universe, society, and ourselves. We have to clean this prism of all learned ideas and start thinking with our own minds. We have to respect the three pillars of physics: 1) perception, 2) creation of the model (mathematization of the phenomena you study), and 3) experiment that will prove or disprove your model. This is the safest methodology to develop physics and cosmology.

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