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Theory About the Universe - "And There Was Matter"

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Abstract

At first, with the Big Bang, there were energy. And then, matter appeared... How? My vision is that a precise orchestration gave birth to elementary particles at a given and predetermined energy level (cosmic DNA). Early moments of universe were very hot (more than 10 billions of degrees K). I think the very firsts to handle this energy were tachyons in supra-gamma radiation above the speed of light and that they are responsible for dark energy in an antimatter universe. At this point, energy was high enough and dense enough to give rise to matter in a form of quark-gluon plasma or quark soup. I believe that decreasing energy gave rise to particles-antiparticles in a decreasing order of mass (quarks (t and b), taus, muons, quarks (c,s,d,u) according to "cosmic DNA". At about 3000 degrees K, photons took the relay in gamma radiation at the speed of light. It took the form of an electric plasma composed of free electrons and neutrinos while gamma energy created this through pair production.

My thought is that speed-mass duality of residual photons (that did not create elementary particles) gave birth to an obscured mass called: dark matter. This whole process created all elementary particles that have amalgamed and organized to form, among others, protons, neutrons with gluons to create the very first atom of the universe: hydrogen. When the hydrogen cloud ends up generating a star under the effect of gravity, the huge thermonuclear furnace began to make heavier atoms (atomic matter) necessary to build this material universe.

Keywords: Tachyon; Photon; Gravity; Particles; Antiparticles; Dark matter; Dark energy

Introduction

The question of the origin of the constituents of the universe has always been a concern. Democritus was one of the first to question the structure of the universe [1]. He was the first to imagine a universe made and surrounded by an elementary particle called: atom. The progress of science has been spectacular since that time. From a single atom, we have moved on to a set of elementary particles that have organized and shaped, presented here with a new vision, to form the material universe in which we evolve. Energy is transformed into elementary particles via pair production of particles-antiparticles. Speed-mass duality of residual photons (having not created elementary particles) gives birth to an obscured mass (dark matter) which is neither more nor less the collagen of the universe. Tachyons evolving in the supra gamma radiation, beyond the speed of light, are responsible for the dark energy in an antimatter universe [2].

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Literature Review

As we move away into space, we move back into the past towards an increasingly hot universe. At 3000 degrees K we encounter the very beginning of the 'cosmic light photosphere'. This is the place where the radiation observed by the COBE satellite was emitted 13.7 billion years ago. At the conventional clock, the universe was about 380,000 years old. The real photosphere, with the emission of gamma rays, appeared much earlier.

A Temperature of 2.75 degrees K (-271.15 degrees Celsius) is that of microwave radiation observed today in our universe cooled by billions of years of cosmic expansion. This fossil radiation carries the memory of the past. Of the 1000 photons that roam the sky today, 999 travel since the creation of this "cosmic photosphere" or 411 photons per cubic cm of space [3].

They are evenly distributed throughout the volume of the universe. The energy of these photons, strongly degraded by the expansion, is very weak today: one thousandth of electron-volt approximately. Yellow photons emitted by the sun are, on average, a thousand times more energetic. Beyond "cosmic photosphere", the universe is opaque to photons but transparent to tachyons. These particles could allow us to auscultate the cosmic matter up to 10 billion degrees. This limit defines The "cosmic tachyosphere". An intense fossil radiation of tachyons was emitted when the universe was about this temperature. These are ‘’super photons’’ propelled by supra-gamma radiation beyond the speed of light.

The transition from 10 billion degrees K to 3000 degrees K takes just a million years, while 13.7 billion years have elapsed between the emission of original fossil radiation to the current microwave radiation (2.75 degrees K). This supra-gamma fossil radiation of tachyons could tell us about the very first moments of the universe. The enigma of these original moments is inscribed in the "cosmic tachyosphere". The more we go back in time, the more the periods are reduced. High temperatures accelerate the rate of physical phenomena (TABLE 1).

TABLE 1. **Cosmics spheres**

Sphere	Vector	Radiation	Temperature
Tachyosphere	Tachyon	Supra-Gamma	> 3k Kelvin
Photosphere	Photon	Radio-Gamma	< 3k Kelvin
Baryosphere	Baryon	Infra-Radio	< 0 Kelvin

My vision is that cosmic temperature controls demography of the cosmos. I think the Universe has its "cosmic DNA" that orchestrates the birth of elementary particles at a given and predetermined energy level (according to total rest energy (mass) of emerging particles). Decreasing energy gives rise to particles-antiparticles in a decreasing order of mass. First, there is supra-gamma energy conveyed by tachyons. At this point, energy is high enough and dense enough to give rise to matter in the form of a quark-gluon plasma or quark soup. This state consists of a strong free interaction of quarks and gluons usually confined, by their confinement color, in the atomic nucleus or other hadrons.

Thus, a few milliseconds after the Big Bang, it was the era of quarks while the universe was in a gluon-quark plasma. According to the Big Bang theory, in the nascent universe, tachyons and fermions could freely form particles-antiparticles. As universe expanded and cooled, some particles-fermions took over anti-particles fermions. Decrescendo energy, now carried by photons in gamma radiation, could no longer break their bounds. These remaining fermions have become the material around us today.

It is only at gamma energy level that matter appears in the form of neutrinos and electrons. At about 3000 degrees K, matter then takes the form of an electric plasma composed of free electrons and neutrinos while gamma energy (strong and weak) achieves this through the pair production of particles -antiparticles (FIG. 1).

Neutrino reacts very little with matter that it pierces easily. In fact, it interacts billions of times less than an electron. But contrary to the initial claims of the OPERA experiment in 2011, neutrino respects Einstein's restricted relativity and does not travel faster than the speed of light [4-6].

The energy conservation law (Lavoisier) establishes a minimum of energy for the creation of a pair fermion-antifermion (particle-antiparticle). This energy level must be greater than the total rest energy (mass) of creating fermion. To create a pairing electron-positron, the total energy of photons must be at least $2mc^2 = 2 \times 0.511$ Mev $\times c^2 = 1.022$ Mev $\times c^2$ ("m" is the mass of an electron and "c‘’ is the speed of light in the void). This energy corresponds to strong gamma rays. This phenomenon finds successfully its application in medicine with the PET scan (Positron Emission Tomograghy). Creation of less massive pairs such as neutrinos-antineutrinos require less total energy that corresponds to weak gamma rays. When remaining photonic energy decreases under radio waves, my believe is that remaining photons (that did not rise to elementary particles) begin its speed-mass duality [2]. These are baryons evolving in the ‘’cosmic baryosphere’’ below 0 Kelvin (TABLE 1). It is neither more nor less the collagen of the universe, the dark matter undetectable but widespread throughout the cosmos.

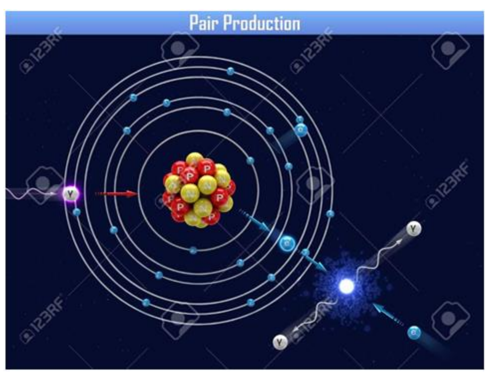

FIG. 1. **Particles-antiparticles pair production**

Tachyons are super photons whose energy is much higher than photons. Their speed is faster than the speed of light and their mass is below zero in an antimatter universe. In order of decreasing mass, there are: quarks (t and b), taus, muons, quarks (c, s, d, u), electrons and neutrinos. (FIG. 2). Protons and neutrons are an amalgam of u and d quarks when combined with electrons already formed, create the very first atom of the universe: hydrogen.

FERMIONS matter constituents spin = 1/2, 3/2, 5/2, ...

Leptons spin = 1/2			Quarks spin = 1/2		
Flavor	Mass GeV/c^2	Electric charge	Flavor	Approx. Mass GeV/c^2	Electric charge
ν_e electron neutrino	$<1\times10^{-8}$	0	u up	0.003	2/3
e electron	0.000511	−1	d down	0.006	−1/3
ν_μ muon neutrino	<0.0002	0	c charm	1.3	2/3
μ muon	0.106	−1	s strange	0.1	−1/3
ν_τ tau neutrino	<0.02	0	t top	175	2/3
τ tau	1.7771	−1	b bottom	4.3	−1/3

FIG. 2. **Mass of Fermions**

Tachyons have already disappeared in the supraluminic universe beyond the speed of light. I think they are responsible for black energy in an antimatter universe [2]. Quantum theory fixes the possible spin values of all species of elementary particles According to its decree, only integer and half-integer values (0, ½, 1, 3/2, 2...) are allowed.

Discussion

Particles of the cosmos are divided into 2 groups: fermions (electrons, neutrinos, muons, taus and quarks) and bosons (photons, W, Z, gluons) [7] (FIG. 3). These two groups are distinguished by their role in building the world. Fermions are the actors between whom the forces exert themselves. Bosons are the mediators who carry forces from one fermion to another. Electrons and neutrinos belong to the family of leptons (light). Quarks and nucleons are grouped under the name of hadrons (heavy). In fermions, quantum theory assigns half- Integer spins (½, 3/2...). In bosons, whole spins are reserved. Photons have one unit while gravitons must be a spin-2 boson.

Quarks exist in 6 flavors: U (up), C (charm), T (top), D (down), S (strange), B (bottom). Each quark also has another property named color. There are 3: blue, green and red. Particles of modern physics are grouped into three great families. Each includes 4 members: 2 quarks and 2 leptons. One of these leptons is a neutrino. The first is called electronic family. Its members include ordinary matter. The first two are u and d quarks, that are constituents of protons (u, u, d) and neutrons (d, d, u). Third is the electron of our electric currents. Fourth is neutrino emitted by our nuclear reactors. We will call it electron neutrino. The so-called muonic family is made up of quarks c and s, muon and other neutrino called muon neutrino. The third family called tauic includes quarks b and t, tau and tau neutrino. Members of the last 2 families are very rarely formed in nature. They are made artificially in the laboratory. Except for neutrinos, their existence is very brief.

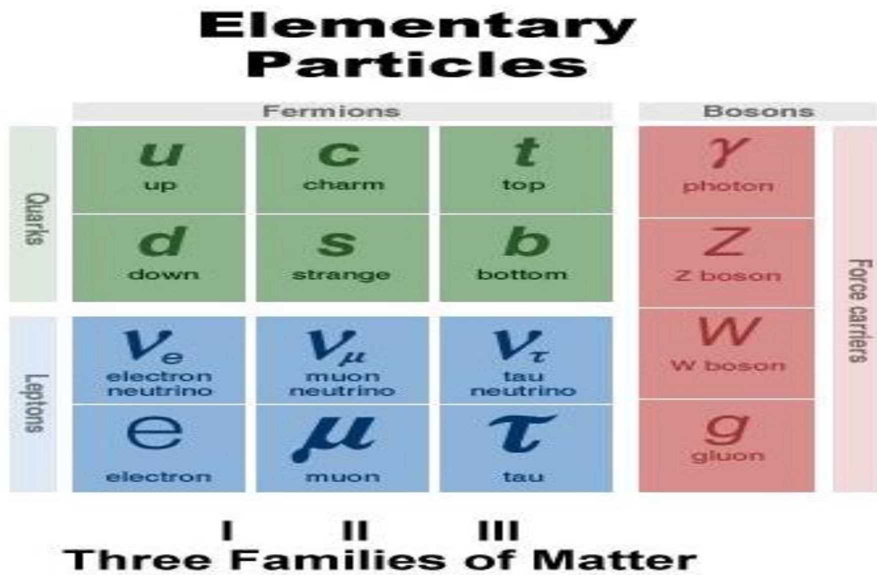

FIG. 3. **Elementary Particles**

The forces are the cohesive agents of nature. They are responsible for a huge variety of structures that exist in the universe (FIG. 4). The weak force is not responsible for any structure. It affects electrons, neutrinos and quarks. It first manifested itself as the proton/neutron decay agent.

This reaction plays a vital role in the life of stars. It controls the production of heavy elements. Its slowness gives the sun its longevity of 10 billion years. The weak force changes electrons into neutrinos and vice versa. It also changes the flavor of quarks: quarks u to quarks d for example.

The disintegration of a neutron (d, d, u) into a proton (u, u, d) is the result of the transformation of u and d quarks under the effect of the weak force. The weak force is conveyed by a set of particles called "intermediate bosons". There are 3 called: W +, W- and Z. This time, the flavor of the quarks is changed while electrons are changed to neutrinos and vice versa. Strong nuclear force restricts its action to quarks which involves an exchange of gluons. Gluons change the color of quarks. Electromagnetic force only affects electrons and quarks.

The force between two electric charges (repulsion or attraction) is transported by a virtual photon exchange. Gravity is the most universal: It acts indistinctly on everything that exists. Graviton is expected to be massless because the gravitationnal force is very long-range and appears to propagate at the speed of light.

Property \ Interaction	Gravitational	Weak (Electroweak)	Electromagnetic (Electroweak)	Strong: Fundamental	Strong: Residual
Acts on:	Mass – Energy	Flavor	Electric Charge	Color Charge	See Residual Strong Interaction Note
Particles experiencing:	All	Quarks, Leptons	Electrically charged	Quarks, Gluons	Hadrons
Particles mediating:	Graviton (not yet observed)	W^+ W^- Z^0	γ	Gluons	Mesons
Strength relative to electromag for two u quarks at: 10^{-18} m	10^{-41}	0.8	1	25	Not applicable to quarks
Strength relative to electromag for two u quarks at: 3×10^{-17} m	10^{-41}	10^{-4}	1	60	
for two protons in nucleus	10^{-36}	10^{-7}	1	Not applicable to hadrons	20

FIG. 4. **Properties of the interactions**

W and Z bosons are very massive, their masses are respectively 80.4 and 91.2 GeV /c2 (about 100x the mass of a proton). They move slowly and do not live long. Whereas in a nucleon, the nuclear force between quarks is transported by gluons, in an atomic nucleus, force between nucleons is transported through massive bosons composed of 2 quarks. The presence of embryonic structures should manifest itself very early in the evolution of the cosmos. Fossil radiation should reveal traces. In hope of solving this problem, American COBE satellite (Cosmic Background Explorer) was launched in 1988. First results, published in 1990, confirm the thermal origin of fossil radiation [8]. Indeed, temperature variations are finally detected at the level of one part per 100,000. The germs of great structures of the cosmos are there. In these minute granularities, the temperature is lowered so that the first constituents of the universe can be formed. Thus, when energy corresponds to the mass of a quark, quarks and antiquarks appear. As for electrons, the presence of nucleons in our contemporary universe proves that quarks were previously a little more numerous than antiquarks. Here we find particle-antiparticle asymmetry. Surplus quarks have survived this hecatomb and today constitute the substance of our atomic nuclei. If, at the beginning, these quarks and antiquarks had been in strictly equal numbers, there would be no more nuclei in the cosmos. The same phenomenon applies to the elementary particles called leptons from gamma energy (electrons, neutrinos) (FIG. 5).

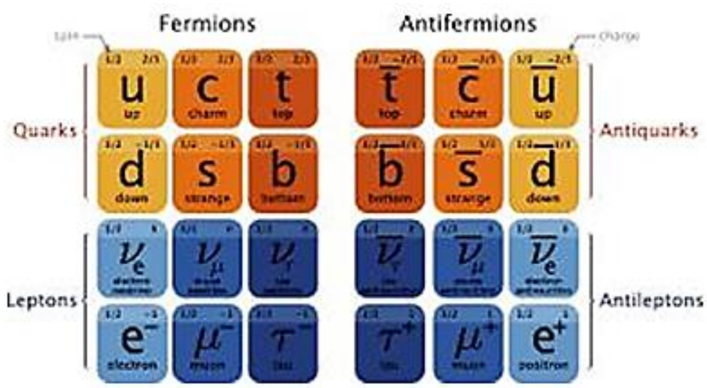

FIG. 5. **Particles-antiparticles**

Thus, quarks will combine two or three by three, through gluons, to give the pions and nucleons. When temperature drops below 3000 degrees K, the newly formed protons fix free electrons and the universe transforms into a transparent hydrogen gas in the light. The primordial homogeneous mash would have hosted minute temperature fluctuations favoring birth of particle-antiparticles (quarks-antiquarks, leptons-antileptons) at the origin of the hydrogen atom. Through their gravity fields, these dense regions attracted to them free electrons to form more hydrogen. This snowball effect gradually empties space between germs continually accentuating density contrasts of primordial mash. From there would be born great structures of the universe. When the hydrogen cloud ends up generating a star under the effect of gravity, the huge thermonuclear furnace begins to make heavier atoms.

Atomic nuclei are aggregates of protons and neutrons. Atoms consist of a nucleus around which electrons orbit [9] (FIG. 6). At each atom corresponds a chemical element. There are a hundred.

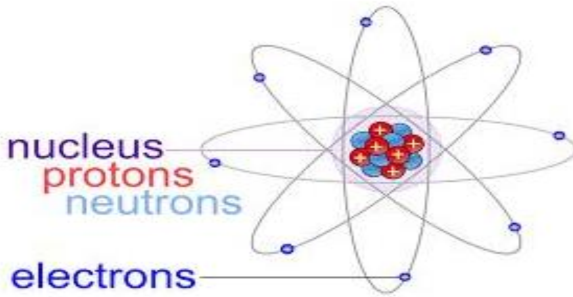

FIG. 6. **Atom.**

Each carries a number that specifies the number of protons in its nucleus as well as the number of electrons in its orbital procession. Number one is hydrogen, number 2 is helium, 6 is carbon, 26 is iron, 82 is lead, and so on. Many of these atoms appear in different varieties called "isotopes". Isotopes of a chemical element differ in the number of neutrons in the nucleus. Isotope of ordinary hydrogen (a proton) is heavy hydrogen or deuterium (a proton and a neutron). Tritium contains a proton and 2 neutrons (FIG. 7). Helium has 2 isotopes: Helium-3 is composed of 2 protons and a neutron while helium-4 is composed of 2 protons and 2 neutrons.

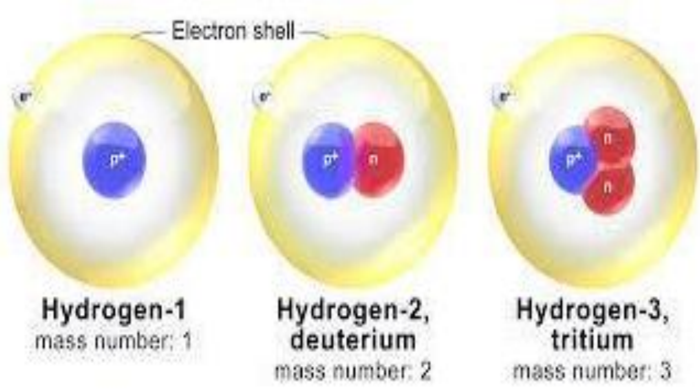

FIG. 7**. Isotopes of hydrogen.**

There are nearly a thousand stable isotopes in nature. Uranium contains two near-stable isotopes: 235 and 238. Depleted uranium contains less 235 than natural uranium [10].

Conclusion

The energy of the Big Bang is first propelled by tachyons in the supra-gamma radiation and then, by photons, in the gamma radiation. My believe is that this energy, orchestrated by cosmic DNA, gives birth to a variety of elementary particles via pair production of particles-antiparticles and dark energy in an anti-matter universe. These elementary particles will amalgam to build atomic matter. My thought is that remaining photons will give birth to dark matter in the infra-radio radiation (baryons). The matter thus formed can seed and give birth to stars and planets of billions facets. Fortunately, at least one of them was able to organize and shape itself in such a way that it could give birth to life. Where are the others ?

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