

Hypothesis of Tetraverse

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Abstract

This paper discloses a hypothesis how four Universes can emerge from one photon. Two of them contain ordinary matter and antimatter. The other two contain matter of magnetic monopoles and antimonopoles. In magnetic matter atoms are bound together by magnetic forces, the electric field can be only solenoidal and electric charges cannot be separated from one another.

Keywords: space, gravitation, Universe, Unified Field Theory, Big Bang, photon, anti-gravity, antimatter, time, energy, Heisenberg uncertainty principle, particle decay, magnetic monopoles, matter.

PACS Classification codes:

03.50.-z Classical field theories; 01.55.+b General physics; 14.70.Bh Photons; 14.80.Hv Magnetic monopoles; 11.30.-j Symmetry and conservation laws; 98.80.Bp Origin and formation of the Universe.

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Introduction

Nothing existed 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].

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 Universe twice, the photon can split [4] into a pair of Universes, i.e., an Universe and an Antiverse. The Universe has a positive mass and therefore gravity. The Antiverse has a negative mass and therefore anti-gravity. This creates gravity space and time. Gravity forces repel the Universe away from the Antiverse. The photon may split into an electric plane, magnetic plane or both into the electric and magnetic plane simultaneously. The set of Universes is reasonably called Omniverse.

Electric Omniverse

The splitting of the photon into the electric plane creates a particle-antiparticle pair with opposite electric charges. The opposite electric charges mutually attract one another because they usually annihilate. The particle has a positive mass. The antiparticle has a negative mass, i.e., anti-gravity. The opposite masses mutually repel. Only when the masses are big enough to overcome the electric attraction, both particles mutually repel and cannot annihilate. The particle decays to an ordinary Universe. The antiparticle decays to an Antiverse. The two Universes are located on the electric plane of the primordial photon (Fig. 1.).

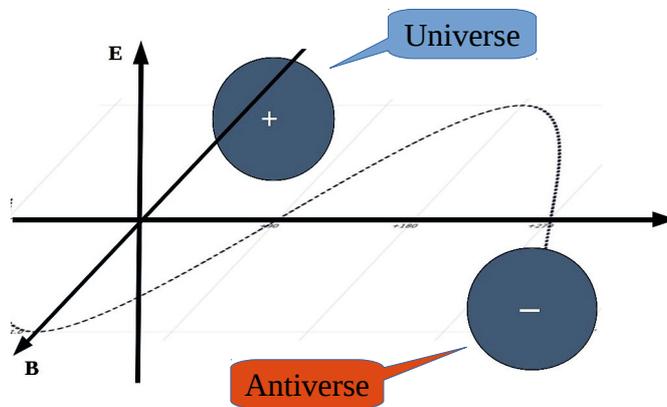


Fig. 1. Electric Omniverse in coordinates of primordial photon. Magnetic field of primordial photon (dashed).

The Universe contains only ordinary matter. The Antiverse contains antimatter. The Antiverse differs from the Universe by being opposite to the ordinary direction of time, space and gravity. The time flow in the Omniverse is shown in Fig. 2.

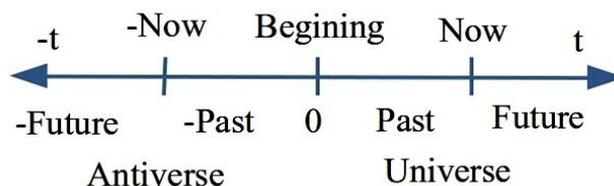


Fig. 2. Time flow from Past to Future in the Antiverse is opposite to time flow in the Universe.

The Electric Omniverse meets the criterion of completeness [5], i.e., the total sum of the two times is zero. This also applies to the mass, energy, charge, etc.

An observer inside the Antiverse feels no difference from the ordinary Universe.

Magnetic Omniverse

The splitting of the photon into the magnetic plane creates a particle-antiparticle pair [6] with opposite magnetic charges (monopoles). The opposite magnetic charges (N and S poles) mutually attract one another because they usually annihilate. The particle has a positive mass. The antiparticle has a negative mass, i.e., anti-gravity. The opposite masses mutually repel. Only if the masses are big enough to overcome the magnetic attraction, the two particles mutually repel and cannot annihilate. The particle decays to a Magnetic Universe. The antiparticle decays to a Magnetic Antiverse. The two Universes are located on the magnetic plane of the primordial photon (Fig. 3.).

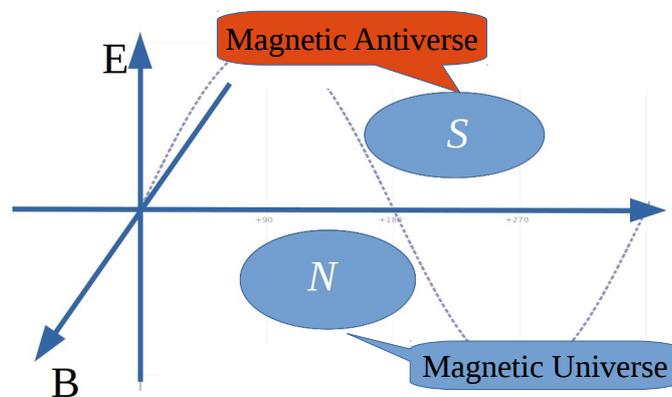


Fig. 3. Magnetic Omniverse in coordinates of primordial photon.
The electric field of primordial photon dashed.

The Magnetic Universe contains only magnetic matter. The Magnetic Antiverse contains magnetic antimatter. The Magnetic Antiverse is opposite to the Magnetic Universe concerning the direction of time, space, gravity, etc.

Magnetic matter differs from ordinary electric matter by charge. There are electric charges in electric matter. There electric field is a potential field but the magnetic field is a solenoidal vector field. The N pole cannot be separated from the S pole.

The magnetic field is a potential in magnetic matter and the electric field is a solenoidal. The plus charge cannot be separated from the minus charge. In electric matter atoms are bound together by electric forces. In magnetic matter atoms are bound together by magnetic forces. The interaction between electric and magnetic matter is very weak and is comparable with gravitational interaction.

Tetraverse

Nothing prevents the photon from splitting into both electrical and magnetic planes simultaneously if energy is sufficient. In this case four Universes may emerge, i.e., two electric Universes and two magnetic Universes. The Tetraverse is complete, i.e., the sum of all items is zero. The Universes and the Antiverses mutually repel. The electric Universes and the magnetic Universes are located in the mutually orthogonal spaces of the primordial photon. They do not interact and the Tetraverse is stable.

All the Universes are in a quantum entanglement state. For this reason, it is possible to exchange information. An event in one Universe can be reflected in another one.

Each Universe has its own expanding space and its own separate time flow. The expanding gravity space is compensated by an opposite dynamical space. As a result, from the outside each Universe looks like a massive point particle, but from the inside it has a very vast space.

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. Liar Paradox and Completeness of Theory.
<https://ia601504.us.archive.org/2/items/LiarParadoxAndCompletenessOfTheory/Liar%20paradox%20and%20completeness%20of%20theory%20.pdf>
6. Prūsis, I. and P. New Concept of Magnetic Monopoles.
<https://ia601503.us.archive.org/22/items/NewConceptOfMagneticMonopoles/New%20Concept%20of%20Magnetic%20Monopoles.pdf>

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