schwinger particle production near the singularity and the matter and antimatter allocation in the universe

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In the papers [1, 2] are presented the different proposals for the presence of the antimatter in the Universe. Below will be considered the matter production by the Planck-particle gravitation vacuum because of , where , . In the consequence of the Planck particle decay into the charged particles with the energy arises the zero-energy singularity structure of size 

 , . (1)

Here the energy  is determined by the electromagnetic field , , . In view of the singularity isotropy only the radial energy flux is possible , and the invariant values are equal to zero: ,  for . Therefore the particle production inside the singularity is highly forbidden. The following evolution of the Universe is only possible as a result of the charged particles  production outside the singularity by the account of the Poisson equation under . From the fact that <<  one can obtain in contrast to [3] the following equation for 

 , , , (2)

that is the consequence of the symmetry break due to the electric quasi-neutrality violation.

The electric quasi-neutrality violation on the singularity size  allows to obtain the evaluation of the particle energy fraction relative to the electromagnetic energy

 . (3)

In this case the separation of the matter and antimatter is supported by the equation

 . (4)

It is supposed in the paper [2] that the particles and antiparticles are the neutral ones, so their separation is not possible. However, for the charged particles  it is not true [4], what allows the scenario of the paper [1].

References

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