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Original Article

The Machinery of the Universe A New Look at What Causes, Fields, Mass, Forces, Gravity and what is Energy

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Abstract *- The start of the universe comprises two spheres brought together with the velocity of light c. One sphere is filled with negative basic particles with a charge of ⅓ of an electron, and the other with particles with a charge of ⅓ of that of a positron. The first dumbbell-shaped particles formed upon collision are very high-energy spinning photons essential for forming fields. A small part of the photons reacts with additional basic particles to form proto-quarks and leptons. The proto particles will surround themselves with photons until the formation of u and d quarks, electrons and positrons. The polarisation of the photons embodies the energy and, therefore, mass. Photons transmit forces and gravity. Observations do not give a Euclidean view of the universe.*

Keywords *- Forces, Fields, Mass, Energy, Structure of the universe.*

1. Introduction

Dirac[1] and Feynman[2] both mentioned the lack of knowledge about the machinery of the universe. What follows is an attempt to fill this lack. In literature, one can find that the universe started with a 17 cm diameter ball[3] with a mass of 1.5E53 kg for the observable part[4]. The crystal ball will explode for unknown reasons, and then there is a Big Bang. But for an explosion, you need two ingredients and an igniter. Therefore, it is proposed to split the ball into two 0.135 m diameter spheres, one containing densely packed basic particles with a charge with a charge ⅓ of that of an electron and the other with particles with a charge ⅓ of that of a positron[5]. The ignition comprises the two spheres that are brought together with the velocity of light *c* (Fig. 1). The result is the Big Bang. The first dumbbell-shaped particles formed upon collision are very high-energy spinning photons essential for forming fields.

The non-observable part of the universe is estimated as 250 times the observable part[6]. Hence the universe's total mass becomes 3.75E55 kg, corresponding to an energy of 3.38E72 Joule. The volume of a sphere is 1.29E-3 m^3, of which 9.55E-4 m^3 are basic particles.[7] The number of particles within each sphere depends on the radius of the basic particles (Table I). The energy of 3.38E72 Joule corresponds to the radius of 3.82E-26 m for the basic particles. This is the maximum radius for the basic particles required for the energy/mass in the universe. Fields are present everywhere in the universe. Hence, more basic particles are required to generate all photons for the fields with a corresponding lower radius.

2. Photons

The first particles formed after the collision are static photons having circumferential velocity equal to the velocity of light *c*. The frequency and energy of the photons can be calculated assuming the circumference is 2π times the radius of the basic particles. From the radius, the volume of basic particles can be calculated, and subsequently, knowing the volume of the sphere, the number of particles per sphere and the total energy per sphere.

The rule that nowhere the velocity of c can be exceeded must also apply to photons. The question immediately arises why the visible light and gamma-ray photons we are familiar with move with velocity *c*. The explanation is that these photons have relatively low energy compared with photons forming a field. Because the vector sum of a photon's translational and rotational velocity cannot be higher than c, this implies that such a field photon has hardly any translational velocity.

3. Planck's Constant and the Formation of Proto–Quarks and Leptons

During the collision between the two spheres, not only the velocity, *c*, will be established but also Planck's constant, *h*. The static photons are the building blocks for all fields. A very small portion of these photons react with additional basic particles (Fig.2). One additional particle added results in a proto quark with a charge of ⅓ of an electron or a positron. Adding additional particles results in a proto quark with a charge of ⅔ of that of an electron or of a positron.[5]

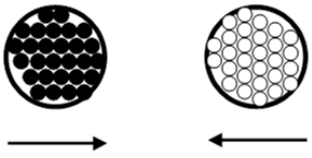

Fig. 1 Colliding spheres of positive and negative particles at the start of the universe

Table 1. Energy versus radius for basic particles

Basic particles				pair		universe
Radius	**Volume**	**Number**	**Circum-ference**	**Frequency**	**Energy**	**Energy**
m	m^3	In each sphere	m	1/s	J	J
10E-20	4.2-60	2.3E+56	6.3E-20	4.8E+27	3.2E-6	7.2E+50
10E-30	4.2E-90	2.3E+86	6.3E-30	4.8E+37	3.2E+4	7.2E+90
10E-40	4.2E-120	2.3E+116	6.3E-40	4.8E+47	3.2E+14	7.2E+130
10E-50	4.2E-150	2.3E+146	6.3E-50	4.8E+57	3.2E+24	7.2E+170
10E-60	4.2E-180	2.3E+176	6.3E-60	4.8E+67	3.2E+34	7.2E+210

Yet another additional particle will result in a proto-lepton. These proto particles are not stable. They must accommodate static photons to get the flavour of *u* and *d* quarks, electrons and positrons.

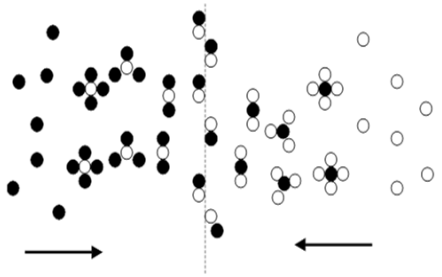

Fig. 2 Initial formation of photons, proto-quarks and proto leptons from positive and negative basic particles.

4. Fields

Almost all basic particles are used for the formation of fields. As fields determine the universe's structure, they must be present everywhere. Implicitly, there are no virgin static photons with a random orientation. They are all more or less polarised by celestial bodies. But as the universe expands, the density of these static photons is diminishing over time. It is not yet known how this will affect the universe's structure.

5. Structure of the Universe

A problem with all attempts to get a good picture of the universe is that everything is based on optical observations. Gravitation lenses prove that there must be an infinite amount of gravitational prisming, which distorts all-optical data. Hence, getting a Euclidian picture of the universe at a certain moment is very difficult. Nowhere space and time are so clearly intertwined as in the universe. For a good universe map, a model is required that can be gauged with observations. In this model, the option of a symmetric universe with matter and antimatter must be taken into account[8].

6. Mass, Forces and Energy

Mass, forces and gravitation make themselves manifest by the polarisation of the (almost) static photons around bodies. The polarization caused by mass comprises energy and, therefore, their relation. Acceleration of bodies results in more polarisation. Polarisation can be considered as an embodiment of information as proposed by Eric Verlinde[9]. Last but not least, polarisation is required to understand the machinery of the universe.

Inertial mass and gravitational mass lead to the same amount of polarization and underpin the Equivalence Principle. It also holds for antimatter when this has a negative gravitational mass[8]. A negative mass for antimatter is a requirement for its presence in the universe and proves the untenability of the Weak Equivalence Principle[10].

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