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Prime Theory

All of nature's forces in a single theory!

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1. INTRODUCTION

Why this theory?

- Because at this very moment, in 2015, we still do not have a unified and complete theory of the Universe.
- Because it is not reasonable to believe that interactions simply propagate through space and exert effects at a distance, without any kind of intermediary.
- Because actual physics does not offer coherent explanations or theories of mass, gravity, electric charge, fields and elementary particles.
- Because the Theory of Relativity (Einstein) alone cannot create the whole foundation of the physics domain.
- Because the modern Standard Model of particle physics is incomplete, very abstract and it does not explain some basic concepts and principles.

In our time, with all the large particle accelerators and the unprecedented evolution of science in general, a complete model of the reality we are facing is still not available. Complex theories are describing the phenomena, the fields and the interactions. Vast quantities of experimental data and scientific observations accumulate, but they still do not reach the critical level needed to make qualitative improvements in explaining the elementary notions used by these theories. However, no philosophical, mathematical or any other form of barrier can stop us from discovering everything, because our thinking powers, our sense, logic and technology are continuously growing and developing.

This means we are evolving every day and will eventually overcome all potential obstacles.

Any experimental limitations, any principles or theorems denying our possibility to fully understand a closed system such as the Universe may be surpassed by human creativity and intelligence. Therefore, I optimistically and full of hope propose this statement as a general postulate in the Prime Theory's introductive words.

It was my passion for electronics and physics, arising in early school years, which led me to eventually become an electronic engineer. The experience acquired until now in this field, at first mostly practical, was reinforced by a logical and mathematical exercise in the field of information technology, which helped me gain an interdisciplinary vision of the surrounding reality.

The decision to dedicate time to this theory came from noticing the lack of concrete accents in modern physics, mostly in quantum mechanics and astrophysics, which through an excessive number of abstract theoretical models moved away from the objective meaning of things, at the largest and the smallest scale. Equally important was the lack of unanimously accepted theories on fundamental physical quantities, concepts and phenomena, such as gravity, mass or electric charge. A descriptive approach, causal and logical, without complex mathematical equations that may easily hide the significance of real phenomena was likely to shed more light upon these matters.

Conceived such as to comprehend and to integrate as much as possible of nature's essence and principles, the Prime Theory is entirely based on classical and relativistic mechanics, with some new laws and postulates added as a personal contribution. To

keep it simple, intuitive and very accessible, all the statements are followed by graphic representations and geometric drawings.

This theory will explain in detail the granularity of space, the interactions of the elementary units of matter, and the rules that now could be considered as the fundamental principles of quantum mechanics. The new perspective helps not only to build a solid basis of all modern physics, but, more important, it allows us to see the true nature of reality.

2. SPACE

2.1. Initial hypothesis

Space is the unique and fundamental element the Universe is made of. Matter represents a special form of space, where its elementary components are in a structured state. Mass, energy and time are physical quantities derived from some special features of the space components.

This hypothesis changes the paradigm of whole physics: the genesis, evolution and dynamics of space are the base for the formation, shaping, moving and transformation of all things in the Universe. All the quantities and constants of physics are thus determined only by space, through its parameters at a given moment. The emergence of space means the emergence of the Universe. For a detailed analysis, we may consider as a starting point some current cosmological theories (temporarily taken for granted as ideas), such as the Big Bang and the Cosmic Inflation.

2.2. Characteristics

A precise definition is needed at first to clarify the meaning of the word space within this theory. In Newtonian mechanics, space is considered a three-dimensional empty framework, homogeneous and isotropic, with a linear metric, continuous, uniform and infinite, where matter can move and transform, waves can propagate and fields can exert their actions. Space has in some way an absolute nature, as does its measurement unit, presumed invariant in relation to other physical quantities also considered as constant in time. In this frame, time flows linearly, at a constant rate, and a body may move through it at any speed.

Experiments have proven, however, that this simplified view is not accurate. There is a maximum value for speed in our Universe: the speed of light in vacuum, and in any frame of reference it has to be considered a universal physical constant, as postulated by the Theory of Relativity. This fact, in addition to the invariance of the laws of physics under a shift of inertial reference frames, fundamentally changes the way space, time, matter and energy are to be described. These physical quantities are no longer constant and uniform; they depend upon the relative speed at which a frame of reference moves towards an observer and upon the presence of gravitational fields. As there is no absolute frame of reference, relativity and its consequences are the mandatory concepts we have to operate with when designing any physical theory of our world.

However, by changing the optic, we realize that ourselves, who are looking for explanations, we are in fact located inside the Universe we wish to describe and understand. This is why we do not exactly "see" everything that is going on, especially if we assume that our Universe is closed and finite. Thus, we are not able to relate to anything outside this system, and all physical quantities should be defined in a relative and limited manner, with localized, temporary values that may be assumed constant.

Let us propose a mental exercise, positioning us as observers outside the Universe, at the time it was born and just after that. With a maximum probability, by collating and partially validating some current theories, we would notice at this zero moment the existence of an immovable "singularity": an enormous concentration of primal matter, located in a space region of infinitesimal size, which comes out of the stable state of high-density and high internal cohesion by a huge explosion.

This matter is in fact the raw material that will later form the current matter; moreover, it will represent, in our theory, the single ingredient space is made of.

The Big Bang explosion created all the components of space, and that was the initial point of the space expansion process (as a three-dimensional framework). Now it would make sense to introduce new physical concepts - like motion, time and energy.

The Prime Theory considers that space has a dual nature, namely:

- **It is a three-dimensional framework, finite, linear, uniform, empty, created in the primordial explosion, and which is ever expanding; very likely, it has an almost perfect ball-shaped form.**
- **It is a pseudo-fluid made up of an infinite number of identical spatial "granules" that are continuously moving in all directions within the three-dimensional frame mentioned above; this fluid specific properties will be discussed in Chapter 3.**

The explosion of the singularity occurred in a fraction of a second, during which the highly concentrated "raw material" exponentially increased in volume and divided into an extremely large number of infinitesimal elements called "granules". All the primordial energy the singularity had at the zero moment was transferred this way to the granules in the form of kinetic energy.

Our scenario presumes that the granules, by their motion, generated the three-dimensional space and they are continuously expanding it. Spatial expansion does not require any energy consumption, because it represents only a geometric expansion

performed by granules through their impact with a perfect elastic medium. Looking from the outer frame proposed above, we could see that, in an absolute way, the expansion of the newly born Universe goes on at a very high speed, probably over the light speed in vacuum **c**. However, it is reasonable to assume that the expansion speed has a lower value than ***C***, the speed referred to in the Granular Postulate #1, Section 3.1.

The granules formed following the explosion normally move in radial directions from the center; but very shortly after the blast, the reflected granules on the space borders have appeared, and hence the first inter-granular collisions started to happen.

During this process, due to expected irregularities in the distribution of granular density, the first aggregations of granules started to form, leading to the creation of the first elementary particles; they soon began to aggregate into composite particles and simple atoms, and finally created the matter as we know it.