

Part 6
Conclusions

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CONCLUSIONS

1. The theory

The theory presented assumes that there is a phase of creation of mass followed by a phase of annihilation of that mass in total, nevertheless with a time-shift, so as to leave a resulting mass of 1% of the total mass created.

Moreover this “massification/demassification” phenomenon is also creating a second effect of electromagnetic origin and resulting in the dipolar magnetic moments of the neutron and proton.

These processes are linked to the Higgs boson and BEH mechanism endowing particles with mass.

Is antimass possible? If there is a process of creation of mass, considered as “positive mass” nothing prevails positive mass to be annihilated, passing from positive to zero, and being an antimass, being negative in comparison to positive mass. Indeed, this negative mass cannot exist before there is a positive mass and should be considered as a reaction to the creation of positive mass. Also, it cannot be bigger than the mass.

This phenomenon could also explain the discontinuity of matter, passing from +1 to 0 by “demassification” or “annihilation”, and being remassified through a constant massification/demassification process.

2. Mass and antimass versus matter and antimatter:

These two concepts are not to be confused. The charged matter is the combination of mass and electromagnetism, the latter being equal to mass + antimass. An electron has an electron mass and an electron negative charge which is the combination of mass + antimass.

So:

- electron mass 1
- electron charge -1 = mass 1 + antimass 1

For the positron it is the following:

- positron mass 1
- positron charge +1 = antimass 1 + mass 1

Antimatter is mass + [antimass + mass] = mass 1 and charge + 1
and matter is mass + [mass + antimass] = mass 1 and charge -1

So, it is to consider two states of mass for the matter, positive and negative. As far as electromagnetism is concerned, there are also two states, positive and negative, deriving from the two states of mass.

At the quantum level the baryonic matter is constituted with a neutron-proton trunk (1,800 electrons masses) and gluons whose mass and charge behavior is compatible with the hypothesis presented.

3. The weak nuclear interaction

The massification/demassification process builds the neutron in a progressive way. Once this process is at its end:

- The neutron "empties" itself progressively, line by line and column by column, from the masses external to the trunk of the neutron which it had accumulated during the process of "mass appropriation". This process of mass expulsion is thus the counterpart of the process of mass appropriation and allows for the equilibrium of the nucleon between neutron and proton.
- The electrons are ejected from the neutron/proton 1 by 1 according to a quantized phenomenon. The observer sees "an electron which carries out a trajectory on an orbit": in fact, the number of electrons is very important on an "orbit" but only one is detectable at any one time since each of them is annihilated by antimass to create an antineutrino immediately after having been ejected.
- The phenomenon indicates also that the electron does not "travel" over the whole orbit but that there are empty spaces: in fact, it is each time another electron that appears and disappears by annihilation.

- This electron has no tangential speed: it is radially ejected, remains immobile, in equilibrium in a position determined by its ejection energy and disappears immediately by annihilation through antimass in order to make place for the following one, which will place itself in another position, depending on its proper ejection energy.
- The neutronic phenomenon "mass appropriation" conserves all its force, but it is challenged by the protonic phenomenon "mass annihilation". This leads to a constant renewal of the nucleon in its neutronic form and a quasi-instantaneous annihilation in protonic form. The proton is therefore the result of this equilibrium, which one observes by the "appearance" of positive electromagnetism and antimass. One has seen that these two phenomena exist also in the neutron, but that they are hidden by the negative electromagnetism and by the mass, (and the positive arrow of time).

So, the weak force, as well as the electromagnetic force is a consequence of the massification /demassification process. As a consequence, the electroweak interaction is part of the BEH mechanism. Electromagnetism is a condensation of mass and antimass since the beginning of the process of massification/demassification. It reflects to the total of the mass and antimass set in motion. This could explain the value of the density of space, as much more mass and antimass are involved than that observed.

4. The strong nuclear interaction

Unlikely the classical fusion process, the nucleosynthesis presented in this paper has other properties. The classical fusion process occurs once the two nuclides have a mass and a charge, hence the difficulty to fuse them. The nucleosynthesis based on the Higgs boson and BEH mechanism occurs before the mass has a charge.

There is a difference between this type of "fusion" and the classical fusion. In the "classical" type of fusion poles of neutron and proton have to disappear in neutrons or gamma particles to make place for the nucleons "imported". The process proposed is different: it modifies a pole of neutron or proton into a new neutron or proton without having to expel any pole, hence no neutron, proton or gamma rays are expelled. The process of creation of a new neutron or proton from one pole of neutron or proton is exactly the same phenomenon than that one of the creation of an electron from the gluon. The gluon is an electron which lost 99/100th of its mass, to get a mass of 10⁻² of an electron, then 10⁻⁴, etc. It recovers its former mass at the end of its course and becomes again an electron which is expelled. The electron is expelled with the energy coming from the accumulation of mass and antimass into energy during the "down" process (electron losing its mass). During the "up" process the electron is recovering its mass. The strong nuclear force is the same interaction. Nevertheless, it concerns a whole pole of nucleon and not only one electron. So, weak and strong forces are part of the same phenomenon. Moreover, both interactions are the consequence of the BEH mechanism.

The distribution of binding energy in each nucleus and its isotopes as shown in the present paper is fundamental for understanding the transmutation process. It allows to determine how the binding energy evolves, nucleus after nucleus, isotope after isotope. This is essential for transmutation process comprehension as the difference in the distribution of binding energy between the elements present at the beginning of the reaction and at the final stage is directly related to the energy released.

Basically, only five bond types are necessary to describe the systematics of the binding energy within the nuclei: the binding energy of α particle (actually ${}^4_2\text{He}$), of NN which is part of α particle binding energy, NP (Deuterium binding energy), NNP (Tritium binding energy), and NPP (${}^3\text{He}$ binding energy).

Each α particle is linked to two other α particles in a linear way and/or in a cross way. As well, each N supplementary is linked to two α particles by (NN + NP) bonds. These bonds could be replaced by NNP or NPP bonds. So, the stability of a nucleus is reached if the number of lines is optimal (for definition of lines, see chapter 2). If the number of lines is not important enough the nucleus decays EC or β^+ , if the number of lines is too important the nucleus decays β^- . The valley of stability is reached when the binding energy value of the nucleus is located between +/- 1% of its experimental value. Also, the number of N supplementary is important for the stability of the nucleus. In the case of Iron, this number stretches from 2 N to 6 N supplementary with a peak at 4 N

(${}^{56}_{26}\text{Fe}$). The increase of N supplementary number allows for the increase of lines number within the nucleus and so for its stability. Nevertheless, if this lines number becomes too important, the β^- decay occurs.

The net binding energy is either positive (demassification) or negative (remassification).

The poles and lines are composed out of gluons and are behaving as the electrons. In other terms, the weak nuclear interaction process is the same as the strong nuclear interaction one. The difference of intensity is the consequence of the quantity of gluons/electrons involved.

So, the net binding energy is proportionate to the number of α particles and to that one of the supplementary neutrons or protons. The increase of the binding energy is linear, about 7 to 8 MeV each time one nucleon is added to the nucleus. Each time a neutron is added a bond is yield which has either (NN + NP) value or NNP or NPP values.

5. Overall conclusions

The creation of mass, especially that one of neutron, proton, and electron, is linked to the process of “massification” induced by the Higgs boson endowing particles with mass. As there is a process of mass creation, an opposite process of mass annihilation is considered. This is resulting in a global phenomenon of “massification/demassification” of the particles. The stable particles have the particularity to be massified, demassified and remassified in the frame of an iterative process. The non-stable ones are massified and demassified.

This phenomenon leaves a resulting baryonic mass due to the time shift occurring between the massification and the demassification of the particles. This has several consequences:

- The baryonic mass is the result of a creation of mass M at instant t and the annihilation of that same mass M an instant later, $t + 1$. The baryonic mass can be described as $M - M' = 1/100 M$. M can be described as M' as far as mass is considered, but there is a time shift between creation and annihilation of the mass M resulting in a difference of mass of $1/100 M$. So, baryonic mass is the consequence of time.
- Therefore, baryonic mass cannot exist outside time, and mass M can be described as energy when existing outside time. Mass and energy are equivalent; nevertheless, these two notions are not the same as regards time.
- The Higgs boson is part of the matrix of matter (Matteron) which endows particles with mass.
- The mechanism of massification/demassification is responsible for the discontinuity of matter as the mass is positive at one instant and equal to zero at one instant later. So, the mass is acting as antimass one instant after having acted as mass.
- Mathematically, one observes a positive mass and a negative mass immediately after, this resulting in null mass. Nevertheless, the physical reality is about creation of mass and annihilation of that same mass an instant later.
- This process is iterative as far as it concerns stable mass. So, in practice there is a mass at quantum instant t , no mass at $(t+1)$, again a mass at $(t+2)$ and no mass at $(t+3)$, this process endowing the mass with its property of discontinuity, the mass being “alive” at one instant, and “dead” one instant later.

Mass and antimass combine to create electromagnetism:

- mass + antimass = negative electromagnetism.
- antimass + mass = positive electromagnetism.

Mass and antimass do not have to be confused with matter and antimatter. The electron is constituted out of an electron mass + an electron negative charge (= mass + antimass), the positron is constituted out of an electron/positron mass + a positive charge (= antimass + mass).

6. Interconnection of baryonic particles with Higgs boson and Matteron particles

Baryonic particles are linked to Higgs boson and Matteron particles. This is the case for each neutron, proton, and electron in nature. This means that these particles are yielded by the Higgs boson and are not produced by the vacuum. This means also that the human body, especially the human brain, is interconnected with the Higgs boson particles through the neutrons, protons, and electrons out of which this brain is constituted. So, our process of thinking is influenced by that interconnection. This phenomenon could explain some properties of the human brain and deserves special interest.

So, every cell of the human brain and body is made out of molecules, themselves made out of neutrons and protons - electrons. Each of the latter particles is generated by a Higgs boson and Matteron particle as the result of the massification/demassification process. This means that the human brain and body are finally constituted with a brane of positive mass offset by a brane of negative mass, both forming an aura of no-mass substance intimately linked to the mass of those brain and body. This is the case for every mass or matter. Nevertheless, only human beings are conscious of this phenomenon.