Achievements in the Life Sciences 8 (2014) 1–9

Contents lists available at ScienceDirect

Achievements in the Life Sciences

journal homepage: www.elsevier.com/locate/als

The Emergence and Existence of Life in the World of Elements and the Physical Vacuum

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ARTICLE INFO

Available online 2 December 2014

Keywords:
Life
Physical vacuum
Quasi-crystalline structure

ABSTRACT

The physical vacuum affects not only the natural processes in deep space but also identifies the key features of the structure of ordinary matter. This sphere of work intersects the fields of chemistry and biology. The condition of the objective existence of elementary particles and the objectivity of quantum measurements require the presence of real physical analogues of clocks and lines that participate directly and literally in particle interactions. The analogue of the clock results from the existence of elementary particles in the form of the alternation of two states with different properties that can be modelled in terms of probabilistic behaviour, the uncertainty principle, and similar concepts. The analogue line appears due to the quasi-crystalline structure of the physical vacuum, thereby generating a real observed mass ratio and other features of the microworld. The emergence of life and sense is regulated by deterministic processes. Biological evolution is a process directed toward a slow and gradual adaptation to the physical vacuum as the real component of the environment. Because of such evolution, the geometric structure of living organisms transforms into a fractal increased in absolute terms by chemical simulation. Therefore, the analogue model defines the key structures of the vacuum. The geometric similarity of the structures allows cells to live in accordance with the laws of the quantum world without requiring the solving of equations.

The Key Step from the Formal Description to the Real Understanding of the World of Quantum Mechanics as a Habitat for Living Cells

More than 100 years ago, the physics of electrical phenomena infiltrated the field of chemistry and, thereafter, biology. In the beginning, many scholars considered this physics to be farfetched. This opinion was natural for an era wherein the only electrical device that had been introduced beyond laboratories was the lightning rod. Today, it is impossible to imagine the structure and chemistry of ordinary matter without the participation of electrons and ions. Scientific understanding has entered a new phase.

Now, it is clear that the physical vacuum not only affects the natural processes in deep space but also identifies the key features of the structure of ordinary matter. This sphere of work intersects chemistry and biology. It has become possible to study this unusual perspective based on living cells and the proper body in terms other than hypotheses and equations that are often incomprehensible

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Peer review under responsibility of Far Eastern Federal University.

Production and hosting by Elsevier

http://dx.doi.org/10.1016/j.als.2014.11.001

even to the authors, but rather through direct observation with electronic and tunnelling microscopes. The proper understanding of the role of the physical vacuum in nature requires a relevant model of the vacuum, and the possibility of its creation has appeared only recently.

For decades, quantum mechanics was able to provide only a formal description. This necessary step enabled the creation of devices that guided research into a new phase of development. Today, the microcosm can be described more than mathematically: its structure is already amenable to rational human understanding, namely, the device lies in a normal geometric space. Such a realistic understanding is necessary for comprehending the underlying foundations of the existence of life and for engineering a full-fledged nanotechnology.

The existence of real physical analogues of clocks and lines that directly and literally participate in particle interactions are conditions for the objective existence of elementary particles and quantum measurement objectivity and for compliance of the Theory of Relativity by particles.

This requirement seems inconceivable, but Nature is more inventive than Man. A key mystery of the microcosm became evident after 40 years of electron microscopy research of the quantitative geometry of biological structures (Golubev, 1981, 1987, 1996a, 1996b, 2013a, 2013b, 2013c, 2013d; Golubev and Gerasimenko, 1989; Golubev and Golubev, 2009a, 2009b, 2010, 2011).

Analogue clocks resulted from the existence of elementary particles in the form of an alternation of two states with different properties that behave probabilistically and in accord with the uncertainty principle. Analogue lines appeared because of the quasi-crystalline structure of the physical vacuum that generates a real observed mass ratio and other features of the microcosm.

Given the volume and scale of unconventional consequences, no statement can remotely satisfy the requirement of the presence at each point of a microcosm of the “clocks” and “lines”, neither of which are drawn on paper but are physically real and participate in the particle interactions. The presence of such clocks and lines determines the actual structure of the microcosm with the following consequences:

- The correlations between the masses of elementary particles obtained are identical to those found in reality.
- Particles acquire probabilistic behaviour, begin to comply with the uncertainty principle and the Pauli Exclusion Principle and attain an opportunity to tunnel. Numerous other quantum effects emerge. There is also a realistic interpretation of the concept of “the proper time of the particle” that literally stops at the speed of light.
- The emergence of life and sense becomes regular deterministic processes.
- Biological evolution is a directed process. It is directed toward a slow, gradual adaptation to the physical vacuum as the real component of the environment. Because of this evolution, the geometric structure of living organisms transforms into a fractally increased chemical imitation of the key structures of the vacuum. Due to the direct geometric similarity to living organisms, natural analogue devices are ideally adapted to match the physical laws of the microcosm with those of normal physiology. That geometric similarity structure allows cells to live by the laws of the quantum world without requiring the solving of equations.
- Humanity has faced range of physical effects for many centuries, but from the standard scientific theories perspective, these effects are declared non-existent and pseudoscientific.

This article is a brief summary of the author's three interdisciplinary books and several articles on biology, physics and chemistry (Golubev, 1981, 1987, 1996a, 1996b, 2013a, 2013b, 2013c, 2013d; Golubev and Gerasimenko, 1989; Golubev and Golubev, 2009a, 2009b, 2010, 2011).

Life—A Special Form of Quantum Ordering of Matter in Time and Space

In biology, the term “coherence” is often used in various embodiments of the expanded value. In the unconscious form, it reflects the presence of a dynamic ordering in the matter of living organisms, the existence of which cannot be described in terms of the conceptual framework of standard theories. The existence of such ordering allows biological cells to live by the laws of the quantum world without requiring the solving of equations. This dynamic ordering of living matter represents a direct adaptation to the fact that quantum particles have an analogue clock, which is not invented by mathematicians nor drawn on paper, but instead directly and literally participates in particle interactions.

The presence of a “clock” at each point of the quantum world is ensured by the fact that the particles themselves can move and exist by alternating two structural states with different properties. Quantum particles are involved in the physical interaction in both states but in completely different manners. The direct consequence of the interaction is the probabilistic behaviours of quantum particles because the phase relation of interconversion between adjacent particles is generally random.

The properties of the particle are the sum of the properties of its two alternating forms. Any particle moves, however, so the sum can be determined only at such an interval of the particle movement when the both forms are present. Mathematically, the sum corresponds to the standard definition of the uncertainty principle. The line along which the particle moves in the form of the alternation of two forms with different properties can be called the trajectory only conditionally. Such a line is not a classical trajectory. For this reason, the concept of classical trajectory does not apply to quantum particles.

The pulsation period in terms of the Theory of Relativity corresponds to the concept of the proper time of the particle. At relativistic velocities, that quantum interconversion frequency decreases. At the speed of light, the alteration of states of photons and neutrinos disappears. The relativity theory calls this event the proper time stop of the particle.