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Русское Физическое Общество
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DIALECTICAL VIEW OF THE WORLD

The Wave Model (Selected Lectures)

George P. Shpenkov (Poland, Bielsko-Biala)

Volume 1

Philosophical and Mathematical Background 2013

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PREFACE

For more than one hundred years, the Standard Model (SM) dominated for a long time in physics did not move forward humankind to more or less profound understanding the nature and structure of matter – elementary particles and objects composed of them. Accordingly, a real mechanism of many observable physical phenomena involving particles was and is, as before, a big mystery for physicists. Why such a situation has been occurred? From our point of view, fully formed during the long run work, the SM suffers from a primordial deficiency, disability. What do we mean concretely under the last words?

The comprehensive analysis that we have conducted has shown that the principal reason of a resulting disadvantageous situation gradually formed in physics, based during the last century on theories of the SM, is an **erroneous theoretical physics paradigm** lying in the foundation of these theories. The word **paradigm** can be defined as an intellectual perception or view, accepted by an individual or a society, as a system of basic views, concepts that are used for creating models, or patterns to explain of how things work in the world.

The accepted paradigm dominated in modern physics is based on the formal logic, although it is known that the latter is in essence the logic of limited possibilities. It rests also on numerous abstract and abstract-mathematical postulates – speculative assumptions. The use of abstract (unreal, mythic) postulates, unfortunately, has become a main, routine, method in creation of modern physics theories. Consequently, we must recognize that for these reasons cognition of Nature in the framework of the SM is absolutely impossible. Being guided by common sense, worrying about the future of physics, we must boldly and openly talk about it.

This is why modern physics still does not know answers to such fundamental questions as: what is the charge, what is the origin of mass, what is the nature of gravitation, what is the physical meaning of the speed of light c in the mass-energy equation $E_0 = m_0 c^2$, what is the physical meaning of the fine-structure constant α , etc. Modern physics erroneously interprets the meaning of polar-azimuthal functions in Schrodinger's equation, ascribing these functions to atomic "*electron orbitals*". Modern physics is unable to derive theoretically relative

atomic masses of isotopes, magnetic moments of a neutron and a proton, to build a unified field theory, etc.

The listed above is quite sufficient in order to look at the state of theoretical physics by sober eyes and to understand the powerlessness of the Standard Model. We stress again, one of the main reasons of lameness of theoretical physics, as was mentioned above, is very simple, it is the erroneous abstract-mathematical paradigm underlying in its base.

We have come to revealing the aforementioned basic fault of the foundation of physics, due to our long-continued work experience, independent research and teaching physics in different university departments, including the philosophical department. The distressing conclusion to which we unambiguously have arrived turned out to be an extremely serious, although apparently simple, in principle diagnosis of a chronic disease, to put it in medical terms. It must be clearly understandable by everyone who begins to study the subject of the present Lectures.

Just fundamental inability of the Standard Model to comprehend Nature, to solve on its basis the real problems of physics, has led to a situation when the abstract mathematical approach, based on inventing the processes and phenomena non-existent in Nature, was brought to the point of absurdity. In so doing, the main aim of modern physicists-theorists, gradually deviating from the main – the cognition of Nature, has become the competition for the invention of more and more mythical scenarios and events, and virtuosity of their mathematical description.

This is why the most of the scenarios proposed in the last time does not relate to basic fundamental problems of physics (mentioned above). They are devoted mainly on to explaining the phenomena of the cosmic scale, where unlimited room for speculations (fictions) and which cannot be, generally, subjected to a direct experimental verification. The bright example of such a fiction, widely known for all, is a mythic hypothesis about the Big Bang of a “singularity” considering in physics as a phenomenon allegedly happened in the past that gave rise to the birth of the Universe. Another (initial, classical) example from a series of the abstract conceptions (which is unknown for wide public, including many physicists) is an invention of mythic virtual particles that led to the highest degree of absurdity the derivation of the anomalous magnetic moment of an electron in quantum electrodynamics

(QED) (see (<http://shpenkov.janmax.com/Virtual Particles.pdf>)). We will consider this interesting question in detail in one of the Lectures.

Thus, we are aware that the actual situation in theoretical physics is characterized as critical. Therefore, the greatest challenge facing physicists today is to find an exit from a deadlock to which modern physics has come with its numerous unsolved and unsolvable in principle fundamental problems. There is an exceptional need in alternative theories that could take it out of the depression.

We believe that there is the only one truly right exit from this unfavourable state: it is to change completely philosophical basis of theoretical physics. Namely one needs to replace an existing abstract-mathematical paradigm in physics with a new paradigm adequately reflecting reality, and on this new basis to develop truly physical theories in opposition to virtual theories of modern physics.

Unfortunately, not many understand the necessity, or do not want for some reason, to act just in such a cardinal way. We have gone this way and have obtained results, considered in these Lectures, which turned out to be very interesting and impressive, very promising. Last two decades we devoted to an appropriate presentation of the results and, in particular, to the description of a new approach, that we have accepted and developed, making stress on how we revealed on its basis a series of unresolved problems accumulated in physics.

A new physics paradigm that we have accepted and follow in all our works is based on:

(1) Dialectical philosophy and dialectical logic.

(2) The postulate on the *wave nature* of all phenomena and objects in the Universe.

Following the postulate, which is single and real, the wave structure of matter-space is described by well-developed methods of classical wave physics, in particular, by the general wave equation

$$\Delta\hat{\Psi} - \frac{1}{c^2} \frac{\partial^2 \hat{\Psi}}{\partial t^2} = 0$$

This equation contains information about both the spherical and cylindrical components of the field of matter-space at all levels of the Universe.

The new physics paradigm, adequate to reality, and solutions of the wave equation led to the dialectical Wave Model (WM) that includes:

- 1) Dynamic Model (DM) of elementary particles, and
- 2) Shell-Nodal Model (SNM) of atoms.

Thus, basing on our long experience, we have come to the conclusion that the current theoretical physics paradigm is erroneous and, therefore, must be changed. Accepting the dialectical view on the world, we gradually arrived at the dialectical Wave Model physical in essence, which we regard as an alternative to the abstract-mathematical Standard Model.

The present book of Selected Lectures considers in detail the novel ideas inherent in the WM. Along with a fair criticism of modern theories, for all issues addressed in the Lectures, clear noncontradictory solutions are presented.

All Lectures are based on the present author's works (up to 2002 in co-author with L. Kreidik) appeared in the last two decades mainly in non-conservative physical journals which accept the well-grounded new ideas laying beyond mainstream theories and devoted to fundamental questions in physics.

I should stress finally that in the literature on physics there is not a constructive analysis of fundamental problems of physics presented in such a manner as it is done in these Lectures. Distinguishing features of the Lectures are the breadth of issues covered by the constructive analysis, its complexity and comprehensiveness. For this reason, the book of Selected Lectures can be useful for all physicists, theorists and experimentalists, specialized in different branches of physics.

George P. Shpenkov
Bielsko-Biala, 2013

Lecture 1

A General Review

Modern technologies are based mostly on a very primitive principle – burning of the mineral raw material such as mineral oil, gas, and coal, and using of radioactive materials. In this connection ecological situation in the World day by day changes for the worse. For this reason humanity rolls gradually up to precipice.

Of course, such a fully formed adverse trend cannot last eternally; one needs to do something in order to change cardinally this situation. Naturally, we must lay our hopes on fundamental sciences, in particular, and first of all, physics. Indeed, physicists by vocation must be directly engaged in this problem. We have the right to wait from them real discoveries of unknown earlier regularities in Nature, which would be applicable for engineering elaborations of new effective sources of energy, environmentally friendly and useful in a wide industrial scale.

However, why do physicists are still so powerless and, especially for the last century, have no substantial advances in the more profound cognition of Nature? Why do, for example, they for a long time and up till now know nothing about the nature of mass and charge of elementary particles. As a consequence, they do know nothing about the nature of gravitation and gravitational interaction conditioned by an existence of mass, which is an integral property of matter. Accordingly, mankind does not know an answer to the question, what are the fundamental parameters of gravitational fields of elementary particles and, hence, all material objects in the Universe consisting of these particles?

From our point of view, the objective reasons of an unsatisfactory and relatively low level of cognition of Nature by modern theoretical physics are the following. Primarily, physics, as the science about fundamental regularities in Nature, makes its first steps on the Earth. It is no wonder; fundamentals of classical mechanics were generalized and formulated by Sir Isaac Newton in 1687. We can regard, conditionally, that year as the year of beginning of contemporary physics; the 325 years have only passed from that time. Hundred years later (1785 - 1789) essential principles of electricity, as the science, were established by Coulomb. From school times almost everybody knows Newton's laws of motion and universal gravitation and Coulomb's law of interaction between two point charges. What does the period of time in cosmic time scale take up 325 years? In other words, what are the 325 revolutions around the Sun in comparison with the 454×10^7 revolutions during an existence of the Earth (4.54 billion years)? It is less than the twinkling of an eye in cosmic scale.

On the other hand, as it turned out, physicists from the beginning of the 20th century have chosen an erroneous way for their research. It was their fundamental fault; we will explain, why. This way is characterized by creating abstract and abstract-mathematical models and theories, which, by definition as abstract, have no relation to reality, they

do not reflect it. Such a way was/is chosen mainly owing to inability of physicists to finding immediately truly right solutions and due to their desire to describe experimental facts promptly at any cost without hard efforts and spending less time therewith. As a result, cognition of Nature has become entirely impossible. From that time theoretical physics, in fact, makes no headway. Thus, unfortunately, modern physics is not developing in the right direction, gradually degrades, and nowadays, in fact, it turned into the virtual physics.

Really, nothing has changed from Newton's and Coulomb's times in contemporary physics for understanding the nature of such primordial fundamental notions as mass and electric charge. This holds back the development not only physics but also related sciences, and, consequently, slows down technological progress. At the same time, mass media do not pay attention on the explicit flaws of physics; and, on the contrary, following opinions of the so-called "credible" "leading" physicists, they blow around fictitious "advances" in physics. Quantum mechanics (QM) is a bright example of such an "inflatable bubble".

Remember, at the turning point of centuries the aforesaid scientists, via mass media, have raised the propagandistic noise by announcing QM as the most outstanding theory of physics for the past 20th century. This was made in spite of the fact, very well-known to that time for many, that QM is, actually, the most primitive abstract-mathematical theory based on erroneous concepts and characterized by blunders in principle and absurd contradictions [1, 2]. For this reason, in particular, QM is unable to clear out and, hence, explain the origin of mass and the nature of electric charge. The QM "theory" suffers a series of other shortcomings.

Mass and electric charge are primordial fundamental properties of matter (elementary particles). However, up till now contemporary physics is unable to explain what mass is, defining it as the measure of inertia of bodies because of their property to resist changes in the speed, i.e., acceleration. And what is electric charge? Answers to these (and other not mentioned here) questions are impossible to find, in principle, in the framework of the SM.

Why do we speak first of all about these two aforementioned fundamental notions, mass and charge? The matter is that understanding just their nature is the main clue for understanding other mysteries of Nature directly related to these notions. In particular, as was said above, knowledge of the nature of mass and charge can clear up a mystery of the phenomenon of gravitational interaction of bodies. It is important

because with understanding the origin of gravitation we will know the ways to influence on gravitation and, hence, to control of it. And as was mentioned above, this will open the doors for the development of ecologically clean power engineering, undoubtedly, realizable on the basis of the knowledge.

Gravitation (or gravity) was the first from the four fundamental interactions, distinguished currently in physics, which became the subject of scientific investigation by man. Perception of gravitation was always indissoluble related with the Earth, and later on it was realized that gravitation acts between all bodies and particles in the Universe. An important peculiarity of gravitation is its universality. Every particle in the Universe is a source of the gravitational field by which it interacts with other particles. However, an existence of gravity fields of the particles does not follow from the modern theories of the Standard Model (SM), explicitly indicating thus onto an inconformity of the SM to reality.

We know that gravitational interactions between particles, at least in scale of our galaxy, proceeds in one direction – towards mutual attraction of the particles. The amazing feature of the phenomenon of gravitation is its extremely low intensity with respect to the perceptible interaction of electrically charged bodies. Gravitational attraction of one individual elementary particle to another one (e.g., an electron and a proton) is slightly low. Gravitational interaction between man and common surrounding macro-objects on the Earth is practically imperceptible.

The well-known classical and modern physics descriptions of the phenomena having relation to gravitation are presented in a large amount of textbooks and monographs. We will not consider them because we are interested mainly in the nature of gravitation, in internal mechanism of its origin, which is not discussed in official literature on physics due to the lack of at least some sort of acceptable idea.

The nature of gravitation is regarded in modern physics as a highly complex problem. Why? As was said above, the problem is in inability of relevant theories of the SM, as being abstract and abstract-mathematical in essence, to solve the problem in principle. Physicists must realize that we should comprehend nature but not only to describe experimental facts, all the more so by inventing nonexistent properties and adjusting them, as it is going on now, in the framework of abstract phenomenological (adjusted) theories. Modern theories of gravitation are the general relativity and a still developing theory of quantum

gravitation. For resolution of the gravitation problem it is necessary to turn from a pure abstract (geometrical) theory of gravity, which is the general relativity, dominated currently in physics, to the development of purely physical theories, reflecting as close as possible the real Nature.

Being abstract-mathematical, the SM “does not see” in principle the gravitational field, unquestionable inherent in atoms and their constituents – elementary particles, because it does not know the nature of their mass and electric charge. This means that SM does not know, in general, the true nature and structure of elementary particles. The SM just attempts to describe behavior of particles; i.e., it focuses on answering questions of ‘how’; but it encounters difficulties when questions of ‘why’ or ‘what’ arise. Therefore the nature of mass and charge of elementary particles is still one of the unsolved mysteries in physics, just like the relation of bare elementary particles with an ambient field-space, etc. To the point, following the as-yet unquestioned modern nuclear atomic model, it is accepted to consider dimensions of elementary particles as not exceeding the size of atomic nuclei. We have arguments to doubt whether this is true; this question will be also discussed in the Lectures.

There are many attempts to construct new theories in order to pull out theoretical physics from a deadlock, in which it turned out to be today. However, the overwhelming majority of efforts in this field are directed mainly on to slight changes of existing theories improving some of their fragments, actually, on to patching holes in old clothes leaving an existent basis of these theories untouched.

Despite not knowing primordial features of matter, physicists, continuing the development of the abstract SM, including an abstract quantum-mechanical model of atoms, are trying to invent the models of more complicated systems such, for example, as the Big Bang model of the origin of the Universe. However, in the course of time, many began to realize that widely-accepted basic concepts of physics are doubtful and they notice that:

“...The ideas that were put in place by our intellectual ancestors in the early 1900’s are insufficient to deal with the deep issues that are now being explored. The neat and tidy view of the 1970’s has given way to confusing collections of paradoxes, puzzles, enigmas, and contradictions...” [3].

The above comment refers mainly to the problems of elementary particles, gravity, and relativity. Widely recognized as well that the SM

“will not be the final theory” and “any efforts should be undertaken to find hints for new physics” [4].

We see that physicists-theorists very well know lacks of the SM, but, unfortunately, they are unable to replace the model. Knowing that accepted ideas concerning fundamentals of physics are poor, but unknowing better ways, the overwhelming majority of physicists continue their studies in a traditional way, creating more and more complicated abstract theories based on sophisticated mathematics. They continuously seek new ways just for the improvement of the SM.

Thus, official physics prefers a renewal of SM keeping the conceptual basis of the model untouched. In particular, it rests hopes upon String Models of Elementary Particles and their derivatives, membrane models, etc. Principal difference of the String Model with respect to the SM is only in the fact that elementary particles in String Models are considered as dimension micro objects – very small strings (less in size than atomic nuclei) – but not as pointlike objects.

The total set of oscillatory modes of the strings must describe, as believed by their creators and adherents, a whole variety of elementary particles and their interactions, including gravitational. A complicated mathematical tool is used with this objective because the strings are 10- and 11-dimensional formations. Unfortunately, String Models, being yet more complicated than the abstract-mathematical SM, do not reflect the real image of elementary particles, tending to describe only their behavior. Physicists-theorists, as for example, David Jonathan Gross, 2004 Nobel Laureate in Physics, recognize the indicated peculiarity and shortcomings of String Models.

A generalized String Model is very far from its final form; if only it will be build completely ever. And what is the most important:

String Models do not solve the fundamental problem of physics which is the origin of mass. Hence, as before, along with the mass, the nature of charges and gravitation will remain to be the great mystery for strings physicists-theorists.

Therefore, the choice of String Models is unsuccessful, rather erroneous; such models have no perspective. Accordingly, we assume that there is no sense to continue efforts and spend time on their further development.

Ignorance of the nature of gravitation and, hence, inability to exert influence upon gravitational parameters of objects by changing intensity of their gravitational fields in value and direction in order to

control gravitation does not make possible till now to use a huge energy of gravity for the benefit of mankind.

Thus, the following questions concerning gravitation remain to be open till now, unreciprocated in modern physics:

(1) What is the nature of gravitational fields?

(2) Is possible or not in principle to control gravitational fields of material objects?

We have convincing arguments to state now that we know answers to the above questions. Accordingly, yes, it is possible in principle to control gravitational fields of material objects. Based on what such confidence? The matter is that we, most probably, in the framework of the dialectical approach, considered in these Lectures, found out the solution to the key problems of physics: we got to know the origin of mass and the nature of electric charges.

As an alternative to the modern abstract-mathematical trend in physics we propose a new in principle approach that we have accepted and use in all our works. It is based on a new philosophical basis, namely, on dialectics (dialectical philosophy and dialectical logic) and only one postulate – real and unquestioned – the postulate on the wave nature of all objects and phenomena in Nature. The philosophical basis that we propose is opposed to that one based on the formal logic and numerous abstract postulates laying in the foundation of modern physics. Just the new approach led us to uncovering the nature of mass and charges (electric, gravitational, and magnetic) of elementary particles and to other important discoveries related to the above enumerated.

The results of corresponding studies, carried out on the new philosophical basis, which led to a series of the discoveries, were published in the course of last two decades and, therefore, they are not yet widely known for a scientific community. A relatively short time has passed after first publications in order to new results would be acknowledged, noticed and accepted by majority of scientists, and because of natural conservatism inherent in science. The first information about the dialectical view on physics has appeared in 1996 in the book “Alternative Picture of the World” by L. G. Kreidik (1931-2002) and G. P. Shpenkov.

In these Lectures, basing on fundamental concepts of dialectical physics, we will gradually reveal all stages on the way to the discovery of the nature of mass and charge. We will show also how we have arrived, in particular, at the discovery of the wave nature of gravitation,

and at the discovery of the fundamental frequency of gravitational wave field of elementary particles, and so on. In the framework of the dialectical physics approach and on the basis of the aforesaid discoveries of new fundamental parameters, a unified description of fundamental interactions (gravitational, electromagnetic, and strong) became at last possible. It should be especially noted that this breakthrough has been made for the first time in physics, and this achievement will also be considered here.

So just due to the dialectical approach, realized in the dialectical Wave Model (WM), it made possible to untie a series of the fundamental problems, insoluble in modern physics. The mass-charge problem is one of them. In essence, it is the problem on the structure of elementary particles. A concept on the wave dynamic structure of elementary particles, realized in the wave Dynamic Model, turned out to be fruitful and perspective. The DM became the key for untie many problems. It was revealed the nature of both mass and electric charge of the particles, and was made the discovery of the wave nature of gravitation and defined therewith the fundamental frequency of gravitational fields. To the following key discoveries associated with the DM, we should mention the shell-nodal structure of atoms and an order of the disposition of nucleons in them, and also the first theoretical derivation of relative masses of all atomic isotopes.

It should be also especially noted that in the framework of the DM it became clear the reason of the dependence of rest energy of particles E_0 on the speed of light c explicitly expressed in the famous formula

$$E_0 = m_0 c^2$$

Lectures of Vol. 1 are devoted to consideration of philosophical and mathematical aspects of a new approach that we have accepted. We call the latter dialectical, as it reflects the philosophical dialectical view on cognition of Nature.

Thus, as is repeatedly stressed, the specific feature of a new approach is its rest on dialectical philosophy and dialectical logic (dialectics). What is an essence of the dialectical approach in comparison with formal logical, accepted in modern physics, is considered in Lecture 2 – the next one after this introductory. We elucidate there the major concepts of the dialectical approach that led to understanding the nature of mentioned above notions. This Lecture begins from considering the laws of “right thinking” of the formal logic

showing their limited possibilities. We mean the laws of identity, noncontradiction, and excluded third. The postulates of dialectical logic: existence, dialectical contradictoriness of evolution, and affirmation-negation are considered in detail in their comparison with the formal logic as an inevitable, proper alternative to the latter.

Lecture 3 is devoted entirely to an analysis of an advantage of the dialectical logic on a concrete example. Namely, in view of the two logics, formal and dialectical, the notions of the “real” and “imaginary” points are considered in their direct comparison. The difference between mono judgments of formal logic and poly judgments of dialectical logic is demonstrated with this example in all details.

The conjugate parameters of dialectical physics: displacement, speed, acceleration, state, charge, current, momentum, force, and energy, are presented in Lecture 4. The physical meaning of “imaginary” parameters is revealed thereupon. Unfortunately, the lack in contemporary physics of a philosophical (dialectical) understanding of the physical meaning of “imaginary” numbers and their relation to “real” numbers, appeared at the description of physical processes by the field of complex numbers, has led to the development of abstract-mathematical quantum mechanical (QM) theory, which turned out (that follows from our analysis) to be erroneous and inadequate to reality.

The dialectical field of binary numbers, basically different from an existent field of numbers, is considered in Lecture 5. Every of two constituents of dialectical binumbers are obeying to one of the two algebras of signs.

A subject of Lecture 6 concerns an important discovery made at an analysis of the dialectical field of binumbers. Namely, the fundamental period-quantum of dialectical binary numbers, which in essence is the period-quantum of the Decimal Code of the Universe, was found. This is a regularity of the Universal scale unknown to modern physics. It relates to an ideal side of the Universe, and is a fundamental parameter of the material-ideal numerical field. The value of the fundamental period-quantum of an ideal field of the Decimal Numerical Base and its influence on the metrology of nations are shown here. A relation of the fundamental period-quantum to the fundamental physical constants one can found in References at the end of this lecture.

Relativity of the notions “real” and “imaginary”, the principle of complementability of the notions, further revealing the meaning of the imaginary unit i are considered in Lecture 7.

The dialectical field of binary numbers is an integral part of Dialectical Physics. The necessity to use the more general field of numbers, which is the binary numbers of dialectics, naturally follows from the data discussed in the Lectures. After revealing the meaning of the imaginary unit and imaginary constituents in complex numbers used in modern mathematics, we have come to the conclusion that it makes sense to replace complex numbers with the dialectical binumbers, in which there are no imaginary terms.

A bipolar character of physical processes, biparameters of oscillations, bipolarity of the wave function, in particular, the symmetry and quasiperiodicity of the shell-nodal structure of atoms are considered in Lecture 8.

The dialectical concept of time is considered in Lecture 9. The notions of the ideal and the real times introduced in dialectical physics are analyzed. The ideal time is an absolute mathematical commonly used time (or reference time). The real times of natural processes are physical times. The wave equation of the time field-space is analyzed. It is shown that this equation reflects the universal law of dialectics $\bar{\bar{A}}$ the law of negation of negation, or double negation.

Collected together all particular axioms of the Wave Model, based on: (1) dialectics and (2) a postulate on the wave nature of all phenomena and objects in the Universe, are presented in is the last Lecture 10 of Vol. 1. The development of Dialectical Physics would be impossible without these axioms, because they constitute the basis of the Wave Model, including the Dynamic Model of elementary particles and the Shell-Nodal Model of atoms, resulted in a series of the aforementioned key discoveries.

Vol. 2 of the Lecturers is entirely devoted to the Dynamic Model of elementary particles developed on the basis of the concepts described in previous Lectures of Vol. 1. The DM is the unique theory existed today, which uncovers the origin of mass and the nature of electric charge of elementary particles. This model was developed by the authors of a book „Alternative Picture of the World” (1996) and described for the first time there. Further, different particular aspects of the model were discussed separately in a series of the relevant papers of the authors. We advise readers to pay attention to one of them entitled “Dynamic Model of Elementary Particles and the Nature of Mass and ‘Electric’ Charge” published in 2001 and continuously available online [6].

An unexpected and conceptually new way in resolution of fundamental problems of physics, simplicity and clearness of the DM has confused at once physicists who have familiarized for the first time with the theory. It should be stressed that the DM cannot be regarded as one of the many casual inventions or a product of authors' imagination. The basis of its creation rests on a new paradigm, which takes into account thousand-year unquestioned achievements of the world philosophical thought, concentrated in dialectical philosophy and dialectical logic [7].

The wave Shell-Nodal Model of atoms is considered in Lectures of Vol. 3. They begin from a thorough analysis of quantum mechanical concepts. Important results of analyzing foundations of quantum mechanics (QM), in particular, Schrödinger's equation, regarding in QM as its major postulate, are considered in detail. Just a comprehensive analysis of the QM described in detail here has prompted us to reconsider the whole foundation of physics. All the flaws of the QM, convincingly revealed to present time, led us to the conclusion on necessity to replace entirely an existing paradigm in physics as based mostly on the Aristotelian formal logic of limited possibilities and on abstract (fictitious) postulates.

Erroneous "solutions" of Schrödinger's equation (in fact they are the wishful thinking) led founders of the QM to an introduction of the conceptually unfounded notion of hybridization of "atomic orbitals", comprising of mixing the qualitatively different ("real" and "imaginary") polar-azimuth functions. Unfortunately, the concept of hybridization taken as a basis in chemistry has initiated the development of modern quantum chemistry. We stress again that the hybridization is solely a mathematical operation of a physically unrealizable mixing of qualitatively opposite physical properties. We assume that it goes without saying; unreasonable theories built on the basis of erroneous concepts might not be accepted. Astoundingly, but why this did not understand creators of the QM in that time and do not understand their following up till now?

Subsequent Lectures that we intend to present in Vol. 4 and 5 will contain additional convincing proofs of the efficiency of dialectical approach resulted in the following not mentioned in Vol. 1-3, important discoveries. In particular, an advantage of the dialectical WM in comparison with the SM is demonstrated by uncovering the real nature of cosmic microwave background (CMB) radiation, regarded in modern physics as "relict radiation" left after the Big Bang. We will show that

hydrogen atoms, but not the mystic Big Bang, are responsible for the CMB radiations, being its source. The true nature of the Lamb shift phenomenon is revealed therewith. The so-called “anomaly” of the magnetic moment of the electron derived for the first time with a great precision beyond QED will also be considered there.

Physics is ripe for change and unambiguously needs in new paradigm for its basis. There is a pressing need to act immediately. The material contained in the Lectures responds to this objective. The comparative analysis of the modern Standard Model and the dialectical Wave Model, conducted in the Lectures at the consideration of different phenomena, justifies in favor of the undeniable advantage of the WM [8]. The complete replacement of an existing philosophical basis of modern physics upon the whole has turned out to be very effective. It cardinaly changes situation in physics.

On the basis of the above described revelations and all other results obtained to now in a chosen direction, we can speak about a creation of the Dialectical Physics with its generalized theory of matter-space-time – the Wave Model. We regard this theory as an alternative to the Standard Model of modern physics [8, 9]. In the capacity of a textbook on Dialectical Physics, we can recommend the Ref. [9] as it contains the most complete material revealing in detail all the issues being considered in the Lectures.

The subjection of basic parameters of physical systems to general principles of dialectics evidences about their completeness. However, not many know what dialectics is and how its concepts are related to physics. For this reason we begin our Lectures (after this introduction) from consideration of the aforementioned new philosophical background suggested for physics, i.e., from dialectics. We will elucidate the basic concepts of dialectical logic in the light of their application to physics. This material, the subject of Lecture 2, represents an extremely brief review on dialectics intended for physicists. Therefore please do not be surprised if it is considered so concisely in the Lecture.

These basics, like alphabet, are highly necessary for understanding the essence and advantage of the dialectical approach. Especially it makes sense since most physicists are not familiar with philosophy and logic, in general, and with dialectical philosophy and dialectical logic, in particular. As uniquely capable to change in a cardinal way the unfavourable state in modern physics (fully-formed because of fundamentally doubtful concepts accumulated with time), the dialectical approach, we hope, will be unquestionably accepted by all

scientific community. The only one question remains to be open, how soon will this happen?

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