

# The Standard Model Theory [may be] a Wrong Theory

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## Abstract

The Standard Model is the theory of Physics that describes the *elementary particles of matter* and the *strong, weak and electromagnetic interactions*, between them. The theory of the Standard Model does not include the description of the *gravitational interactions*. It is a *very well founded theory* that has predicted many experimental results, such as the existence of many particles and has withstood many experimental tests. The key missing piece of the theory to fill in was the *Higgs boson*, whose existence was reasonably suspected and confirmed by CERN's ATLAS and CMS experiments in 2012. The current synthesis of the theory was completed in the mid-1970s, after the experimental confirmation of the existence of the quarks, and then confirmed, with the discovery of the Higgs boson, in 2012. All these, are according to the established views of science.

But according to the opinions of many scientists, opinions with which I as the author of this paper agree, the theory of the Standard Model is a *wrong theory* because, while it makes some successful predictions, it does not answer to a number of many other questions that it should answer for its final establishment. Specifically and according to established views, the theory cannot explain the existence of *dark matter* and *dark energy*, the behavior of *neutrinos* and the existence of particles with very *different masses*. It is also questionable whether the *Higgs boson*, discovered in the ATLAS experiment is actually the particle that contributes to the creation of the mass of the elementary particles of matter, and whether the Higgs mechanism is theoretically a correct mechanism. There is doubt if the interactions, actually be created by the exchange of bosons? If bosons are really exist? And not any convincing explanation is given by the theory, for the case that, the bosons exist as particles, where were they found? And how do they work?

For replace, or fill the void will be left by the theory of the Standard Model, which I believe sooner or later will be renewed or retired, I propose a New Model that more convincingly describes the elementary components of matter and the interactions between them. The New Model also *addresses all the weak points* of the theory of the Standard Model, including the *interaction of gravity*. But the main feature of the New Model, which will *surprise you!* is its reliability, correctness, logic and simplicity. But this is something you will judge after studying the New Model.

## Introduction

One of the main issues that concern scientists today is to discover the fundamental components of matter and antimatter and the way in which, from these fundamental components, the rest of the particles, the masses, the antimasses, the material bodies, were subsequently created and then the Universe, perhaps, many other Universes and Antiuniverses and the Cosmos.

Many theories have been proposed for this issue. Of the theories proposed, the Standard Model theory prevailed due to the fact that it predicts many experimental results, such as the existence of many particles, and has successfully withstood many theoretical and experimental tests.

But despite all its successful predictions, the theory of the Standard Model, as we will see, also makes many wrong predictions and leaves behind it, many unclear points and many unanswered questions. The theory's wrong predictions, the ambiguities and unanswered questions, are so numerous and so basic that they lead us to the unquestionable conclusion that the theory is false. This means that there is an absolute need for a new theoretical proposal that describes to us, in a more convincing way, the elementary components of matter and the interactions between them. I believe that this need can be realized by establishing of the New Model proposal for the elementary particles and fundamental interactions, which I describe below, after the briefly describing the Standard Model and its weaknesses.

## **The Standard Model**

I thought it appropriate, before describing the weaknesses of the Standard Model theory and before write the New Model, to write a very brief description of the Standard Model theory [3], which I believe will relieve the readers from having to search, for find some decent description of the theory. I believe that this very brief description will also help the readers in a better understanding of this work.

Thus, in a few words, the theory of the Standard Model describes the elementary particles of matter and antimatter, from which the rest of the particles, of matter and material bodies, were created. It also describes the interactions between these particles and antiparticles, which take place in the creating of the next generations of particles.

The elementary particles as described by the theory are divided into two categories: the particles of matter called *fermions* and the particles of interactions called *bosons*.

### **The fermions**

The fermions are the building blocks of matter and are grouped into two families which are:

The six quarks: Up quark (u) with charge  $2/3e$  and down quark (d) with charge  $-1/3e$ , charm quark (c) with charge  $2/3e$  and strange quark (s) with charge  $-1/3e$ , and top quark (t) with charge  $2/3e$  and bottom quark (b) with charge  $-1/3e$  and

The six leptons: The electron (e) with charge  $-1e$  and the electron neutrino ( $n_e$ ), with charge  $0e$ , the muon (m) with charge  $-1e$  and the muon neutrino ( $n_m$ ), with charge  $0e$  and the tau (t) with a charge of  $-1e$  and the tau neutrino ( $n_t$ ), with a charge of  $0e$

### **The bosons and the Higgs particle**

The bosons are the carriers of the interactions and are:

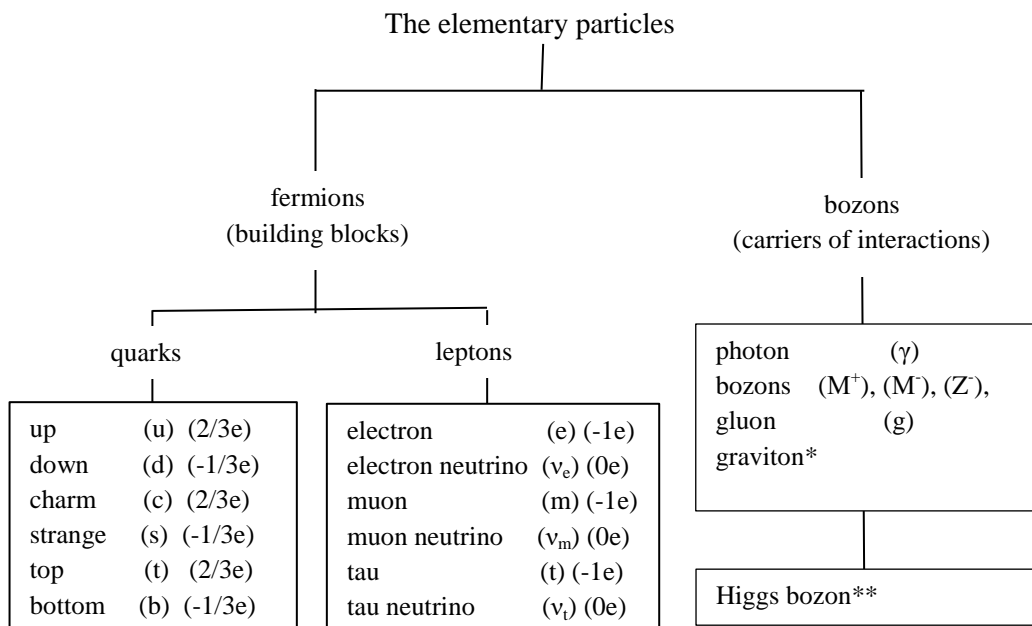
The photon ( $\gamma$ ), carrier of the electromagnetic interaction, the particles,  $W^+$ ,  $W^-$ , and  $Z$  carriers of the weak interaction, the gluon (g) carrier of the strong interaction and the Higgs particle that creates the mass of the elementary particles.

The possibility of describing the gravitational interaction, through a boson is also being investigated. For this boson, although there is no evidence so far, it has already been named graviton. The corresponding theory that is being developed for the gravitons has already been called, Quantum Theory of Gravity.

For every matter particle there is also a corresponding antimatter particle, which has the same mass as the corresponding matter particle, but an opposite electric charge. Antiparticles are denoted by a line above the name of the corresponding particle. Bosons have no antiparticles.

Diagram 1 below shows the elementary particles according to the Standard Model theory:

**Diagram 1.** The elementary particles according to the Standard Model theory



Note: \*The graviton particle has not yet been detected, there is not any characteristic of it except that it must be a very weak boson, that is why it is not included in the Standard Model theory.

\*\*The Higgs boson does not take part in interactions but contributes to the creation of the masses of the elementary particles.

### Various general details of the Standard Model theory

The electromagnetic interaction, has an infinite radius of action, propagates through photons ( $\gamma$ ), which are massless particles. The strong nuclear interaction between quarks has a small radius of action and propagates through gluons ( $g$ ) which are also massless particles. At high energies, the electromagnetic and weak interactions are described by a generalized electroweak interaction where the  $W^+$ ,  $W^-$  and  $Z$  particles, which propagate the weak interaction, gain mass, which is compatible with the small radius of the weak interaction. The “weak” interaction is not perceptible and, contrary to the electromagnetic interaction, is not conserved.

Leptons are free particles. They can be charged particles: electron, muon and tau ( $e$ ,  $\mu$ ,  $\tau$ ), so they perceive the electromagnetic and weak interactions, or neutral particles: neutrinos ( $n_e$ ,  $n_m$ ,  $n_t$ ), so they perceive only the weak interactions. Quarks perceive all three interactions, but they do not occur freely in nature. They are observed only in complex states of particles created by quarks, the hadrons. The most common hadrons are: the proton and the neutron.

Within the Standard Model theory, we consider the elementary particles to have mass. But this consideration violates the electroweak symmetry and the theory begins to show serious problems of predictability and self-consistency. To circumvent this case, the “Higgs mechanism” was devised which spontaneously breaks symmetry by assuming that the vacuum is filled by a field which has only a weak charge. Weakly charged particles ( $W^+$ ,  $W^-$  and  $Z$ , and leptons) are slowed down by interacting with the Higgs field, and thus “gain” mass. The mass of the Higgs particle itself is about 125 GeV, but it is not created by the Higgs mechanism. The discovery of the much-anticipated Higgs particle was confirmed by CERN with the ATLAS and CMS experiments in July 2012. However, it is doubtful whether the discovery of the Higgs particle also confirmed the “Higgs mechanism”. This is the reason why research on the Higgs particle and the Higgs mechanism continues.

### **The weaknesses of the Standard Model theory**

Although the Standard Model theory, as I described it in above summary, is characterized as a *very well founded* theory, which has predicted many experimental results, and has withstood many experimental tests, in its details the theory also presents *many weak points*, which must be clarified, before its establishment, namely:

✓ *Are quarks and the electron really elementary particles?* In diagram 1 on the previous page, we notice that there are elementary particles, (the down quark, the paradox quark, the bottom quark and their antiparticles), with a charge of  $-1/3e$  and  $+1/3e$ . This means that particles with a charge multiple of  $1/3e$ , (the up quark, the charm quark, the top quark, the electron, the muon, the tau, and their antiparticles), must be composite particles. From this only observation we see that the Standard Model theory is self-refused. !

✓ *Do bosons really exist? And if they exist, how were they created? How do they work and how do they all coexist in nature?* All bosons, including the photon, are indirectly detected by their effects. For the graviton, which is the supposed boson that creates the gravitational interaction, there is not any indication, not even an indirect detection, which is the reason why the gravitational interaction was excluded from the interactions of the Standard Model. In the next section where I describe the New Model for elementary particles and interactions we will see that bosons as elementary particles do not exist. And not only do bosons not exist, but physics to explain the interactions don't need them. !

✓ *How is the behavior of neutrinos particles justified?* The transformations of neutrinos observed in the various experiments lead us to the conclusion that neutrinos particles must not be elementary particles. !

✓ *How does the Standard Model theory explain the accelerated motion of the Galaxies?* According to the Big Bang theory, the movement of Galaxies in the Universe had to be either constant or decelerated. However, but experimental observations lead us to the conclusion that Galaxies are in accelerated motion. This accelerated movement cannot be explained by the Standard Model theory. The attempt to provide some explanation for the accelerated motion of the Galaxies by introducing the concepts of “*dark energy*” and “*dark matter*” did not bring any substantial result. It probably confused things even more and created more problems in the theory.

✓ There are many other weak points of the Standard Model theory, but I will not insist further more on the description of the weak points of the theory, since this paper is not intended to describe the weak points of the Standard Model, but the purpose of the paper is to prove that the Standard Model theory is wrong. In this sense and in order not to insist further more on views that may not interest the readers, I believe that the above weak points I describe are in favor enough to reject the theory.

### **A New Model, for the subatomic particles and the elementary interactions. The New Model includes and the interaction of gravity**

In addition to the weaknesses I have described above for the Standard Model theory, which if not clarified and as I believe will not be clarified, reject the theory; another weak point is that: there are many worthwhile proposals for the renewal or replacement of the theory of the Standard Model, which, however, for unknown reasons are rejected, without being studied or taken into account.

Among these proposals, is the New Model that I describe below for the origin of the *structural components of matter* and the *strong, weak and electromagnetic interactions* between them, which includes the *interaction of gravity* and describes with greater clarity, simplicity and reliability the origin of the structural components of matter and the interactions between them. The New Model that I propose is fully adapted to all theoretical and experimental data of science, there are till to date.

So according to the New Model:

***“Everything in the Cosmos<sup>1</sup> was created by two particles, the Pointon and the Antipointon, and by a single interaction, the Electromagnetic Interaction!”***

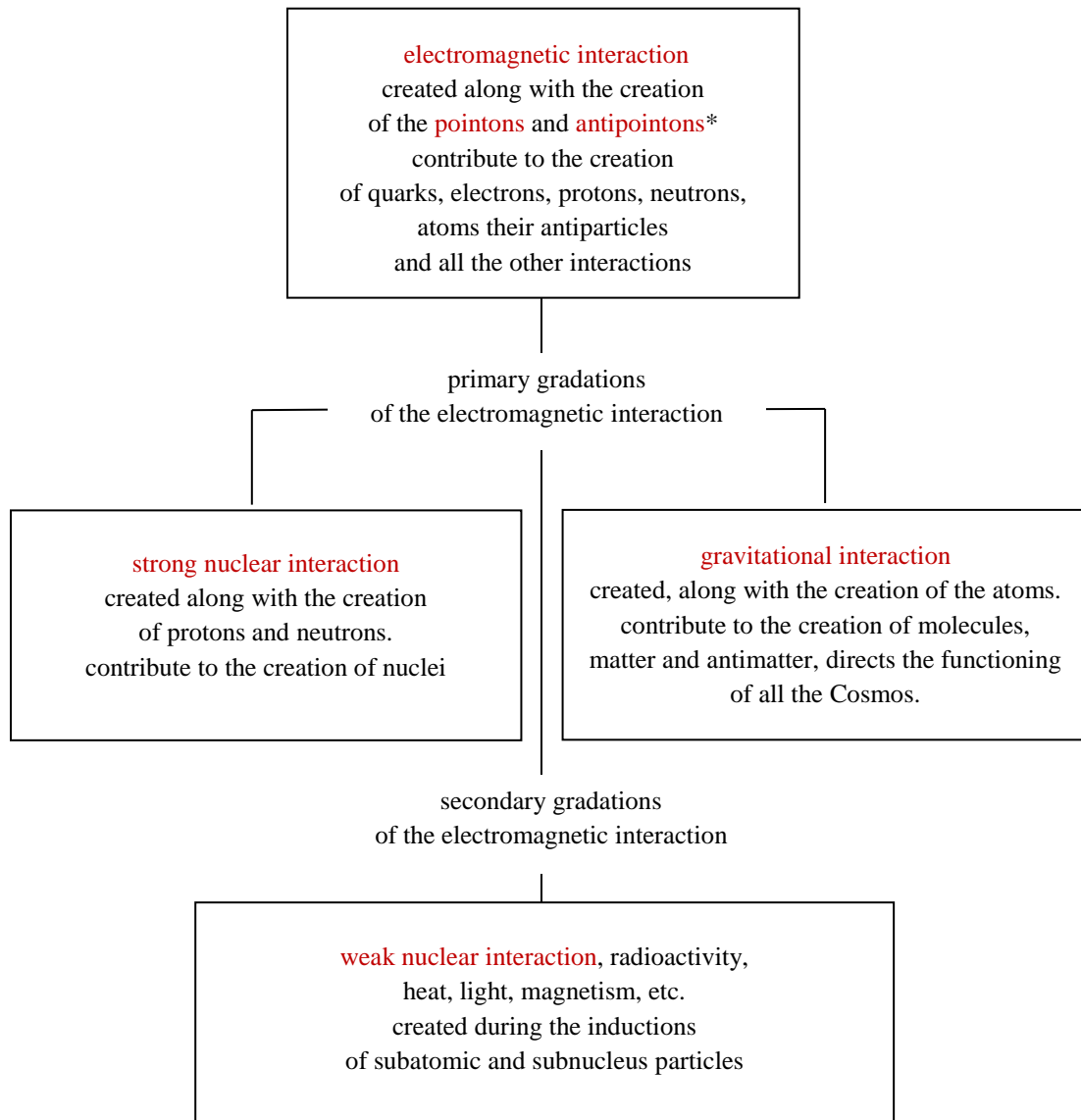
The *electromagnetic interaction* is created along with the creation of the *pointons* and *antipointons*, as an attraction or repulsion, between these particles without the need for the mediation of a boson (the photon ‘ $\gamma$ ’), to create this attraction or repulsion. With the creation of the first pointons and antipointons, a lightning *chain*

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<sup>1</sup> According to the Chain Reaction Theory [1] Chapter 6, together with the Universe, the Antiuniverse is created too. Many other Universes and Antiuniverses are also created, which altogether create the Cosmos.

*reaction* producing pointons and antipointons began, which continues to produce particles till today at the limits of the Cosmos. The particles produced by the chain reaction are elementary particles, that means ere the smallest subdivisions of matter and antimatter. They are simply charges,  $+1/3e$  and  $-1/3e$ , massless, with inertial and had almost zero dimensions (diameter  $<10^{-30}m$ ).

**Diagram 2:** The classification of the fundamental interactions according to the theory of the chain reaction



Note: \*According to the New Model, the elementary components of matter and antimatter as well as all interactions are limited to the two particles *pointon* and the *antipointon* and the *electromagnetic interaction*. !

With the help of the electromagnetic interaction, the pointons and antipointons were attracted and repulsed to each other, and: a) either collide and annihilate each other, b) or move freely at speeds proportional to the speed of light or the electromagnetic interactions, c) or enter in rotational orbits around their opposite

charged particles. In the third case, they create the next generation of particles, namely: the up and down quarks, the electron and their antiparticles, which are particles with mass<sup>2</sup> (which is created without needing the Higgs mechanism) and dimensions<sup>3</sup>.

Then without needing of any other interaction, (or the gluons ‘g’, accepted by the Standard Model theory), from the up and down quarks and by the help of the rotational orbits and the electromagnetic interaction, protons and neutrons are created. Together with protons and neutrons, the first primary gradation of the electromagnetic interaction is created, the *strong nuclear interaction*<sup>4</sup>, (again without needing the gluons ‘g’), which contributed and contributes to the creation of the Helium nuclei and then the nuclei of the other atoms. The Hydrogen nuclei had already been created since they consist of simple protons.

From the nuclei of Hydrogen and Helium and the electrons, the atoms of Hydrogen and Helium were created, by the known mechanisms that we all know, without needing any other interaction. But together with the creation of the atoms of Hydrogen and Helium, the second primary gradation of the electromagnetic interaction, the *interaction of gravity*<sup>5</sup>, (without needing the graviton particles), which contributed and contributes to the creation of molecules, matter and antimatter and then directs all the creation and the functioning of our Universe and all the Cosmos.

The remaining interactions, namely: The *weak nuclear interaction*<sup>6</sup>, the radiation, the heat, the light, the magnetism, etc. are created during the inductions of the subatomic and subnuclear particles and are characterized by the New Model as secondary gradations of the electromagnetic interaction.

At this point I conclude the brief summary of the New Model that I propose. As you will notice, the only elements needed to describe the New Model are the two elementary particles *pointon* and *antipointon*, the *electromagnetic interaction* and the *chain reaction*, producing the pointons and the antipointons...some right thinking and nothing more.!

Diagram 2 on page 6 summarizes the whole process above. But I have a feeling that I’ve tired you enough with my pointons and antipointons, the chain reaction, the

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<sup>2</sup> The mass, of the up and down quarks, the electron and their antiparticles, is created when the pointons or the antipointons enter in spin orbits around their oppositely charged particles, to create the up and down quarks, the electron and their antiparticles, [2] Chapters 4 and 5.

<sup>3</sup> The dimensions of the up and down quarks, the electron, and their antiparticles are created by the diameters of the spin orbits of the pointons and antipointons around their antiparticles.

<sup>4</sup> The strong nuclear interaction, when the protons and neutrons are at a distance from each other, is a very weak interaction, analogous to the gravitational interaction, but when the protons and neutrons come closer, it changes into a very strong interaction analogous to the electromagnetic interaction.

<sup>5</sup> The gravitational interaction is created by the masses of electrons, protons and neutrons and by the difference  $dF_e$ , of the attractive and repulsive forces of electrons and nuclei of the atoms, [2] Chapter 4 and 5 and viXra: 2205.0051

<sup>6</sup> The New Model considers the weak nuclear interaction as a secondary gradation of the electromagnetic interaction.

gradations of the electromagnetic interaction etc. This is why I am closing the work, leaving the rest of the details, for the readers who want to delve deeper and study more into the subject of elementary particles and interactions, to find and study them in my books, [1] and [2].

### **Judgments, conclusions and proposals**

From the above analysis we notice that, to explain the origin of the structural components of matter and the strong, weak and electromagnetic interactions between them, there is the theory of the Standard Model. But the theory of the Standard Model does not agree with many of the existing experimental and theoretical data of science. This is why science must: either to revise the existing data, which is something probably impossible to happen: or to readjust the Standard Model to this data.

Unfortunately, however, the proponents of the theory of the Standard Model, who also represent the established views of science, oppose the revision of the theory, or make wrong choices in their attempt to readjust the data of the theory, as for example: the *de facto* establishment of the quarks and the electron as elementary particles, while there are indications that these are not elementary particles and: the explanation of the phenomenon of the accelerated motion of the Galaxies through the disputed concepts of “*dark energy*” and “*dark matter*”, resulting in the confusion even more.

At the same time, they reject, for unknown reasons, all the new opinions that come from small researchers, such as for example the New Model that I propose above, a proposal that I believe could offer very positive results. I personally believe and have absolute certainty that with the study of the New Model all the weak points of the theory of the Standard Model would be clarified and new paths would be opened in the evolution of Physics.

At this point, instead of an epilogue, I will make a hypothesis, a request and two very simple questions, namely:

✓ The hypothesis is that, I consider it necessary that established science, in its investigations, in addition to the great Research Centers and the great Universities, should also include the small researchers that today have ignored them. Of course, the works of small researchers are so many and the majority of them they are wrong works. But it is quite easy for science, if there is a will, to single out the good works and study them. Let’s not forget that Copernicus and Galileo when proposed the theory of the Heliocentric System, on which the new modern Cosmology was based, were being characterized in their era as insignificant and rather as heretical researchers. And let us keep in mind that accidental discoveries are not made only by great Research Centers and by great Universities but by all scientists.

Many friends urge me to send the paper to be peer-reviewed and then to publish it in a reputable journal. But I believe that, with the current mentality, the paper will not be published, and even if it is published, it will not be supported and will soon be forgotten. This is the reason I preferred to personally address the scientists, who deal with related issues, so that they can judge the work themselves.

✓ After the above paragraph, the request been spontaneously created, is an exhortation to the readers to carefully study the paper and if they find it interesting, to



support it. Don't let the work go unnoticed. Science needs such works. Supporting the work is the greatest service you could offer to Physics today. I personally believe that if the New Model be established, even temporarily there will no longer be any matter of subatomic particles and fundamental interactions. !

✓ And I will finish the work with two questions: If the scientific world, participating in the research of the particles and the interactions *is aware of the existing situation?* That is to say, a large part of the Modern Physics, of the particles and the interactions, is based on wrong theories and, if they are aware, then: *how they react, or how they think of reacting?* After studying this paper.

### **References**

- [1] V. Talios, "*From Elementary Particles to the Limits of the Infinite Cosmos*", Nova Science Publishers, Inc. (2020).
- [2] V. Talios, "*A Modern Theory of Everything*", Laplambert Academic Publishing (2021).
- [3] The theory of the Standard Model is described in to many works and in to many books. While writing the work I had been studied many of these papers. This is why I do not refer to any specific literature.