ON the PHYSICAL SIGNIFICANCE OF the  parameter THE OBSERVED UNIVERSE EXPANSION

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In the presently accepted paradigm of the Universe expansion there exist two important statements: 1) the Universe inflation and 2) the antimatter disappearance near the cosmological singularity It is worth noting that inflation proposals in itself is quite acceptable when keep in mind that the gravitational force decreases by the moving apart from the singularity , so that for an achievement of the zeroth Universe energy according to the Hawking postulate, the matter density  must also decrease. Such a decrease of the matter density could be attributed to observed accelerated Universe expulsion under the const flux . This effect could occur only by the gravitational particle escape near the singularity. However such an escape is impossible because of the gravitational attraction. In principle the disappearance of antimatter near the singularity may be used as a startup of the Universe evolution. But for lack of understanding of this step in the context of the gravitational theory is open to question. One must stress that both these points of the paradigm can be resolved by the account of the Planck particles decay inside of the singularity into the pairs of charged particles ,where  is the size of Planck particle.

Here the motion of the charged particles goes in the inertialess regime what is connected with the inequality

>>1.

From this inequality it follows that the effect of the electromagnetic force on the charged particles far exceeds the effect of the gravitation. Therefore the matter expulsion from the singularity can be possible due to the drift motion of the charged particles. As for the symmetry breaking near the singularity, this may be obtained for the charged particles from the nonquasi – neutrality condition for singularity size 

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As a result of the phase explosion occurs  < 0, what suggests the presence of the antimatter near the singularity. At the same time the matter displaced to the larger . From the condition  it follows that the nuclon energy fraction relative to the electromagnetic field energy is equal to , where this value concerns matter and antimatter integrally.

References

1. Lukash V.N., Mikheeva E.V. Physical Cosmology, Moscow, Fizmathlit, 2010.
2. Hawking S.W. A Brief History of Time. Toronto – New York – London – Sydney – Auckland.
3. Hawking S.W., Penrose R. Proc. Roy. Soc. Lond. A 314, 529 (1970).
4. Gordeev A.V. // 46-th International Zvenigorod Conference on Plasma Physics and on Controlled Fusion, Zvenigorod , 18 -22 March, 2019. Book of Abstract, p. 226.