universe – expansion dynamics under the unbounded Planck – vacuum energy

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The Planck-particle unique peculiarities consist in the equality between the particle energy and corresponding gravitational energy as well as in the classical expression of the energy flux , . These peculiarities according to [1] dictate the existence of the singularity with the size cm in relation to the Einstein equations for which the energy conservation law there exists [2]

 , ,  , . (1)

According to (1), the total Universe energy after its creation should be equal to zero because of the compensation each other the matter energy and the gravitational energy. Such compensation is ensured by the equation [3]

 , , (2)

which allows to meet the total energy conservation law (1) due to the existence of the additional parameter in the  variation. In this case, in spite of the flux deceleration, the  decrease takes place due to  at the first stage of the Universe expansion and the  increase - at the stage of the accelerating Universe expansion. The increase of  is finished in the maximum formation after which  slopes down toward  [2].

Differentiating the energy expression for  from (1) and considering that the velocity of the  displacement is determined by , one can obtain

  >0. (3)

This expression corresponds to the velocity of the Universe boundary. The last observations in the framework of the BICEP2 reveal the electromagnetic field polarization in the point that is placed at the distance of  cm from the singularity [4]. This might indicate of the formation the electromagnetic fields  and  structure which is necessary for the  drift of charged particles from the singularity. In this structure according to the Schwinger criterion for 

  (4)

 the electromagnetic pair production in the energy range of  GeV occurs at the strong relativism near the singularity .

References.

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