EVOLUTION OF STRUCTURED MATTER

New concepts beyond the standard model

BY THE SAME AUTHOR

Localisation des satellites basée sur le principe de l'interféromètre radioélectrique (in French), 1966.

Satellites et fusées porteuses lancés depuis Spoutnik 1 (in French), 1966.

Development of Telecommunications and International Organizations :
ITU – CEPT- EUTELSAT (bilingual English-French version), 1989.

Development of Telecommunications and International Organizations :
ATU – ASCO – PATU – APT –CITEL (Bilingual English-French version), 1989.

ABOUT THE AUTHOR

In Grenoble, France, Grégoire Nachszunow graduated from the Faculty of Science with a degree in physics, and with a radio engineering degree from the Institut National Polytechnique.

After early activity as a physicist in industrial research on fluorescence he joined, in 1954, the Centre National d'Etudes des Télécommunications (CNET) as Head of the Laboratory "Essais en Vol" engaged, on behalf of the Air Force, in the measurement of the radar diagram through helicopter equipped with a special receiving antenna. To this end he developed a receiving antenna operating in the cm wavelength range, for which invention a patent was taken out in 1961, entitled "Patent relating to improvements and automatic control of a telemetering system", the first patent of a series of three. On the same principle was built the antenna with associated servo and tracking equipments at the Italian earth station in Fucino.

In 1965 Grégoire Nachszunow was appointed one of the representatives of France in the European Technical Planning Staff (TPS) charged with elaborating the basis for acquiring independent European space technology. The proposed line of proceeding was adopted by the European Space Agency (ESA) which started its activity with the Orbital Test Satellite (OTS), leading in 1978 to the European Communications Satellite System ECS. Within the scope of his activity G.Nachszunow published the book "Satellite Tracking with a Radio Interferometer" (in French), completed with a list of satellites and launchers since Sputnik 1. Following the same path he was particularly concerned with collecting and studying the scientific progress in satellite communication equipment.

After his retirement in 1984, he undertook a comprehensive publication of the international regulations in telecommunications, before devoting himself to his long-life passion: the study of laws in physics. Coming up against contradictions in the Standard Model, the present book is an effort to give an insight into the evolution of structured matter from its very beginning.

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FOREWORD

The purpose of this book is not to deal with the conceptual foundations of modern particle physics. Besides very valuable discoveries, they also contain an assortment of theoretical speculations, with a number of them agreed upon in the Standard Model. Their often remarkable mathematical complexity leaves a doubt about their practical utility in solving problems.

Dealing with a question in terms of mathematics is inappropriate in physics, where it must only be a tool.

My professional experience in physics and satellite communications as an engineer in industrial research led me to the conclusion that physical laws are simple in essence but with a wide range of diversifications leading to complex structural realizations. This complexity of nature is beyond the human intellectual ability to dominate its mechanisms either by mathematics or computerized memories.

In order to penetrate the secrets of the structure of matter it is essential to get an insight into the very beginning of the Universe: what were its constituents in the early period of near absolute zero temperature, what made possible their evolution to a more complex structure in the succeeding thermodynamic conditions, how radiation could be generated and in what conditions mass was formed?

New concepts beyond the Standard Model are proposed with respect to the formation of stable particles, such as neutrinos and antineutrinos, electrons and positrons, of weak and strong forces, gravitational forces, thermodynamic energy, electromagnetic radiation and energy conservation, with the particular aim of establishing the role of the attractive properties of the neutrino particles not only in the development of stable particles, but also in the formation of gravitational cells.

The evolution of structured matter is a process that ranges from simple to ever more complex. We hope that this study will widen the understanding of such an important matter.

In order to spare the reader the necessity of engaging in time-consuming research of cited sources, some extensive excerpts are given.

We believe it is also useful to point out several incompatibilities with physical laws of some notions granted in the Standard Model of Physics , in spite of the Nobel Prizes awarded to their authors.

I would like to express my appreciation to my daughters Marguerite and Caroline and my son-in-laws Alain Vauchelles and José Varona for their assistance during the final stages of production of this work. I would like to give warm thanks to my wife, Willy Prins, for the outstanding job she did in producing the electronic manuscript.

Grégoire Nachszunow

CHAPTER 1

ERA OF ABSOLUTE ZERO TEMPERATURE

Formation of four stable fundamental particles: neutrino, antineutrino, positron, and electron

1.1 Formation of neutrino and antineutrino - New concept beyond the Standard Model

1.1.1 Primary micro-cells

In the beginning of the era of absolute zero temperature, only primary micro-cells existed.

1.1.1.1 Basic properties of the primary micro-cells

These properties were featured by:

- neutral charges; *see Figure 1/1*;
- magnetic forces, due to the rotation of the micro-cells around their own axis (spin), producing attractive or repulsive forces depending on the direction of spin rotations.

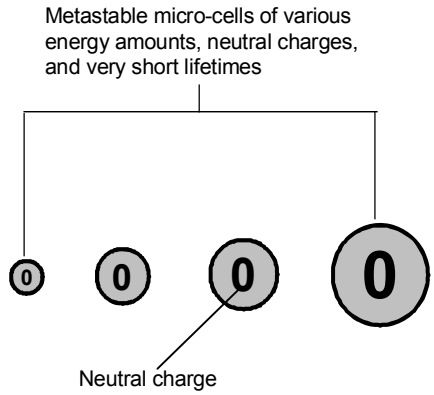

Figure 1/1 Primary micro-cells

1.1.1.2 Law of numbers

The diversification of micro-cells in energy amount, electric charges, speed, and size, complied with the "law of numbers" featured by:

- Each constituent of the group represents a separate entity.
- They are independent one from the other.
- However, in spite of different characteristics of the group constituents, they have one common trait.
- This common trait is amplified by the great number of group constituents and becomes the identity of the group.

1.1.1.3 Micro-cells as metastable particles

The particularity of a metastable state is the disequilibrium between two energetic states:

- potential energy that does not involve motion; it is stored in a body or system as a consequence of its position, shape or state;
- kinetic energy which is characterized by motion; it is defined as work that will be done by a body possessing kinetic energy when it is brought to rest, which implies the transformation of this energy into another form of energy, for instance heat (thermodynamics).

Any disequilibrium between potential and kinetic energies generates a metastable state.

1.1.2 Formation of neutrally charged micro-cells with magnetic energy h/2

In the course of diversification a group of metastable micro-cells appeared with the following characteristics:

▪ low speed;

- very small energies*;*

▪ approximate equilibrium between potential and kinetic energies;

- magnetic interaction between neutrally charged micro-cells rotating around their own axis (spin), forming small magnets.

From the collision of two metastable micro-cells having these characteristics emerged a larger micro-cell that had the magnetic energy *h/2* (h = Planck's energetic unit), *see Figure 1/2.*

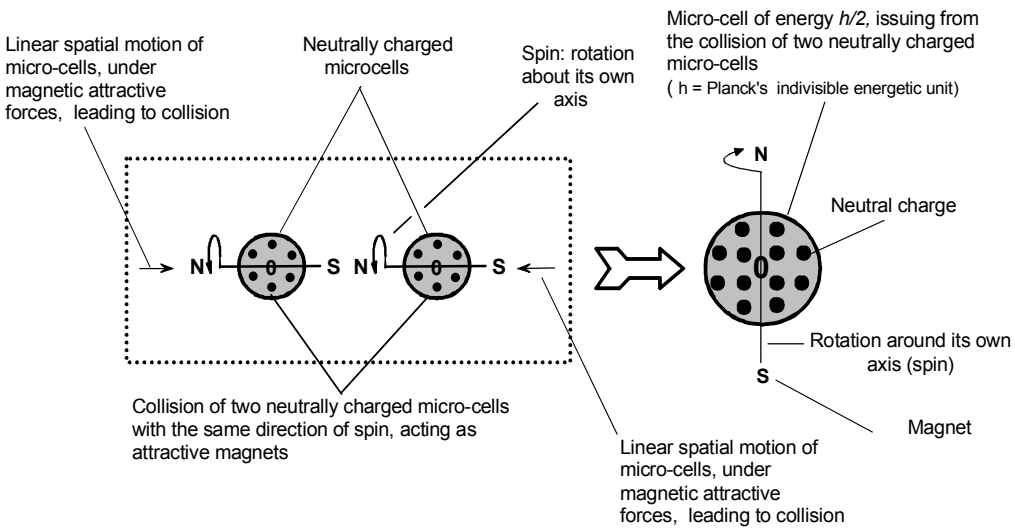

Figure 1/2 Formation of a neutrally charged micro-cell of magnetic energy h/2

1.1.3 Aperiodic linear interaction of two metastable neutrally charged micro-cells of magnetic energy h/2

The interaction of two metastable neutrally charged micro-cells generated the states given below:

- **Energetic state: Not colliding state**

The micro-cells exerted two opposite forces: attractive forces due to the rotation of neutrally charged micro-cells (magnet effect), and repulsive forces due to identical neutral charges. As a result they passed through the region of zero energy where the attractive and repulsive forces were equal and reached the maximal energetic value h/2, *see Figure 1/3a Attraction.*

- **Energetic state: Repulsion**

After reaching their maximal energy the micro-cells were repelled, passing again through the same region of zero energy, reaching the energy h/2 but of opposite sign with respect to zero, i.e. the minimal amount, *see Figure 1/3a Repulsion*.

- **Oscillation process**

A linear oscillation process occurred about the zero energy with maximal and minimal deviations of h/2. Each stage (repulsion or attraction) lasted T/4 (quarter of the complete phase T). The transformation of the colliding state into a not colliding state, or vice versa, occurred in an *aperiodic way* (not occurring at regular intervals), *see Figure 1/3b.*

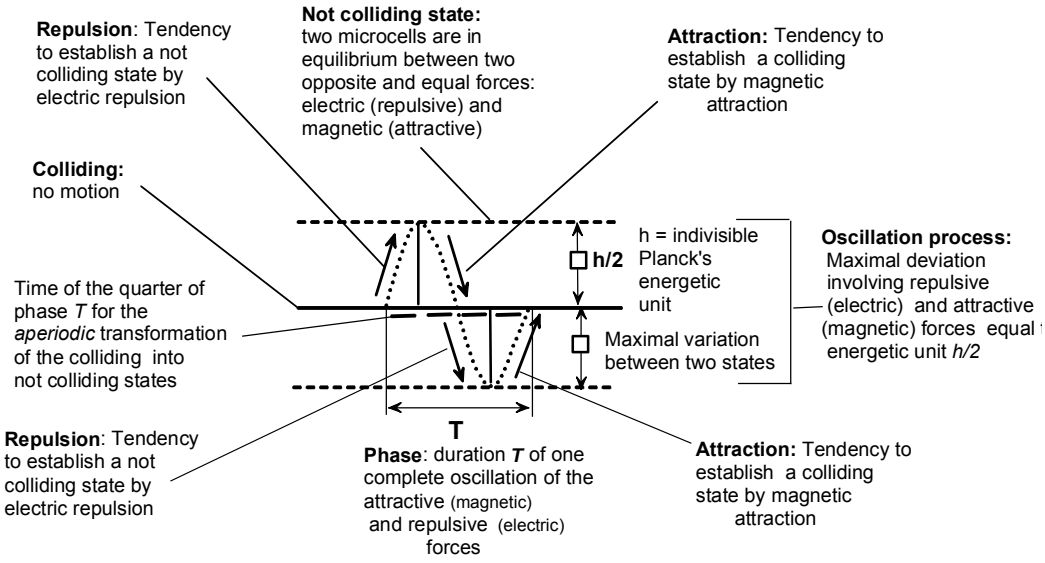

Figure 1/3 a Colliding and not colliding states

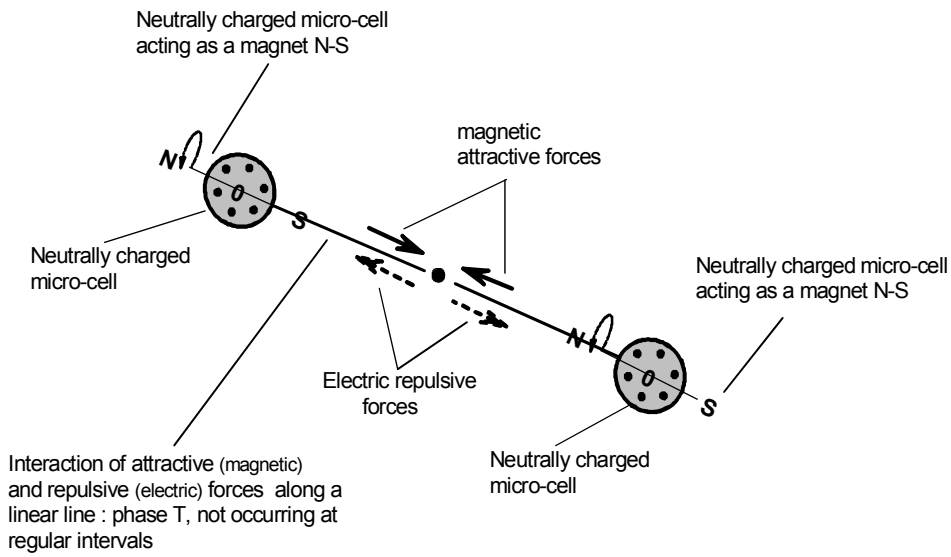

Figure 1/3 b Colliding and not colliding states

Figure 1/3 Formation of the magnetic energy h/2 at not regular intervals

1.1.4 Pairing process : Formation of the group of neutrinos

The appearance of metastable neutrally charged micro-cells of magnetic energy *h/2* made possible the formation of the first stable particles : the group of neutrally charged n e u t r i n o s by the pairing of two metastable micro-cells moving in a common circular orbit, *see Figure 1/4.*

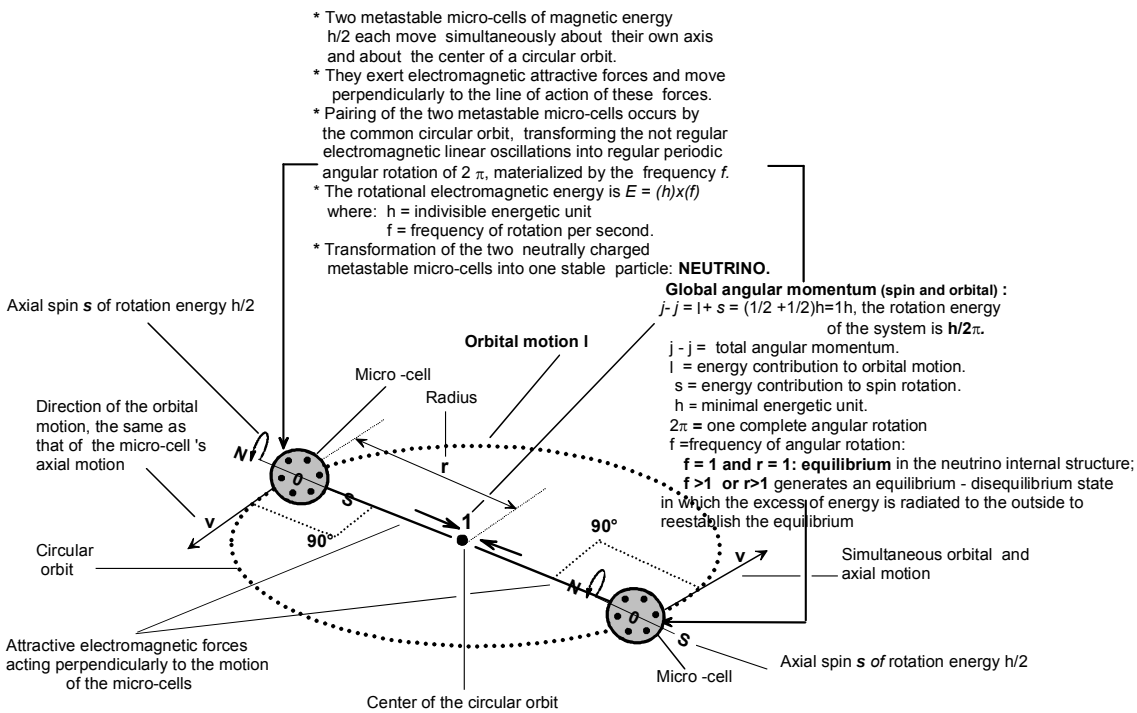

Figure 1/4 Internal neutrino structure