

Before Big Bang

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Abstract

The article discusses the circumstances before the Big Bang. Only a photon can exist in such conditions. This article discloses a variant how the Universe can emerge from “nothing”.

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There was nothing before the Big Bang: no space, no time [1], no matter. Only a photon could exist in such circumstances. Only a photon is self-sufficient. The photon does not need ordinary (gravity) space and/or time. The photon creates its own electromagnetic space [2].

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It seems incredible, but in such conditions the photon may have any amount of energy. In reality, according to Heisenberg uncertainty principle [3] the product of energy and time is:

$$\Delta E \Delta t > h \quad \text{or} \quad \Delta E > h/\Delta t, \quad (1)$$

where: ΔE – energy,
 Δt – time,
 h – Planck constant.

If $\Delta t \rightarrow 0$, then $\Delta E \rightarrow \infty$. Therefore at $t = 0$, the energy of a photon can be within the range from h to any value. In such case the law of energy conservation is not in force.

If the energy of a photon exceeds the mass of an electron twice, the photon can split [4] into a pair of leptons, i.e., an electron and an anti-electron (positron). They are bound together by Coulomb forces. The lepton has a positive mass and therefore gravity. The anti-lepton has a negative mass and therefore anti-gravity. Gravity space and time emerges. Gravity forces repel the lepton away from the anti-lepton. Since Coulomb forces are 10^{36} times stronger than gravity forces, the lepton and anti-lepton pair will annihilate in a short while and convert back to the photon. The gravity, space and time will disappear. This may happen many times until the magnitude of photon energy reaches a level sufficient for creating the particle-antiparticle pair with gravity which can repel particles far enough away from each other.

In this case the particle-antiparticle system is stable. Expanding [5] gravity space and time emerges around the particle. Expanding anti-space and anti-time emerges around the anti-particle. The particle decays to the ordinary Universe. The anti-particle decays to the Anti-universe. The cold Big Bang [6] begins in both Universes. Both Universes are in a quantum entanglement state. It is reasonable to call the system of

these Universes the Omniverse because it includes several Universes as a complete system. The full symmetry of time, of space, of electric charge and of mass exists in the Omniverse. According to the Noether theorem each symmetry is associated with a specific conservation law [7]. For this reason, conservation of energy, conservation of momentum, conservation of charge, etc., is in force in the Omniverse.

The Omniverse is complete [8] because the sum of all items (space, time, charge, mass, energy etc.) is zero.

References

1. Carlidge, E. No evidence of time before Big Bang. Published online 10 December 2010 | Nature | doi:10.1038/news.2010.665
2. Prūsis, I. and P. Space Equation – Basic Equation of Unified Field Theory. <https://ia601508.us.archive.org/17/items/SpaceEquation-BasicEquationOfUnifiedFieldTheory/Space%20Equation%20%E2%80%93%20Basic%20Equation%20of%20Unified%20Field%20Theory.pdf>
3. Heisenberg, W. *Physikalische Prinzipien der Quantentheorie (in German)*, Leipzig: Hirzel English translation *The Physical Principles of Quantum Theory*. Chicago: University of Chicago Press, 1930.
4. Carsten Kallesø Agger. The Theory of Photon-Impact Bound-Free Pair Production and Applications to Relativistic Heavy-Ion Collisions. 1996. Agger.
5. Prūsis, I. and P. Universe Self Inflation Without Dark Energy. <https://ia601504.us.archive.org/6/items/UniverseSelfInflationWithoutDarkEnergy/Universe%20Self%20Inflation%20without%20Dark%20Energy.pdf>.
6. Prūsis, I. and P. Big Bang without Bang. <https://ia601504.us.archive.org/29/items/BigBangWithoutBang/Big%20Bang%20without%20Bang.pdf>
7. Prūsis, I. and P. New Concept of Conservation Laws. <https://ia801507.us.archive.org/9/items/NewConceptOfConservationLaws/New%20Concept%20of%20Conservation%20Laws.pdf>
8. Prūsis, I. and P. Liar paradox and Completeness of Theory. <https://ia601504.us.archive.org/2/items/LiarParadoxAndCompletenessOfTheory/Liar%20paradox%20and%20completeness%20of%20theory%20.pdf>

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