

METAFIZIKA

(Metaphysics)

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- ✓ **CONTENTS**
- ✓ **SUMMERY**
- ✓ **KEY WORDS**

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E-mail: metaphysica.rudn@gmail.com

CONTENTS

EDITORIAL NOTE	3
METAPHYSICS AS THE NUCLEUS OF PHILOSOPHY	
<i>Mironov V.V.</i> Objective Self-Definition of Metaphysics	7
<i>Katrchko S.L.</i> How Is Metaphysics Possible (in the Light of a Transcendental Perspective)?	31
<i>Katsonov V.N.</i> The Critique of Science in the Tradition of Philosophical Phenomenology	55
METAPHYSICS OF NATURAL SCIENCE	
<i>Gaidenko P.P.</i> The Establishment of Modern European Natural Science: The Overcoming of the Paradoxes of the Actually Infinite	65
<i>Vladimirov Yu.S.</i> Fundamental Theoretical Physics and Metaphysics	88
<i>Yefremov A.P.</i> The Universe in Itself and the Ways of Knowing	106
<i>Kopeikin K.</i> The Theological and Natural Science View of the Ontological Nature of the Universe	123
<i>Ivanov A.V., Fotieva I.V., Shishin M.Yu.</i> Metaphysical Foundations of Modern Science	154
METAPHYSICS OF THE HUMANITIES	
<i>Ogurtsov A.P.</i> Thomas Hobbes and the Leviathan of Total Power	169
<i>Vladimirova T.Ye.</i> The Russian Code of Being: Establishment and Development Trends	185
FROM THE LEGACY OF THE PAST	
<i>Heidegger M. Sein and Zeit</i>	205
OUR AUTHORS	225

EDITORIAL NOTE

This issue begins the publication of *Metafizika* (Metaphysics), an interdisciplinary scientific journal devoted to the analysis of the foundations of science, philosophy and other branches of world culture. These problems have long been traditionally included in the sphere of metaphysics. There exist a number of definitions of metaphysics. Thus, Bertrand Russell wrote: “Metaphysics is an attempt to conceive the world as a whole by means of thought.” Max Born defined metaphysics as the study of the general features of the structure of the world and our methods of penetration into that structure. Heidegger stated: “Metaphysics is inquiry beyond or over beings which aims to recover them as such and as a whole for our grasp.” Russian philosopher Vladimir Mironov defines metaphysics as the “theoretical part or core” of philosophy, as the “theory of the first principle of being,” and believes that it consists of three parts—ontology, gnoseology and axiology. A number of other definitions and interpretations of metaphysics may also be cited. This is done, in particular, in some of the articles published in this first issue of the journal.

At present, the term “metaphysics” has been restored from oblivion and even persecution to which this concept was subjected in the not-so-distant period of Russian history. Today there is growing confidence in the need for in-depth discussion and study of the subject of this highly essential branch of world culture. David Hume, in his day, stressed that “metaphysics and morals are the most important branches of science.” Similar statements can be found in Immanuel Kant, who wrote that “the search for metaphysics will continue, because the interests of human reason are so closely bound up with it.”

Nowadays, the need for metaphysics has grown many times over for a number of reasons. Here it should be noted that research in modern fundamental theoretical physics has come close to problems of metaphysical character. This is the case both with studies of the megaworld, where the questions of the origin, structure and evolution of the Universe at large are examined on the basis of the general theory of relativity and its generalizations, and in the physics of the microworld, where physicists have come to studying the most elementary building blocks of the Universe.

One could cite many factors indicative of a pressing need for publishing a special journal on metaphysics providing a platform for the broad layers of the scientific community to expound and discuss the problems of the fundamentals of science, philosophy, religion and other branches of a single culture.

In the first place, it should be noted that it is now for quite a while that a weekly interdisciplinary seminar on metaphysics has been functioning at the Department of Physics of Moscow State University. The seminar is conducted under the supervision of members of the editorial board of this journal. Taking part in the work of the seminar are staff members of a number of departments of Lomonosov Moscow State University, the Peoples' Friendship University of Russia, the Institute of Philosophy of the Russian Academy of Sciences, the Institute of Physics of the Russian Academy of Sciences, the Institute of the History of Natural Sciences and Technology of the Russian Academy of Sciences, the Moscow Engineering and Physics Institute, and other scientific and academic institutions of Moscow and other cities of Russia. The journal is intended to publish articles featuring the most significant reports at the seminar.

A number of problems of metaphysical character are discussed at seminars conducted at the Peoples' Friendship University of Russia: "Gravitation and Cosmology" (head of seminar: Professor Alexander Yefremov), "Cosmos-World-Man" (coordinator of seminar: Associate Professor Vladimir Yurtayev), and others. A number of seminars held at the Institute of Philosophy of the Russian Academy of Sciences (heads of seminar Academician Vyacheslav Stepin, Professor Yelena Mamchur, Professor Andrei Pavlenko, and others), as well as at other institutions in Moscow and other cities of Russia (St. Petersburg, Yaroslavl, etc.) should also be mentioned.

The proceedings of philosophical congresses regularly held in Russia, attracting the attendance of a substantial number of scientists and philosophers, are widely known. Brief outlines of the reports delivered at them easily fill several thick volumes.

The Department of Philosophy of Lomonosov Moscow State University, jointly with other university departments and institutions, holds representative conferences "Philosophy of Mathematics" and "Philosophy of Physics" at MSU, at which a wide range of pressing methodological issues of modern natural sciences are discussed.

In addition to these forums, regular convocation of conferences "Christianity and Science" held at the Department of Physics of Moscow State University within the framework of annual Christmas Educational Readings should be mentioned (so far, thirteen such conferences have been held). Actively discussed at them are general metaphysical questions such as models of formation and development of the Universe, the relation of the finite and the infinite, questions of causality, various techniques of logic and inference, etc. All these questions are on the border between science, philosophy and religion. Based on the materials of the conferences, nine volumes of "Christianity and Science" conference transactions have been published (the last three volumes have been published by Peoples' Friendship University of Russia Press).

Similar questions are discussed at the conferences "Science, Philosophy, Religion" annually conducted in Dubna by joint efforts of Lomonosov Moscow State University, the Joint Institute for Nuclear Research and the Moscow Theological

Academy with the financial support of the Foundation of the All-Praised St. Andrew the First Called and the Center of National Glory of Russia. Speaking at these conferences are prominent scientists and philosophers and representatives of the Russian Orthodox Church.

Topical problems of metaphysical character are discussed in a number of scientific journals and collections published in Russia. They include, in the first place, the almanac *Metaphysics: 21st Century*. Four issues of the almanac have been published to date. The last issue of *Metaphysics: 21st Century* focuses on discussion of the foundations and topical metaphysical issues of mathematics. It carries articles by noted mathematicians, philosophers and physicists. The last but one issue of the almanac deals with questions of the relation between science, philosophy and religion. It consists of four parts. The first part, which opens with an interview with Academician Vitaly Ginzburg, expounds the views of scientists (mostly theoretical physicists) on the relation between the three branches of a single culture. The second part features a perspective on this question by prominent Russian philosophers. In the third part, representatives of the Russian Orthodox Church and in the last part, representatives of other religious confessions—Islam, Judaism and Buddhism—state their views. It also provides information on the structure and activities of the Pontifical Academy of Sciences in Vatican City. Taking part in compiling the issue and preparing it for publication were members of the editorial board of this journal.

A number of special monographs on problems of metaphysics should also be mentioned. They include two editions of Yuri Vladimirov's monograph *Metafizika* (Metaphysics), three books *Mezhdru fizikoi i metafizikoi* (Between Physics and Metaphysics) by Yuri Vladimirov, the comprehensive textbook *Universitetskiiye lektsii po metafizike* (University Lectures on Metaphysics) by Andrei Ivanov and Vladimir Mironov, a number of books by Piama Gaidenko—*Istoriya grecheskoi filosofii v eyo svyazi c naukoi* (A History of Greek Philosophy in Its Connection with Science), *Istoriya novoyevropeiskoi filosofii v eyo svyazi c naukoi* (A History of Modern European Philosophy in Its Connection with Science), and others, the book *Metafizicheskaya matematika XVII veka* (Metaphysical Mathematics of the 17th Century) by Vladimir Katasonov, etc. It should be noted that all these authors are also contributors to this first issue of the journal *Metafizika*. To these should be added Valery Zakharov's highly informative books *Vvedeniye v metafiziku prirody* (Introduction to the Metaphysics of Nature) and *Fizika kak filosofiya prirody* (Physics as a Philosophy of Nature), and a number of other publications and collections. All these are indicative that there has been accumulated substantial material on problems of metaphysical character which needs to be discussed in detail on the pages of the newly launched journal.

In conclusion, it would be appropriate to recall the words of Russian philosopher Georgy Shchedrovitsky: "When a people and a country overlook the significance of ontological work and, by force of some circumstances of their historical development or others, cease to carry it on, the way it was in our country during the years of stagnation and in the years that preceded them, the country and the

people will surely slide into the category of backward countries and peoples, since they will be devoid of the opportunity to engage in intellectual work. Ontology, or metaphysics in the Aristotelian sense, is the basis for each and every kind of intellectual work. It provides an opportunity for projecting, programming and planning. And vice versa: if there is no such work, nothing can be projected, programmed and planned, for then there are no conditions and basis for this... Compared with the absence of ontological work, everything else is trifles. If there is no ontological work, there can be no modern thinking, modern life and modern nation. In this sense, what happened in our country is a classic case of destruction of scientific work because of the lack of ontological work. And this is an instructive experience on the scale of the history of development of, I would like to stress, universal human culture.”

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CONTENTS

EDITORIAL NOTE	3
METAPHYSICS IN THE SYSTEM OF NOTIONS OF THE UNIVERSE	
<i>Zakharov V.D.</i> Metaphysics and the Physics of Geometric Spaces	5
<i>Siparov S.V.</i> Theses on the Metaphysical Principles of Natural Philosophy	30
<i>Mitskevich N.V.</i> Cognition, Faith, Science.....	45
<i>Vekshenov S.A.</i> Metaphysics of Invariance	50
METAPHYSICAL PROBLEMS IN THE PHYSICS OF THE MICROWORLD	
<i>Sevalnikov A.Yu.</i> Comprehending Metaphysics	59
<i>Belinsky A.V.</i> Quantum Paradoxes and the Concept of Long-Range Action	72
<i>Eliovich A.A.</i> On the Methodology of the String Program	83
METAPHYSICAL PROBLEMS OF THE THEORY OF GRAVITATION AND COSMOLOGY	
<i>Vladimirov Yu.S.</i> Myths and Realities of the General Theory of Relativity	110
<i>Panov A.D.</i> On the Methodological Problems of Cosmology and Quantum Gravitation	123
<i>Burlankov D.Ye.</i> The General Theory of Relativity Does Not Describe Physical Reality	147
<i>Bulyzhenkov I.E.</i> Non-Vacuous Material Space in Philosophy and in Physics	159
FROM THE LEGACY OF THE PAST	
<i>Bergmann P.G. Unified field theory: past, present and future</i>	167
<i>Zelmanov A.L. Some questions in Cosmology and Gravitation theory</i>	173
OUR AUTHORS	178

EDITORIAL NOTE

AS was already noted in the editorial note to its Issue No. 1, the *Metafizika* (Metaphysics) journal deals with topical philosophical (metaphysical) problems of science and culture. This issue of the journal examines a number of metaphysical issues of fundamental theoretical physics, which today has come close to revising its notions of the physical picture of the world. Forthcoming changes are expected both in the sphere of the laws of the physics of the microworld and, in particular, in the realm of generally accepted views of the structure and laws of the evolution of the Universe as a whole. From this point of view, the situation being experienced by physical science is comparable to the revolutionary changes that were brought about by the creation of the theory of relativity and the quantum theory.

The issue opens with the section “Metaphysics in the System of Notions of the Universe,” containing articles on the establishment and development of the ideas of fundamental theoretical physics, which today has begun elaborating problems of metaphysical character.

The articles in the next section, “Metaphysical Problems in the Physics of the Microworld,” examine several fundamental problems of the contemporary physics of the microworld. The main attention here is given to the interpretation of quantum mechanics and the methodological foundations of the string program and the theory of supergravitation, to which great expectations are now attached.

The third section focuses on the methodological problems of the contemporary theory of gravitation and cosmology—in particular, the problem of extending the principles of the general theory of relativity to the Universe as a whole. As is known, every physical theory has its limits of applicability, which holds true as well with respect to the Einsteinian theory of gravitation that has been sufficiently confirmed within the framework of the Solar system and, to a certain extent, on a cosmic scale. Physicists, however, were carried away by the prospect of describing, on the basis of the general theory of relativity, the global properties of the Universe, which had previously been regarded within the framework of religious and philosophical systems. In the course of discussions of the hypotheses of dark energy and dark matter that unfolded within the framework of cosmological solutions of Einstein’s equations, there arose an imperative need for a more detailed analysis of the foundations and applicability of the GTR.

Another topical problem of contemporary fundamental theoretical physics is the question of the methods of combining the principles of the general theory of

relativity and the quantum theory. This problem, otherwise known as the problem of quantization of gravitation, was of paramount concern to theoretical physicists throughout the entire last century. A number of its aspects, in particular, those related to studying quantum cosmological models, are also touched upon in the articles included in this section.

The second issue of the journal closes with the section “From the Legacy of the Past,” which includes works by noted 20th-century gravitation physicists—Peter G. Bergman, who worked with Albert Einstein, and Abram Zelmanov, a leading Russian cosmologist of the 1950s-1970s. These articles examine the merits and certain demerits of the general theory of relativity and offer forecasts of the ways of its further development.

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CONTENTS

METAPHYSICA IN ITS HISTORICAL DEVELOPMENT

<i>Yefremov A.P.</i> Plato, Kant and Heidegger on the Duality of the Universe From the Standpoint of 21 st Century Knowledge	3
<i>Zakharov V.D.</i> Metaphysical Image of the World	15
<i>Archpriest Kirill Kopeikin.</i> Harmonia Mundi: From Pythagoras to Pauli	39
<u>Yeremeyev V.Ye.</u> Picture of the World From Traditional Chinese Science Perspective	60

METAPHYSICAL PROBLEMS OF THE MODERN NATURAL HISTORY

<i>Yakovlev V.A.</i> Mentality: Metaphysical and Physical Research Programs	69
<i>Kassandrov V.V.</i> Number-Structure-Matter: on the Way Towards A Radical Pythagorean Methodology of Fundamental Natural Science	85
<i>Mensky M.B.</i> The Phenomenon of Consciousness in Terms of Quantum Mechanics	103
<i>Vekshenov S.A.</i> Metaphysics of Invariance (Part 2)	115

METAPHYSICAL PRINCIPLE OF TRINITY

<i>Vladimirov Yu.S.</i> The Principle of Trinitarity in Physics, Philosophy and Religion	121
<i>Barantsev R.G.</i> Trinitary Understanding of Matter	140
<i>Kharitonov A.S.</i> Mathematical Foundations of the Synthesis of the Principles of Dualism and Triunity	147
<u>Yeremeyev V.Ye.</u> Trigrams of the Book of Changes as Symbols of Interactions	156
<i>Bakhtiyarov K.I.</i> Genetic Method for Styles of Thinking	167

FROM THE LEGACY OF THE PAST

<i>Solovyov V.S.</i> The Crisis of Western Philosophy (Fragment)	175
<i>Kobzev A.I.</i> In Memoriam of Vladimir Yevstigneyevich Yeremeyev (1953–2011)	183

OUR AUTHORS	185
--------------------------	-----

**PLATO, KANT AND HEIDEGGER ON THE DUALITY
OF THE UNIVERSE FROM THE STANDPOINT
OF 21ST CENTURY KNOWLEDGE**

A.P. Yefremov

*Institute of Gravitation and Cosmology
of the Peoples' Friendship University of Russia*

Key words: algebra, complex numbers, quaternions, geometry, Universe, physical world, dimensionality, philosophy.

METAPHYSICAL IMAGE OF THE WORLD

V.D. Zakharov

All-Russian Institute of Scientific and Technical Information

Key words: being, time, gravitation, metaphysics, causality, formation, world image, philosophy.

HARMONIA MUNDI: FROM PYTHAGORAS TO PAULI

Archpriest Kirill Kopeikin

Key words: outer space, inner Olam, knowledge, harmony, world modeling, interpretation, microworld, macroworld, number.

**PICTURE OF THE WORLD FROM TRADITIONAL CHINESE SCIENCE
PERSPECTIVE**

V.Ye. Yeremeyev

Russian State University for the Humanities

Key words: Yin, Yang, Chinese science, Book of Changes, trigrams, resonance, fractality principle, oneness of creation.

**MENTALITY: METAPHYSICAL
AND PHYSICAL RESEARCH PROGRAMS**

V.A. Yakovlev

Lomonosov Moscow State University

Key words: intuition, information, quantum mechanics interpretation, mentality, subjective reality, consciousness, reduction.

**NUMBER-STRUCTURE-MATTER:
ON THE WAY TOWARDS A RADICAL PYTHAGOREAN
METHODOLOGY OF FUNDAMENTAL NATURAL SCIENCE**

V.V. Kassandrov

*Institute of Gravitation and Cosmology
of the Peoples' Friendship University of Russia*

Key words: algebrodynamics, anthropic principle, quantum theory, physical constants, mathematical structures, Pythagorean philosophy.

**THE PHENOMENON OF CONSCIOUSNESS
IN TERMS OF QUANTUM MECHANICS**

M.B. Mensky

Physical Institute of the Russian Academy of Sciences

Key words: probability, probabilistic wonders, choice of reality, Everett's concept, many-worlds interpretation, quantum mechanics, phenomenon of consciousness.

**METAPHYSICS OF INVARIANCE
(Part 2)**

S.A. Vekshenov

Key words: Metaphysics of invariance, duality principle, relational paradigm, spinor object, continuum, space – time, twistor theory.

THE PRINCIPLE OF TRINITARITY IN PHYSICS, PHILOSOPHY AND RELIGION

Yu.S. Vladimirov

*Department of Physics of Moscow State University
Institute of Gravitation and Cosmology
of the Peoples' Friendship University of Russia*

Key words: principle of trinitarity, metaphysical paradigms, physical categories, triunity, triplicity, binary geometrophysics, relational paradigm.

TRINITARY UNDERSTANDING OF MATTER

R.G. Barantsev

Mathematics and Mechanics Department of St. Petersburg State University

Key words: trinitarity, oneness, intuition, ratio, emotio, concepts, images, symbols, triads, style.

MATHEMATICAL FOUNDATIONS OF THE SYNTHESIS OF THE PRINCIPLES OF DUALISM AND TRIUNITY

A.S. Kharitonov

Russian State Social University

Key words: golden proportion, principle of triunity, oneness, measure of chaos, measure of order, harmony, states of systems.

TRIGRAMS OF THE *BOOK OF CHANGES* AS SYMBOLS OF INTERACTIONS

V.Ye. Yeremeyev

Russian State University for the Humanities

Key words: trigrams, Book of Changes, earth, heaven, man, hexagrams, components of communications.

GENETIC METHOD FOR STYLES OF THINKING

K.I. Bakhtiyarov

Goryachkin Moscow State Agroengineering University

Key words: genetic code, Boolean binarity, logical square, adenine, cytosine, guanine, uracil.

THE CRISIS OF WESTERN PHILOSOPHY (FRAGMENT)

V.S. Solovyov

Key words: metaphysics, all-unity, space, causality, cognition, will, freedom, sufficient ground.

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CONTENTS

ON THE UNIVERSAL CONNECTION OF WORLD PROCESSES

<i>Vladimirov Yu.S.</i> What Lies behind Mysterious Correlations?	3
<i>Sevalnikov A.Yu.</i> Teleologism and Modern Science	16

CONNECTION BETWEEN ASTROPHYSICAL AND TERRESTRIAL PHENOMENA

<i>Shnol S.E., Kaminsky A.V., Rubinshtein I.A., Shapovalov S.N., Kharakoz D.P.</i> The Fine Structure of the Spectrum of Fluctuation Amplitudes of the Results of Measuring Processes of Different Nature as a Characteristic of Inhomogeneities (Anisotropy) of Space-Time	36
<i>Panchelyuga V.A.</i> Smirnov's Detector: Detection of Impacts from Remote Astrophysical Objects	67
<i>Tsetlin V.V., Fainshtein G.S.</i> On the Effect of Cosmophysical, Geophysical and Radiation Factors on the Electrophysical and Biological Properties of Water	81
<i>Rodionov B.U.</i> Vertical Currents in Astro- and Geophysics.....	100
<i>Korotayev S.M., Serdyuk V.O., Gorokhov Yu.V.</i> Forecasting of Heliogeophysical Processes on the Basis of Advanced Nonlocal Correlations	108

MYSTERIOUS CORRELATIONS IN TERRESTRIAL PHENOMENA

<i>Panov V.F., Kurapov S.A., Boyarshinov A.Ye.</i> The Structure and Mechanical Properties of Metals after Treatment of the Melt by an Electromagnetic Radiator	126
<i>Zenin S.V.</i> The World View, a New Paradigm, the Discovery of the Spirit of the Matter	140

MYSTERIOUS PHENOMENA IN HUMAN BIOPHYSICS AND PSYCHE

<i>Pytyev Yu.P.</i> Physical Aspects of Alternative Vision	156
<i>Rodionov B.U.</i> Science as Metamysticism	167

OUR AUTHORS	180
--------------------------	-----

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WHAT LIES BEHIND MYSTERIOUS CORRELATIONS?

Yu.S. Vladimirov

Key words: Universal connection, outer space influence, enigmatic phenomena, world regularities, correlations.

TELEOLOGISM AND MODERN SCIENCE

A.Yu. Sevalnikov

Key words: Unity, anthropic principle, teleologism, cosmology, coincidences of constants, fine tuning adjustment, integrity, physical interactions.

THE FINE STRUCTURE OF THE SPECTRUM OF FLUCTUATION AMPLITUDES OF THE RESULTS OF MEASURING PROCESSES OF DIFFERENT NATURE AS A CHARACTERISTIC OF INHOMOGENEITIES (ANISOTROPY) OF SPACE-TIME

**S.E. Shnol, A.V. Kaminsky, I.A. Rubinshtein,
S.N. Shapovalov, D.P. Kharakoz**

Key words: Histograms, spectrum of fluctuation amplitudes, processes, synchronous changes, periodicity, collimators, Mach's principle.

SMIRNOV'S DETECTOR: DETECTION OF IMPACTS FROM REMOTE ASTROPHYSICAL OBJECTS

V.A. Panchelyuga

Key words: Smirnov's detector, directional pattern, spin of a top, astrophysical events, Solar system planets.

ON THE EFFECT OF COSMOPHYSICAL, GEOPHYSICAL AND RADIATION FACTORS ON THE ELECTROPHYSICAL AND BIOLOGICAL PROPERTIES OF WATER

V.V. Tsetlin, G.S. Fainshtein

Key words: Biosphere of the Earth, cosmophysical factors, electrical properties of water, diurnal and seasonal variations, metabolism, current oscillations.

VERTICAL CURRENTS IN ASTRO- AND GEOPHYSICS

B.U. Rodionov

Key words: Vertical currents, atmosphere, fammeter, Khoper effect, geomagnetic effects, earth fractures, solar flares.

FORECASTING OF HELIOGEOPHYSICAL PROCESSES ON THE BASIS OF ADVANCED NONLOCAL CORRELATIONS

S.M. Korotayev, V.O. Serdyuk, Yu.V. Gorokhov

Key words: Heliogeophysical processes, quantum nonlocality, advanced correlations, causality, Kozyrev's results, forecast algorithm.

THE STRUCTURE AND MECHANICAL PROPERTIES OF METALS AFTER TREATMENT OF THE MELT BY AN ELECTROMAGNETIC RADIATOR

V.F. Panov, S.A. Kurapov, A.Ye. Boyarshinov

Key words: EHV generator, properties of metals, antenna system, metal melts, new physical paradigm.

THE WORLD VIEW, A NEW PARADIGM, THE DISCOVERY OF THE SPIRIT OF THE MATTER

S.V. Zenin

Key words: Spirit of the matter, information system, memory of water, structure of water, nonlocal correlations, laws of being.

PHYSICAL ASPECTS OF ALTERNATIVE VISION

Yu.P. Pytyev

Key words: Alternative vision, extrasensory perception, magnets, wave processes, holographic perception, shut-eye vision.

SCIENCE AS METAMYSTICISM

B.U. Rodionov

Key words: Metamysticism, metaphysics, hyperphysics, axiology, noosphere, information model, human abilities.

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CONTENTS

FUNDAMENTAL PROBLEMS OF MODERN NATURAL SCIENCE

<i>Zakharov V.D.</i> How Quantum Mechanics “Explains” Consciousness (A Critique of the Multiworld Interpretation and Its “Expanded” Version)	3
<i>Bulyzhenkov I.E.</i> The Primacy of Consciousness for the Observed Illusion of Localizations of Nonlocal Matter	24
<i>Kulakov Yu.I., Ivanov V.Ya.</i> The Imprint of the Harmony of the Universe	29
<i>Aristov V.V.</i> Philosophical Problems of Space-Time Related to the Relational Statistical Concept	48

PHILOSOPHICAL ASPECTS OF SPECIFIC RESEARCH PROGRAMS

<i>Petukhov S.V.</i> Hypercomplex Numbers, Genetic Coding and Algebraic Biology.....	64
<i>Levin S.F.</i> Philosophical Problems and Statistical Methods of Fundamental Metrology	89
<i>Chechin L.M.</i> On the Way to Metaphysics or, “Physics, Don’t Be Afraid of Metaphysics!”	119

PHILOSOPHY OF NATURAL SCIENCE

<i>Katrechko S.L.</i> Modern Transcendentalism as a Theory of Human Experience (Knowledge)	130
<i>Yakovlev V.A.</i> Christian Principles and Metaphysical Foundations of Classical Science	150

THOUGHTS FROM THE PAST

<i>Chizhevsky A.L.</i> The Earth in the Embrace of the Sun	163
<i>Chizhevsky A.L.</i> Physical-Chemical Reactions as Indicators of Space Phenomena	168

OUR AUTHORS	175
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HOW QUANTUM MECHANICS “EXPLAINS” CONSCIOUSNESS (A CRITIQUE OF THE MULTIWORLD INTERPRETATION AND ITS “EXPANDED” VERSION)

V.D. Zakharov

The multiworld interpretation of Everett’s quantum mechanics in its modified version suggested by M. Mensky claims to explain the nature of human consciousness. The article shows the groundlessness and inconsistency of this explanation.

Key words: quantum concept of consciousness; dichotomy of consciousness; being; subject; thinking; man; subject knowledge; causality; quantum reality; falsifiability.

THE PRIMACY OF CONSCIOUSNESS FOR THE OBSERVED ILLUSION OF LOCALIZATIONS OF NONLOCAL MATTER

I.E. Bulyzhenkov

The main question of philosophy, the question of the relation between consciousness and matter, has a clear-cut answer in the metaphysics of nonempty material space, which is a nonlocal and indivisible Universe. As shown in the article, consciousness is primary for the seeming being of localized bodies (or the illusory matter inside an uninterrupted energy continuum), whereas nonlocal material fields are primary for the observer, consciousness and cognition (including comprehension of consciousness in the form of self-cognition).

Key words: consciousness, metaphysics, gravitation, observer, indivisible Universe, nonlocality of the world, Maxwell’s equations.

THE IMPRINT OF THE HARMONY OF THE UNIVERSE

Yu.I. Kulakov, V.Ya. Ivanov

Key words: harmony of the Universe, mythologem, crisis of physics, language of creation, discrete eidoi, boson octuplet, multiplets of chemical elements.

PHILOSOPHICAL PROBLEMS OF SPACE-TIME RELATED TO THE RELATIONAL STATISTICAL CONCEPT

V.V. Aristov

General theoretical physical and philosophical notions which can define space and time in a new way are examined. New ties within the relational statistical numbers-particles-space-time pattern are described. The philosophical foundations of the correspondence between mathematics and physics are discussed.

Key words: relational and statistical concepts, space-time, time, theory of relativity, relation, dimensionality of space-time.

HYPERCOMPLEX NUMBERS, GENETIC CODING AND ALGEBRAIC BIOLOGY

S.V. Petukhov

Hypercomplex numbers, the concept of which is one of the foundations of mathematics, turn out to be related to the genetic coding system and are used for including biology in the domain of developed mathematical natural science. The findings are presented of a study of a multilevel system of molecular genetic alphabets based on using matrix methods of the noise-immune coding theory. The algebraic properties of the system of molecular genetic alphabets common to all living organisms suggests a new, algebraic way of cognition of living matter and development of algebraic biology related to hypercomplex numbers. Living matter, which ensures transition of hereditary information down the chain of generations, represents itself as an information essence that is profoundly algebraic in its nature.

Key words: genetic alphabets, hypercomplex numbers, Rademacher functions, Walsh functions, Adamar matrices, cyclic groups, Punnett grids, algebraic biology.

PHILOSOPHICAL PROBLEMS AND STATISTICAL METHODS OF FUNDAMENTAL METROLOGY

S.F. Levin

Key words: fundamental metrology, measurements, unity of measurements, true value, measurement error, reference value, confidence interval.

ON THE WAY TO METAPHYSICS OR, “PHYSICS, DON’T BE AFRAID OF METAPHYSICS!”

L.M. Chechin

The problem of motion is one of the most important in the general theory of relativity. It has received a substantial development in Kazakhstan because N.M. Petrova and M.M. Abildin, direct disciples of Vladimir Fock, and a group of young theoretical physicists worked there. The author has been prompted to write this article by his informal acquaintance with YU.S. Vladimirov’s monographs and a number of his other books setting forth the problems of physical creation within the framework of a new paradigm of knowledge now taking shape.

Key words: history of theoretical physics, Kazakhstan, general theory of relativity, problem of motion, impact of dialectics, metaphysics, Abildin.

MODERN TRANSCENDENTALISM AS A THEORY OF HUMAN EXPERIENCE (KNOWLEDGE)

S.L. Katrechko

Transcendentalism is, above all, a theory of human experience which *meta-physics* (as Aristotle’s *first philosophy*) should be. Thus, in contrast to speculative idealistic interpretations of Kant’s transcendentalism of the Fichte-Schelling-Hegelian type, we adopt the Neo-Kantians’ slogan “Back to Kant!” which presupposes the development of *scientific metaphysics* aimed at apprehension of modern science (“physics”). The heuristic potential of transcendentalism has by far not been exhausted: it should be a methodological basis for apprehending modern post-non-classical science.

Key words: transcendentalism, metaphysics, categories, objective deduction, subjective deduction, pure thinking, construction of concepts.

CHRISTIAN PRINCIPLES AND METAPHYSICAL FOUNDATIONS OF CLASSICAL SCIENCE

V.A. Yakovlev

In modern culture every type of activity has its own social and ecological “niche.” Let us abstract away from the material sphere of culture related to the development of the productive forces of society—in the first place, technological means of production. Now let us single out religion and science, which are of interest to us, from the known historical forms of basic spiritual practices (formerly more often referred to as “forms of public consciousness”)—politics, law, religion, moral, art, and science. Each of them is determined by specific consciously constructed communications.

Key words: metaphysical foundations of science, Christian principles, ecology of cultural creativity, positivism, religion, spiritual experience.

THE EARTH IN THE EMBRACE OF THE SUN

A.L. Chizhevsky

In examining statistically the main points of the world historical process and then detailing our analysis, we have arrived at the conclusion about effect of solar processes on the behavior of human masses apparently determined by an energy mechanism. This conclusion in its turn has enabled us to include the world historical process among natural phenomena and treat it as a cosmic phenomenon.

Key words: Solar system, cosmic influence on the Earth, penetrating radiation, astrology, stellar formations.

PHYSICAL-CHEMICAL REACTIONS AS INDICATORS OF SPACE PHENOMENA

A.L. Chizhevsky

The idea that certain external influences, usually not taken into account, may affect the vital activities of the organism and even chemical or colloidal reactions is not new. However, never before have physicochemistry and biology provided such convincing proof of the existence of cosmic phenomena, previously “left out of account,” as in our times, which is the result of staging special laboratory experiments and accumulating vast statistical material.

Key words: cosmic phenomena, physical-chemical reactions, cyclical changes, influences on the structure of water, shielding, magnetic storms.

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CONTENTS

EDITORIAL NOTE	3
LINGUISTS ABOUT THE METAPHYSICAL PROBLEMS OF LANGUAGE LEARNING	
<i>Postovalova V.I.</i> The Idea of “Meta” in the Self-Consciousness of 20 th -21 st Century Culture	6
<i>Vladimirova T.Ye.</i> Metalinguistic Paradigm of Studying the Language Personality ...	26
<i>Sinyachkin V.P.</i> Universal Human Values: Ontological and Epistemic Aspects of Their Study	39
<i>Vendina T.I.</i> Russian Traditional Spiritual Culture: Heritage in Word	49
<i>Lomakina O.V.</i> On the Metalanguage of a Modern Dictionary of Proverbs	65
PHISICS ABOUT THE O METAPHYSICAL ASPECTS IN LITERATURE	
<i>Zakharov V.D.</i> Literature and Archetypes	74
<i>Poroikov S.Yu.</i> Archetypal Subjects of World Literature	98
PHILISOPHYCAL PROBLEMS IN HUMANITIES	
<i>Vizgin V.P.</i> Ontological Foundations of Michel Foucault’s Philosophy	109
<i>Neklessa A.I.</i> World Vision: Transition of the Methodology of Management and Organization of Social Knowledge in the Late 20 th -Early 21 st Centuries	121
INFORMATICS AND THE METAPHISICS OF LANGUAGE	
<i>Yevin I.A., Koblyakov A.A.</i> Complex Network Theory in Humanitarian Studies	129
Activities as justification of Informatics (Interview with A.A. Bers)	140
Informatics as a cultural phenomenon (Interview with A.G. Marscuk)	154
<i>Vekshenov S.A.</i> Metaphysical Language of Mathematics	161
FROM THE LEGACY OF THE PAST	
<i>René Thom.</i> Topology and Linguistics	180
OUR AUTHORS	203

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THE IDEA OF “META” IN THE SELF-CONSCIOUSNESS OF 20TH-21ST CENTURY CULTURE

V.I. Postovalova

Institute of Linguistics of the Russian Academy of Science

Based on an epistemological analysis of the idea of “meta” as a symbolic marker of the activity of self-consciousness, this article examines the specific features of reflexion in various spheres of culture and communicative practices at different levels of its realization—from formally semiotic to profoundly ontological and mystical.

Key words: self-consciousness, reflexive activity, metacultural space, metasphere, metalanguage, metadiscourse, metamodeling, metasyntesis.

METALINGUISTIC PARADIGM OF STUDYING THE LANGUAGE PERSONALITY

T.Ye. Vladimirova

Lomonosov Moscow University, Peoples’ Friendship University of Russia

This article focuses on the metalinguistic approach to the analysis of the language personality and the development of a cognitive model on the basis of the metaphysical principles of trinity and fractality.

Key words: metalinguistics, language personality, existential picture of being, model, triad.

UNIVERSAL HUMAN VALUES: ONTOLOGICAL AND EPISTEMIC ASPECTS OF THEIR STUDY

V.P. Sinyachkin

Peoples’ Friendship University of Russia

This article deals with the psycholinguistic and linguoculturological analysis of universal human values and the development on this basis of an anthropocentric paradigm of their study.

Key words: value, social and everyday consciousness, ontology, ethics, researcher’s epistemological stand.

RUSSIAN TRADITIONAL SPIRITUAL CULTURE: HERITAGE IN WORD

T.I. Vendina

Institute of Slavic Studies of the Russian Academy of Sciences

The article focuses on hermeneutic analysis of the language of Russian traditional spiritual culture. The author shows that, despite serious transformations determined by secularization of Russian culture, the chain of time has not fallen out of joint but has been preserved as a heritage in word.

Key words: Russian dialects, language picture of the world, cultural motivation.

ON THE METALANGUAGE OF A MODERN DICTIONARY OF PROVERBS

O.V. Lomakina

Moscow Institute of Foreign Languages

The article offers an analysis of various dictionaries of proverbs (paroemia). Examined in detail is the metalanguage of the modern dictionaries *Narodnaya mudrost* (Folk Wisdom) by V.M. Mokienko and T.G. Nikitina and *Bolshoi slovar russkikh poslovits* (Great Dictionary of Russian Proverbs) by V.M. Mokienko, T.G. Nikitina and E.K. Nikolaeva. The forthcoming publication is announced of *Slovar poslovits i pogovorok yazyka L.N. Tolstogo* (Dictionary of Proverbs and Sayings from L.N. Tolstoy's Language), and the structure of a dictionary entry is described.

Key words: dictionary, metalanguage, paroemiography, author's (writer's) lexicography.

LITERATURE AND ARCHETYPES

V.D. Zakharov

All-Russian Institute of Scientific and Technical Information (VINITI)

The role of Carl Gustav Jung's archetypes of the collective unconscious in the formation of the most vivid masterpieces of world literature is revealed. Literature based on archetypes is contrasted to "realistic literature" depicting psychological types and characters. The characteristic features of literature based on archetypes are illustrated with works by Pushkin, Lermontov, Lev Tolstoy, Goethe, and Dante.

Key words: archetype, symbols, mimesis, realism, prototype, psychology of dream, Muse, masks, Dante's third sphere, non-Euclidean geometries, theory of superstrings.

ARCHETYPAL SUBJECTS OF WORLD LITERATURE

S.Yu. Poroikov

Russian Philosophical Society of the Russian Academy of Sciences

The work presents an analysis of archetypal subjects of world literature. Using cycles of works by Alexander Pushkin and William Shakespeare by way of an example, the author shows that, on a philosophical/methodological level, archetypal subjects can be associated with philosophical categories and laws (relation between form and content, relation between part and whole, relation between cause and effect, transition from abstract to concrete, manifestation of the necessary through chance, negation of negation, etc.).

Key words: archetypal subjects, manifestation of the necessary, Alexander Pushkin, William Shakespeare, world literature.

ONTOLOGICAL FOUNDATIONS OF MICHEL FOUCAULT'S PHILOSOPHY

V.P. Vizgin

*Vavilov Institute of the History of Natural Sciences and Technology
of the Russian Academy of Sciences*

The article aims to reveal Michel Foucault's ontological attitudes. The author shows that there are two types of ontological consciousness behind the three periods of his creative work. Whereas the first two periods proceeded under the sign of Nietzschean naturalism combined with ontological postulates characteristic of quantum mechanics, the last period involved a change in ontological orientation from nature to history. Yet there remained a certain continuity of ontological consciousness. Chance, materiality and discreteness act as its invariants.

Key words: Michel Foucault, "archaeology of knowledge," "genealogy of power-knowledge," "school of suspicion," ontology of history.

WORLD VISION: TRANSITION OF THE METHODOLOGY OF MANAGEMENT AND ORGANIZATION OF SOCIAL KNOWLEDGE IN THE LATE 20TH-EARLY 21ST CENTURIES

A.I. Neklessa

*Institute of Economic Strategies
under the Social Sciences Section of the Russian Academy of Sciences,
Institute of Africa of the Russian Academy of Sciences,
Academy of Geopolitical Problems*

The epoch of modernity and its institutes are in the state of transition. The theater of planetary operations and the speed and scale of changes have predetermined the renovation of the methodology of cognition and action and of the entire system of knowledge organization. The methods of management of objects, subjects and events have undergone several revolutions over the last few decades. The apophatic world view and the synergic type of thinking may become the basis for a new generation of intellectual practices.

Key words: global transformation, metapolis, world of communities, socio-cultural gravitation, knowledge organization, methodology of management, pre-adaptation, self-organizing criticality, apophatic world view, synergy, hesychasm, nonclassical operator.

COMPLEX NETWORK THEORY IN HUMANITARIAN STUDIES

I.A. Yevin

*Moscow Institute of Physics and Technology
(State University)*

A.A. Koblyakov

Moscow State Conservatory

Many complex systems can be studied by regarding them as network structures formed by interaction of elements of these systems between themselves. The article presents possible approaches to applying the complex network theory in modeling the structure of certain works of literature, music and painting, and also ancient myths. The use of the theory of interconnected networks in models of musical and poetic works is discussed.

Key words: scale-free networks, interdependent networks, assortativity.

METAPHYSICAL LANGUAGE OF MATHEMATICS

S.A. Vekshenov

Russian Academy of Education

The article examines the metaphysical possibilities of the language of mathematics in the context of tendencies introduced by “linguistic philosophy.” The main emphasis is on the semantics of that language, which is related, in the first place, with the concept of the infinite. The interpretation of this concept in original texts by Georg Cantor, the creator of the theory of sets, is discussed. Using the continuum problem by way of an example, the expediency is substantiated of expanding the semantics of the mathematics language beyond the limits of the set theory.

Key words: language, syntax, semantics, infinity, set, continuum problem.

TOPOLOGY AND LINGUISTICS

René Thom

Translator’s Note

A work done at the junction of interests of two groups of scientists risks not being accepted by either: there occurs an almost biological rejection reaction. It would be regrettable if this happened to René Thom’s article offered to the reader’s attention. The publication of its Russian translation in a mathematics journal is formally justified by the author’s universally known scientific reputation, although it might well be published, for example, in the journal *Voprosy yazykoznaniiya* (Issues of Linguistics).

The main result of the work is neither a mathematical theorem nor a purely linguistic observation. It consists in establishing a somewhat concealed yet close structural parallelism between fragments of two languages—the “human” language of everyday life and the language of Newtonian mechanics in its extremely schematized and topologized version.

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CONTENTS

EDITORIAL NOTE	3
METAPHYSICAL ASPECTS OF TIME	
<i>Gaidenko P.P.</i> The Problem of Time in Isaac Newton	8
<i>Novikov Yu.Yu.</i> Time in Henri Bergson's Philosophy	21
<i>Bolokhov S.V.</i> On the Ontological Aspects of the Phenomenon of Time	29
<i>Levich A.P.</i> Substantial Time of Open Systems	50
METAPHYSICALLY- MATHEMATICAL ASPECTS OF TIME	
<i>Katasonov V.N.</i> The Achilles Heel of Modern European Science	74
<i>Kulakov Yu.I.</i> Mathematical Principles of Natural Science (Concerto for Two Pianos and Orchestra)	85
<i>Vizgin V.P.</i> Metaphysical Aspects of "Einstein's Arc"	108
<i>Polishchuk R.F.</i> The World as a Hierarchy of Moments	126
TIME IN COSMOLOGY	
<i>Sevalnikov A.Yu.</i> Time in Modern Quantum Cosmology	136
<i>Panov V.F., Rybalchenko V.A.</i> Problems of the Evolution of the Physical Form of Matter	150
TIME AND METAPHYSICAL ESSENCE OF LIFE	
<i>Yakovlev V.A.</i> The Experimental-Metaphysical Essence of the Problem of Life	157
<i>Solovyov N.A.</i> Quantum Mechanics of All-Unity	172
FROM THE LEGACY OF THE PAST	
<i>Pimenov R.I.</i> Differential Equations: to what Extent are they Justified?	181
OUR AUTHORS	197

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THE PROBLEM OF TIME IN ISAAC NEWTON

P.P. Gaidenko

Institute of Philosophy of the Russian Academy of Sciences

The article focuses on the philosophical foundations of Isaac Newton's physics, in particular, Newton's theory of absolute time indissolubly linked to the theory of absolute space as a divine sensorium. Newtonian mechanics, based on these philosophical and theological principles, determined the destiny of the scientific thought of the subsequent centuries. The adoption by Newton of two absolutes—space and time—made it possible for him to formulate his three fundamental laws of motion, just as his belief in an omnipresent and omniacting God enabled him simultaneously to overcome Boyle and Hooke's plain empiricism and Descartes' narrow rationalism, to renounce mechanical explanations, and to build his world as a system of forces for which natural philosophy was to establish mathematical laws.

Key words: absolute and relative time, duration, eternity, continuum, space, philosophy, natural science, classical, non-classical and post-non-classical types of rationality.

TIME IN HENRI BERGSON'S PHILOSOPHY

Yu.Yu. Novikov

*Noosphere Research and Development Institute
of the International Ecological Fund*

This article examines Henri Bergson's philosophical views on the problem of time. An analysis is given of his concept of time in the context of his contemporary philosophy, in particular, in his fundamental work *Creative Evolution*. Henri Bergson's role in the formation of the 20th-century general scientific paradigm and the significance of his ideas for the future are also disclosed.

Key words: Henri Bergson, time, duration, extent, space, consciousness, intuition, intellect, Albert Einstein, space-time continuum, Vladimir Vernadsky.

ON THE ONTOLOGICAL ASPECTS OF THE PHENOMENON OF TIME

S.V. Bolokhov

*Institute of Gravitation and Cosmology
of the Peoples' Friendship University of Russia*

The article attempts to analyze the ontological nature of the phenomenon of time proceeding from contemporary physical notions and considerations of a general philosophical character. We separately analyze the possibility of giving time the status of an objective phenomenon both in the aspect of formation and in the aspect of chronological ordering of events. In doing this, the relational and substantial interpretation of time is taken into account. Possible counterarguments are considered. On the whole, we arrive at a positive solution of the question of the objective status of time, only with a number of conventions and reservations conditioning the substantive physical content of the initial problem statement.

Key words: time, space, ontology, theory of relativity, relational theory.

SUBSTANTIAL TIME OF OPEN SYSTEMS

A.P. Levich

*Lomonosov Moscow State University,
Web-Institute for Time Nature Explorations*

The article sets forth the author's methodological views of the causes of difficulties in exploring time. A model of formation, or flow, of time is proposed. Physical, cosmological and biological examples are given of applying the model. Approaches to describing space, matter, motion, interactions, and the origin of quantum and cosmological features of the World are set forth.

Key words: time, space, motion, charges, interaction, substance, open systems, measurement of time and distances, establishment, flow of time, discreteness of time and space, time reversibility, irregularity in the course of time, space dimensionality, space expansion, corpuscular-wave dualism.

THE ACHILLES HEEL OF MODERN EUROPEAN SCIENCE

V.N. Katasonov

St. Tikhon's Orthodox University of the Humanities

The article discusses the question, fundamental for modern science, of applying mathematics to natural science. Ancient science solved this question mainly in the negative (except for applying mathematics to the "superlunary world"—in

mathematical astronomy). Modern times have abolished this ban imposed by ancient thought. The article analyzes Galileo's arguments related to this problem. An overview is also given of Husserl's criticism of Galileo's "science." The strategy of precision, which has established itself in modern European science, bears upon the question of legality of using the concept of actual infinity. It is shown that, paradoxically, it turns out to be impossible to remove craftsmen's skills from modern European mathematical natural science and related technologies.

Key words: mathematical natural science, Galileo Galilei, Edmund Husserl and his criticism of science, actual infinity, philosophy of technology, problem of measurement, ancient science.

MATHEMATICAL PRINCIPLES OF NATURAL SCIENCE (CONCERTO FOR TWO PIANOS AND ORCHESTRA)

Yu.I. Kulakov

Novosibirsk State University

In the middle of the 20th century, an attempt was made to separate mathematics and physics. The consequences proved to be catastrophic (see V.I. Arnold and S.P. Novikov). Mathematics and theoretical physics are in a deep crisis. Mathematics has to be built anew from the other end, in the image and likeness of physics, not from the theory of sets nor from the Peano axioms and the ZFC (Zermelo-Fraenkel set theory with axiom of choice) axioms but from a minimum number of abstract symbols—eidoi. The languages of mathematics and physics are only slightly different from each other. An alphabet and grammar common to both of them can be found. This makes it possible to describe physical reality in a language of abstract symbols. Fortunately, the alphabet of such a universal language is quite simple. It consists of two pairs of constant symbols and two types of continual symbols. This makes it possible to regard all physics and mathematics as consisting of a finite number of generations remarkably related to each other.

Key words: theory of physical structures, theory of sets, Bourbakization, Leibniz's monadology, crisis of mathematics, Hilbert's program, strogomania (mania for obtaining rigorous proofs), axiomophils, sinistrocerebral mathematicians, mythologem, courts' calculus, nucleus and alphabet of mathematics.

METAPHYSICAL ASPECTS OF “EINSTEIN’S ARC”

V.P. Vizgin

*Vavilov Institute of the History of Natural Sciences and Technology
of the Russian Academy of Sciences*

The exploration of the history of formation of fundamental theories in 19th-20th century physics makes it possible to identify certain general factors of a metaphysical nature influencing the process of transition from empirical facts to fundamental tenets of theory—a process which, according to Albert Einstein, is not logical. They include the mathematicity and teleologicity of the physical world (or “incomprehensible efficiencies” of mathematics and analytical mechanics in physics), some of the methodological principles of physics (such as the principles of symmetry, preservation, causality, correspondence, etc.), and also sometimes whole philosophical systems. In the latter case, it is the position of philosophical pluralism or philosophical opportunism which, according to Vladimir Vernadsky, Gaston Bachelard and Albert Einstein, should be recognized as effective for physicists.

Key words: “Einstein’s arc,” metaphysics, mathematicity and teleologicity of the physical world, methodological principles of physics, scientist’s philosophical opportunism, ontological foundations of theories.

THE WORLD AS A HIERARCHY OF MOMENTS

R.F. Polishchuk

Institute of Physics of the Russian Academy of Sciences

The article briefly presents a spectral approach to the scientific picture of the world as the one that has a single conceptual pivot of a multivarious reality. Viewing it as its own cause makes it unnecessary to look for extra-natural principles in nature. Man is viewed as a cosmic being born of cosmos according to the law of cosmos. The spiritual history of mankind is viewed as a single contradictory branching-off process. The author’s philosophical stance is protomonism as a kind of a “square root” of monism rather than duplication of principles in the spirit of dualism. Using vacuum and particle physics by way of an example, the limits of applicability of the concepts of space and time are shown. The joining of the modi of time and space of our world makes it possible to conceptualize it not only as a hierarchy of spatial structures but also as a hierarchy of moments the meaning of which lies in their conceptual indivisibility.

Key words: cosmos, light images, protomonism, theory of strings, theory of Einstein-Cartan, theory of singularities, modi of time and space, spectral approach to the world, synergetics, infinity, invariants of history, life.

TIME IN MODERN QUANTUM COSMOLOGY

A.Yu. Sevalnikov

Institute of Philosophy of the Russian Academy of Sciences

The article focuses on resolving the paradox of the absence of time in quantum cosmology. In describing the world as a whole from the point of view of quantum mechanics, the evolution of the Universe over time is absent. This paradox is resolved in a two-mode picture of being, where there exists potential and actual being. The flow of time is absent for potential being. It is stated that the “arrow of time” is related to the actualization of the potential, which is described by equations of quantum mechanics.

Key words: Universe, quantum mechanics, “arrow of time,” potential and actual being, time, eternity.

PROBLEMS OF THE EVOLUTION OF THE PHYSICAL FORM OF MATTER

V.F. Panov, V.A. Rybalchenko

Perm National Research Polytechnic University

The article analyzes the problem of cosmological singularity, the birth of the world “out of nothing,” and the role of dark matter. It has been found out that the evolutionary potential of the development of the Universe is reflected in the following laws: Einstein’s law on the relationship between mass and energy in the aspect of the development of the physical form of matter, the law of the physical vacuum, and the evolving gravitational field. It is shown that the evolutionary content of these laws manifests itself only provided they are included in the overall process of evolution of the Universe.

Key words: development, evolution of the Universe, physical form of matter, uniform natural world process, cosmology, singularity, vacuum, phase transitions, dark matter.

THE EXPERIMENTAL-METAPHYSICAL ESSENCE OF THE PROBLEM OF LIFE

V.A. Yakovlev

Lomonosov Moscow State University

The article analyzes the problem of the origin and essence of life in the light of modern achievements in physics and biology. Such metaphysical principles as

the principles of synergy and the self-organization of nature (Ilya Prigogine, Hermann Haken) are revealed. The metaphysical status of the principles of invariance and cyclicity in science is disclosed. A critical view is presented on the modern reductionist approach which reduces the properties of living organisms to characteristics of inorganic substance. A new status of the problem of life as an experimental-metaphysical problem is noted.

Key words: metaphysics, physics, biology, life, invariance, cyclicity, synergetics, reduction, self-organization.

QUANTUM MECHANICS OF ALL-UNITY

N.A. Solovyov

The article presents a metaphysical model describing the relationships between the tripartite Absolute and the creature's otherness. It is shown that the solution of the antinomy between determinism and freedom for a creature's essence is possible on the basis of a quantum description of the Universe combining the determinism of the Schroedinger equation and the multivariance of the world of potential possibilities for quantum objects (subjects).

Key words: metaphysics, Absolute, tripartiteness, otherness, freedom, determinism, world of potential possibilities, logos, energy, Ego.