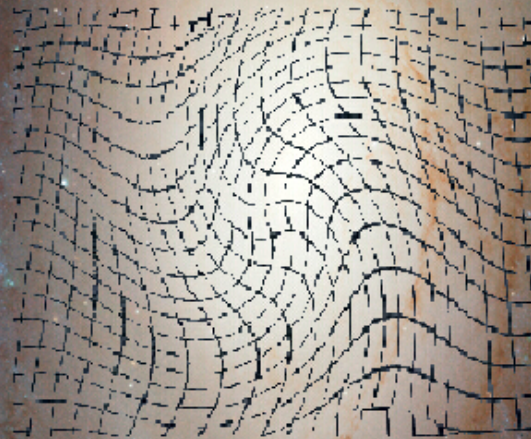


# GLOBAL PHYSICS

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*Museum of the science of future*

GLOBAL MECHANICS

*José Tiberius*



GLOBAL EDITION

*Hobbies: chess, padel and philosophy among others*

José Tiberius is the main author of Molwick publisher books.

With over 40 million visitors and two million books downloaded in PDF format, he is undoubtedly one of the most widely read authors in Spanish of scientific essays in the current millennium.

There are more than 10000 links to Jose's website, where his books on theoretical physics, theory of evolution, quantitative genetics, cognitive theory, philosophy of science, metaphysics, and children's stories are showcased in five languages. Many of these links –to all these different fields– come from universities, projects done by university students and blogs created by teaching professionals and Educational Specialists.

Moreover, it is interesting to note that these links are usually together with links to Wikipedia or pages such as National Geographic.



The only antidote for the egocentrism  
of pure reason is Love.

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# MOLWICK

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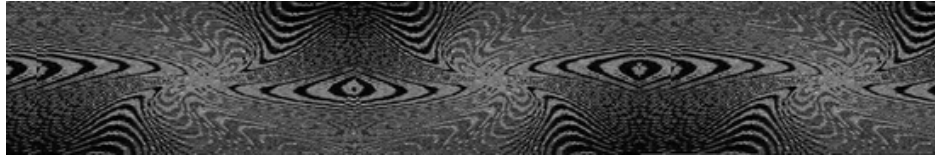
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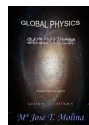
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GLOBAL PHYSICS

VOL.

GLOBAL MECHANICS





# 1. CONCEPT OF MATTER

## 1.a) Matter and energy

The development of the new gravity theory has implied changes in many principles and laws of physics, configuring a theory of unification and a theory of everything. We can divide the modified physics principles of the new paradigm into two broad groups:

- In the first group, the affected physics principles will define matter in the general sense and its various states of aggregation.
- In the second one, the physics principles relate to Euclidean space and absolute time and all the implications concerning the properties of matter in its various states of aggregation, such as the concepts of movement, force, gravity force, and energy.

This modern science book studies the first group of principles of physics related to the equivalence of gravity and mass, from its support, constitution, or physical reality, and the energy as a property of the aggregation states of matter.

If *Global Dynamics* deals with space, time, and their relation to the physics of gravity, *Global Mechanics* is more concerned with areas closer to [Quantum Mechanics](#).

Contemplating the properties reticular structure of matter or global aether, and the subatomic world has led us to create some explanations regarding the states of aggregation of matter, which configure concepts of mass and gravity.

We would like to emphasize two particular aspects. On the one hand, the global aether and the mass exist as real physical entities, and independently of any observer. On the other hand, in the new theory of everything forces at a distance or forces derived from fields with mathematical properties without material support of a physical nature are unnecessary.

Even though the complexity of the mathematical formulae, related to the states and the structure of matter studied in *Quantum Mechanics*, would cause severe mathematical tensions to neurons; this *Global Mechanics* book on the concept, properties, and characteristics of matter avoids quantitative details to keep the difficulty level as low as possible.

Nevertheless, we believe mathematics will not be a problem when it comes to the new definition of matter and the other unusual ideas. Mathematical tools today are very advanced, but they lack a physical base to support them and make them coherent within a complete model of the physical reality.

Amongst the most innovating elements of *Global Mechanics* regarding the concept of matter and energy are the following:

- A new description of the structure of matter
  - The existence of the [global ether](#) –the reticular structure of matter supporting potential gravitational energy, [kinetic energy](#), and mass–, allows one to understand the origin of the forces of gravity.
  - Clarification of the mechanisms of mechanical energy in the transformation between kinetic energy and gravitational [potential energy](#)
  - The modulations of the force of gravity, which can even become negative; this could mean the



- confirmation of the equation of the [Gigachron](#) experiment.
- Relation of the forces and fields of gravity with the electromagnetic forces and fields
    - The concept of gravity –tension of the longitudinal curvature of global aether– as a medium for the propagation of light
    - Definition of photons as mechanical waves of torsion or transversal turns
    - The constant speed of light because the light is a physical wave of torsion or transversal turn of a mechanical nature.
    - Variation of the speed of light with changes in the intensity of the gravitational field or [luminiferous aether](#)
    - An explanation of the [wave-particle duality of light](#) of the photoelectric effect and Young's experiment or [double-slit experiment](#)
  - Unification of the force of gravity with weak and strong [nuclear forces](#), and with the electromagnetic interaction
    - Concept and nature of elementary particles with mass
    - The new atomic model offers a mechanical rather than virtual base for the *Standard Model* of fundamental particles; allowing us to understand some of the relationships between said particles without needing to use magic.
    - The explanation of the dual, and in some cases mixed,

nature of matter.

- Explication of the [tunnel effect](#)

Despite its specific nature regarding the matter and its properties, *Global Mechanics* is a part of the *Global Physics*, which constitutes at the same time a theory of unification and a theory of multiple interpretations ([Quantum Mechanics](#) and [Theory of Relativity](#)).

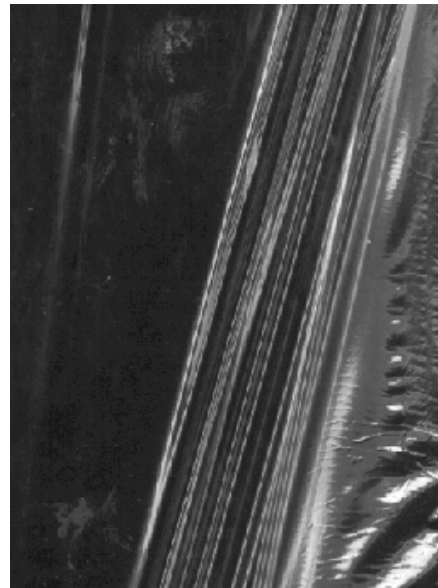
The reinterpretation in the case of the *Theory of Relativity* is relatively simple because even if it has some significant ideas, like the initial approach on the [mass-energy](#) equivalence, its nucleus of the relativity of time is incorrect from a physical point of view and a conventional or formal one.

Regarding *Quantum Mechanics*, the topic is more complex. On the one hand, *Quantum Mechanics* based on more detailed knowledge, as it limits itself to the *Principle of Uncertainty* that considers the study of the underlying mechanisms of energy and the knowledge of reality under a certain threshold. This way, it avoids making mistakes about precise concepts, gaining indisputable usefulness in the world of science and technology.

On the other hand, as it starts from a non-relativistic *General Physics*, *Quantum Mechanics* has some classical concepts about movement and energy. Therefore, it is more difficult to refute,

## **Gravity**

### **On the edge of an object**



modify or improve. Nevertheless, some of the interpretations seem to be quite far from physical reality.

In a way, the new paradigm of *Global Physics*, which will uncover slowly, could mean a scientific leap concerning to *Newtonian Physics*; similar to the one *Classical Physics* took apropos *Greek Mechanics*. Bearing in mind the degree of abstraction needed to understand the new concepts, which are not at all intuitive; it is advisable to grasp the new concepts while reading further.



## 1.b) Theory of Quantum Mechanics or Quantum Physics

Before appreciating the proposals of [Global Mechanics](#), it is advisable to understand the theory of *Quantum Mechanics*, its development, and its limitations or weaknesses.

With its non-academic perspective, the presentation of this book addresses to both experts in the field of *Elementary Particle Physics* and the public in general.

This book is not a super-specialized essay, but it has an advantage; its perspective will match some of the questions an average reader could ask about the content and meaning of the [theory of Quantum Mechanics](#).→

After an extensive exploration of various Wikipedia entries, the most relevant ideas about the development and evolution of *Quantum Physics* are:

- **Historical origin**

The theory of *Quantum Mechanics* emerged in the 1920s with the first theories on the atom's structure and its elementary particles; more precisely, it begun with the explanation of the photoelectric effect by **Einstein**, taking a step towards the physical approach of the concept of the **Planck** constant.

- **Initial scientific context**

I believe there to be two fundamental aspects that affected the initial context of the theory of *Quantum Mechanics* from a scientific viewpoint. Firstly, the rejection of the aether –

meaning aether proposed by **René Descartes**— as a medium for the propagation of light. Secondly, the [Theory of Relativity](#) emerged.

The strictness of the non-existence of any aether formulated by the theory of *Quantum Mechanics* would prevent *Particle Physics* from achieving a logical understanding of the forces of gravity and will condemn it to attain only a mathematical justification of the physical reality.

At the same time, as both aspects need each other, the recognition of the scientific concept of relativity of time demanded a change in the philosophy of science; eventually turning it into a philosophy of the technical and of utility instead of the philosophy of logical and objective knowledge.

## ■ **Evolution**

The best proposal of the theory of *Quantum Mechanics* was to establish a limit of physical knowledge: **Heisenberg'** *Principle of Indetermination*, from which it would be possible to create logical and mathematical structures of reality.

As scientists went on observing nature or physical reality, they named them particles and created laws to explain its behavior. Consequently, in *Quantum Physics* there is a multitude of names lacking in any logical structure (when compared to the names in organic chemistry) and numerous laws and principles with their respective names. It seems there are more names in Physics than in all other sciences put together.

That is to say; things are happening because the principles say so, principles or laws of a descriptive nature and lacking in real [logic](#).

Of course, the principles and laws are good enough until a violation appears; then, they create new laws and principles to explain the violations, with new theories and their corresponding names for the violations, the new principles, and the abovementioned theories.

■ **Quantum Technological development**

Contrary to the few practical applications of *Relativity*, the theory of *Quantum Mechanics* is responsible for the tremendous technological development in the 20th century in electronics and communication systems, together with all its implications in science and economy in general.

■ **Current scientific context**

The mathematical explanation of reality, skipping the most basic logic, ends up being a liability. Also, it generates artificial limits in the development of science and establishes

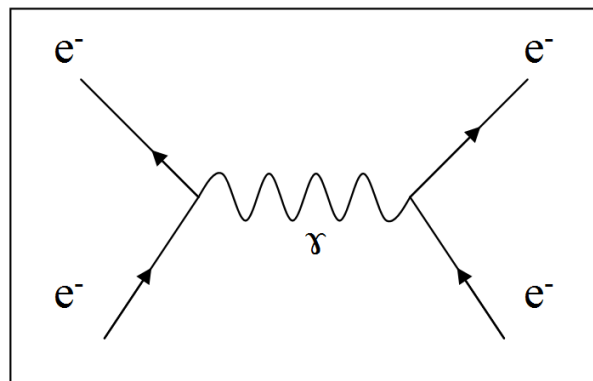
the habit of accepting as science something very irrelevant to science, which reminds us of witchcraft and old wizards.

In *Quantum Mechanics*, plenty of “scientific” theories coexist. Since its beginning, with the designated *Copenhagen Interpretation*, numerous theories arose as new characteristics of the structure of matter appeared.

Among the theories above, we can quote the *Quantum Field Theory* (QFT) and, as part of it, *Quantum Electrodynamics* (QED) and subsequently, *Quantum Chromodynamics*

**Feynman Diagram**

Quantum Drawing



(QCD).

To justify the goodness of the *Standard Model*, Wikipedia says that until today there is proof of the existence of all its particles except for that of the Higgs boson. What remains slightly unclear is that the *Standard Model* has developed to explain the observations carried out with poor advances in the model concerning the observations, as in the case of the Higgs boson.

Due to the **incompatibility** between Quantum Mechanics and **Einstein's** *Theory of Relativity*, various unification theories have arisen.

*String Theory* is the most famous of these, with its even more famous ten additional spatial dimensions. The *Superstring Theory* has more or less the same dimensions, depending on the particular variant; including the theory that tries to join them all –the *M Theory*.

*Quantum Gravity* and *Loop Quantum Gravity* (LQG) compete with the above *String Theory* but have fewer supporters.

Less known theories, but more open-minded, are current *Transactional Interpretation* and *Many-Worlds or Multiple Worlds Interpretation*.

The *Transactional Interpretation* argues that in a photon, there is a wave advanced in time and another wave that travels backward in time. As a consequence or effect, the cause-effect logic disappears and something new called quantum **logic** appears, although we would call it by a different name.

The *Many-Worlds Interpretation's* opinion regarding the collapse of the probabilistic wave function is that, in manifesting a particular or concrete reality, the objects of



the probabilities not in fact carried out will be the concrete realities in other worlds or parallel universes.

I have a slight suspicion that it will take time to prove empirically any of the last few theories. Although, when one thinks about other supposedly proven theories, anything could happen.

As can be observed, this review on the historical development of *Quantum Mechanics* is brief and adapted to the purpose of this book. On the one hand, it aims to explain and recognize both its achievements and their impressive mathematical complexity, and its huge gaps or weaknesses. On the other hand, to propose logical solutions for the physical interpretation of reality, so that the mathematical tools used to obtain the coherence they deserve.

*Particle Physics* is a very young branch of science, and it is under fast development, so it probably lacks a solid and structured base for its contributions to scientific knowledge.

Following the quantum logic of to be or not to be, we hope that we have now increased the probability of understanding the positive intention of the presentation of the following **negative characteristics** of the theory of *Quantum Mechanics*:

- **Discrete nature of reality**

This property of physical reality connects to the Greek concept of the atom. Another issue is that scientists assign the same discrete nature to abstract concepts such as space, time, force or speed.

- **The acceptance of magic**

There are forces from virtual fields with mathematical properties and without material or tangible cause, however

small it may be. That is to say, among many other things, the forces at a distance that upset **Newton** so much persist.

### ■ **Influence of mathematics**

Quantum Physics, rather than a physical theory, is a mathematical theory, which attempts to describe reality without trying too much to understand it.

If in the mathematical model of elementary particles, the necessary properties of an object with mass do not fit in, the particle does not have mass. It is surprising scientists do not say the particle has any connection with the physical world. Nonetheless, it still exists, and it is a particle!

If something emerges from nothing, they call it a virtual particle. That way, everybody is happy –this is the case of the W and Z bosons, identified in 1983 in the particle accelerator at CERN, Geneva, after the prediction by the *Standard Model* as intermediary bosons to explain other subsequent particles.

### ■ **Quantum Logic**

As there is a distinct lack of **logic**, the scientific community itself has established the new expression of quantum logic.

An example of this new quantum logic is what Wikipedia says when explaining the virtual W and Z Bosons: "...that in the middle there was an asymmetry of **mass-energy** so brief that it's as though reality itself didn't register it".

Other examples could be the appearance of theories with a lot of dimensions, worlds, and time-travels.

Some of them even say the human brain is not good

enough to understand reality. Well, perhaps theirs is not! We imagine the reason is this quantum logic, or to describe certain somewhat unique brain types. For example, those brains which only use one percent of their capacity!

■ **A theory that is neither proven nor demonstrated**

Despite all its technological accomplishments, the theory of *Quantum Mechanics* is not proven or demonstrated the theory of physics beyond its descriptive character of the observed reality. It is not even a Physics theory; it is a branch of Physics studying the structure of matter with a particular perspective, in which different alternative theories coexist.

Also, apart from some recent attempts, more philosophical than scientific, all these theories are incompatible with Einstein's [Theory of Relativity](#).

To sum up, *Quantum Mechanics* has substantial internal contradictions, and it seems that, given the new proposals, there is a consensus that it is in a phase in which necessary changes or essential restructuring could occur in the short term.

Nevertheless, we believe quantum phenomena are fashionable now and expanding in areas like the philosophy of existence and time; occasionally touching upon the concept of quantum God.

Sometimes things are difficult to understand, on other occasions they are more difficult to explain; perhaps the true story of the little Molwick, doing a quantum [logic](#) course for gifted children, will be illuminating:

\* \* \*



The **teacher** of the course explains a quantum experiment:

–When someone pushes a button,  
an image appears on the monitor;  
however, detailed measures indicate that the image on the  
monitor  
appears even before pushing the bottom.–

All the **kids** are thinking about it  
and very impressed;  
then the **little Molwick** asks:

–What happens if when the image appears  
someone decides not to hit the button?–

...

The **children and the teacher** start to think about it  
again.

---



## 1.c) Principles of physics in Global Mechanics

A physical model is a collection of mental abstractions used to represent the material reality and the relations determining its variations over time. In all models, there will be underlying physical principles of a general character and a mixed nature of philosophy and science.

The *Global Scientific Method* book there is a chapter of the [Methodology of Scientific Investigation in Modern Physics](#). It criticizes the principles of physics within the [Theory of Relativity](#), Quantum Mechanics, and other theories trying to make them compatible by adding physical dimensions.

In other words, in this book the **banned principles** of Physics are pointed out, who is to say, those which could allow any of the following:

- Multiple simultaneous realities
- Realities with more than three physical dimensions
- Recursive definitions, such as the variable volume of space or the speed of time itself
- Simultaneous cause-effect and effect-cause
- Negative things or energies
- Things or energies that emerge from nothing or completely disappear
- Magic forces or forces at a distance

Likewise, the *Global Dynamics* book quotes three

**philosophical or epistemological principles** of Physics. We shall repeat them here because of their high relevance:

- The physical reality does not depend on the observer, only its perception, and description.
- Time is relative from the subjective point of view of life, but this aspect is irrelevant in the objective or general physics scope.
- A scientific theory is good if it is useful, but it is even better if once understood, it follows common sense.

It is helpful to do a brief presentation on the physical principles in *Global Mechanics* considering the enormous difference that exists concerning those principles of Physics in the accepted theories: [Theory of Relativity](#) and [Quantum Mechanics](#).

Gathering the previous ideas on the physical principles in Global Physics, we may organize them into the following groups:





- **Principles of Physics from the philosophy of science**
    - Utility
    - Simplicity
    - **Logic** or common sense
  - **Principles of Physics derived from Global logic**
    - Euclidean space
    - Absolute time
    - Mechanical nature
  - **Principles of physics by intuitive observation**
    - Oneness of matter
    - Unbreakable three-dimensional net
    - Elasticity of matter
- 

The first two groups of principles of Physics imply a return to both the classical concepts of space and time and to the philosophy of the scientific method, which needs the use of Physics theories and their common sense.

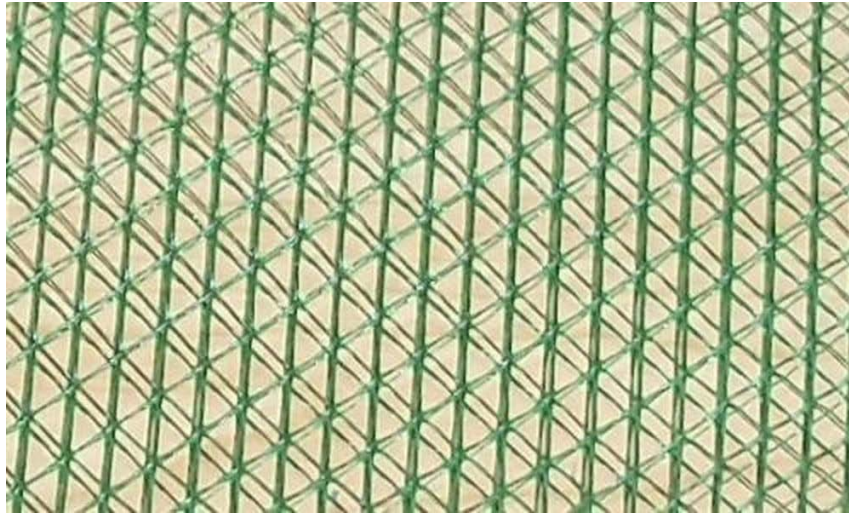
The third group of principles of Physics introduces the nature of matter in the elastic model of Global Mechanics. This new model is a revision of the previous semi-rigid model of *Global Mechanics* from April 2008.

The switch to the elastic model in April 2009 implied a considerable simplification over the previous one. The only significant change was to define the three-dimensional net as

unbreakable to explain better the conservation of energy in the universe. The change forced a redefinition of the precise mechanisms of movement, **kinetic energy**, and **potential energy**.

### **Oneness of matter**

Unbreakable 3D grid of matter



The characteristics of the new physical model proposed by *Global Mechanics* are genuinely different from those of *Quantum Physics*. Nevertheless, we think they are quite complementary and that the characteristics of *Global Mechanics* have a filter function for the excessive confusions or deviations from the scientific **logic** that affects the *Physics of Elementary Particles*.

Effecting a change in perspective, amongst the **characteristics** of the physical model of *Global Mechanics* we can cite the following:

- Intuitive model with scientific claims, as it is empirically verifiable.
- Very generic and highly imprecise proposals
- High probability of containing one or more significant mistakes

- We hope to contribute an idea relevant enough to imply a change in the paradigm of Modern Physics.
- A renormalizable model, to allow it to develop and evolve
- Incomplete, as it is not possible to do everything at once

Among the most known scientific experiments reasonably explained by *Global Mechanics*, we can mention the [Double-slit experiment](#) on the [dual nature of light](#), and the *Tunnel-Effect experiment* on the properties of electrons. However, without any doubt, the most innovative experiment is the [Gigachron experiment](#),

$$[ \mathbf{G} * \mathbf{g} = \mathbf{c}^2 * \mathbf{h} * \mathbf{R} * \mathbf{n} ]$$

This mathematical equation results in the fundamental equation of the *Global Physics*.

$$\mathbf{g} = [ \mathbf{E} \mathbf{c} / \mathbf{G} ] * \mathbf{n}$$


---

[Gravitational Law of Equivalence](#)

Moreover,  
alternative  
equation:

its

$$\mathbf{g} = [ \mathbf{c}^2 * \mathbf{h} * \mathbf{R} / \mathbf{G} ] * \mathbf{n}$$


---

$$\mathbf{g} = [ \mathbf{m} \mathbf{c}^3 / \mathbf{G} ] * \mathbf{n}$$

Therefore, we would ask the reader not to search for mistakes but rather for achievements, while also considering that errors may exist. It is true as well that the terminology will not be as consistent as we would like, because of the underlying technical complication and due to the lack of systematization in *Global Mechanics*, given its young age.

\* \* \*

## 2. STRUCTURE OF MATTER AND FABRIC OF SPACE-TIME

The development of the *Global Physics*, carried out by *Global Mechanics*, confirms the proposed new paradigm. *Global Mechanics* makes the unification of the **fundamental forces** as the result of the different states of composition, constitution, or aggregation of fundamental matter or global aether.

The first problem to consider when presenting the new model of the constitution of matter is of a terminological nature. The definition of matter is not unique, and its fundamental structure is still unknown in *Modern Physics*.

The definition of matter is in continuous evolution, as the characteristics and properties of the components of states of matter are better known or with the discovery of new elementary particles of the structure of matter.

Even the concept of matter differs in some Wikipedia pages from the English to the Spanish. To prevent confusions between the different meanings, *Global Mechanics* defines matter in general as the only thing that has an entity in the physical reality of our world, in clear contrast to abstract, mathematical, imaginary or magical concepts.

If before the *constitution of the matter* was mass, now mass is what is composed of matter. Nevertheless, we will generally try to speak about the reticular structure of matter or global aether, to eliminate any doubts concerning the referred concept.

The word ether has a negative connotation in the scientific community since the consolidation of General Relativity.

Nonetheless, there is a practical unanimity regarding its existence, though there have not been any attempts to synthesize its possible properties.

Einstein himself pointed out that space-time could be a type of aether if it had mechanical properties. However, there is no doubt that if space-time involved a physical limit to speed, it would have mechanical properties affecting velocity, according to [Mach's principle](#).

When Einstein said, "mass produces a distortion of space-time," it was a tautology because we know that the mass generates the gravity field throughout space; and gravity force comes from the gravity field. Therefore, it is the same as a distortion of space-time and still provides the gravity force.

The difference with Newton is that Einstein introduces energy as an element capable of interacting or generating additional distortion of space-time –although without much clarity. Another aspect, of course, is the terminology of "space-time" that adds a melodramatic effect in the best case.

Let us look at the synonyms and other concepts the scientific community uses to avoid classical expressions like gravitational aether and [luminiferous aether](#).

### ■ **Synonyms**

Among the well-known synonyms, we can cite the following.

- Fabric of space-time
- Fabric of reality
- Foam-like structure
- The texture of reality
- The texture of space-time

- Grains of space
- Quanta of space
- A kind of net loops, or 'loop quantum gravity.'
- Quantum vacuum
- Theory of strings

### ■ **Mathematical fields with mechanical properties**

Supposedly, the origin of these properties is neither magical nor divine or written formulas down on paper.

- Gravitational field
- Electromagnetic field
- Higgs field
- Strong field

### ■ **Quasiparticles**

Wikipedia defines quasiparticles as "... an entity of a particular type that is possible to identify in certain physical systems of interacting particles."

Looking at the numerous [types of quasiparticles](#) →, they correspond to elastic events of an aether, such as the well-known Casimir effect, the Van der Waals forces or the London dispersion forces.

### ■ **Fictitious forces**

They refer to effects of inertia, but there is not currently any explanation for their origin. Undoubtedly, there must be something with mechanical properties, since it affects the [movement of mass](#).

The only orthodox explanation is that [fictitious forces](#) → are due to the acceleration of a non-inertial reference system; that is, another mathematical concept.

On the other hand, there are two **abstract concepts** whose nature is an essential element in Physics; we are referring to space and time. We should mention that abstract concepts cannot have mechanical properties.

Talking about space-time with mechanical properties is a conceptual metaphor –applying properties of a thing to abstract concepts–, and, in fact, it refers to a gravitational or [kinetic aether](#).

The *Global Dynamics* book explains the characteristics of both concepts. [Spatial geometry](#) will be **Euclidian geometry** or Greek geometry. **Time** configures as a monotonous, increasing, continuous and constant function, used to explain two different realities, and subsequently defines the movement of matter in its various states of aggregation.

Returning to the question of what matter is, even though in the future someone could come to a deeper or more comprehensive and detailed analysis of physical reality, nowadays we could say that a fundamental or essential particle exists of which all the others particles are composed. *Global Physics* names it global aether. What is more, it is just one particle in the whole universe, the reticular structure of matter, the only constituent of the material support of gravity, mass and other phases or states of aggregation.

The structure of matter exists in multiple states of matter, but the analysis will cover a few generic categories, like the previously mentioned ones of gravity and mass. Of course, the study will include the properties of these states of matter, such as speed, force or energy.

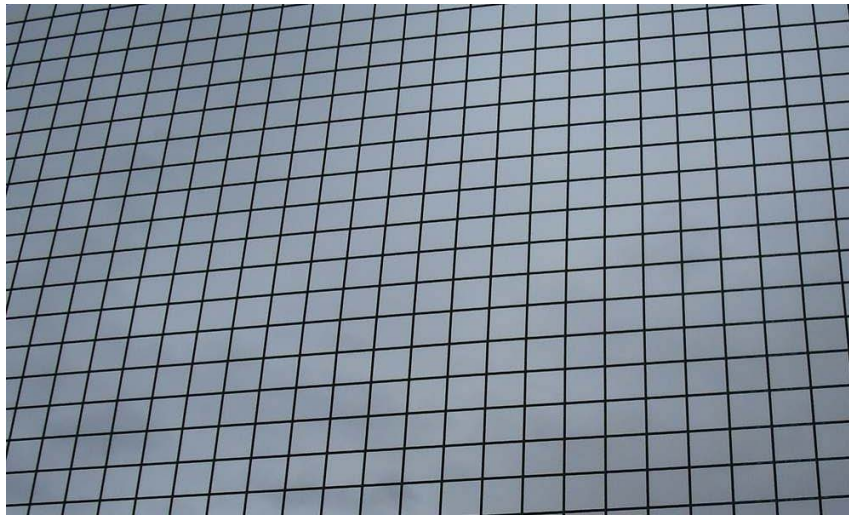
Now let us try to create the world, as we know it, with only global aether. The process will be to add characteristics and properties to the different states of matter in general. The



objective is to obtain a global model of the four fundamental interactions compatible with the valid and accumulated scientific knowledge; which means excluding most's [Theory of General Relativity](#), and some aspects of [Quantum Mechanics](#), such as the discontinuity of matter.

### **Global aether**

Supports gravity, [kinetic energy](#), and mass



As we cannot directly detect matter's structure in its first state of aggregation or gravity, we will use a **heyelologic** microscope to explain its characteristics and properties. Of course, we could say that global aether is everywhere but that the prevailing paradigm of *Modern Physics* does not acknowledge or interpret it.

Using the metaphor of a theatre without actors or audience space would be like a huge swimming pool without water. That is to say; space is independent of water, of global aether, of time, of everything, because space is an abstract concept, so it does not have either physical existence nor water or aether or anything.

The image shows a layer of the composition or structure of matter with a nonexistent total symmetry in physical reality, at least for now. Perhaps it exists in intergalactic space. The only

thing we have done is to fill the swimming pool with global aether. By showing its reticular nature, it is similar to the structure of matter in the case of gravity; however, we still have not introduced the typical radial symmetry of gravity.

On the next page, we will cover the general properties of matter and later on, the specific properties of matter in its different states of aggregation, such as gravity, electromagnetism, and mass.





## **2.a) General properties of matter or global aether**

Taking advantage of the fact that the general properties of matter can renormalize, we will try to connect them to make the assimilation of the new paradigm easier. As the new model grows in complexity, nuances will appear in the properties of matter. The following ideas offer a view of the structure and properties of matter renormalized several times over.

In addition to the many small renormalizations that *Global Mechanics* underwent during its initial development, it is useful to point out the switch from the previous semi-rigid model to *Global Mechanics*' current elastic model. The change came after the review of the whole model because of the development of the *Astrophysics and Cosmology* book.

Although the new elastic model only adds the general property of matter concerning the constitution of global aether as unbreakable matter, this property significantly simplifies *Global Mechanics* by making the most complex mechanisms of the old semi-rigid model unnecessary.

On the previous page, we said the nature of the structure of matter is a three-dimensional net of unbreakable filaments that extend themselves along the whole universe. We call this 3D grid global aether.

Let us delve deeper into the characteristics or general properties of matter.

- **Three-dimensional structure**

When one is wondering what gravity is, the first thing one thinks of is that it has to be a spatial structure, which can

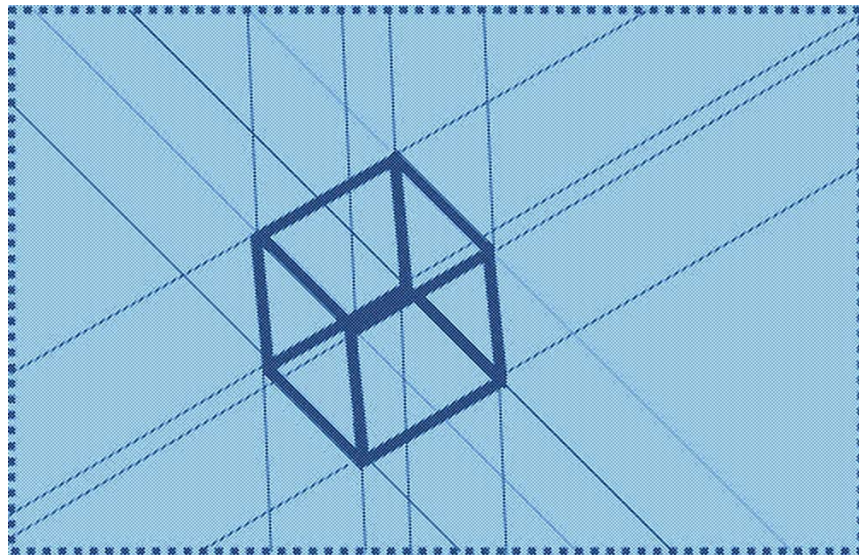
support the forces of gravity. Then, if we remove the radial symmetry of gravity, we will find that the three-dimensional structure with total symmetry is a general property of matter.

The images shown in this book refer to the three spatial dimensions of Euclidian geometry, and their goal is to get the brain accustomed to the real existence and the characteristics of global aether as a **state of matter**, which configures **gravity** in the ordinary world known by all of us. The concept is essential to follow the explanations of the new physics model's properties and nature, and consider that the existence of other worlds and time travel is science fiction.

The proposed three-dimensional structure of matter will be composed of filaments that form a 3D grid of reticules.

### **Structure of matter**

Reticule of global aether



- **Reticules with a cube shape**

The crossing of the global aether filaments forms cubes.

The shape of a cube is the simplest for the brain to

visualize. Any other geometric figure could also be possible, provided it does not forbid the physical state with the general property of matter of theoretical, total symmetry in the absence of forces of gravity or electromagnetism.

- **Unbreakable filaments**

This characteristic or property of matter justifies the principle of conservation of matter (understanding matter as in the *Global Mechanics* sense).

- **Continuous nature of matter**

Likewise, the nature of the unbreakable filaments makes matter continuous in the entire universe; in other words, the global aether particle extends itself throughout the whole universe. After almost 2500 years of a discontinuous nature of matter, who would have thought it? We hope Democritus would not mind!

- **The matter is formed exclusively by the filaments' matter**

The space between filaments is empty and hollow in the ideal state of total symmetry.

This characteristic of matter will be advantageous to us when developing the theory of the formation of mass and the new theory of the atom.

- **Elasticity**

This property of matter is very intuitive, but we have to consider that it also has a colossal rigidity at the scale at which we operate.

The elasticity explains the principle of energy conservation

as it is an energy of reversible deformation. Perfect elasticity is an essential requirement for the principle of energy conservation.

The concept of elastic energy is more difficult than it appears at first. An elastic object needs internal elements with elastic properties and so on. On another hand, elastic energy needs elements in constant motion or vibration, as a full static element would not have any internal energy.

In short, the property of elasticity configures the global aether as a real net in constant vibration or [resonance](#).

Longitudinal elasticity, bi-dimensional or longitudinal curvature elasticity and transversal elasticity, together with the unbreakable nature of matter's filaments, support the [Principle of Global Conservation](#), which covers the law of conservation of matter and the law of conservation of energy.

- **Longitudinal elasticity**

This quantitative characteristic has its relevance; the elasticity of the filaments could make them reach a length of ten, a hundred or a thousand times longer than their length in the absence of traction forces. For now, we have the liberty to fix this parameter; nevertheless, the size of the stable elementary particles with mass –[protons and neutrons](#)– could help us to delimit this general property of matter quantitatively.

One should not confuse the expansion or [contraction](#) of global aether with variations of **space** itself, as some physics theories do.

- **Bi-dimensional or longitudinal curvature elasticity**



The result of the forces derived from the elastic tension of the longitudinal curvature of the filaments in global aether will be responsible for the *attractis causa* of the gravitational theory in *Global Mechanics*.

- **Transverse elasticity**

The elasticity of a transverse nature is a *general property of matter*, which will be the concrete base of the electromagnetic interaction.

This general property of matter will relate, together with the property of longitudinal elasticity and longitudinal curvature elasticity, with the weak and strong nuclear interactions and with the formation of mass.

The general properties of matter try to describe the nature of global aether from both an internal and an external point of view. The elastic properties of global aether imply that within its constitution it has smaller elements. Perhaps the limit of transverse or longitudinal elasticity links to the size of the reticule.

In short, the filaments configure themselves as the mechanism for the transmission of the minimum unit of energy, unavoidably related to the **Planck constant** –though it is most probably not as constant as it appears to be.

On the following pages, we will analyze the composition, characteristics, and properties of matter in general for each of the big categories of the 3D reticular structure of matter.



## **2.b) Gravitational aether as a state of physical matter**

According to *Global Mechanics*, the definition of gravity is that it is the first state of physical matter and the one with the highest symmetry. The total symmetry of a structure of non-radial reticular matter is purely theoretical because it does not seem to be present in physical reality.

The above definition of gravity as a state of physical matter implies a change of paradigm in Modern Physics, so it is convenient to keep an open mind while trying to understand the essence of the proposal and not to search for little mistakes. For example, whether the shape of the reticule of the structure of matter has one particular form or another is not important, as long as it fits the required properties of the model, and as long as the model explains the physical reality in a way that makes more sense than that of other models. In this case making a minimum amount of sense would be enough, since the forces at a distance are difficult to justify from a scientific point of view, not to mention physical dimensions in other worlds or contractions of space or time themselves.

The *Standard Model of Quantum Theory* depends on points in space with emerging, virtual, or mathematical properties. In the current philosophy of science, the word "emergent" justifies unexplained phenomenon, avoiding magical or religious arguments, as in the case of the generally accepted *Theory of Evolution*, by [Charles Darwin](#).

Classical Physics did not connect aether with the radial symmetry of the reticular structure of gravity or *first state of*

*physical matter* –if we do not count the hypothetical total symmetry of matter–. The disciple of Descartes, Christian Huygens, described aether as subtle *balls of air in contact* to be able to transmit light. Augustin Fresnel concluded that light waves were transverse waves when he was studying the polarization of Iceland spar, or calcite.

As for partially relating global aether with classical aether, we have to point out that the idea of an aether differing from the classical concept it is not exclusively of *Global Physics*. The already demonstrated [Quantum Mechanics](#) theory also uses the term quantum foam or quantum vacuum to recognize that the classical vacuum is not empty, and avoids mentioning the word aether with different characteristics. Also, well-known *String Theory* proposes something like an aether of little vibrating strings and different states of physical matter, including numerous additional dimensions.

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### NEWS ABOUT PHYSICS

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#### **"The time of the big collision is coming - LHC**

We think that the universe's vacuum is not nothingness, it is a substance that can vibrate, and the interaction of vacuum - which is not really vacuum - with the rest of the particles (a kind of friction), is what would generate its different masses."

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El País 09-03-2008 (Nature)

Once we have related the most intuitive characteristics of the state of the physical matter with radial or gravitational symmetry, we can go on to add other characteristics, less

intuitive and with less probability of being correct. In any case, if during the line of argument, we come to any contradictions we can always renormalize the proposed characteristics –as long as the efficiency of the model, concerning its capability of explaining the observed phenomena, increases and providing the model as a whole is still coherent.

Throughout this book, we will apply additional properties and mechanisms of gravity –or the first state of physical matter– to understand complex phenomena such as electromagnetism, the weak and strong **nuclear forces** or black holes. Regardless, we will begin to relate the specific characteristics and properties that will be useful to explain the force of gravity from *Global Mechanics*.

Once we have determined these properties, we will see the classical gravitational interaction and the behavior of the forces of **gravity at short distances**, close to the elementary particles with mass.

Given the unification of gravitational and electromagnetic interactions –because the first state of physical matter is their common medium support– the electromagnetic interaction is included in the chapter on gravity in the book.

The attempt is to characterize functionally the reticular structure of matter or global aether as a support of the forces of gravity; backing *Global Physics* when it says that global aether will be present, in one way or another, in all known physical processes.

Taking into account the previously quoted general properties of matter and the specific properties of the gravitational field, the characteristics of global aether or state of physical matter supporting gravity are the following:

- **Material composition**

The composition of matter in the case of gravity is merely the global aether; that is to say, global aether does not have an intermediate state of physical matter.

It is odd that some people still prefer to accept magical forces emerging from nothing, rather than accepting non-detected matter with our current technology; despite all the indirect signs that one could imagine.

The virtual or mathematical nature present in the definition of the field of gravity is understandable, due to the initial impossibility of characterizing it in any other way –as **Newton** himself showed. Perhaps it is now time to change the nature of gravity slightly.

- **The continuous nature of material support of gravity**

The parts or elements of said material structure supporting gravity must be connected, as an isolated part could not exert a radial or ordered force nor could it maintain its spatial structure. We have already established that continuity is a general property of physical matter.

Another question is whether [potential energy](#) has a continuous quantitative nature or whether it is discrete as in the case of electromagnetic energy. We would say that it would also be discrete, as well as related to the Planck constant and the internal elements of the filaments in the global aether.

Nevertheless, the continuous nature of the material support of the gravitational field requires the development of the concept and characteristics of the force of gravity, which we will present in the next chapter.

- **Invisible**

Not only we cannot see the reticular structure of matter or global aether, or the phase of matter that configures gravity, but also until now, there is no recognition of it. Another way to look at it is that from the inside of a box, one cannot see its external perspective, not without a little bit of imagination and without using, at the very least, 20 percent of the capacity of the average human brain.

- **The tension of the longitudinal curvature, rigidity, and additive**

We already know that the forces of gravity are additive, so the structure or states of physical matter generating these forces must also have the same property, at least about the component mechanisms of gravitational fields.

The potential gravitational energy is due to the tension of the longitudinal curvature caused by mass as it bends the filaments of the reticular structure of matter with initial, total symmetry. This tension generates forces perpendicular to the tangent at every point of the filaments, which is coherent with a curvature decreasing asymptotically with the square of the distance.

The state of physical matter, which configures gravity, has to be rigid enough to support forces that can move the universe's planets and stars far away from their origin. In other words, the elastic tension of global aether exists on a much more rigid structure than that of any other known material.

Regardless of this, at great distances, the phenomena of [contraction](#) and expansion of the reticular structure of

matter or global aether are also significant.

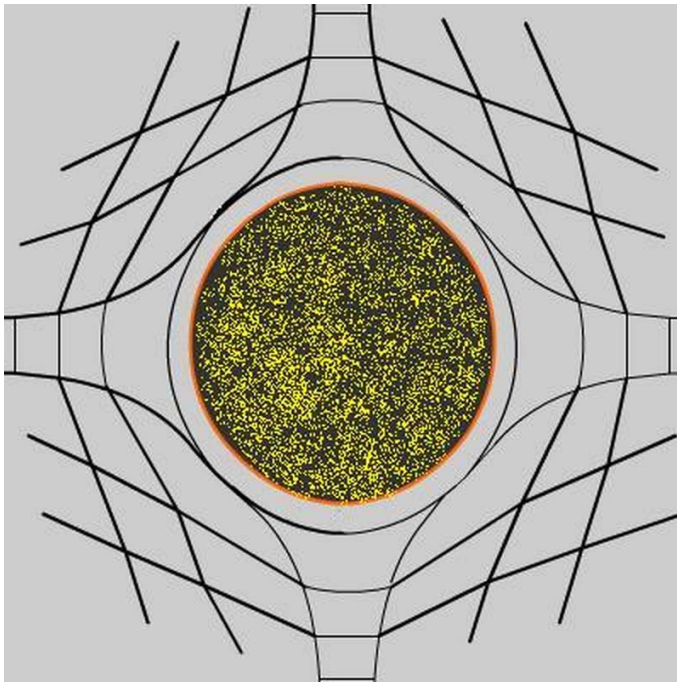
- **The radial symmetry of the longitudinal tension**

The initial total symmetry of global aether breaks down when mass generates a radial symmetry with an asymptotically decreasing tension of the longitudinal curvature of the filaments.

The hypothesis on the exact shape of a reticule of the structure of matter with total symmetry was the cube or another geometrical figure with a high symmetry, to permit the observable gravitational effects in [Euclidian geometry](#) when introducing radial symmetry. In any case, the radial symmetry of the forces of gravity is more due to the elasticity of global aether than to the particular shape of the tiny reticule.

### Gravitational aether

State of physical matter



This radial symmetry is slightly different from the typical radial symmetry of the drawings of the Sun with its little yellow rays.

The *heyelologic microscope* gives us a perspective of global aether greatly amplified so that we can observe how global aether filaments come

closer together the further they are from the mass, despite



the radial symmetry.

If we put a ball inside one reticule of global aether, and the ball is much bigger than the reticule, the filaments of the said reticule and the adjacent reticules will not only stretch due to their property of longitudinal elasticity; they will also acquire a longitudinal curvature.

In other words, the elastic deformation of the filaments will occur; and they will tend to go back to their original state.

For now, this approximation of the state of physical matter, which configures gravity, is enough; the origin of the ball is in the chapter on the composition of mass.

One could consider gravity as an almost rigid solid that becomes very flexible at very [short distances](#), according to the longitudinal curvature produced. In short, global aether is a very solid and rigid structure, and at the same time very elastic and flexible for materials currently known. One can consider how hard a metallic object is and how easy it can be to pull an atom from it, or the remarkable properties of diamonds – being both hard and fragile.

To sum up, the less intuitive idea is the movement of mass through the physical structure of gravity. The switch to the elastic model of *Global Mechanics* precisely implied a renormalization of the hypotheses regarding the movement of mass vis-à-vis the older semi-rigid model.

On another hand, it seems as though the propagation of gravity will have a different nature than that of the transversal waves of the reticular structure, although it does do so at the same speed. Another thing would be if a mass were to move fast enough to generate changes in the filaments' curvature,

eliminate and then regenerate itself –then, one could talk about [gravitational waves](#) at relatively short distances to avoid going into the asymptotic zone of the curvature of longitudinal tension.

In any case, the longitudinal waves of global aether would have a different physical sense to the propagation of a wave on the surface of water or the propagation of electromagnetic waves. They would be more like the vibration or [resonance](#) of an atom, and they connect to this phenomenon. We will explain it in the book on *Global Dynamics* with the concept of movement.

Now, we are ready to present on the next page the model of gravitational interaction within the first state of physical matter.





## **2.b.1. The gravitational interaction and gravity force**

Until the introduction of gravitational force, any of the reticules of the structure of matter, global aether in Euclidian space would have the same properties. In other words, global aether would have an equal symmetry in every direction, global symmetry or total symmetry.

In the previous [section](#) on [gravitational theory](#), we saw the physical properties of the phases of matter that configure gravity, especially the introduction of radial symmetry and the additive tension of the longitudinal curvature of global aether.

As shown in the figures, the aforementioned total symmetry breaks down in the gravitational field due to the effect of mass, which provokes a separation of the filaments of global aether. Besides the radial symmetry of the gravitational field, in the images shown one can recognize an up-down symmetry or symmetry concerning the horizontal axis, where the filaments are convex towards the axis of symmetry.

In other words, the mass provokes an elastic tension in the gravitational field's three-dimensional net when separating the filaments on one end. In this way, the interior of the lines is convex towards the mass or the point with the biggest separation of the filaments or lines of elastic tension, provoking the vertical asymmetry of the heyeologic figure.

Regarding the gravitational force, it is important to point out that there could be two different causes. One would explain the movement due to the classical gravitational force or Newtonian force of gravity; the other would explain the

movement of the [anomalous precision of the orbit of Mercury](#) –already explained by Paul Gerber in 1898– instead of the distortion of the space suggested by [General Relativity](#).

The book on the Law of Global Gravity will analyze these causes and their mathematical formulation in Newton's [Law of Universal Gravitation](#), incorporating a correction by the [Law of Global Gravity](#) apropos the effect of [kinetic energy](#) on the force of gravitational attraction.

We will also leave the analysis of the characteristics of gravitational forces at [atomic distances](#) for another section.

Finally, we will also dedicate a section of the *Law of Global Gravity* book to another topic related to the force of gravitational interaction; it is about the characteristics of [gravitational waves](#) and the various definitions or concepts used to refer to them. In particular, there are some ideas about the characteristics of longitudinal waves, the relation with the expansion of the universe and the speed of transmission of potential gravitational energy.

Now, we will analyze one of the most relevant aspects of the gravitational interaction, the additive property of tension of longitudinal curvature or potential elastic energy of global aether that supports gravitational force.

- **The additive property of the gravitational force**

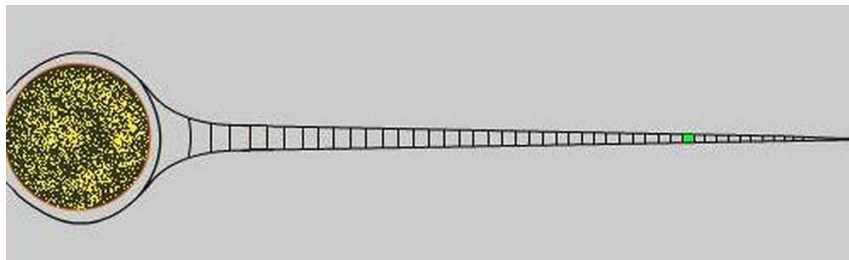
The longitudinal curvature, together with the characteristic of rigidity, causes the creation of elastic lines of tension in the filaments of the three-dimensional structure of matter.

The [electromagnetic fields](#) also possess the additive property of their potentials; as we will see later on, their material support is also global aether; and in this case, they would be due to the transversal elasticity of its filaments.

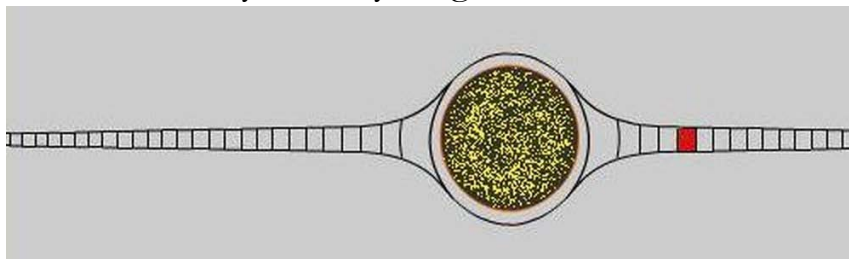
The colors red and green in the three figures depicting the gravitational force show the additive property of gravity as a linear relation when summing up the vertical distances between the filaments. A more significant approximation of reality would be to add the distances on a semi-logarithmic scale because of the inverse-square law.

### **Gravitational force**

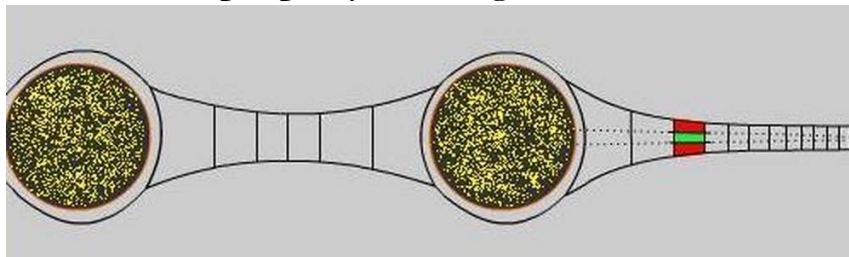
Convexity towards the axis of symmetry



Radial Symmetry of gravitational force



Additive property of the gravitational force



As the gravitational force rest on a structure of elastic three-dimensional reticules, the characteristic of having additive tension is quite intuitive. However, it will be useful to highlight two new aspects of the gravitational model:

- One should not confuse the mathematical representation of a gravitational field by using lines of force of the field with the material lines or filaments of

the global aether.

- The maximum separation of the filaments depends on the pure longitudinal elasticity of the edges of the three-dimensional reticules. In the figure, it would be a shorter distance than the diameter of the ball of mass, which itself would also depend on the aforementioned reticular elasticity. We will see this when talking about *what mass is in Physics* and the *stable fundamental particles with mass*.

The rigidity of the global aether will cause the convexity to decrease with distance, by the attraction of the gravitational law with its inverse-square law.

The curvature created in the filaments of global aether implies the existence of potential elastic energy, and it will have an asymptotic shape in the right-hand part of the abovementioned figure, related to the horizontal axis of symmetry. This elastic tension of the filaments is responsible for the multiple components of the force of gravitational attraction and the gravitational acceleration.



## **2.b.2. Gravity at the atomic distances. Mass and specific gravity or relative density**

The tension of the longitudinal curvature of filaments in the reticular structure of matter or global aether is the origin of gravity. Consequently, at short distances, the force of gravity will depend on the three-dimensional shape of the said reticular structure, which will depend on the presence of mass.

On another hand, the concept of mechanical energy at atomic distances is not as useful as in the case of the movement of bodies. Although the *Law of Conservation of Energy* exists within a closed system, the movement and spatial location of global aether itself will affect potential gravitational energy and gravitational **kinetic energy**; as we discuss in the book on the *Law of Global Gravity*.

In the section on **electron configuration** within the new theory of the global atom of this book, we will analyze the mass, the electromagnetic energy and force of gravity at atomic distances, all together. Logically, it will also affect characteristics of the molecular structure, the mass and specific gravity or relative density, even though many other factors exist, such as molecular cohesion or typical intermolecular bonds of solids.

Specific gravity or specific mass is a relative measurement of the density of an element, and it will depend on the concentration of mass per unit of volume for each element. Said concentration of mass would vary with the three-dimensional molecular structure and mass number of the atoms.

At the same time, the molecular bonds mainly depend on the characteristics of the electromagnetic field, but this field tends to cancel itself out between the positive and negative charges of the atoms and ions. In this way, sometimes, the gravity at short distances becomes more relevant.

We will have to wait for the definition of electromagnetic energy, its origin and what mass is, to understand better the complete model of the gravitational field and the specific gravity, specific mass or relative density.

Nevertheless, it is convenient to state in advance two crucial concepts regarding the reticular structure of matter that supports the gravitational force at atomic distances.

The two following phenomena will affect the configuration of the atomic nucleus and its electrons, the molecular structure, and the specific gravity or specific mass:

- **Repulsive force of gravity**

This phenomenon occurs very near the atomic nucleus; when the mass of the neutron separates the elastic filaments of a three-dimensional reticule of global aether, it forces said filaments to become concave concerning the neutron itself.

In other words, due to the tension of the longitudinal curvature, the gravitational force will operate towards the exterior because of the convexity. The configuration means the sense –of orientation– of the spatial vector in the direction of the gravitational force inverts. A little arrow on top of the affected magnitudes usually represents this vector.

The force of gravity changes its sign and, when this happens, there will be an inflection point where it cancels

out. In this way, it will no longer be necessary to use the *uncertainty principle* from the theory of [Quantum Mechanics](#) to explain why electrons do not fall into the nucleus of the atom.

Regardless of the previous paragraph, as we will see in this book, electrons do not fall into the nucleus of the atom because their mass has a slightly different nature than the mass of [neutrons or protons](#), and their movement has unusual characteristics.

### **Repulsive force of gravity**



In the case of homogenous dissolutions in liquids, the dissolved element will tend to expand due to the effect of repulsive gravity. Even if it is small, it will exist because of the additive property of the forces of gravity, although the distribution of the electromagnetic field at the molecular level of both liquids can also be significant.

Another effect of repulsive gravity will be the general tendency of liquids to have a lower density than solids and, as a result, specific gravity or specific mass smaller than solids and bigger than gases, for one same element.

A similar line of argument justifies the volume of gasses

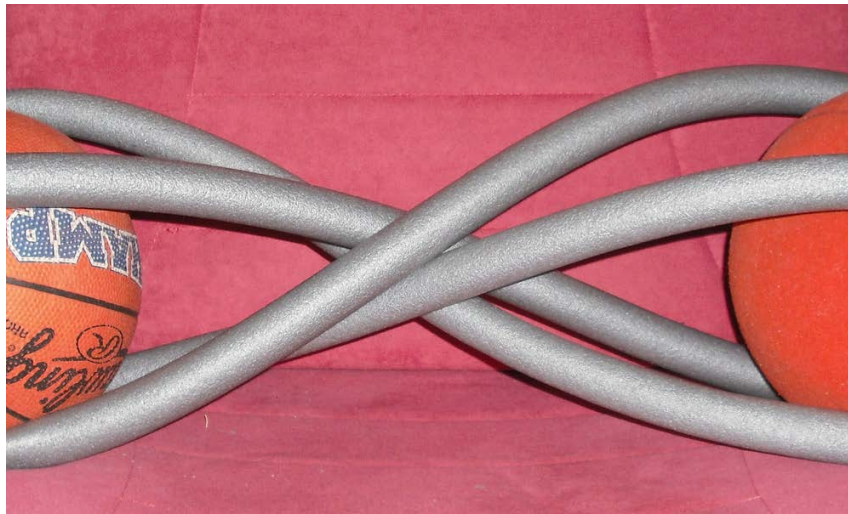
and the pressure for a specific temperature. By playing around with these variables, one can manage to vary the density and the specific gravity of gases; this aspect is more relevant when conducting them through pipes.

- **The braking force of gravity**

It is a vector modulation of the gravitational force due to twists in the reticular structure of global aether.

Mass does not only have a gravitational effect when provoking a significant increase in the tension of the longitudinal curvature but is also associated with electromagnetic energy because it is curls or whirlpools of global aether itself.

### **Restrained force of gravity**



As we can see in this figure, the twists in global aether will also provoke a reversal of the orientation of the force of gravity, which will go from being a force of attraction to being a force of repulsion or braking force, at very short distances.

The braking force of gravity will have relevant effects on the configuration of the atomic nucleus and of molecules. As we will see later on, the electrons imply a twist in the

global aether, similar to the one in the figure.

If the temperature associates in some way with the electromagnetic field, the pressure will be associated with the braking gravity and, to a less extent, with the repulsive gravity. Although in such an elastic physical model, all the forces are interrelated and tend to balance themselves out.

Note that up until now we have not introduced the electromagnetic interaction, which –together with the standard gravitational interaction and its vector modulation due to the two reasons previously stated– will determine the underlying atomic structure, the molecular structure and eventually, the density and specific gravity or specific mass of the materials.

A significant aspect is that these changes or modulations of the gravitational force could make the equality of the [Gigachron](#) experiment always be correct and could generalize the validity of the fundamental equation of *Global Physics*.

$$[ \mathbf{G} * \mathbf{g} = \mathbf{c}^2 * \mathbf{h} * \mathbf{R} * \mathbf{n} ]$$

Furthermore, the analysis of the new atom configuration will mainly deal with

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### Gravitational Law of Equivalence

$$\mathbf{g} = [ \mathbf{c}^2 * \mathbf{h} * \mathbf{R} / \mathbf{G} ]$$

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the demarcation of the equilibrium points concerning all the current forces.

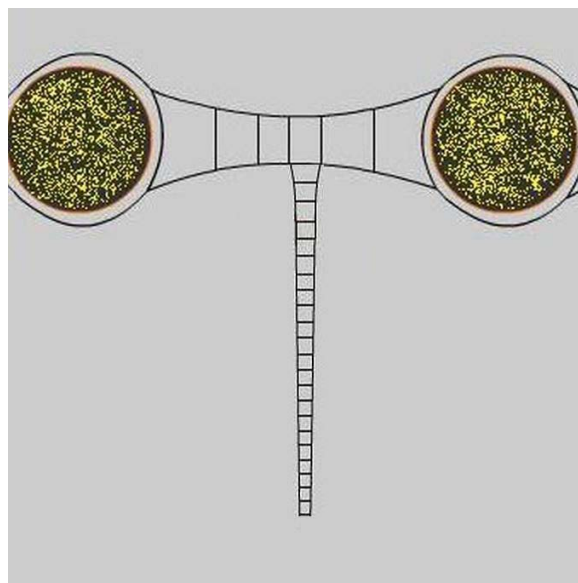


### **2.b.3. Indirect gravity**

It is an obvious consequence of the gravitational model of Global Mechanics, but we had never thought of it before because gravity force is the result of all of its components. Nevertheless, given the high number of its components, indirect gravity could provide half the force of gravity.

If gravity is a consequence of the longitudinal tension of the filaments of the [global aether](#), the model implies that the size of the cells of this net will not only depend on the direct effect of mass generating the gravitational field, but also on the size of the adjacent cells. The name of indirect gravity comes from this idea, as the size of the adjacent cells will themselves depend on the global gravitational field, with its own direct and indirect effects.

#### **Indirect gravity**



In short, what produces the longitudinal tension is the gradual decrease of the abovementioned size or the reticules with distance. This decrease will be a consequence of the elastic effect of the filaments, which directly join the cell with the mass that produces the field, as well as all the filaments or possible paths between the cell and the mass –within an angle that does not cancel out the resulting indirect forces.

From this point of view, gravity does not configure as a single force, which tends to join two masses, but rather as the result of a multitude of forces, where not all the directions pass through the masses. One would have to measure the aforementioned elastic effects using mathematical models, to analyze the possibility of asymmetric effects in particular situations.

Another aspect of indirect gravity is that its importance could have more relevance at atomic distances. One could think that if indirect effects do indeed exist upon mass, in the case of a gravitational field formed by two or more masses, these effects could have a certain degree of asymmetry.



## 2.c) Luminiferous aether as a property of gravitational aether

The theory of Global Physics is an interpretation of [Quantum Mechanics](#) and [Relativity](#). It is a non-relativistic theory, but it incorporates some concepts of the Theory of Relativity. We can cite the [Mach principle](#), the equivalence  $E = mc^2$  of Olinto de Pretto, the double gravity on the energy –initially formulated by Paul Gerber with the formula of the [orbit of Mercury](#) 20 years before Einstein–, and the [Lense-Thirring](#) drag effect on electromagnetic energy that allows maintaining the classic time and space.

According to *Global Mechanics*, electromagnetic waves are transverse waves of a “mechanical nature” on [luminiferous aether](#) –gravity field or tension of longitudinal curvature of the reticular structure of matter.

We have also seen that the [global ether](#) is the reticular structure of matter supporting potential gravitational energy, mass, [kinetic energy](#), and contributing consistency to the Mach principle.

In other words, supporting medium of luminiferous aether is the global aether.

The concept of photon and electromagnetic wave is very delicate in the theory of *Modern Physics* because of the known [wave-particle duality of light](#).

The [double-slit experiment](#) carried out by **Thomas Young** in 1803 established the wave-like nature of light when he obtained patterns of interference and diffraction in the propagation of electromagnetic waves.

On another hand, the *photoelectric effect* explained by **Einstein** in 1905 shows the particle-like or corpuscular nature of **photons** when it proves that the absorption of light and electromagnetic waves discretely takes place –quanta of light– with a constant of proportionality, which takes the value of the **Planck constant**.

Nevertheless, we would say that all this was exaggerating the contradictions to raise a scientific discipline artificially. How could one think of a wave that does not have a material nature? Perhaps it would have a spiritual nature. Is not energy property of matter? The phenomenon in the XIX century and at the beginning of the XX century regarding the nature of the light is similar to that of the current **Quantum Mechanics** phenomenon; the barriers of science have softened. Religion and magic are everywhere.

The photoelectric effect shows that the particle nature of light is discrete and not continuous or, more precisely, that the transverse elasticity of luminiferous aether as a support of the electromagnetic interaction seats on physical mechanisms of a discrete nature.

Considering the filaments of global aether are unbreakable, and consequently, the continuous nature of matter, we will have to incorporate a new property of global aether to implement the coherence of the model with electromagnetic wave propagation.

The filaments of global aether will have internal elements that we could call **elastocytes**, which would have a unique elastic property. The elastocytes are continually vibrating to support their internal energy and to allow both the elasticity of the longitudinal curvature of the gravitational interaction and the transmission of a transversal torsion or a twist from a

minimum unit of energy in the electromagnetic interaction. In the opposite case, or when the excess of torsion does not reach an additional minimum unit, the energy of torsion would reflect.

Perhaps a filament between two vertices of a reticule of global aether is what configures an elastocyte, apart from its great longitudinal elasticity.

We will attempt to present the physical life of a photon in the different stages of the electromagnetic interaction in a simplified way. Nevertheless, the concept of a photon will not be complete without understanding the context of the whole model, especially regarding the magnetic field and electromagnetism in general. In other words, all the concepts of the structure of matter, in its different phases or stages of physical matter, relate to each other. A more intuitive view will be available once we get to know the complete elastic model on the physical reality of *Global Mechanics*.

Some new concepts are hard to accept because of the substantial variation or change in current paradigm. The concept of the electromagnetic wave or photon is something without mass or physical entity, and its propagation goes through space where there is nothing at all. Although lately, this idea is weakening, some people find it difficult to substitute nothingness with something unknown. Perhaps, in this case, it will not be so difficult for our minds to exchange such a null concept for something more tangible or intuitive.

To get closer to the new concept of photon or electromagnetic wave, and without the intention of carrying out an exact description of the new paradigm of physics, let us see the three consecutive stages of the life of a photon: creation, electromagnetic wave propagation and the collapse of the mechanical wave:



■ **Initial torsion of the magnetic wave**

The origin of the electromagnetic wave propagation is a spatial variation of the luminiferous aether and, consequently, of global aether, which provokes a torsion mechanism, deforming its filaments, described on the previous pages, due to the property of transverse elasticity.

The figure shows the characteristic shape of a beam or a polyurethane bar when we apply torsion at one end, and it cannot release the transversal tension because its other end is secure.

**Transversal elasticity**

Aether luminiferous



Afterward, the electromagnetic interaction will become more complicated because of the movements of global aether of atomic nuclei and the formation of mass, especially the [mass of electrons](#).

The propagation of transverse mechanical waves and the collapse of the electromagnetic wave are in the following section.



## 2.c.1. Photon propagation

Once torsion has taken place at one end, a transverse mechanical wave will be produced in the form of a spiral curve advancing towards the other end as shown in the figure (well, an animated gif would better indicate this).

### **Affected structure of gravity**

Gravity filaments affected



Therefore, energy from the photon or the mechanical torsion will transmit from the point of origin towards the other end of the beam according to the parameters of the transverse elasticity.

This presentation of **photons** as transverse mechanical waves is a mere simplification of what happens in reality. It seems that in the case of propagation of electromagnetic waves, the torsion of a filament in the global aether will necessarily affect the adjacent filaments. So, one can talk about three-dimensional waves, but still not knowing what a photon is.

As a result, the beam or bar will represent the wave sequence or the collection of filaments affected in the reticular structure of matter, global aether, by the advance of the electromagnetic wave.

From the perspective of the central axis of the transverse mechanical wave, the amplitude of the electromagnetic wave will depend on the elastocytes needed to reflect the total energy of the wave, bearing in mind that each **elastocyte**

represents a minimum unit of energy or quanta.

According to Wikipedia, since they are transverse waves, they can polarize, whereas longitudinal waves, such as the mechanical waves of sound, cannot polarize because the oscillation has the same direction as its propagation.

Wikipedia also states that the study of electromagnetic polarization only concerns the electric fields of the aforementioned transverse waves by convention, since the magnetic field is perpendicular and proportional to the electric field. We still have not been able to make out the difference between an electric field and a magnetic field in a photon. We suppose it would be a conventional difference because of historical reasons, and because it is useful to separate the two spatial components. Maybe it has something to do with the differences due to the direction of propagation of the electromagnetic waves, concerning the tension of the longitudinal curvature of global aether and the resulting difference in torsion potential.

Another way to look at it will be to ask ourselves if the magnetic wave has an electric component in its transverse wave propagation.

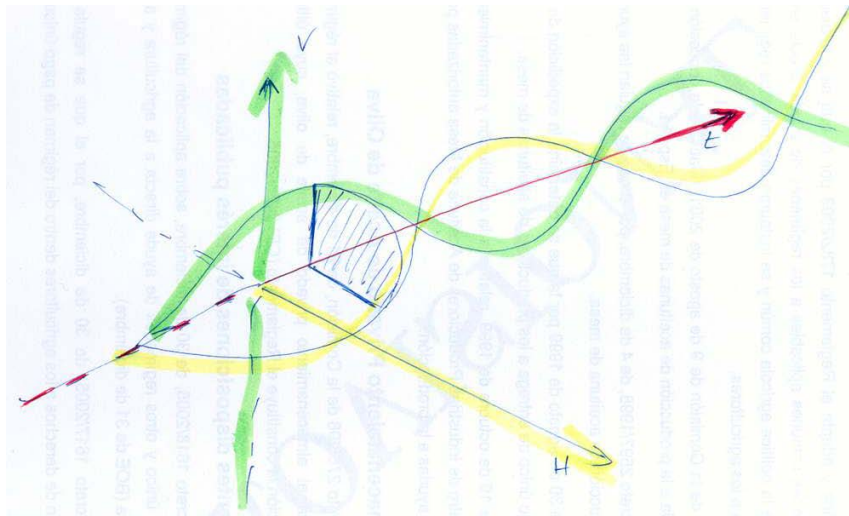
The figure on the propagation of the magnetic and electric fields shows the classical virtual division of the electromagnetic wave propagation. This representation of two planes of a three-dimensional transverse and mechanical wave corresponds to the lines defining the area of global aether affected in each instant.

The figure is not exact because the vertical and horizontal lines of the propagation of the wave of the transverse mechanical wave cannot be so straight. However, we hope we have achieved the intended effect.



## **Definition of photon**

### Magnetic field and electric field



The fact that the mechanical wave maintains the energy of the photon indicates that the luminiferous aether –longitudinal tension of global aether– is a non-dispersive medium.

Another property of electromagnetic waves is that they break the symmetry of the simple radial structure of gravity.



## ■ Physical collapse of electromagnetic waves

Warning! This event is not to be confused with the mathematical collapse of the wave function in [Quantum Mechanics](#).

The electromagnetic wave of light, or a photon, will not stop as long as there is no reason to; for example if it were to reach a fixed point that did not allow its passage or propagation. At that moment, the possible main events in the transverse mechanical wave are:

- *Absorption of the electromagnetic wave by a particle with mass*

Consequently, the photon will have transmitted its energy to the receiver particle. The energy received may cause an increased vibration in the mass and the surrounding global aether, or increased heat, or [kinetic energy](#) of the linear movement of the mass.

Meanwhile, the spatial distortion that the photon created disappears, and the particle with mass absorbs a tiny bit of the global aether.

It is like if a car were to enter a highway at speed compatible with that of the other cars on the highway. Consequently, the rest of the cars would have to either readjust their speed to maintain a safe driving distance (heat) or go faster to increase the available space (kinetic energy).

- *Rebounded electromagnetic wave*

Another possibility is that the transverse mechanical wave, for whatever reason, rebounds in the direction of

the displacement or another direction.

It could be that the frequency of the wave and the particle with mass are incompatible, somewhat like a car entering a highway too slowly or with too many cars.

- *Reception and reemission of the photon*

What could also happen is the reception of the photon, but immediately reemitted because it created an unstable state in the receiver particle with mass.

In this case, the car will manage to enter the highway because it goes faster, but it pushes another car out, forcing it to leave the highway.

One more possibility is that the torsion of the transverse mechanical wave ends up creating a half-fold or a complete loop.

Another essential characteristic of the propagation of electromagnetic waves or photons refers to the concept of movement, which we study in detail in the book on *Physics and Global Dynamics*, particularly the sections regarding the [Dynamics of the Movement of Light](#).

Finally, we would like to point out that wavelike behavior shown by [photons](#), as transverse waves of a mechanical nature propagating on [luminiferous aether](#) –gravity field or tension of the longitudinal curvature of global aether or reticular structure of matter– implies the beginning of the unification of the gravitational interaction with the electromagnetic interaction. The full unification will come with the mechanism of creation of mass.





## 2.c.2. Luminiferous aether and properties of photons

In describing the stages of electromagnetic waves, we indirectly pointed out some of the properties of light waves, or photons, according to the interpretation of [Quantum Mechanics](#) and [Relativity](#) that Global Physics supposes. Likewise, we mentioned the dual nature of light or the wave-particle duality of electromagnetic waves in the sense of being transverse mechanical waves on luminiferous aether – longitudinal tension of the reticular structure of matter or [global ether](#).

An important characteristic or property of the wavelike behavior of light, which we study in the book *Law of Global Gravity*, is the movement of light regarding the [curvature of light](#), or the natural phenomenon of gravitational lenses, as explained by the [Merlin Effect](#).

Now we will look at other interesting properties of light waves, or photons, which are critical aspects of the current theories of *Modern Physics*, and that would change with the *Global Mechanics*. We will look specifically at topics regarding the postulate of the constancy of the speed of light, the mass of photons and the previously mentioned dual behavior of light, or its wave-particle duality.

The new definition of a photon implies the following properties of electromagnetic waves:

- **Propagation of magnetic waves and constant speed of light**

One consequence of the definition of gravity and the wavelike behavior of the photon, as a transverse wave on the tension of the longitudinal curvature of global aether, is gravity as the supporting medium for the propagation of light waves or **luminiferous aether**. The *Global Physics* proposes this interpretation of the **Michelson-Morley experiment**; especially as regards the entrainment of electromagnetic energy in line with the **Lense-Thirring effect**.

If the propagation of transverse waves has a variable speed depending on its intensity or frequency in a mechanical medium, we call this a dispersive medium, and the contrary would be a non-dispersive medium. By this definition, luminiferous aether would be a non-dispersive medium.

Another property of light waves of equal or greater importance is that their speed of propagation in a non-dispersive medium, such as gravity field, it does not depend on the electromagnetic energy or frequency but the parameters of the longitudinal elasticity or rigidity of the filaments of global aether –supporting medium of the luminiferous aether, and indirectly, of light.

Intuitively speaking, one can better grasp the concept of the constant speed of light by imagining that if one were to strike a train rail twice, the sound would not travel faster than if one were to strike it only once. In other words, the speed of light does not depend on the energy or frequency of the waves. (This is a useful example assuming that said rails constitute a non-dispersive medium).

On the other hand, **Maxwell** proposed a formula for the speed of propagation of light waves, based on the magnetic permeability of vacuum  $\mu_0$  and the permittivity of vacuum (dielectric constant)  $\epsilon$ . This famous formula



0

reminds us a lot of the speed of propagation of transverse waves in strings, which depends on the square root of the tension of the string divided by the linear density of the string.

$$\begin{aligned}c^2 &= 1/ \mu_0 \varepsilon_0 \\c &= (\mu_0 \varepsilon_0)^{-1/2}\end{aligned}$$

It seems as though **Maxwell** thought of luminiferous aether as the mechanical medium of light waves, or photons. Another ironic fact in the history of science, since nowadays; **Maxwell's** prediction serves as an indisputable argument sustaining the [Theory of Relativity](#). It is as if the winners of scientific battles also wrote the history of knowledge.

- **Propagation of magnetic waves and the variable speed of light**

From a dogmatic approach, according to the formula proposed by **Maxwell** on the velocity of propagation of light waves or photons, the most important fact is that the speed of propagation of a mechanical wave in a non-dispersive medium is a property of light waves, which relates to the square root of tension and density. This property suggests the inaccuracy of a large part of the Theory of Relativity by implying a variable speed of light due to the longitudinal tension changing the intensity of the gravitational field –luminiferous aether.

Furthermore, if the gravitational field is a supporting medium for electromagnetic energy, if we measure the velocity of propagation of photons in a system of reference external to the gravitational field, it will be greater when the gravitational field moves in the same

direction, and lower in the opposite case.

- **Mass and non-mass of photons**

The property of photons, of being mechanical waves along the luminiferous aether directly indicates that light and photons do not have mass.

Nevertheless, due to the proper mechanism of origin, transmission, and collapse of the transverse magnetic waves that we have described, it could be said that, from a strict point of view, a spatial variation in the material (or physical) reality exists due to the property of elasticity of global aether.

A photon does not have mass and is not a particle (in the material sense of the word) but, as a dynamic property of global aether, its energy brings about a succession of small movements in different **elastocytes** during the propagation of a light wave.

In other words, photons change the density of the global aether and, when a particle with mass absorbs a photon, the mass increases its density.

Perhaps the concept of a photon as a particle without mass and being able to transmit a linear momentum was a paradox, but once explained it ceases to be so. It is neither a paradox nor a particle in the non-technical concept. In our opinion, science consists of explaining paradoxes, not relying on them –let alone reveling in them. Therefore, it is better to talk of light or photons as a dynamic property of the elasticity of global aether due to being a transverse mechanical wave than as a particle without mass.

On the other hand, the book *Law of Global Gravity*, when talking about the **attractis causa** of the gravitational force,

explains that gravity affects electromagnetic energy due to the same mechanism as mass, and what is more, it affects twice as much due to the speed of propagation of electromagnetic energy. In other words, electromagnetic energy is an energetic property of global aether just as mass is, but this does not mean that photons and mass are identical from all perspectives.

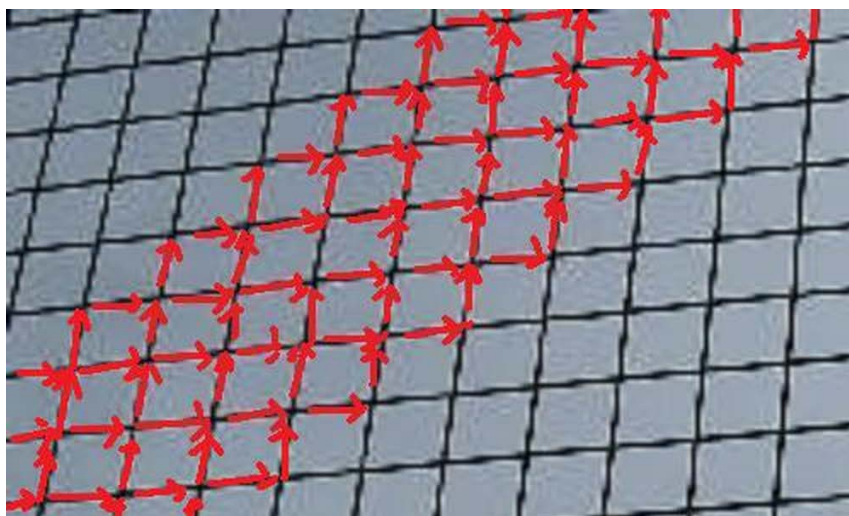
- **The wave-particle duality of light**

In the previous point, we have just explained how *Global Mechanics* understands the wave-particle duality of light and the topics regarding the *double-slit experiment* and the *photoelectric effect*. It is worth repeating that a wave created by torsion advancing through a single filament should not produce diffraction nor pass through two slits. However, the filaments make up part of the global aether, and a photon affects a collection of them.

When the electron disappears due to the change in orbital level, it will affect many filaments of global aether until it reappears in another level.

### **Luminiferous aether**

Photon propagation



Likewise, the results of all the forces will spread the impulse through the elastocytes up to certain extent, in the direction of movement for each reticule of the global aether. This characteristic or property of light waves and photons would explain the wavelike behavior of light in the *Young experiment or the double-slit experiment*.

A different problem from that of the wave-particle duality of light, or photons, is the *double-slit experiment with electrons* –but we will try to explain this topic when describing what electrons are and how they move.

An encouraging example is to see in Wikipedia how *Quantum Theory* resolves the paradox of the *Young experiment or double-slit experiment* when emitting photons one by one. They propose that the probability functions of finding a particle at a specific point interfere with each other. Never mind that the functions represent waves of which they are not aware, but only in the world of *Quantum Theory* would it be possible for a mathematical function to have a real effect. Pardon us; this also occurs in the world of the [Theory of Relativity](#), along with the concept of gravity as a geometric effect in [space-time](#).

We say that this is encouraging for two reasons, because [Quantum Mechanics](#) has a mathematical mechanism impressively adapted to the properties of photons in the physical reality. Therefore, it must be possible to calculate with great accuracy the size of a reticule, the elastocytes and other ideas derived.

The second reason is that the logical justification is often glaringly absent, thereby leaving a clear gap for physical theories such as *Global Mechanics*.



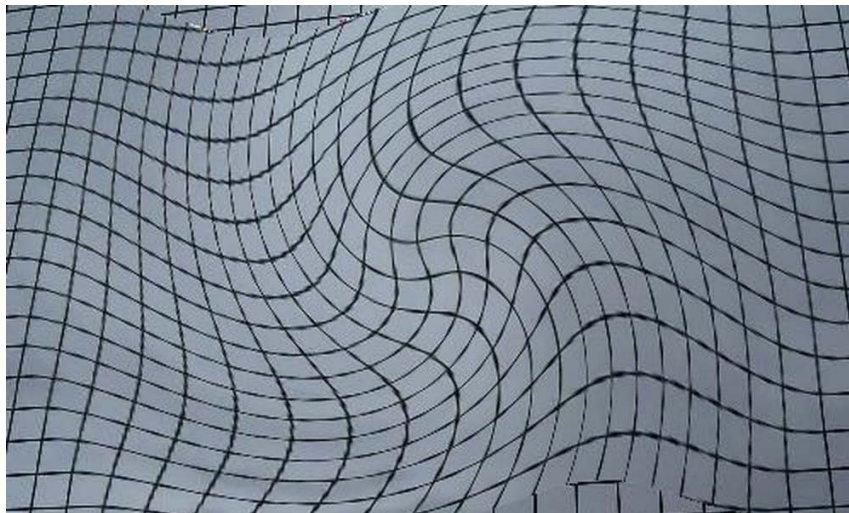


### **2.c.3. Electromagnetic interaction, field, and force**

When discussing the properties of light waves, we mentioned that to understand the concept of a photon we need to know the complete model, especially this section concerning the *electromagnetic interaction*. Likewise, to understand the electromagnetic force or the electromagnetic field in *Global Mechanics* one needs to be familiar with the concept of an electromagnetic wave – which is why we explained it earlier.

#### **Global aether**

Electromagnetic field



The same happens with the electromagnetic interaction and the atom model, and since it is not possible to explain the whole *Theory of Everything* at once, we shall look at the new atomic model later on.

The first thing that we would like to highlight is that the new concept of electromagnetic wave supposes a step to the unification of gravitational and electromagnetic interactions. Both the gravitational field and the electromagnetic field are effects of the global aether and its properties like rigidity and

elasticity.

According to Wikipedia, the unification of gravitational force with electromagnetic force does not consist a *Grand Unified Theory (GUT)* because it does not unify the fundamental electroweak forces (weak nuclear force and electromagnetic force) with the strong nuclear interaction. Nor would it be a *Theory of Everything (TOE)* because it does not include the gravitational force together with the three previous ones. Therefore, we shall say that it is a *Second Unification Theory* (or Mini Unification Theory), due to the addition of gravitation to the electroweak model and the lack of the [strong nuclear force](#).

Nevertheless, it is not exactly like that, because it is not about adding or unifying a force but about reconfiguring the three forces involved. On the other hand, the third unification comes in the part of *Global Mechanics* concerning the new atom model, so it is indeed about a *Theory of Everything*.

Furthermore, from another perspective, *Global Mechanics* reestablishes the concepts of time and space by integrating the gravitational interaction –reverting to a classical [Euclidian geometry](#)–, which inevitably results in more accurate and precise definitions of speed and the concept of movement; as the *Global Dynamics* shows. In short, more than unification it seems that Global Physics is a common and compatible interpretation of the [Theory of Relativity](#) and [Quantum Mechanics](#).

If the gravitational interaction based on the elasticity and rigidity in the longitudinal curvature of the reticular structure of matter or global aether, the electromagnetic interaction centers on the transverse elasticity of said longitudinal tension. In other words, the two interactions coexist in the global aether.



The gravitational field is a result of the elasticity in the longitudinal curvature of the reticular structure of matter and the electromagnetic field of the transversal elasticity of this same structure.

The global aether supports the gravitational field and this, in turn, is supporting medium of electromagnetic energy [luminiferous aether](#).

The electromagnetic field disrupts the pure gravitational symmetry created by mass.

The difference in the concept lies in the cause of the generation of the fields and the spatial orientation of the transmission of energy or force.

Another important aspect is the relation between electromagnetic field and electromagnetic wave; that is to say, even though particles with an electrical charge in motion produce force fields, these particles in motion do not necessarily have to exist for electromagnetic fields to exist.

Moreover, electrons are a result of the differences in electromagnetic potential or torsion of the global aether, which relax with the creation of these particles. We shall discuss further these ideas when talking about mass and the configuration of the atom.

One of the most novel ideas in *Global Mechanics* concerns to the concept of electromagnetic field, its generation, and destruction.

Now let us discuss each one of these elements:

## ■ **The concept of an electromagnetic field**

An electromagnetic force field is similar to a gravitational field but is due to the transverse forces of torsion instead of the longitudinal forces. The electromagnetic force does not cancel out the force of gravity, as can be easily proven at home with a magnet.

The process of torsion needs a mechanical compensation; that is, if at a given point, a force of torque perpendicular to a particular direction starts toward the right, a torsion perpendicular to it as well has to start in this same direction but going the other way, towards the left.

The forces in *Global Mechanics* are of a purely mechanical nature, derived from elastic energy –which is the perspective of the [Principle of Global Conservation](#)–. Furthermore, there cannot be spiritual forces or forces from another world. It is in some way equivalent to [Newton's third law](#) of action and reaction, though this name can be confusing or misleading concerning the real effects in specific cases, as the book *Global Dynamics* book mentions.

Some scientists have concluded, experimentally, that monopoles do not exist because of the lines of the magnetic field close, which is the **Gauss' Law** for the magnetic field. It is true that they close, though the “lap” could be large mathematically speaking. One only needs to draw an electromagnetic force field to see that, if we try to draw the whole thing, it will almost surely go beyond the limits of the piece of paper –and maybe the lines will even become closed before coming back to the paper due to other magnetic fields.

We believe the reason for the non-existence of monopoles

in the electromagnetic interaction is not that the lines close, but those two lines always have to open in the opposite direction to feed themselves. In other words, upon breaking one symmetry, another of lesser rank arises.

## ■ **Generation of the electromagnetic field**

Photons create electromagnetic force fields since the filaments of global aether acquire the torsion that defines these fields by the propagation of [photons](#).

Additionally, the less the waves that create the electromagnetic field disperse, the greater the resulting field will be. If we twist a rope on one end while kipping the other fixed, we can observe how torsion occurs according to its elasticity.

A second cause of the generation of electromagnetic fields are the elementary particles of the state of aggregation of matter that corresponds to mass, that is, particles with mass –but only the stable particles with the distinctive characteristic of having electric charge create a static electromagnetic field.

In short, the static electromagnetic field means there will be torsion in the filaments of global aether.

Of course, a torsion in any particular direction will compensate with torsion in the opposite direction. The nucleus provides the starting point of the torsion mentioned above. As will be seen when discussing the creation of mass, there are two types of torsion: clockwise and counter-clockwise. These will be the proposed causes of the properties of the positive and negative electric charges, even if they do not correspond exactly.

■ **Annulment of torque stress or transversal tension**

- *A simple physical experiment with a rope*

If one were to keep one end of a rope fixed, and on the other end one made a transversal torsion to the left and then another to the right, there was no torque stress in the rope; naturally, it canceled.

The same would happen if one connected two strings that both had one end fixed by their loose ends. Then, the tension of both strings would also disappear.

As stated earlier, one has to distinguish between protons, or charged, stable particles that produce a magnetic field, and electrons that the magnetic field creates them in the process of weakening the torque stress, due to the filaments of the global aether reaching the maximum sustainable torque stress and producing a half-fold or bend.

We show this mechanism in detail on the page corresponding to the [atomic model](#) of this book on *Global Mechanics*.

As will later be explained, this mechanism is the reason for the existence of electrons as [wavons](#), which can be easily proven:

- *Homemade physical experiment with an elastic rubber band*

If one has an elastic rubber band on hand, one can twist its ends. Then we could see that, with enough

**Relaxation  
of transversal tension**



torsion, a loop emerges in the middle of the elastic or rubber band, and if we could feel how the transversal force decreases at both ends (held with each hand) just at the moment when the loop or curl emerges.

The complete loop produced by the electromagnetic waves implies a change of the nature of tension; from transversal, it goes partly to reversible deformation energy and partly to tension of the longitudinal curvature created.



### 3. What is mass?

#### 3.a) Interaction of physical mass

We have seen how electromagnetism reflects the torque forces of the filaments of the reticular structure of matter or global aether, within a simplified view of reality, to express the concepts.

*Global Physics* has approached gravitational and electromagnetic interactions when saying gravity field is the [luminiferous aether](#). Now it should be easy to unify both interactions entirely through the mass interaction since we already have a quantitative equivalence using the equation  $\mathbf{E} = \mathbf{mc}^2$  from [Theory of Relativity](#), that does indeed quantitatively coincide, albeit partially, with physical reality.

#### Interaction of mass

The creation process of elementary particle



The unification of the gravitational interaction with the interaction of physical mass consists of the same energy process like that found in electromagnetic

waves, but highly intensified to be able to create physical mass.

The interaction of physical mass will require electromagnetic waves in a region of the global aether to produce a half-fold or a complete loop of its reticular structure and to relax the torque stress or transversal torsion. This process involves an

additional form of physical collapse of the wave, which is when said torque stress transforms into the tension of longitudinal curvature and tension of reversible deformation or compression of global aether, to form the fundamental particles of mass.

Taken to the extreme, this process of the theory of mass explains in the online book of *Astrophysics and Global Cosmology* what black holes are and why they form. It implies that fundamental particles of mass share characteristics with black holes and vice versa.

Therefore, we can establish the definition of physical mass as compressed and coiled matter, because it relaxes electromagnetic waves while creating.

To better understand what physical mass is, its definition, and its most essential characteristics, we can take a look with the heyelologic microscope at the main steps of the creation process of an elementary particle:

### ■ **Torsion Spirals**

In the heyelologic figures, we can observe how loops form by increasing the torsion on the filaments of the global aether. That is, the loops in the interaction of the mass of fundamental particles form because of the torque stress of global aether.

We said earlier that the complete loop produced by torque stress implies a change like the stress from transversal to longitudinal tension. In other words, the electromagnetic elastic energy becomes gravitational [potential energy](#) and reversible deformation energy –a purely mechanical effect.

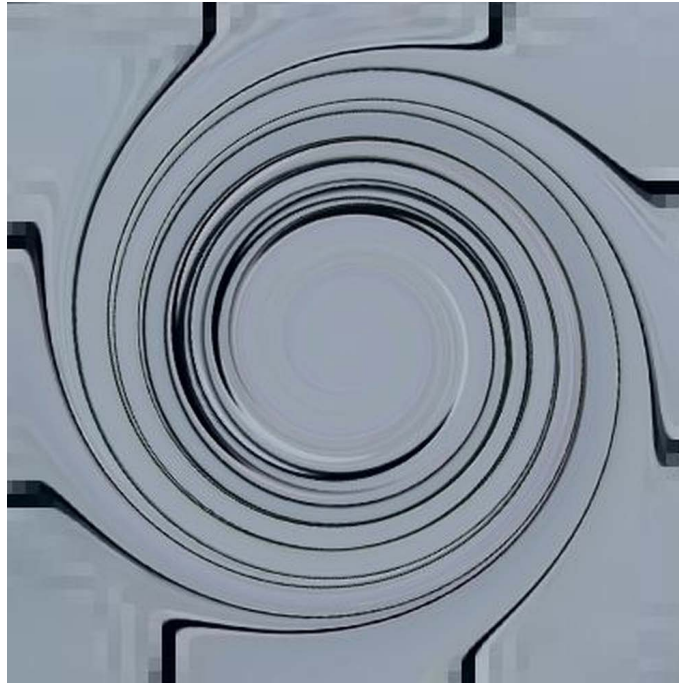


It will be the first step of the theory of physical mass in the creation of the new state of physical matter different from that of gravity.

One has to imagine the global aether in a three-dimensional space of **Euclidian geometry**, to try to visualize what shape these loops or curls will have. We think they could generate something similar to a small sphere, or spirals. In the case of an electron, it could be like a half-fold o bend.

### **Global aether**

Creation of loops, spirals or curls



The half-fold or complete loop of the fundamental particles with mass will create where the elastic torque stress –transversal tension– or electromagnetic energy surpasses a physical limit related to **c<sup>2</sup>** and the mass of the electrons.

#### ■ **Spatial contraction**

The creation of the loops in the fundamental particles in the theory of mass will shrink the three-dimensional net or grid of matter or global aether, and therefore, it will involve a reticular shrinking phenomenon. As a result, based on the definition of mass we can gather that a property of global aether is volume reduction or [spatial contraction](#), at a very high percentage, and compaction of the filaments.

The spatial contraction of objects is a natural phenomenon and common in many areas of physics and should not be confused with the contraction of space. Something that gets smaller reduces or shrinks; the concept of contraction of space itself is unnatural, and all it accomplishes is to complicate reasoning and move us away from physical reality. Some arguments of *Modern Physics* remind us of the creative accounting of *Modern Economy*.

#### ■ **Curling a loop and accumulating elastic energy**

In the new theory and definition of mass, if there is an initial spiral, loop, or curl in the global aether, and the torque stress maintains with more electromagnetic waves upon this initial curl. Then, new loops or curls will create, but there will be a tendency to undo themselves if nothing prevents it. However, as we will see later, there could be some crack generating an energy barrier of stability – electrons–, or a jam between filaments of the cells of the global ether –protons and neutrons.

A visual, very intuitive and renormalizable approximation of the definition of physical mass would be a ball made up of rubber bands. In the figure, longitudinal rubber bands and not the local torsion of a three-dimensional structure of filaments constitute the ball.

In short, according to the definition of mass, the new elementary particle will have strongly compressed filaments by the disappearance of the three-dimensional spaces of the reticules with the creation of the curls, which will end up producing a material structure of coiled and jammed filaments with a much greater density than global aether. It will have lots of elastic energy due to the accumulated torsion. These are the fundamental particles of the definition of mass, configuring a new phase or state of aggregation of matter called physical mass.

This analysis is consistent with the formula of equivalence between mass and energy, and that electromagnetic waves violate the *law of conservation of mass*. Nonetheless, we would not suggest that mass and energy are the same or identical terms, only that they are equivalent from a specific perspective.

Indeed, both physical mass and electromagnetic energy are elastic characteristics or properties of global aether in different stages of physical matter.

In several sections of the book on the *Law of Global Gravity*, there is a more detailed explanation regarding the quantitative relation between mass and energy.

Dealing with this topic of the equivalence between energy and mass, we once again come across a terminological issue since, although the concepts of mass and matter are ever-changing, *Modern Physics*

continues to use the terms of *states of physical matter* to identify what are sub-states or types of aggregation of mass. Moreover, normal matter contains global aether, mass, and it has

### **Elastic energy of mass**



properties such as nuclear energy, electromagnetic energy, thermal energy, and kinetic energy.

In the following sections, we will delve into the definition of physical mass and some of the physical limits or conditions of what mass is, which will allow us to analyze the characteristics and types of motivating elementary particles.

### **3.a.1. Properties of fundamental particles with mass**

In the previous section, we saw the basic characteristics of the interaction of **physical mass** or the creation process of fundamental particles with mass. **Spatial contraction** of the reticular structure of matter, or global aether, increases its density and accumulation of elastic energy in the curls due to electromagnetic energy.

Calling “*particles*” elementary particles without mass is confusing for the brain when the topics are already rather complex. The common element is internal elastic energy, but if there are entities that do not have mass they should be waves. Nonetheless, on a smaller scale, even physical waves have a material base, but it changes much faster than **physical mass**. In any case, when one does not know if something has mass or not, “particle” is a good name.

The new physical model of the theory of mass provides and explains additional characteristics of the nature of fundamental particles with mass and their internal energy.

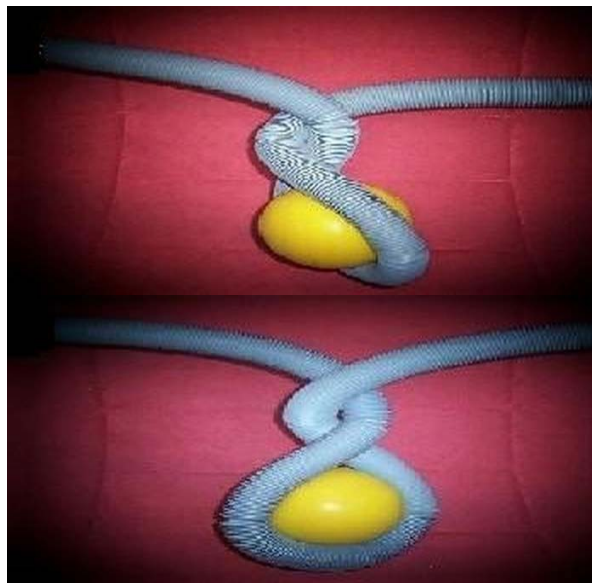
- **Spatial nature of fundamental particles**

There are only two possibilities for creating a spiral in the global aether in a Euclidean space, or three-dimensional space: either by the left or the right; in other words, either with **clockwise or counter-clockwise** torsion or electromagnetic elastic energy.

It somewhat reminds us of the negative and positive charges of mass. However, it is not precisely the same,

since one should not confuse the quantitative difference in the torque stress (or transversal torsion) between two points or areas of space and the qualitative difference of being elastic energy or clockwise or counter-clockwise torque stress.

**Clockwise  
and counter-clockwise  
fundamental particle**



It is worth clarifying this concept, as it will have severe repercussions in the theory of the atom. The qualitative difference in fundamental particles with mass relates to matter and antimatter, while the quantitative difference in electrical charge of mass concerns the internal compensation of the charge and its environment. One could think of the atom's charge with more or fewer electrons.

On the other hand, there are fundamental particles with very different mass but with the same electrical charge and opposite signs, such as protons and electrons.

We must remember that there are also two types of

photons, with elastic energy or with torque stress – with clockwise or counter-clockwise transversal torsion.

- **Resonance in the fundamental particles with physical mass**

We are all familiar with how balls such as soccer balls move, but the torque stress of an elastic band is less intuitive. Therefore, it is worth having a torsion bar or elastic polyurethane beam or bar, like the one used in the heyelagic microscope, on hand while reading the book *Global Mechanics*, to feel how it acts as a torsion spring.

To understand the resonance of fundamental

particles with mass is necessary to think of elasticity as a type of internal dynamic energy. If one bends an elastic bar, there will be a tendency to return

to its straightened state; furthermore, this tendency will disappear if the bent bar were to behave as if one had taken its photo. If the global aether were entirely still, it could not have the property of elasticity or internal elastic energy.

The discussion regarding whether a structure with **elastic energy** needs to have internal elements with the property of elasticity is an interesting one because if we apply a recursive argument, we will get the *infinity towards the little*.

### **kinetic aether**

Mass resonance



Another curious argument regarding the internal energy of matter would be whether a flexible or elastic structure could emerge from rigid elements or vice versa.

If we imagine the formation of a loop, we will think of a dynamic and elastic process that increases the tension of the longitudinal curvature of the filaments of global aether. This tension will balance the tendency that deformation energy has of reverting to its initial state. In short, the elastic energy of the fundamental particles of mass will be in the form of internal vibration.

Because global aether is compressed or compacted in fundamental particles of mass, the internal energy of their vibration will imply their state of resonance.

The frequency of resonance of fundamental particles will synchronize the vibration of the longitudinal tension of the global aether since they continue to make up part of it. Nonetheless, one has to keep in mind the **speed** since once the fundamental particles with mass are moving, they will have to increase their vibration or resonance to synchronize themselves with the global aether in classical relative movement, which is somewhat similar to the Doppler Effect in mechanical waves.

- **Discrete nature of mass and dual property of matter which makes up mass**

The properties of the elementary particles with mass in *Global Mechanics* allow us to assign to it a discrete nature. Besides being the result of quantified elastic electromagnetic energy, they form by loops, of which the smallest size is the electron and is just a half-fold or bend, and they reach their largest size if they are stable, [protons](#)



and neutrons –in normal conditions–. Nevertheless, in black holes, there are most surely other processes of squeezing global aether.

Besides, the matter is continuous as pointed out at the beginning by a principle of *Global Mechanics*, in which the existence of global aether aims to support the global conservation of energy with great simplicity.

From another point of view, as global aether is in constant vibration, it also has a wave nature. The dual nature of mass –the common expression is *dual nature of matter* – derives from the elastic energy due to the resonance of fundamental particles and its relation to the tension of longitudinal curvature produced in the global aether.

As we shall see in the following section regarding **unstable subatomic particles**, some types of mass have a mixed nature, independently from the abovementioned dual nature of matter; that is, they change sequentially between the nature of an electromagnetic wave and that of a fundamental particle with mass.

Finally, we would like to point out that we should clarify expressions like discrete nature, the dual property of matter, wave-like behavior for each specific case, and use their technical meaning with caution since it will inevitably refer to the paradigm of *Modern Physics* and not to *Global Physics*.



### 3.a.2. Stable and unstable subatomic particles

We have seen how fundamental particles –the smallest subatomic particles of **physical mass**– create through an intense process of torsion of the reticular structure of matter or global aether, which generates a different state of physical matter, where the main character is the accumulation of elastic energy in curls or spirals of resonant mass.

We have called this phenomenon of *a change in the state of matter* the interaction of mass or black interaction, due to eliminating the torque stress –transversal tension– from the electromagnetic wave and transforming it into the tension of longitudinal curvature –gravity– and *reversible deformation energy* of global aether –mass.

#### Stable knot



We have also seen in the previous section **properties of subatomic particles** in general, such as their clockwise and

counter-clockwise spatial nature, and we have mentioned their stable or unstable nature.

*Stable subatomic particles* will have some mechanism to prevent the spirals or loops of the reticular structure of global aether from easily becoming undone, despite the tendency to return to its initial state due to the elastic energy.

The figure shows a rolled-up blanket with a knot to intuitively represent a possible mechanism of stability, although it cannot be like that.

There will be more detail regarding stable elementary particles and their maximum size in the section of this book on [Particles of the atom](#) of the new atomic model put forth by Global Mechanics.

Characteristics of subatomic particles:

- **Sliding of subatomic particles**

As has been previously explained, electromagnetic waves, or photons, and other *particles without mass* represent small twists or transverse (or torsion) deformations of global aether. When these twists join in space with opposite direction, they create half-folds, complete loops or spirals of [physical mass](#).

If the loops receive more energy or torque force from one side, they will slide until they reach an equilibrium in the transversal tensions of torsion received through the loop ends. In this case, intuitive description of the movement of the particles with mass would be the displacement of a slipknot.

Recently (2016) I have found that the [theory of knots Lord Kelvin](#) → can point to as a clear precedent of *Global*

*Mechanics*. This theory proposed that the various atoms correspond to different knots in the classical ether. Logically, the advent of Relativity discarded it, because of the general denial of the existence of any ether with mechanical properties.

Relativity assigns these mechanical properties to [space-time](#) itself, thus avoiding mentioning the word aether. Suffice to say that the detected [gravitational waves](#) drag light, according to LIGO experiment.

- **Nature of very unstable subatomic particles, or gravitational skip**

If the *subatomic particle* is at a point in a potential valley, like the electrons in their orbits, by changing the differences in potential the point will cease to be a point of equilibrium, and the particle will become undone due to its elastic tension. The freed electromagnetic energy will travel at the speed of light until it finds a new equilibrium in a minimum potential but in another valley, where it will appear again as a subatomic particle with mass.

We can call this phenomenon a gravitational skip –little jump or *Tunnel Effect* – because it will typically take place at very [short distances](#). It defines a new type of subatomic particles. We will also find it again in the page corresponding to the new [atomic model](#) of the *Physics of Elementary particles* proposed by *Global Mechanics* within *Global Physics*.

- **The wavons**

The necessary distinction between the expressions [dual nature of matter](#) and the new type of subatomic particles suggest the creation of a second type of duality – mixed or

intermediate as far as the duration time with one nature or another is concerned.

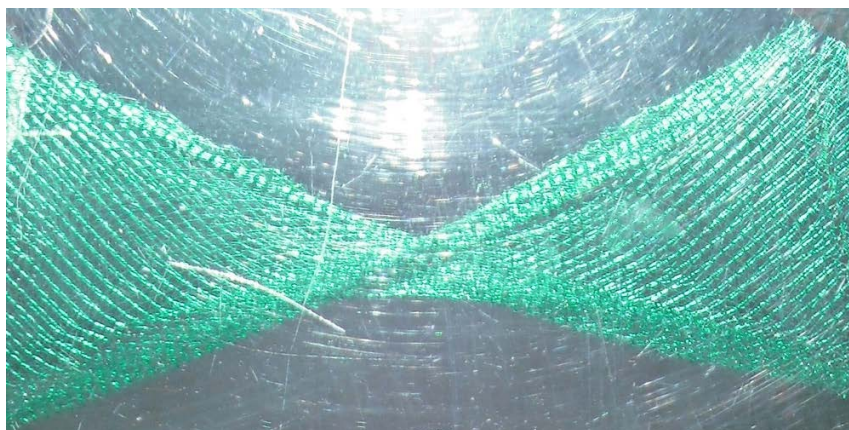
A generic term for these strong waves could be wavons. That is, they would be subatomic particles that acquire mass between the skips or tunneling effects that we referred to previously. They exist as material loops, and they leap at the speed of light like photons until they reach a new equilibrium in the gravito-magnetic tension. The term refers to the fact that electromagnetic waves would be abundant, and powerful, derived from the existence of the loops or curls that characterize [physical mass](#).

We name **wavine** the mass of wavons to differentiate it from the mass in the strictest sense (squeezed matter). Occasionally, the term mass is used for both types of states of physical matter in a broad sense, because both are made up of half-fold, curls or loops of global aether.

It will be necessary to use this distinction when analyzing the physics of movement in the book of *Global Dynamics*. Let us remark that both stable and unstable elementary particles with mass slide through global aether like the abovementioned slipknots.

## **Unstable subatomic particle**

Heyelologic echography



The heyelagic figure shows a 180-degree rotation on a bi-dimensional net. We can intuitively observe that there is nothing to stop the rotation from reversing if the tension that produced it were to disappear and if tended to return to its flat state.

## ■ **Electrons**

As we said, electrons slide like slipknots within their orbits. The orbital movement of electrons has special conditions, which we will examine in the section on the [Atomic structure](#) of this book.

### **Curl in the global aether**

slip knot



Likewise, due to being wavons, electrons also travel by leaps or skips between orbits.

This characteristic of electrons can explain the *Tunnel Effect experiment*—which should be the *jump of the wavons experiment*.

Furthermore, the mixed movement of unstable subatomic particles would easily explain the *Young experiment* or [double-slit experiment](#) done with electrons.

Finally, an electron can slide like other particles with mass as free electrons.

■ **Antiparticles and spatial lengthening of global aether**

A fascinating topic in *Particle Physics* is the association that emerges between subatomic particles and black holes, which, upon their formation, are large accumulators of mass and elastic energy.

Another comparison between *subatomic particles* and *Astrophysics* refers to the processes of **contraction** and **expansion** of global aether, which take place at both an atomic level as well as at the level of stars and galaxies –as described in particular detail in the book *Astrophysics and Global Cosmology*.

When two fundamental particles of opposite spatial nature, clockwise and counter-clockwise respectively, are also leaping or unstable, and contact with each other, they annihilate each other and thereby producing other particles and photons based on their distinct energy.

With the collision between the antiparticles that make up antimatter and normal matter, the loops will cancel out immediately without creating transverse torsion, since the transverse torsion will also compensate. However, the elasticity in the global aether, which gave rise to the initial curvature and the formation of particles and antiparticles, will make global aether to recover its volume thanks to its characteristic of reversible deformation energy.

For future reference, we name spatial lengthening of global aether to this physical phenomenon.







### **3.b) Evolution and history of the atomic model**

The structure of matter has been the focus of study and analysis since the dawn of modern civilization. The word atom comes from the Greek word (of the same phonetic pronunciation) which meant indivisible; that is, the smallest unit of matter, mass, or however the Greeks called it.

The current meaning of the atom comes from its evolution in the 19th century, and in the last century, scientists discovered there were subatomic particles. Therefore, it began the elaboration of the current structure of the atom, or interrelation of the types of smallest elementary particles that make up the atom.

Given the importance of the evolution of the different atomic models developed, let us briefly comment on the history of the atom in chronological order before showing the current atom model put forth by *Global Mechanics*.

#### **■ 450 BC – Atomic model of Democritus**

The philosophical development by Democritus postulated the impossibility of an infinite division of matter, so there should be the smallest unit of which all substances would consist.

It is interesting to think that for 2,500 years Democritus was right; the truth is that it seemed to be so, but now one of the most critical theories or ideas in *Global Mechanics* presents the exact opposite notion.

In the current model of *Global Physics*, all substances make up a unique particle called global aether, which consists of

an unbreakable three-dimensional reticular network that extends throughout the universe.

■ **1808 – Atomic model of Dalton**

The development of the Dalton model already pointed the way to the modern atom, but as a single particle, although it was not very clear at first if the *atomic model of Dalton* was supposed to be an atom or a molecule.

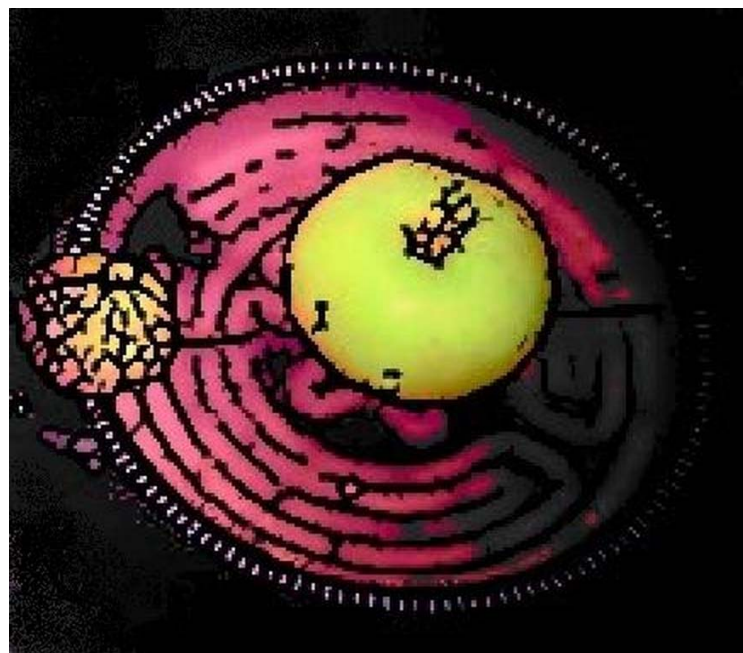
■ **1897 – Atomic model of Thomson**

The following major step in the history of the modern atom was the *atomic theory of Thomson*, with the division of the atom in positive and negative charges, like a fruitcake or garlic soup, with electrical forces of attraction.

■ **1911 – Atomic model of Rutherford**

The Rutherford model separates the nucleus with a positive charge from electrons with negative charge.

**Atom Model of de Rutherford**



Electrons are in circular or elliptical orbits around the

nucleus. The *Rutherford model* in 1920 added the neutron theoretically, confirmed experimentally in 1932.

The **Rutherford model** is the visual image we all have of the modern atom, but it had two problems:

- It contradicted the *Maxwell laws* of electromagnetism, in which charged particles in movement should constantly be emitting photons. Therefore, electrons should lose energy and fall towards the nucleus of the atom.
- The atomic theory of Rutherford did not explain the atomic spectrum.

### ■ 1913 – Atomic model of Bohr

The *atomic theory of Bohr* introduced substantial improvements to the **Rutherford** model by incorporating energy aspects derived from Planck energy and the photoelectric effect.

Although a detailed description of the *Bohr model* is complicated, the following characteristics are relevant in regards to the model that *Global Mechanics*, is going to introduce:

- Electrons are in stable circular orbits; that is, where they do not emit energy and not allowing all orbits.
- The allowed electron orbits in the Bohr atomic model have an angular momentum that is an exact multiple of  $h\text{-bar}$  –the Planck constant divided by  $2\pi$ .
- Electrons emit or absorb a photon by changing atomic orbits, the energy of which depends on the difference of energy of the orbits and they do not need to pass through intermediate states.
- In the Bohr atom, the electron orbits follow the rules

of *Classical Mechanics* but the orbit changes do not. Regardless of the enormous success of this model in many aspects, the problem with the Bohr model, and with the whole of [Quantum Mechanics](#), is that they go on adding assumptions throughout history, but without explaining the reasons to justify them. They work and better explain reality; which, although it is not at all bad, does not help very much with the understanding of reality if the reasons themselves base on misleading physics principles.

They could have tried a plausible explanation for a change.

- **1916 – Atomic model of Sommerfeld**

The development of the Sommerfeld model includes sublevels within the Bohr atom structure, dismisses circular orbits and, to a certain extent, incorporates [Theory of Relativity](#).

The Sommerfeld model also makes electrons out to be an electrical current, and it does not explain why orbits must be elliptical. We believe they are ellipsoids, and that Sommerfeld is right in that the electron is a special kind of electromagnetic wave, **wavon** in *Global Mechanics*.

- **1926 – Schrödinger model, or current model according to Wikipedia**

The **Schrödinger** model alters the philosophy of orbits – most certainly because of its new contributions to the *atomic theory of De Broglie* regarding the wavelike nature of mass in 1924— and describes electrons with wave functions. This configuration allows us to determine the probability of finding the electron at a specific point in space. In this way, we obtain orbitals of spatial density of probability of finding an electron.

This model of the *Schrödinger atom* adapts much better to observations; however, by giving up the previous image of the shape of orbits, it moves away from an intuitive explanation regarding the causes of such arbitrary orbits.

At the same time, **Schrödinger** goes into the world of probabilities and of mathematical abstraction, which, in large doses, could end up being very detrimental.

■ **2008 – Evolution of the current model of an atom**

In the following section, this online book of *Global Mechanics* proposes a new step in the evolution of the modern model of the atom in an attempt to continue to make progress in our knowledge of a physics reality that is as beautiful and simple as it is complicated.





### **3.b.1. Theory and concept of the atom**

The structure and theory of the atom developed throughout history, as pointed out in the previous section, with unquestionable conceptual and technical advances in the understanding of the different phases of matter in general or, to be correct, the reticular structure of matter or global aether.

We think one of the most helpful ways to explain the structure and definition of the atom in the new theory is to present its original properties and characteristics about previous atomic theories or conceptions. On the one hand, homage is paid to these contributions for pointing out important aspects and, on the other hand, both the understanding of new ideas and the concept of the atom is more accessible, whether one agrees with them or not.

On another hand, the idea is to present the most innovative properties of the atom, not the implications on the development of the entire *Standard Model of the Physics of Elementary Particles*. In any case, it is worth pointing out that the most innovative characteristics of the atom in *Global Mechanics* are those related to the concept and motion of electrons together with the stable state of the particles in its nucleus. The new atom theory explains the properties of **electron motion** within both an orbit as well as those that generate a change between orbits.

The characteristics and properties of the new concept of an atom in *Global Mechanics* will be the following:

- **Continuous nature of matter**

The theory of the discrete nature of matter comes from the concept of the atom of **Democritus**; in short, what it philosophically expresses is the non-existence of infinity in physical reality, in this case, infinite divisibility.

The previous semi-rigid model of *Global Mechanics* agreed with Democritus.

Despite having allowed me to develop *Global Mechanics* and the entire *Global Physics*, the premise of a **discrete nature** of matter forced to imagine mechanisms that, if not impossible –like those in other theories– most definitely complex.

Therefore, we decided to change to the current elastic model of *Global Mechanics*. The development of this model based on shifting from the principle of a discrete nature to that of the continuous and unbreakable nature of the reticular structure of matter.

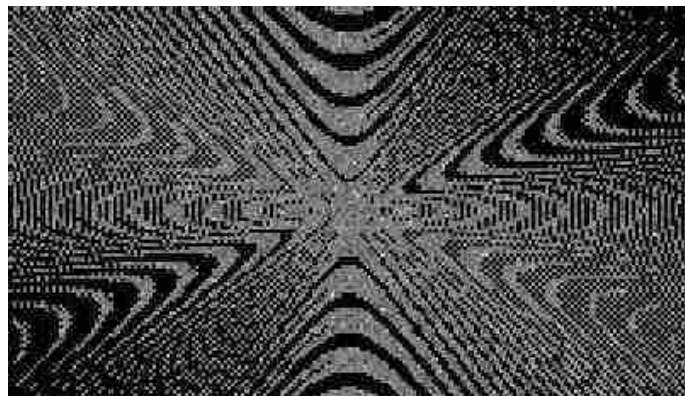
In the new definition of the atom and normal matter, all physical objects and energies are properties of global aether.

- **Discrete nature of the mass of atomic particles**

While explaining the process of the formation of mass, we saw it starts with a curl or loop in the global aether until it reaches a certain physical limit of

### **Theory of the atom (a)**

Continuous nature of global aether



elastic energy due to the torque stress related to  $c^2$ . The elastic strength needed for the initial half-fold, curl or loop will establish a minimum of physical mass for electrons.

The size of stable atomic particles –[protons](#) and [neutrons](#)–, is variable, yet very close to their maximum size –in normal conditions–, and they are larger than the unstable particles of the atom, like electrons.

We shall discuss this aspect in the following section, and shall refer to the maximum size of a reticule of global aether, keeping in mind the elasticity of its filaments.

There must be some reason for the size of neutrons to be so similar to that of protons. According to Wikipedia, the mass of a neutron is 1,008587833 amu (unit of atomic mass) and its average lifetime is about 15 minutes.

We also think that there may be other particles of mass that are much larger than [protons](#) and [neutrons](#); but they would not form atoms, and they would only be stable in conditions of very powerful magnetic fields, such as in black holes and stars.

- **The atom as a building block of mass of normal matter**

This initial contribution to the modern theory of the atom belongs to **Dalton's** atomic theory.

We call it normal matter because the atom has the characteristic of being stable about isolated subatomic particles, such as neutrons and smaller elementary particles, and because that is how purely chemical elements are on the human spatial scale.

The average lifespan of protons is very high, so high in fact that the exact time is unknown and it depends on the

theoretical models used.

- **The electric charge of subatomic particles**

The atomic theory of **Thomson** introduced the idea of two types of atomic particles with properties of attraction and repulsion. In the theory of the atom, these particles are negative and positive charges.

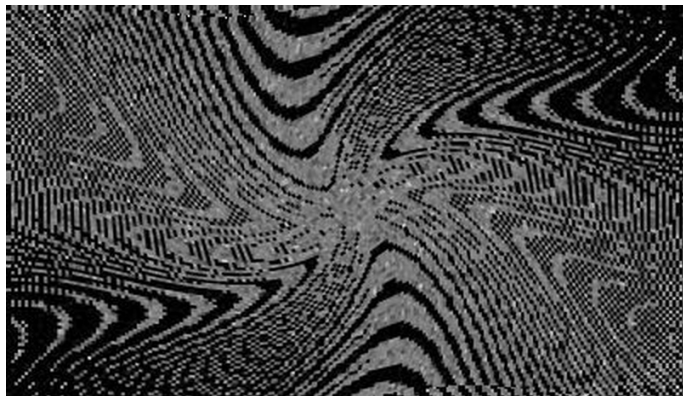
When discussing photons and electromagnetism, we saw how the electromagnetic interaction configures as the second type of interaction supported by the reticular structure of matter.

The electromagnetic interaction is due to the elasticity of torsion of the longitudinal tension lines of the global aether.

It is said, with little scientific basis, that the transversal tension of torsion is much stronger than the tension of longitudinal curvature –gravitational force– in the **short distances** or atomic distances.

### **Theory of the atom (b)**

Gravito-magnetic field  
generated by in the atomic nucleus



We would venture to say that *Modern Physics* knows very little about the internal gravity of objects and that the electromagnetic force frequently cancels itself out at short distances. In the following sections of this theory about the concept and structure of the atom and molecules, we will attempt to go into more depth regarding the formation of the gravito-magnetic field at short or atomic distances,

understood as the combined effect of the gravitational and [electromagnetic fields](#).

The heyeologic **image** shows the structure of the atom, with the elastic filaments of the global aether as black lines that represent the torsion produced throughout the filaments, due to the effect of the electrical charge of the nucleus of the atom, that is, the combined effect of [protons and neutrons](#).

The electric charge of the atom is located in the protons in the nucleus and the electrons, while the neutrons carry no electric charge overall.

The idea of configuring electrons as an electrical current comes from the **Sommerfeld** atomic model of 1926, which came after the **Bohr** atomic theory of 1913. A more precise approach for the theory of the atom would be to include electrons in the category of **wavons** –as defined in the section on [Unstable subatomic particles](#)–, given that calling it an electrical current does not clarify much either.

- **Quantum structure of the atom**

The allowed orbits of the electrons respond to levels of stable energy, which relates to the **Planck** constant. The same occurs with the absorption or emission of energy from electrons when changing orbits, as proposed in 1913 by the **Bohr** atomic theory.

Let us note that the *continuous nature of matter* does not contradict the quantification of energy in the modern concept of the atom. Furthermore, the elastic energy of the global aether requires internal elements with elastic properties.

The concept of continuity does not mean uniformity since

the reticules of the reticular structure of matter imply internal elements in the global aether and its initial symmetry.

The elastocytes will be the elements that support the property of elasticity of matter, as well as the quantification currently in *Particles Physics*, although it occasionally reaches the extreme of quantifying characteristics that are very independent of the energy from a conceptual point of view, such as space or time.

In the following points, we will comment on why **protons and neutrons** in the nucleus of the atom are stable, and what electrons are and the causes of electron motion, according to the spatial structure in the concept of an atom in *Global Mechanics*.







### **3.b.2. Atomic particles**

Each time we introduce a concept in *Global Mechanics*, we should keep in mind that it is necessary to have read the previous chapters. The proposed atomic model needs the new concepts of [physical mass](#), electromagnetism, and the force of gravitation.

At the same time, these concepts will better grasp after reading this chapter on the nucleus of the atom and atomic particles, especially in regards to the force of gravity created by physical mass.

We have divided the analysis of atomic particles into the study of the particles of the nucleus of the atom (protons and neutrons) on the one hand, and electrons on the other.

In turn, the study of atomic particles of the nucleus presents two parts. The first part is about mass, the concept of half-life, and the distinctive characteristic that provides stability to neutrons and protons, both within and outside of the atomic nucleus.

The second part of the study of atomic particles of the nucleus poses ideas regarding both the strong and weak nuclear interactions in the interior of a proton or neutron, as well as that which holds together the atomic nucleus, called the [residual strong nuclear force](#).

The concept of electrons, their formation and the characteristics of their orbits are the focus of the first part of the second block of proposals regarding electrons; which completes a study of the analytical conditions of equilibrium in electron motion in the theory of the atom put forth by

*Global Mechanics.*

All of the above is merely touched upon briefly and for the sole purpose of presenting the novelties of the atom model in *Global Mechanics*.

Let us take a look at the following characteristics of the stable particles of the nucleus of the atom, protons, and neutrons:

- **Mass of the stable particles of the atom**

According to Wikipedia, the mass of the proton is 1,836 times that of the electron, and the mass of the neutron is 1,838 times that of the electron. The mass of the electron, according to Wikipedia, is  $9.10 \times 10^{-31}$  kg

To facilitate comparisons, the mass of the proton represents a unit of atomic mass (amu).

The radius of the atom is not precise, and it will inevitably vary considerably between different atoms. The radius of the hydrogen atom is approximately  $10^{-10}$  m. Likewise, the radius of a proton is on the order of  $10^{-15}$  m, which means that in the case of the hydrogen atom the radius of the atom is about a hundred thousand times greater than that of the proton.

The mass of the electron comes from reaching the physical limit of transversal elasticity of the reticular structure of matter or global aether. So, we can form a vague, yet intuitive, idea of the size of the *stable atomic particles*—protons, and neutrons—, regarding the size of the filaments of global aether.

From another point of view, the mass of the proton and the neutron contains the mass of the three **quarks** which make them up, plus the mass of the loops or curls of the

strong field.

The formula of *Theory of Relativity*,  $E = mc^2$ , is no more than a mathematical euphemism, given that *Modern Physics* not only does not know what the mass of atomic particles is, it does not even have a physical proposal to this effect.

- **The average lifetime of protons and neutrons**

According to Wikipedia, the average lifetime of a neutron outside of the atomic nucleus is approximately 15 minutes.

As far as the half-life of a proton is concerned, there is no specific number, but it is very high, millions of years or more.

Without forgetting that the half-life of a proton and a neutron refers to the specific conditions on Earth, there has to be some physical cause for the enormous stability of the proton and neutron, since the neutron does not disintegrate, but instead transforms into a proton.

The stability of the particles of the atom means that enormous energy is required for them to decompose, or, that their elastic tendency to revert to their initial state has a very high-energy barrier.

- **Maximum size of atomic particles: neutrons and protons**

The similar size of the elements of the atomic nucleus, neutrons, and protons, gives us a clue in that it could be a size similar to the maximum size of stable atomic particles—in normal conditions.

All particles bigger than neutrons and protons are very unstable.

Likewise, since the elementary particles with mass and

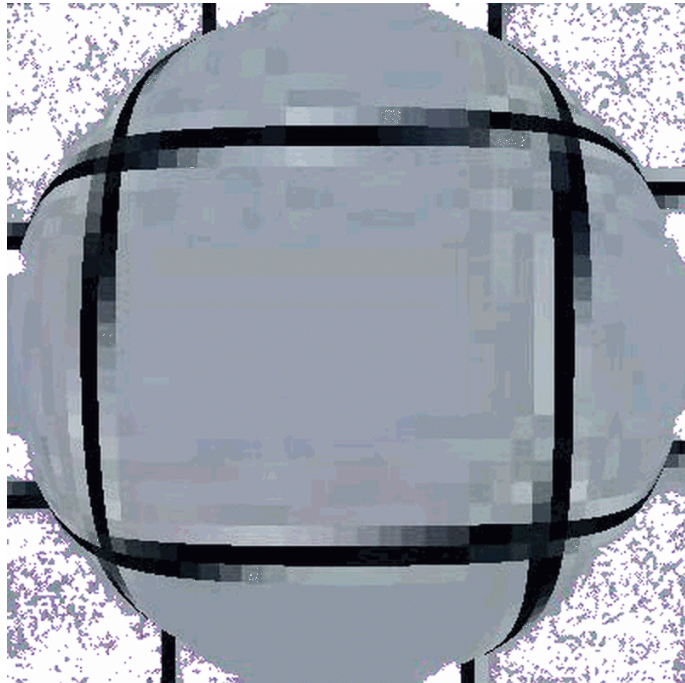
smaller than neutrons and protons are almost all very unstable, it seems that there is a relation between a minimum size and the stability of the atomic particles. In other words, the minimum size of the stable particles of the atom is very similar to their maximum size. It appears that the reticular size is significant when it comes to the play of **nuclear forces** in the atomic world.

As we can observe, the heylologic

microscope allows us to show a reticule with a proton or neutron in its internal volume. In the figure, we can distinguish something similar to three quarks made up of rubber bands representing the filaments of

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### Proton with quarks



global aether, which is not directly detectable for the moment.

We are going to continue with the creation process of a stable subatomic particle with mass, paying particular attention to its volume; for this, we shall separate the creation process into the following stages:

- *Formation of loops or curls of global aether, and the contraction of global aether*

Due to the electromagnetic energy, the loops will accumulate reversible deformation energy, and there will be a strong tendency to revert to the original state.

Because of the spatial **contraction** of global aether within the three dimensions of Euclidean space, the initial volume of the mass, or curls, would be smaller than that of a reticule of global aether.

- *Maximum elasticity of the filaments of a reticule*

The accumulation of curls will continue increasing the volume of the mass, but there will come a moment in which the volume of a reticule will limit the mass' growth –the filaments have a large elasticity, but even so, there is a limit.

The contraposition of forces between those of the formation of mass and those of the reticule is energetic.

It is worth noting that the elasticity of the filaments relates to the square of the distance since it is the same elastic energy of filaments supporting the gravitational and electromagnetic forces.

Nonetheless, the resistance to stretch of the filaments will increase with distance, which, to a certain extent, is opposite to the force of gravity, or electromagnetism, both of which decrease with distance. This aspect is reminiscent of the concept of **asymptotic freedom** in *Quantum Chromodynamics*.

- *The Equilibrium between accumulated electromagnetic energy and elastic energy of the reticule*

We need some condition of stable equilibrium to explain the stable atomic particles.

If we imagine several huge particles introduced into the reticule, it is possible that they could end up tangled and stuck, and form a type of knot or blockage with the filaments of the reticule in such a way that they create a stable atomic particle.

It would be a process similar to when **knots** form in strings or rubber bands when they are twisted, and by stretching them, some knots become even stronger and more stable.

A special mention here to the theory of knots of **Lord Kelvin**.

- *Random process with multiple elementary particles*

Almost certainly, obtaining this equilibrium is not probable, but if we think of a large number of elementary particles that could form within a robust and variable **electromagnetic fields**, perhaps it can be easier to understand that achieving this would not be so far-fetched of an idea.

The three quarks making up the *atomic particles* of protons and neutrons could relate to the three-dimensional shape of the reticule. *Global Mechanics* proposes the shape of a cube because it is simple and because by having six sides, it coincides with the idea of three internally crossed particles. There should be one side –or face– for the entrance, and another for the exit for each quark. However, it is an adventurous and renormalizable detail.

Elementary particles more extensive than those corresponding to the maximum volume of a reticule may eventually form, but they will be very unstable because there will not be any mechanism to prevent its reversion

unless there is an enormous electromagnetic force. It could be the case in some phases in the creation of black holes, which is a topic that shall be touched upon again in the book about *Global Astronomy*.

- **The mass of stable atomic particles is the cause of the gravitational force**

An essential element of *Global Mechanics* comes from this mechanism of the formation of mass. The increase in the volume of a reticule due to the presence of atomic particles will produce an elastic force derived from the [tension of the longitudinal curvature](#) of the adjacent filaments of the reticules with the *inverse-square law*, which is precisely the gravitational force.

The same argument leads us to the fact that the mass of the smaller particles does not generate the gravitational force because they do not have enough volume to produce longitudinal curvature in the filaments of global aether. At least, the spatial configuration will be different, although it could produce a slight gravitational effect. Due to the distinct characteristics of this mass, we call it **wavine**.





### 3.b.2.a) Strong and weak nuclear force

In the previous section, we described the process of formation of stable atomic particles, as well as the physical causes that justify their stability and the extremely similar size of the nucleons, [protons, and neutrons](#).

This description included the different forces that are at play, which helps us to understand the nature of nuclear forces.

Before getting into analyzing the nuclear force, it is worth pointing out that the model in *Global Mechanics* is different from the better-known model in [Quantum Mechanics](#), that of *Quantum Chromodynamics* (QCD). This non-academic approach does not mean that the calculations of *Quantum Chromodynamics* are erroneous or do not correspond to reality, but what is indeed incorrect is the interpretation of the underlying physical causes. Something similar occurs with the Theory of Relativity when it stretches time or expands space.

Quantum Chromodynamics (QCD) is a generalization of Quantum Electrodynamics (QED) as it has a similar mathematical structure but, instead of an electric charge, it has three-color charges and, instead of a photon, it has eight gluons.

Furthermore, there is a [lattice perturbation theory](#) → within Quantum Chromodynamics.

In any case, the perspectives of *Global Mechanics* (GM) and *Quantum Chromodynamics* (QCD) are entirely different. We hope they can complement each other, where one renormalizes some ideas, and the other renormalizes the mathematics.

One aspect that creates much confusion is the terminology

used by [Quantum Mechanics](#) for the elementary particles that intervene in the nuclear force; indeed, one has to acknowledge the effort needed to categorize the unknown. Sometimes, we get the impression that it is somewhat like describing drops of water that fall into a pond full of frogs and toads of different species and ages.

In the page of this book on the main [elementary particles](#) of the *Standard Model*, there is a brief reference to the relationships between these elementary particles and the types of fundamental particles according to *Global Mechanics*.

The global characteristics of the nuclear force are:

- **Strong nuclear force**

According to *Quantum Chromodynamics* (QCD), both the strong nuclear force and the weak nuclear force operate in the interior of [protons or neutrons](#), while the nuclear force that is responsible for maintaining the nucleus of the atom bound is the residual strong nuclear force. This terminology has historical reasons given that, according to Wikipedia, the force that kept the atomic nucleus bound together was initially the strong nuclear force.

*Global Mechanics* unifies the support of the strong force with that of the electromagnetic force; therefore, *Global Physics* –which *Global Mechanics* forms part of– could be a *Grand Unified Theory* (GUT). *Global Physics* could also be a *theory of everything* (TOE), as it unifies the strong nuclear interaction and the electroweak interaction with the gravitational interaction through the interaction of mass.

The mass of [protons and neutrons](#) is made up of curls of the reticular structure of matter, or global aether, due to the accumulation of electromagnetic force.

As described in the previous section, protons or neutrons contain three quarks in the interior of a reticule. To be more precise, they keep together due to the filaments of a specific reticule. Besides curls, or strictly speaking, quarks, there will also be torsions of global aether –the strong field– inside the **reticule and nearby reticules**. In fact, it seems that most of the mass of the nucleons corresponds to the filamentous matter of the strong field.

### Residual strong field

Balance of forces



The heyelagic figure of a more or less static strong field is a simplification to offer an intuitive idea, but one should not forget that global aether has an unbreakable three-dimensional reticular structure.

The main idea is that the **strong nuclear force** → means two opposing forces in equilibrium, the strong internal force, and the strong external force.

The elasticity of the filaments of the three-dimensional reticule configures the **strong external force**, as they are responsible for both quarks and the entire strong field not coming apart due to the reversion of their elastic energy of deformation. This description is somewhat similar to the process of **confinement** in *Quantum Chromodynamics* (QCD).

The **strong internal force** will be the tendency of the curls of global aether to come undone due to the accumulated elastic energy of deformation.

There is an exciting expression from Wikipedia when discussing gluons and the strong color force in *Quantum Chromodynamics* (QCD), "... the gluons that bond the quarks create a field of color in the shape of a cord which, with enormous force, prevents the quarks from separating...". The force of the cord is so immense that, by *Global Mechanics* (GM), it is unbreakable, as it deals with the filaments of a reticule of global aether.

Likewise, the balance of the strong force, which creates nucleons, makes the mass very stable by mutually blocking the internal curls, as if it were a knot in which the harder the ends are pulled, the stronger it gets.

#### ■ **Weak nuclear force**

The positive charge of protons or the neutral charge of [neutrons](#) is a consequence of the need for internal equilibrium in the electromagnetic tension between different quarks.

According to previous sections, the formation of an electron in orbit involves reaching a physical limit concerning the curls of the mass by the energy of electromagnetic torsion allowed by global aether. The three quarks of the nucleons indicate three sources of different electrical charge, and they could respond to another physical limit of torsion in the strong field. However, since this field will connect to the exterior [electromagnetic field](#), eventually, the imposed limit, in any case, would be the limit of the formation of a mass of the electromagnetic torsion.

The total charge of the proton cannot exceed that of the electron due to the need above for internal equilibrium in the electromagnetic tension.

In any case, they are only some farfetched ideas.

We have the unfounded suspicion that the charge of the proton and the neutron changes, or at least can change with speed, and that the electrons cancel out the more positive charge of the atomic nucleus the faster they move in their orbits.

The accumulated elastic energy will neutralize between the different **quarks** due to their spatial confinement within the reticule. If the strong force implies a balance between internal forces and the external force of the reticular filaments, the weak nuclear force represents a balance between the interior forces of the different quarks.

The *weak interaction*, or *weak force*, refers to the changes in the internal configuration of **protons and neutrons**. The more well-known is the beta decay ( $\beta$  decay) and radioactivity. Beta decay is the transformation of a neutron into a proton using the emission of a W boson, which breaks down (decays) almost immediately into a high-energy electron and an antineutrino. More detail on the weak interaction is on Wikipedia.

Consequently, the **weak interaction** or **weak force** is a result of the need for equilibrium in what we have called the internal strong field, in an attempt to maintain similar terminology, to a certain extent, to that of *Quantum Chromodynamics* (QCD). Similarly, the electrons of the atom are a consequence of the gravito-magnetic field generated between the nucleus and space outside the atom.

The neutron should contain a balance of forces of torsion that annuls its total charge; therefore, the three quarks should not have the same nature as their curls.

In special cases, such as those of nuclear interaction, one

could speak of **strong waves** and **weak waves** not to confuse them with *electromagnetic waves*.

The **electroweak model** in *Quantum Mechanics* unifies the *weak nuclear force* with the electromagnetic force since at very high energies they behave in the same way. Therefore, it is in a *Grand Unification Theory* (GUT).

This electroweak unification is not surprising if, as has been mentioned, the weak nuclear force relaxes with the internal equilibrium in the electromagnetic tension between the different quarks.

*Global Mechanics* (GM) shares this statement; however, the unification with the strong nuclear force conceptually refers to global aether supporting it. The mechanism of retaining by the filaments in the strong force is not the same as that of the elastic energy of torsion, although it will quantitatively produce the necessary balance.

#### ■ **Residual strong force**

This nuclear force is responsible for the nucleus of the atom remaining bound despite the hypothetical repulsive electromagnetic forces between the protons.

I say hypothetical because the residual strong field distorts the effect of the electromagnetic field, just as the electromagnetic field distorts the gravitational force for the particles that interact with the electric charge.

The residual strong force is a consequence of the residual strong field created around the **protons and neutrons** due to the effect of retention on the three-dimensional structure of global aether.

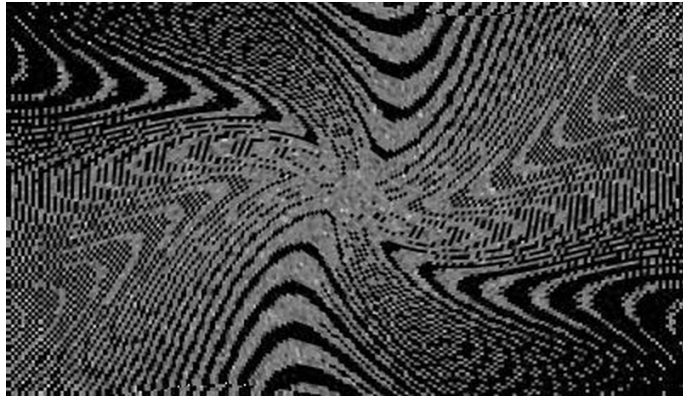
*Modern Physics* tells us that this force vanishes beyond 10-15 m, that is, the size of the atomic nucleus.

The heyeologic image shows how the residual strong force could act, that is, fitting in zones of strong tension with others of lower tension between nucleons.

The residual strong force acts only at very **short distances** because the strong field quickly stops existing with distance, due to the enormous energy necessary to maintain it, which is only possible thanks

## **Theory of the atom**

Residual strong force



to the resistance that the filaments of a reticule have to stretch.

Furthermore, there are special effects that could occur at **short distances**, such as the one explained in the section corresponding to the gravitational force of this book. The **external strong nuclear force** will be more like a type of gravitation than like electromagnetism, as it depends on the longitudinal tension of the filaments of a reticule.





### 3.b.2.b) Structure of the atom: What are electrons?

In the section on unstable *Fundamental Particles* with mass, we defined a new type of particles called **wavons**, which share the material nature of mass and the wave nature at several moments of their existence. Electrons were a specific case of wavons and if the atomic nucleus acquires or loses energy, the point of equilibrium that generated them before alters.

The mixed nature of electrons is independent of the **dual property** of matter, initially introduced by **De Broglie** in 1924, which refers to a different aspect. Furthermore, this duality of matter is different from the poorly named **dual nature** or behavior of light, as has been discussed in previous sections of this book.

In other words, electrons in the new structure of the atom in *Global Mechanics* do not magically appear and disappear, or come and go from other dimensions, as statements from the current **Quantum Mechanics** would seem to indicate.

Let us keep in mind that, besides the electron configuration, there are elements of the atom. The nucleus of **protons and neutrons** (particles with mass, or compressed matter) which possess most of the mass, as established by the **Rutherford** model in 1911 with the Geiger–Marsden experiment (also called the Gold foil experiment or the Rutherford experiment). Rutherford fixed the radius of the atom as approximately 10,000 times that of its nucleus.

The fundamental innovation of *Global Mechanics*, regarding the elements and structure of the atom, is the configuration of electrons because of the **electromagnetic field**, and as elements reducing the transversal tension of this field. The

configuration is in contrast to *Quantum Mechanics*, which states that electrons in motion generate an electromagnetic field, although this is also true.

Perhaps it seems to be merely a philosophical change, but effect-cause is not the same as cause-effect, much less so is cause-cause, as a large part of the current *Quantum Mechanics* proposes.

Regardless, we hope that the new characteristics of the elements of the atom and its electron configuration will help to a more precise understanding of electrons, their origin, and their orbits.

The point of equilibrium where electrons exist is a dynamic equilibrium; what's more, however, the dynamics of movement of the electrons in the structure of the atom respond to different causes and display different behaviors.

Let us look at some of the additional characteristics of the structure of the atom and, in particular, its electron configuration. First, we shall examine electron motion within any orbit and subsequently, analyze both the reasons for which they change orbit and the way in which they do it.

#### ■ **The dynamic orbits of electrons**

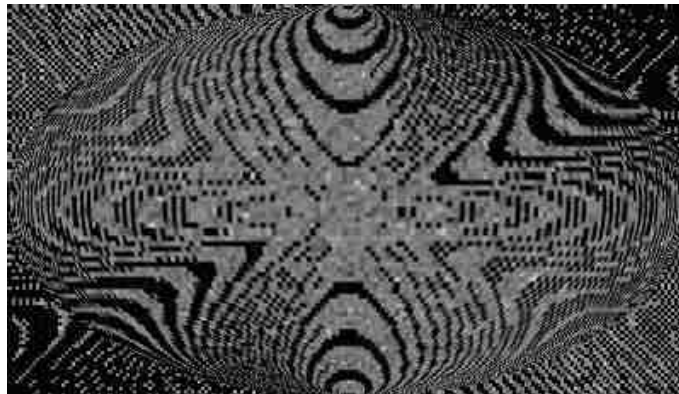
The most relevant change in the *electron configuration* of the new atomic model is, without a doubt, the shape and meaning of the orbits of the electrons.

The **Rutherford** atomic structure defines the electron orbits as circular and elliptical, the **Bohr** atomic theory presumes them to be circular, and the **Sommerfeld** model adds sublevels, rules out circular orbits and includes relativity. In the end, the current **Schrödinger** model changes the philosophy of atomic orbits and outlines areas

of the probability of finding an electron in the spatial structure of the atom.

According to *Global Mechanics*, the electron configuration of the atomic structure also accepts the zones of spatial localization of negative charges around the nucleus –or electrons–, which belongs to the type of elementary particles, called **wavons**. Electrons have ellipsoid orbits that are variable despite being stable. As a result, the orbits represent the points through which the electrons move while they share the nature of mass; that is, as they are indeed wavons when they have the characteristic of coiled global aether of mass and not of an electromagnetic wave.

### **The electron orbits**



The orbits of electrons are dynamic, ellipsoid, not necessarily around the atomic nucleus, and they correspond to spatial points where the **resulting force** of electromagnetic tension –torsion–, and the tension of longitudinal curvature –or classic gravitational curvature–, is null. Alternatively, it is null due to the electron motion, the vibration of the nucleus of the atom and the half-fold or bend that form the electrons.

The movement of the wavon in orbit neutralizes –is a consequence of– the force of residual torsion or difference in the residual gravito-magnetic potential after the elastic

energy of torsion neutralizes with the half-fold of the mass of the electron itself.

The orbits of the electron configuration are dynamic or have a cloud-like shape such as in the **Schrödinger** atom model of 1926, because of the vibration of the atomic nucleus. This vibration occurs because the distribution of elastic forces of torsion and tension of the longitudinal curvature is not uniform, nor can it have purely radial symmetry; like the force of gravity considered at greater distances than [atomic distances](#).

Consequently, the orbits of the electron configuration in the new atom model will also be ellipsoid. The ellipsoid figure will not have to be on a single plane of space – instead, it will be a three-dimensional ellipsoid. Also, neither will the nucleus of the atom have to be located within the orbital cloud.

One could already see the **Schrödinger** structure of the atom; the zones of movement are not always entirely around the nucleus. Although the orbits of the electrons may be circular or elliptical, this will not always be the case. They will be ellipsoid.

Let us take a careful look at why the motion of electrons within an orbit responds to the electromagnetic energy not relaxed by the half-fold of which they formed.

- *The dance of the Wavons*

The mass of the electron depends on the stored elastic energy. From a spatial perspective, the energy of the electrons will be equivalent to the neutralized elastic energy and will depend on the physical limit, for a half-fold, loop or curl of global aether create, and on its orbital speed.

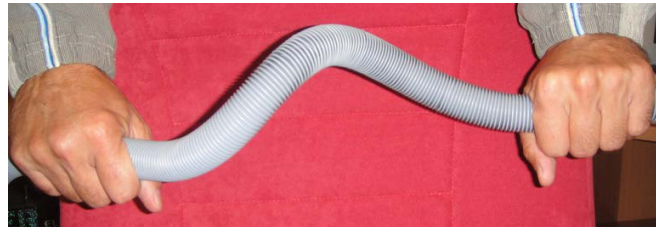
However, the neutralization by the movement of the **wavons** in the structure of the atom takes place with each complete turn or revolution; that is, the only orbital frequencies allowed are those that can neutralize or relax the forces of torsion. At the same time, the speed of the electrons will neutralize these forces, since it depends on them. It is somewhat similar to when we want to **touch something with the hand**, and that something moves in the same direction and speed, our force or intention to touch or push it will become neutralized.

We do not know if it is just us today, or if it is tough to explain the elements of the new **atomic structure** or both, so we are going to try explaining it another way.

In the heyelologic figure, there is a pair of hands holding a polyurethane bar by the ends with torsion. If the hands move, like

### **Electron configuration**

Magnetic field



peddling a bicycle, in the same direction as the forces of torsion or twisting transversal tension, the tension at the ends of the bar held by the hands will not vary substantially. Nevertheless, if they move in the opposite direction, due to the elastic reaction in the bar, the tension in the hands will disappear once it reaches a certain rotation speed; the only thing that one can do is to let the two hands go along with the movement.

The tension produces an elastic force that tends to move the hands. If the hands move backward with the

same speed that they would have had due to the effect of the elastic forces of torsion, the elastic forces will no longer be noticeable; that is, from this point on, outside of the hands, they do not exist. For future reference, we should name this mechanism of elastic relaxation in the structure of the atom. We like to call it the *dance of the wavons*.

The spatial points through which the electrons move in their dance are not the orbits around the nucleus, but rather they will move upon an axis of symmetry that can, in turn, be mobile, based on the result of the existing elastic forces at play.

#### ■ **Electronic configuration and Pauli exclusion principle**

Electrons do not necessarily have to travel around the entire orbit –each of the two electrons in a single state could be moving back and forth in a particular section of the orbit. The movement would be due to the vibration in the atom from the elasticity forces in global aether when there are restrictions on atom's movement in some way, such as when it forms part of a molecule. Recall that the electron exists in the [equilibrium points of elastic forces](#) and depends on the location of the nucleus of the atom concerning its surroundings.

The following example of a hard plastic ball and its resistance to deformation gives an intuitive idea of the *Pauli exclusion principle*.

##### ○ *Simple Physics experiment*

If one were to kick this ball, nothing would happen;

however, if it was a particularly hard kick, it might produce a dent in its surface in the shape of a largish **slice of orange**.

Now, if one were to continue giving little kicks all over the ball, harder and harder each time, one would find that the next orange-slice dent would appear just at the antipode of the first, with the same orientation. Afterward, two more will fit in the perpendicular plane. Finally, four more in the intermediate spaces.

### **Global atom elasticity**

Global aether force equilibrium



Of course, everything would depend on the elasticity of the plastic. If we could define these forces mathematically, we could prove and generalize that under certain conditions, one would always obtain the same result.

Then, the Pauli exclusion principle would cease to be a principle and become a physical law based on a mathematical theorem representing particular conditions.

An atom with a higher number of protons will have a

more significant transversal tension difference between the filaments in the atomic nucleus and the outside of the atom. Therefore, more electrons will create further away if the inner layers are adjusted and relaxed with electrons. We must bear in mind that the [tension of longitudinal curvature](#) (different from the transversal one) decreases with distance to the atomic nucleus.

On the other hand, some electrons may form earlier in particular locations of higher levels with more tension than the inner layers due to the spatial geometry of the elasticities.

For a formal analysis see the [Wikipedia page on electronic configuration](#) →. There are exceptions and many practical rules, such as the  $s + d + n$  rule and the Aufbau principle.

## ■ **Electron spin and orbital angular momentum**

The confirmation of the existence of *electron spin* came about thanks to the Stern-Gerlach experiment and the so-called fine structure of the Hydrogen spectrum.

The electronic configuration given previously is coherent with the Pauli exclusion principle, the existence of spin or intrinsic angular momentum of electrons and the Spin-orbit interaction –such as the fine structure of Hydrogen. See the [HyperPhysics](#) → page for more details on electronic spin.

The sign of the Spin seems to be simply due to whether the orbital angular momentum is in the same direction as the magnetic moment of the electron due to spin itself, or in the opposite one. Consequently, the positive or negative



values of spin depending on the Spin-orbit interaction.

### **Vibration of the atom**

Spin changes when electron flips  
(Just an idea)



Topological insulators are an example of the relationship between Spin and linear momentum –in these objects, a Spin-impulse block takes place.

From a different perspective, the origin of spin comes almost certainly from the energetic barrier of stability in the creation of electrons, which is undoubtedly part of the intrinsic nature of these particles and possibly linked to the creation of individual [neutrinos](#).

#### ■ **Tunnel effect or leap between electron orbits**

If the nucleus of the atom acquires energy by absorbing a photon, it will change the structure of the generated gravito-magnetic field, as well as the points of equilibrium where the electrons can exist and move. Hence, at times when the imbalance is higher than the energy barrier of stability of the electrons, the mass of the electrons will vanish into electromagnetic energy, until the half-fold, loops or curls that make up the electron mass will once again create, reaching a new point of orbital equilibrium.

Therefore, it is not possible to follow the electron motion between orbits, and *Modern Physics* talks about electrons as leaping between orbits in the structure of the atom and about the movement of *electron clouds*.

This mixed nature of the *electrons* is also the basis of a possible explanation for the [tunnel effect](#) and the Young experiment, or [double slit experiment](#) carried out with electrons.

### ■ **Free electrons and molecular bonds**

Electrons can also create between different atoms, forming covalent, ionic or metallic bonds.

They equally move like stable subatomic particles with mass like a slipknot in the classical vacuum or reticular structure of matter or global aether.

In these cases, they are free electrons because they can leave the space of the atom or molecule. From *Global Mechanics*, what has happened is either that the variations of the energy of the atomic nucleus provoke changes in the spatial localization of the relaxation points of the transversal torsion of global aether, or that the relaxation is not necessary anymore.

Likewise, the electron motion in exterior space, or classical vacuum, shows that they have certain stability, and therefore there must be an **energy barrier** –minimum of energy– for which the electron breaks up –decays– into photons. Also, it is possible that the more [kinetic energy](#) they possess, the more stable they will be.

The stability of the electron will affect the configuration of the orbitals in the atom since it will delay the elastic

adjustments of the whole atom. This characteristic of the electrons contributes to a higher spatial margin of the spheroid shape of their orbits.

◦ *Simple physics experiment.*

In the example of the slipknot with a hair, one can see how quickly the knot slides.

Now, for the case of electrons, let us think that the slipknot is a half-knot, which created with a bend in the **straw of a refreshing drink**.

Intuitively, we can see how this bend will only occur above the minimum energy of transversal turn on said straw. Otherwise, the straw will preserve its cylindrical shape.

### **Crack of global aether**

Stability energy barrier



The electrons –or the bend in the plastic straw in our example– will have the same resistance or energy barrier to disappear than it had to appear.

We have just discovered another one of the possible characteristics of the filaments of global aether, that is, they will have a **tubular nature**, though it will not be utterly homogeneous due to the vertices of the cubic cells of the three-dimensional net.

As we know from the photoelectric effect, the electron will have higher speed and greater kinetic energy the more significant the energy of the photon absorbed by the atom is, always above a necessary minimum of energy. Without said minimum energy, no electron will outflow, no matter how much we increase the radiation intensity.

A recent experiment *in the limits of the photoelectric effect* carried out by German scientists show that an absorbed photon could produce the expulsion of more than one electron; in other words, it seems that in this case, the nucleus of the atom –and not the electron– absorbs the photon.





### **3.b.2.c) Electron configuration in the global atom**

We have just seen what the electrons are, and meaning of their motion within an orbit in dynamic equilibrium. We had also previously seen special characteristics of the electron mass.

Now we are going try to understand the configuration of electron orbits from an analytical perspective; that is, which the points of equilibrium of different forces are, and why these points are in points of the gravito-magnetic potential valley.

For a more straightforward presentation of electron configuration, electron motion, and electron mass, let us look at the following elements of the atom one by one, despite coexisting in the atomic structure.

The goal is to communicate bit by bit:

- **Orbital levels of the electron configuration of the atom**

The relation between the electron motion, its mass, and the gravito-magnetic field will determine the electron configuration and its orbits.

Naturally, the electron mass or **wavine** comes from the kinks or half-folds of the reticular structure of matter or [global aether](#), and it will depend on the transversal tension and the physical limit of filaments of global aether resistance to such tension.

Therefore, since the torsion force is discrete, the orbital levels, the electron mass and the energy of change between some levels and others of the electron configuration will also be discrete. As always, the electron motion is purely

mechanical, and there is no magic involved, nor are there forces at a distance, otherworldly dimensions or time traveling, nor *Alchemy*, nor anything of the sort.

The complex Rydberg constant and their modulating various numerical series bring all these relationships in the structure of the atom with mass and electron motion together.

The Rydberg constant is in the [GigaChron experiment](#).

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### Gravitational Law of Equivalence

$$g = [ c^2 * h * R / G ] * n$$

---

For this

experiment to have a positive result in every case of electron configuration, we need to modulate the **Rydberg constant** for the different orbital levels.

$$[ G * g = c^2 * h * R * n ]$$

The **Balmer**, **Paschen**, and **Lyman** series adjust the different levels of energy of the electrons with the Rydberg constant (the wavelength appears in all the numerical series mentioned above, but we know that it corresponds to the frequency and, consequently, to the energy).

#### ■ Annulment of the positive electromagnetic charge

In the new electron configuration of the atomic structure, the electron is a half-fold, loop, curl, spiral or particle belonging to the family of [wavons](#). It creates where the two forces of torsion meet; forces which have the same spin in the direction of their movement but are opposed to each other.

Both the creation of the electron mass as well as the electron motion is a result of the mechanism of elastic

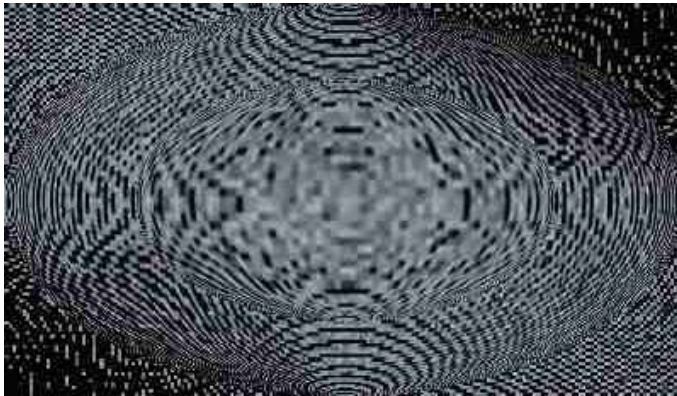


relaxation of the transversal torsion forces. Consequently, both forces dissolve, and the electric charge of the whole disappears.

It can also mean the difference in magnetic potential between a positive charge and a neutral mass or a null electromagnetic potential. In any case, the mechanism of elastic relaxation is the same.

### Electron configuration

Atomic structure



What has happened is that energy of *transversal tension* transforms into the *energy of reversible deformation* or elastic deformation tension; that is, an accumulation of electromagnetic energy in the form

of the half-fold or curls, in other words, [physical mass](#).

A third possibility is that the exterior of the atom has a significant negative charge, so more electrons than needed form to neutralize it, and the atom will end up with negative electric charge.

This condition of equilibrium of the electron configuration is also in the formulation of the [GigaChron experiment](#).

#### ■ Annulment of the gravitational force

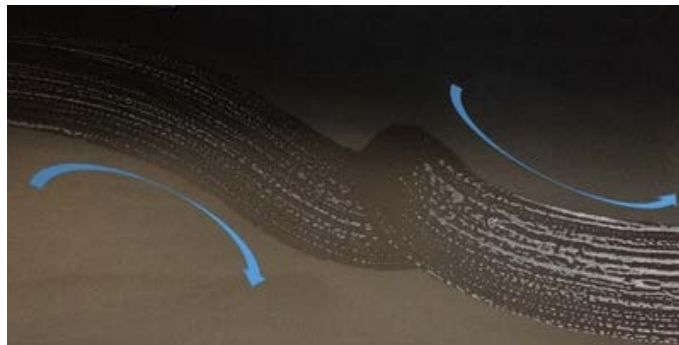
Meanwhile, something similar happens to the tension of longitudinal curvature in which, before changing the sign of the convexity of the lines of gravitational tension, a point of inflection will occur, where the force will also be null. We have mentioned already the need to modulate the

force of gravitation in the surroundings of the atomic nucleus due to the spatial configuration of global aether in the section on [Gravitation at atomic distances](#).

It seems to us that the electron configuration in the current *Quantum Physics* considers that the mass of the electron does not end up falling into the nucleus of the atom due to the electron motion because of the *Principle of Uncertainty*. In our opinion, that form of argument has always seemed very odd and very mistaken; either that or it is a bunch of fiction.

### **Electron and atomic structure**

Point of inflection of gravity



However, the fact that the atom and its electron configuration are in a particular gravitational field –for example on Earth or the Space Station– does not mean there are more or fewer electrons. Instead, it would mean that the point of inflection of the longitudinal tension of global aether might be at a larger or smaller distance from the nucleus of the atom.

This condition is what makes the fundamental equation in *Global Physics –Global Mechanics* is part of Global Physics– applicable in all situations, both the previous case of the different atomic levels as well as for the different conditions of gravity that we are discussing here.

As in the previous case, this condition of the electron configuration is empirically consistent with the *GigaChron experiment* or one of its analogous presentations:

$$[ \mathbf{g} = \mathbf{E} \mathbf{c} / \mathbf{G} ]$$

### ■ **Electron mass**

In the interior of the half-loops that make up the mass of the electron, the density of matter increases; this is a general characteristic or property of the phase of matter that constitutes mass.

It also seems that in this case, the language of mathematics includes this aspect in the same fundamental equation. It would make sense that, if this equation is the fundamental one for a *theory of everything*, then it would include the constants, or relationships, between the essential magnitudes of the model:

$$[ \mathbf{g} = \mathbf{m} \mathbf{c}^3 / \mathbf{G} ]$$

One must keep in mind that, when discussing photons, we observed how the speed of a transversal wave in a non-dispersive medium does not depend on the intensity or energy of the wave; but does depend on the square root of the longitudinal tension and its density.

### ■ **Contraction and expansion of global aether by electrons**

In the section regarding the creation of [physical mass](#), we saw how it provokes the spatial [contraction](#) of the global aether.

It seems that [Theory of Relativity](#) defines space as a combination of the points –or reticules–, which make up

the structure of matter and its tension; as if the motion were merely a displacement over them. If they move, come together or separate, it is space itself that contracts or expands or that time changes.

Then, the inevitable happens! Everything becomes too complicated, and space ends up getting confused with time and reality with the observers.

We analyze the implications that *Global Mechanics* has on movement in the section on [Physics and movement in gravity](#) of the book *Global Dynamics*.

In the creation of the mass of electrons, the phenomenon of spatial contraction also occurs, although it should be much smaller than in the creation of stable particles like [protons and neutrons](#). Spatial changes are due to displacements of global aether instead of space weirdness, which, in our opinion, it is not correct, not necessary, and it creates many more problems than it resolves.

Fortunately, *Chemistry* changes the volume without resorting to the [expansion of space](#) or the Universe due to an increase in the temperature of an element or chemical compound. Not even *Alchemy* would have been brave enough to attempt such a thing!

We hope that with these general outlines we have managed to express the most pertinent and relevant ideas of *Global Mechanics* regarding electron motion, the structure of the atom, and fundamental particles.





### 3.c) Bonds of atoms and molecules

Atoms and molecules form normal matter, which we detect directly by our senses. In the previous sections, we have seen the new atomic theory of *Global Mechanics*; now, we are going to try to explain the composition of molecules and their properties from the same perspective.

*Global Mechanics* allows one to visualize the *atoms and molecules* in the reticular structure of matter or global aether by presenting elementary particles as loops or curls of this structure, forces of attraction as gravity and electromagnetism, and, finally, forces of repulsion as negative gravity or also electromagnetism.

One should also remember the concept of **temperature** or movement of the atoms and molecules –with a stationary or vibrating nature–, which relaxes the electromagnetic tension between the atomic nucleus and its surroundings.

*Molecules* signify restrictions in the individual movement of atoms, whether they are molecules of a pure element or molecules with atoms of various chemical elements. These restrictions are primarily a consequence of molecular bonds.

The principal types of molecular bonds are the following:

- **Ionic bond**

Due to the energy barrier from the stability of electrons, an atom can lose an electron to another atom to form an ionic bond. In any case, it is essential to understand what electrons are and why they form where they form; that is, not only the electron transfer but also there is a change in

the spatial location and orientation of the atoms.

- *Simple physics experiment*

Let us imagine a bed sheet spread out on the horizontal plane and fixed in the middle line. On each end, a person twists the sheet 90 degrees in the opposite direction. No loop will form on any of the sides, but if the horizontal line of the center is twisted 90 degrees in any direction, it will produce a loop or twist of 180 degrees on one side, and the original 90-degree twist on the other end will disappear.

- **Covalent Bond**

The covalent bond occurs when two or more atoms share electrons in a molecular orbital.

The rules put forth by *Global Mechanics* regarding the gravito-magnetic equilibrium of the electron orbits in an atom should apply to the set of forces brought about by the presence of more atoms, resulting in orbitals throughout the molecules.

The covalent bond of molecules is quite a bit stronger than the ionic bond since the atoms would be closer and the [energy barrier of electron stability](#) will tend to keep these atoms together.

The page [Gravity at short distances](#) in the section on the *Gravitational interaction* gives us another perspective. The electrons of a covalent bond imply a joining force between two atoms of a molecule and, at the same time, prevent the atoms from getting even closer together.

- *Simple physics experiment*

Make a slipknot on two parallel strings. Separate both



of them at one of the ends, and verify that the knot or half-knot cannot get close to this end without becoming undone.

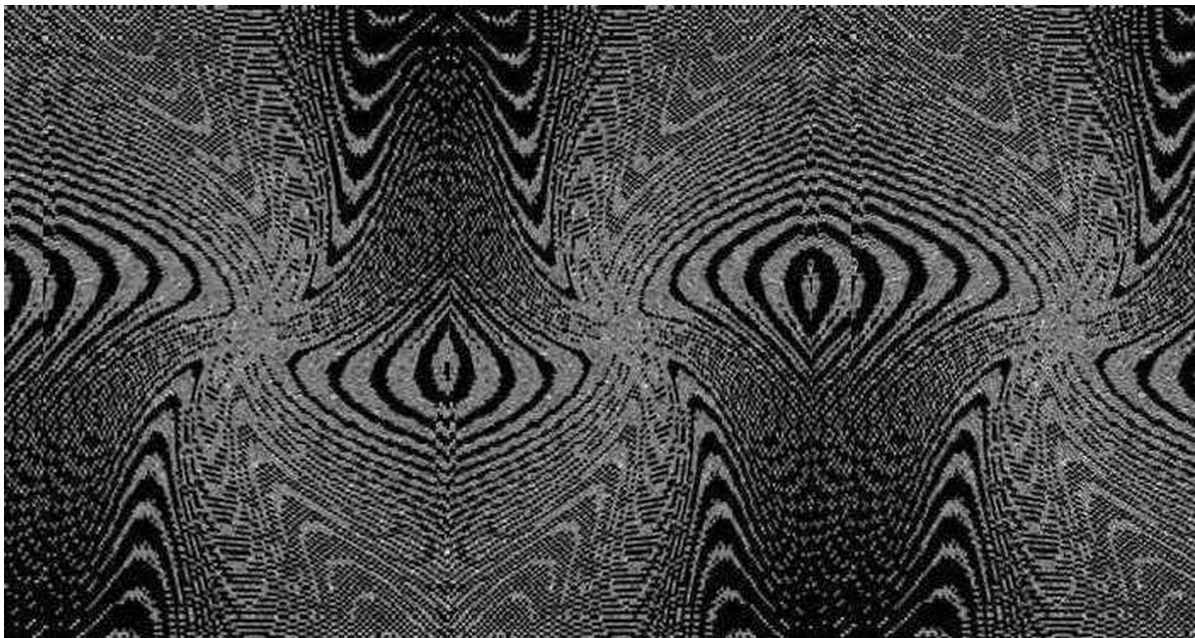
The mechanisms of stability in **molecules** are similar in their principal characteristics to those of the electron configuration of the atom. Therefore, when one atom in a covalent bond is more electronegative, it will be a polar covalent bond. The ionic bond would appear in the limit of the polarity of the covalent bond.

■ **Metallic bond**

Electrons move as electron clouds in covalent bonds in networks of tightly bonded atoms. This structure and the considerable mobility of the electrons are responsible for the characteristic properties of metals.

## **Bonds of atoms and molecules**

Éter global



We have stated that molecules signify restrictions in the movement of atoms, but there also restrictions on the movement of molecules –such as, for example, covalent

bonds in networks, or metallic bonds themselves.

The **phases of matter**, *solid, liquid, and gas*, reflect the atomic and molecular structures as the individual movement of atoms and molecules and other characteristics or properties, such as hardness, malleability, conductivity, or, solubility.

Let us take a look, at an attempt with specific renormalizable details, of the effect of temperature on the three physical phases of matter:

- *Solid phase of matter*

Atoms and molecules need to move simultaneously since the loops of the three-dimensional structure of matter do not permit molecules to move individually, whether this is due to network bonds, of the three-dimensional structure of molecules, or because of the existence of other spatial adjustments of gravito-magnetic differences with sufficient force.

However, with the increase in temperature, the nucleus of the atoms acquires more energy and mass, which increases the gravito-magnetic field and, as a result of the repulsive [gravity at short distances](#), the points of electromagnetic relaxation that imply the orbits of electrons move away.

If this distancing cannot take place, there will be an increase in the vibration of the nuclei and the velocity of the electrons.

- *Liquid phase of matter*

However, there will come a moment when the energy that temperature and vibration represent will produce certain molecular mobility that will give way to the liquid phase.

- *Gas phase of matter*

The movement of the molecules is entirely independent, and an increase in temperature has a direct relationship to the **kinetic energy**, the elastic collisions between the molecules, and the pressure produced by the collisions with the walls that contain the volume of the gases.

On Wikipedia, one can find a lot of information and details about molecules, molecular bonds, and the physical phases of matter, though all the forces of the atom and molecules will have a virtual or mathematical nature.

The type of molecular bond explains the properties of the physical phases of each element or chemical compound mostly, but there are many other variables and significant exceptions. For example, one compound goes from solid to liquid with an increase in temperature. Then it goes back to being a solid before becoming liquid again, and then finally it becomes a gas.



## 4. Standard Model vs. Global Mechanics

This section attempts to present a simplified explanation of the *Standard Model* of [Quantum Mechanics](#) and analyze the compatibility with the contributions from *Global Mechanics* regarding elementary particles.

There is no simple way to explain the [logic](#) of the set of elementary particles in the *Standard Model of Particle Physics* because there is none. However, we are not trying to give destructive criticism about the model; one should understand the previous statement in the same way in which one could talk about the list of chemical elements before knowing the periodic table of elements.

In our opinion, the biggest problem with the Standard Model of Physics is that [Theory of Relativity](#) does not allow it to discover the essence of elementary particles by outright denying that any aether or material structure of virtual fields could exist, and by singularly complicating the already complex mathematics.

The elementary particles of the *Standard Model* form an orderly set based on observed characteristics, but its cause is not very well understood, so it is necessary to resort to axiomatic principles such as the [Pauli Exclusion Principle](#), or the **Heisenberg** Uncertainty Principle –to quote the most well-known ones.

Below is a presentation of both the classification of the elementary particles in the *Standard Model of Quantum Mechanics* and *Global Mechanics*.

[Standard Model](#) →

Bosons	Transmission of forces	Integer spin	Do not follow the Pauli EP	Bose-Einstein statistics
Fermions	Constituents of matter	Fraction spin	Respect the Pauli EP	Fermi-Dirac statistics

## Elementary particles in the Standard Model

Bosons	Existence	Spin	EM Charge	Color charge	Interaction	Mass (MeV/c <sup>2</sup> )
Photon	Confirmed	1	0	No	electromagnetism	0
Boson W	Confirmed	1	± 1	No	weak	80.000
Boson Z	Confirmed	1	0	No	weak	91.000
Gluon	Confirmed	1	0	color+anticolor	strong	0
Graviton	Hipothetic	2	0	No	gravitation	
Higgs boson	Hipothetic	0	0	No	mass	
Axion	Hipothetic	1	0	No		

Fermions	Name	Symbol	Spin	EM charge	Weak charge*	Color charge	Mass (MeV/c <sup>2</sup> )
Lepton	Electron	e <sup>-</sup>	+1/2	-1	-1/2	0	0,51
	Muon	μ <sup>-</sup>	+1/2	-1	-1/2	0	105,00
	Tau	τ <sup>-</sup>	+1/2	-1	-1/2	0	1.777,00
	Electron Neutrino	ν <sub>e</sub>	+1/2	0	+1/2	0	< 3 E-6
	Muon Neutrino	ν <sub>μ</sub>	+1/2	0	+1/2	0	< 0,18
	Tau Neutrino	ν <sub>τ</sub>	+1/2	0	+1/2	0	< 18,00
Quark !!	Color charge						
	up	u	+1/2	+2/3	+1/2	RGB	~2
	charm	c	+1/2	+2/3	+1/2	RGB	~1.200
	top	t	+1/2	+2/3	+1/2	RGB	>170.000
	down	d	+1/2	-1/3	-1/2	RGB	~5
	strange	s	+1/2	-1/3	-1/2	RGB	~92
	bottom	b	+1/2	-1/3	-1/2	RGB	~4.200

### ■ Elementary Particles in the Standard Model of Physics

We cannot help mentioning that the main characteristic of the Standard Model is that seems to use names straight out of Greek mythology or from the world of *Lord of the Rings*.

The first classification refers to the particles called Bosons and Fermions. Bosons are responsible for the transmission of forces, they have an integer spin, the *Pauli Exclusion Principle* does not affect them, and the *Bose-Einstein statistics*

can describe them.

### Compound subatomic particles

Hadrons	Name	Stable	Spin	Confinement	Mass (MeV/c <sup>2</sup> )
Mesons			integer	quark + antiquark	
	pion charged				139
	pion neutral				136
	kaon charged				493
	kaon neutral				497
	D charged				1.800
	B charged				5.200
Upsilon				9.400	
Baryons			Fraction	3 quarks	
	proton	si			938
	neutron	si			940
	Delta				1.232
	omega				2.600
	Xi double				3.500
Lambda inferior				5.600	

Fermions are the building blocks of matter, they have half-integer spin, they verify the *Pauli Exclusion Principle*, and the *Fermi-Dirac statistics* can describe.

Some particles included in the elementary particles of the *Standard Model* are not elementary in the strictest sense since they are composed of smaller particles. Therefore, it would be more accurate to speak of subatomic particles.

The antiparticles of many of the subatomic particles in the tables also belong to the Standard Model.

A more detailed description of the particles in these tables is in Wikipedia.

#### ■ Elementary particles in Global Mechanics

The following table shows a classification of the subatomic particles, similar to that presented in the *Standard Model*, but from *Global Mechanics*.

GLOBUS	waves			
		wavons		
	Matter		Composite	two
		Masons		three
				>Three
			Black holes	

The colors show the approximate relationship between the major types of fundamental particles.

At this point, we can examine the problems of compatibility between the two models and propose solutions.

In reality, it is difficult to make a precise comparison, since several criteria combine. [Quantum Mechanics](#) does not even know what mass is, nor the origin of mass, nor anything beyond its effects of inertia or gravitation. Moreover, it is always concerned with the [wave-particle duality of light](#) and the [particle-wave nature of matter](#). As a result, it cannot tell the difference between particles with a proper mass at rest and waves, or mechanical transmission of energy across the reticular structure of matter or [global aether](#) and of [luminiferous aether](#).

The name “particles without mass” immediately raises semantic issues. While the *Standard Model* establishes types of elementary particles based on their participation in the essential interactions, the *Global Model* uses the *composition of fundamental particles* as the central element of classification.

Likewise, we could continue with many other concepts; however, despite the different perspective of each model, their final types are quite similar, bearing in mind that both approaches are complementary.

This simple comparative analysis attempts to highlight the described differences throughout this book, like the concept of [wavons](#) or fundamental particles with a mixed or



alternating nature, such as waves and mass.

On the one hand, it also attempts to provide an intuitive picture of the set of elementary particles without having to use half the memory of the human brain. On the other hand, to detect any compatibility issues and to contrast important aspects of *Global Mechanics*, we must bear in mind [Quantum Mechanics](#) is an experimental science, and its observations are empirical, even if we do not understand to our satisfaction or if they do not know what they are observing.

In short, the deeper one goes into the characteristics of *elementary particles*, the more speculative the ideas become, due to the limitations of the physics experiments and the scientific theories themselves.

The aspects to highlight the **comparison** between the Standard and Global models are:

- **Existence of global, gravitational or kinetic aether, and luminiferous aether**

The presence in *Global Mechanics* of an essential particle, or unbreakable reticular structure of matter throughout the universe, which could be a type of [gravitational aether](#) with mechanical properties and which provides matter and supports the energy of all the remaining particles.

[Global aether](#) does not have a known spatial, physical limit—three dimensions—, nor time constraints—absolute time.

- **The great mass of bosons**

The great mass that the W and Z bosons have—which is some 160,000 times that of the electron, or 80 times that of the proton— indicates that at high energy levels, the mass of the proton or the neutron is quite a bit higher than

in normal conditions. Regardless of the mathematical models used in Physics by *Quantum Mechanics*, we could assume that the nucleons will have acquired this mass using a successive absorption of photons, thereby confirming the increase of mass with energy –in contradiction with General Relativity.

- **The graviton and the Higgs boson**

According to *Global Mechanics*, these two hypothetical elementary particles of the *Standard Model* would not exist as suppliers of mass to the rest of the fundamental particles, because global aether carries out that function.

- **Stability of subatomic particles with mass**

In both the Standard Model and the Global Model, the only two stable particles are neutrons and protons. In one case, confinement is justified by the asymptotic freedom of the color force in the strong interaction which, judging by its name, is not very well understood. In another case, the existence of reticules of global aether explains confinement.

As far as the instability of the rest of the subatomic particles is concerned, *Particle Physics* does not offer any explanation, whereas *Global Mechanics* argues the effect of the reversible deformation energy when no force opposes it.

Other *fundamental particles* with mass could be stable but under conditions very different, such as in the case of [free electrons](#) in a vacuum.

- **Gravitational force**

With the [Global Gravity Law](#), gravitational force affects

double to both electromagnetic and kinetic energy.

Another difference is that [protons and neutrons](#), at [short distances](#), produce negative gravity or the gravitational force of repulsion, which is responsible for the electrons not joining the nucleus of the atom or that nucleus of atoms not getting closer to another nucleus.

Two other interesting aspects are in the following few pages. The first one deals with concepts related to [superposition and quantum entanglement](#), while the second relates to the possible mass of [neutrinos and their wave-like nature](#); though in this case, it seems it might be a longitudinal wave.



## 4.a) Superposition and quantum entanglement

Nowadays, there are numerous explanations in the scientific literature regarding the phenomena of superposition and quantum entanglement. The idea here is not to repeat [Wikipedia](#) →, but to present a reasonable opinion on what superposition is, and why one hears about instantaneous communication between entangled particles when the only entangled characteristic is the correlation on the ignorance of their states.

It is not very easy to follow academic explanations on this subject, as they mostly skip over the basic ideas and mix complex technical concepts with fanciful terminology – quantum teleportation, decoherence, [multiverse interpretation](#). Any reference to Einstein or the [EPR paradox](#) → helps to accept blindly cattish concepts that aren't properly understood.

Finally, in case someone insists on trying to understand those basic concepts, academia presented those concepts as contrary to intuition and formalized with mathematical formulae – [Bell inequalities](#) → – aimed at professionals of theoretical physics and Greek and oriental philosophy.

The fact that the most sensationalist interpretations of quantum entanglement are impossible does not mean that scientific and technological development does not require further investigation of the real characteristics of physical particles. It also should not come as a surprise that particular investigations might not be in detail to the public, considering the past, current, and probable future geopolitical climate of our world.

Confusion around this subject comes from the main characteristic of Quantum Mechanics: Heisenberg's *Uncertainty Principle*. This principle makes it necessary to work with **probability functions** –wave functions– due to both the impossibility of predicting the correct values of quantum properties and issues with measurement. A measurement will, therefore, provide information about a past state, as it will affect its evolution and destroy its temporal coherence.

To explain quantum entanglement, let us stick to the case of electron Spin and use a classic example that can equate the concepts of Spin, superposition, entanglement, and instantaneous communication to their quantum counterparts.

### ■ Spin

It is relevant to know that Spin is a quantum property that can take two values for the electron, but that we cannot determine its value without altering the [physical reality](#) surrounding it. In other words, the measurement of Spin for a specific moment does not provide information regarding its next state, as the measurement itself can change its value. Then, when an electron is created or chosen, its Spin is unknown.

The page on the [structure of the global atom](#) has a brief section describing the *Pauli Principle* and another on Spin and the orbital angular momentum of electrons. Regardless of whether its value is known or unknown, note that an electron in an atom can be changing its value back and forth, but a free electron seems to be unable to change its Spin, although this is still not known with absolute certainty. The insecurity is because it can only be measured once, and only if it has not changed due to any external factors –*quantum decoherence* in the case of entanglement.

Our example consists of a **coin, spinning** on a table so fast that if we were to take a very quick photograph, we would not be able to know in advance what the result would be, whether it would show heads or tails of the coin.

Our probability function is a priori 50% for it to be heads.

Here we have the reasoning behind the famous quote of a cat being both dead and alive at the same time –due to the probability function of the wave. Curiously, what is anti-intuitive is to use the example of dead and alive, since heads and tails or one Spin or another seems perfectly intuitive.

## ■ **Superposition**

Another aspect, no less impressive, is the interpretation of the probability functions. As we cannot know whether it will be heads or tails before taking the photo, part of academia says that it is **both things** at the same time, that it is in **two places** at once, or that it is in a state of superposition.

Confusing terminology, when one does not know what the actual event is and only knows its probability, it academy says both events occur at the same time –the event and its opposite– despite being exclusionary probabilities.

It is a reverse conceptual metaphor –to treat features of abstract concepts as physical properties of things–, despite being impossible in this case.

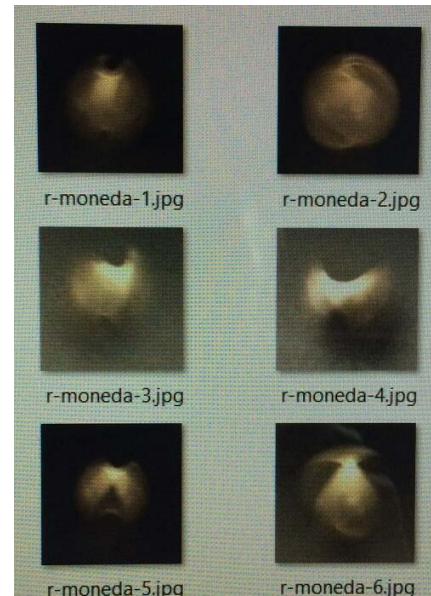
In other words, since our eyesight is not good enough to see heads or tails as the coin spins –such as the optical illusion in the image– they then say it is in superposition, even though if they were to take the photo, they would see

that this assumption is incorrect. What's more, no one has ever found a moribund cat.

As such, physical reality is not anti-intuitive, but these incorrect assumptions are. It is certainly a crucial error since there is a priori no scientific reasoning that justifies it. There is no excuse to argue that it is, in fact, a superposition of probabilities; this is implicit in the concept of probability itself, and precisely to state that one possibility excludes the other and that the sum of all probabilities is always equal to one. What's more, they do not say that either; probabilities are not two things at the same time and cannot be in two places at once –they do not have units of time or space. They are abstract concepts unless we start talking about other worlds.

## Superposition

Erroneous assumption



Let us see an additional problem of *Quantum Mechanics* and its ignorance regarding the real states of things and their causes. If we were to put the photo of the coin inside an envelope without looking at it and send it via standard mail to country B, they would still say it is in superposition, even though there is only one photograph in the envelope and no trapped cat or spinning coin. The corresponding quantum example to the envelope would be a free electron, since –as we have seen previously– the Spin of these electrons does not change its value except in the case of quantum decoherence.



## ■ Entanglement

Now let us imagine that a camera, synchronized with the rotational speed of the coin, takes two photographs in such a way that if the first photo is heads the second will be tails. If we were to put the photos in two different envelopes (without looking) and send them to country B and country C respectively, the photos would be entangled, since we know that if one is heads, the other will be tails and vice-versa.

In *Quantum Mechanics*, on occasion, two electrons will have opposite Spin values; in this case, we have additional information on one electron simply from it being part of a two-particle system. It is a game of conditional probabilities; if we know that one has Spin  $1/2$ , then we could infer the other has Spin  $-1/2$ . In this case, we refer to entangled particles.

Without taking into account the possibility of quantum decoherence, it would be logical to assume that as long as we do not open the envelopes, there is no additional information; but at the exact moment we open one, we will know the content of both envelopes. We can reason similarly with the Spin values of both electrons.

From a probability function, superposition of entangled particle functions means the probability function of the system includes further information on its particles due to their mutual interdependence.

There are experimental proves of entanglement, and there is no problem with it as long as one does not try to extend

this concept to the subsequent instantaneous communication between separated particles, as there is no experimental confirmation of the communication.

### ■ **Instantaneous communication**

If we were to open the entangled envelope in country B and it contained a photo of the “heads” of the coin, we would immediately know that the envelope in country C contains a photo of the “tails.” However, this does not mean that the postman ran fast to put the photo of tails in the envelope in country C, just that it was already in the envelope since the beginning.

One should be careful with this quantum terminology—the phenomenon of immediate knowledge about the content of the envelope in country C is the *instantaneous collapse of the wavefunction*. In other words, as there is no longer uncertainty regarding its content, the wave function—probability function—is said to have collapsed, in a clear paradoxical mimicry of the real collapse of a mechanical wave.

The instantaneous communication between envelopes or particles does not exist; at least not until there is an experimental prove without the use of trapped cats. It is not enough proving the final state; one needs to prove the communication at the final state.

Another example is the creation of two entangled photons in electron-positron annihilation. In this case, the right-handed and left-handed photons are entangled photons since their creation due to the [nature of the particles](#) that produce them. Moreover, once created do not change their [spin](#)—except in the case of quantum decoherence—and will not communicate despite being entangled.

Concerning the instantaneous communication of information, this also does not exist; the information obtained in country B must go to country C so that the latter knows the content of its envelope without needing to open it. Of course, conditional information with pre-established codes may have effects, but this is equivalent to any classical system with the same characteristics.

- **No application of the uncertainty principle**

It seems evident that knowing the content of an envelope without opening does not imply a paradox of any kind. It is an exception to Heisenberg's *uncertainty principle*, an example of how to overcome it, as this knowledge does not impose any limitation regarding the envelope state, open or closed. In other words, in Quantum Mechanics, no measurement has occurred.



## 4.b) Neutrinos as longitudinal waves

Given the physical model provided by Global Physics, we can make speculative proposals on one of the least understood particles in Modern Physics, due to its low interaction with normal matter.

As always, these proposals are renormalizable and deal with the following characteristics.

- **Neutrino mass**

The mass of neutrinos affects the proposal in Global Mechanics regarding the electron as a physical limit for the [creation of mass](#). In other words, elementary particles with a lower mass than the [electron](#) should not exist.

The elementary particles with mass in the [Standard Model](#) have a higher mass than the electron, but there are a few exceptions; two out of three neutrinos have a mass lower than that of the electron. In particular, the mass of the electron neutrino is approximately a million times smaller.

It is possible that what [Quantum Mechanics](#) considers the mass of neutrinos is not mass as defined in *Global Mechanics*, or perhaps it is a particular type of mass.

In fact, even the electron mass is not a consequence of the [retention forces](#) of [global aether](#) cells –Asymptotic freedom in QCD– as is the case for protons and neutrons; its origin lies instead in the energy barrier or the minimum energy necessary to prevent [free electrons](#) from breaking up –decaying– into photons.

The mass of the electron neutrino is so small that it could

be massless –however, due to oscillations physicists say it has a non-zero mass. We will have to wait for the results of multiple current experiments and those scheduled for the near future.

■ **Neutrinos could be longitudinal waves**

The nature of neutrinos could lie in longitudinal waves through the filaments of global aether, instead of transverse waves such as in the case of photons. The origin of these waves would then be **cracks or hard bends in the filaments** produced during the creation of electrons and other particles with mass –weak interaction–, or the reversion of those cracks when particles decay into photons or smaller particles.

◦ *Simple physics experiment*

**Compressed air rifle  
load and reload**

Longitudinal waves origin



When we load a **compressed air rifle** with its ammunition and snap it shut, a vibration occurs

throughout the rifle due to its mechanism –stability barrier– that keeps the rifle ready to fire.

Likewise, a similar vibration will occur when opening the rifle to reload it.

This longitudinal wave nature of neutrinos would explain why the mass –or energy– of the electron neutrino is so small in comparison with that of the electron. In any case, the values of the masses of neutrinos are not definitive.

#### ■ **Little interaction of neutrinos with normal matter**

The configuration of neutrinos as longitudinal waves is consistent with the small interaction they have with normal matter. If neutrinos were longitudinal waves, it would make sense that they would not interact much with the loops of global aether caused by transverse waves of electromagnetic energy.

Also, it makes sense that when they do interact they do through the weak interaction because it implies the creation or destruction of cracks in the filaments of the global aether.

[The spin](#) of the neutrinos could be due to the creation of folds in the filaments of the global aether –and the longitudinal internal wave that originates– does not occur in one plane of the three-dimensional space. On the contrary, it implies a twist that relaxes the transverse tension of said filaments; as explained when talking about electrons in the [structure of the atom](#) or the mechanism of creation of protons and neutrons.

#### ■ **Neutrinos and gravitational interaction**

Due to the speed of neutrinos –almost equal to the speed

of light—, the force of gravity will also affect them twice as much as the mass, just as it does to electromagnetic and kinetic energy according to the [Law of Global Gravity](#).

- **Neutrinos and expansion of the universe**

A consequence of the proposed nature of neutrinos is that they could produce or contribute to the [expansion of the universe](#) through the nuclear fusion processes of the stars.

\* \* \*





When **Einsoder** finished the book,  
he called **M<sup>a</sup> José** to tell her how pleased he was.  
Then, she said the following:

–It is very good.  
I especially like the part about  
the *experiment with the sheet*,  
but do not forget that  
some limits must sometimes be self-imposed,  
*Even if there aren't any!*–

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