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[Srečko Šorli](#)*

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Article

The Discrepancy Between the Expansion of the Universe, Distances in the Solar System, and the Age of the Milky Way

Amrit Sorli

Bijective Physics Institute, Slovenia; sorli.bijective.physics@gmail.com

Abstract: The age and the diameter of the galaxy Milky Way are confirmed by precise astronomical observations. The universal space expansion is calculated 72.8 kms^{-1} per parsec. The calculation taking into account the expansion of the universal space confirms that since the formation of the Solar system, the distance between the Sun and Neptune should increase by 1.531.438.809.644.816.600 km. Today distance between the Sun and Neptune is 340100 times smaller. The calculation taking into account the expansion of the universal space confirms that the velocity of space expansion on the Milky Way's diameter is $44.626.400 \text{ kms}^{-1}$. This would mean that the Milky Way diameter grows in one year by 1.408.302.080.640.000 km. Dividing today's measured diameter of the galaxy by the length of the annual growth of the diameter, we get the time when the diameter of Milky Way was zero. This should be before $1.34 \cdot 10^4$ year. The discrepancy with the existing Milky Way age $1.36 \cdot 10^{10}$ years is on a scale 10^6 . Expansion of the universe needs re-evaluation.

Keywords: universal space expansion; solar system; age of milky way; diameter of milky way

1. Introduction

The latest calculation of the universe's expansion is 72.8 kms^{-1} per parsec [1]. One parsec is 3.26 light years, which is $3.0857 \cdot 10^{13}$ km. Rate of expansion on larger and smaller distances is proportional. For example, on 10 parsec velocity is 728 kms^{-1} , on 0.1 parsecs velocity of expansion is $0,728 \text{ kms}^{-1}$. We will calculate how the expansion of the universal space increases the distances in our solar system and we will calculate the age of the Milky Way galaxy based on the expansion of the universal space per year.

2. Expansion of the Universe, Size of the Solar System the Age of the Milky Way

Let's calculate the impact of universal space expansion on the Solar system. The distance between Earth and the Sun today is 149.597.900 kilometres, one AU. On this distance, space is expanding with velocity $0.0003529419 \text{ kms}^{-1}$, which means that because of the universe's expansion, the distance between the Sun and Earth is increasing in one year by 11.138 km. The age of the Solar system is about $4.568 \cdot 10^9$ years. This means that since the formation of the Solar system distance between the Sun and Earth should increase by 50.878.375.733.886 km ($5.08 \cdot 10^{13}$ km). Today distance is 149.597.900 km ($1.49 \cdot 10^7$ km). The discrepancy is on a scale 10^6 . Today distance between the Sun and Earth is 340100 times smaller. Calculation confirms that with the idea of the expansion of the universe, there is something wrong.

Neptune is distant from the Sun 30.1 AU. One AU is 149.597.870.700 km. The distance between Neptune and the Sun is 4.502.895.908.070 km. At this distance, the expanding velocity is $10.623548048 \text{ kms}^{-1}$, which means that because of the universe's expansion, the distance between the Sun and Pluto is increasing in one year by 335.253.680 km. The age of the Solar system is about $4.568 \cdot 10^9$ years. This means that since the formation of the Solar system distance between the Sun and Neptune

should increase by 1.531.438.809.644.816.600 km. Today distance between the Sun and Neptune is 340100 times smaller. The discrepancy is on the same scale as the distance Sun-Earth, 10^6 .

The diameter of the galaxy Milky Way is about 613 kpc, which is $1.891534 \cdot 10^{19}$ km, age is 13.6 billion years ($1.36 \cdot 10^{10}$ years). The latest evaluation of the universal space expansion is 72.8 kms^{-1} per parsec [1]. This means that the velocity of space expansion on the Milky Way's diameter is $44.626.400 \text{ kms}^{-1}$. This would mean that the Milky Way diameter grows in one year by 1.408.302.080.640.000 km ($1,408 \cdot 10^{15}$ km). If we divide today's measured diameter of the galaxy by the length of the annual growth of the diameter, we get the year in which the diameter of the Milky Way was zero, see Eq. (1) below.

$$\text{time in which diameter was zero } (X) = \frac{\text{measured diameter}}{\text{length of expansion per year}} \quad (1).$$

$$X = \frac{1.891534 \cdot 10^{19} \text{ km}}{1,408 \cdot 10^{15} \text{ km}}$$

$$X = 1.34 \cdot 10^4 \text{ years}$$

The declared age of the galaxy Milky Way is 13.6 billion years ($1.36 \cdot 10^{10}$ years). Because of the universal space expansion current diameter of the Milky Way galaxy is constantly increasing and was smaller in early ages. Our calculation has confirmed that $1.34 \cdot 10^4$ years ago the diameter of the Milky Way galaxy was zero. This means that according to the rate of the universal expansion, $1.34 \cdot 10^4$ years ago Milky Way could not exist yet. This discrepancy on a scale of 10^6 with the declared age of the galaxy Milky Way suggests that the expansion of the universal space needs serious re-evaluation.

3. Discussion and the Re-Evaluation of Expanding Universal Space Model

If universal space expands by the velocity 72.8 kms^{-1} per parsec, then the Milky Way cannot be older than $1.34 \cdot 10^4$ years. The other option is that universal space is not expanding and the age of the Milky Way is $1.36 \cdot 10^{10}$ years as predicted by official data. Expansion of the universe is extrapolated from the gravitational redshift of distant stars and galaxies. We have to consider the possibility that so-called cosmological redshift does not exist. The measured redshift of the light from distant galaxies is due to the loss of light's energy when pulling out of the strong gravitational field of galaxies. Expansion of the universe based on the proposition that expansion of space generates the Doppler effect is an ad-hoc idea that was never proved experimentally [3]. A gravitational redshift of the light coming from distant galaxies is one phenomenon and the Doppler effect in an expanding space is another phenomenon that was never observed and has no exact mathematical model behind it. Gravitational redshift and the hypothetical Doppler effect in an expanding space should be clearly distinguished. Once this is understood and accepted, the progress of cosmology is inevitable.

The idea that the universe started in some remote physical past belongs to the history of science. Fundamental physics research has confirmed that time has no physical existence and that the physical past is non-existent so nothing could happen in some remote physical past [4].

NASA measured in 2014 that universal space has an Euclidean shape. Euclidean space has metrics which does not allow expansion. This is an additional unsolvable theoretical problem of the idea that the universe is expanding [5].

Presented calculations in Chapter 2 are supported by a recent study where the cosmological constant problem suggests the expansion of the universe could be an illusion. [6].

4. Conclusions

The idea of some explosion in the distant physical past is not falsifiable and has no realistic scientific significance. The beginning of the universe from nothing is not a scientific subject, but more a philosophic-religious subject. The scientific subject is how the universe works. Inevitably the Big Bang cosmology belongs to the history of science, we are back to the stationary cosmology.

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