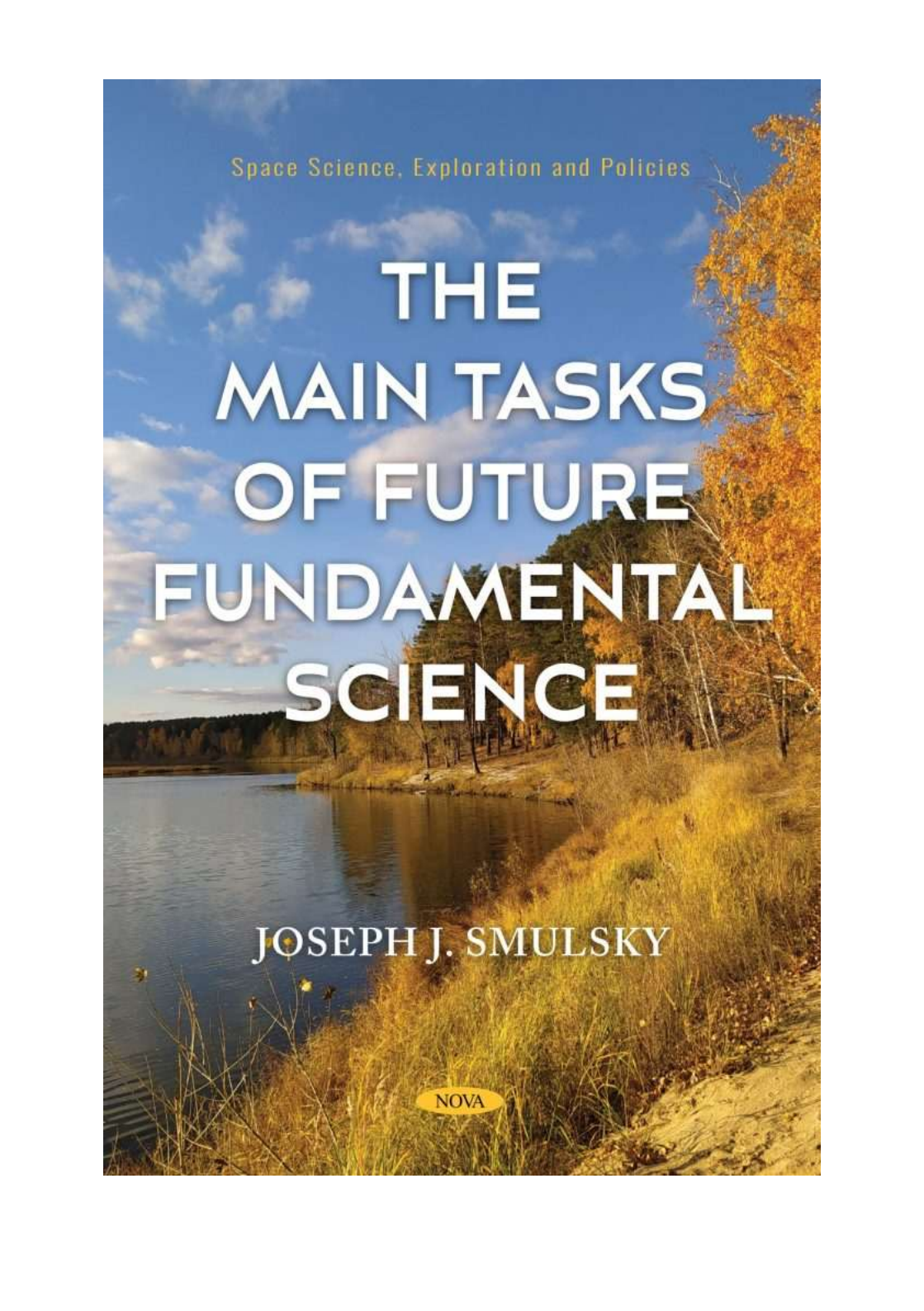




Space Science, Exploration and Policies

THE MAIN TASKS OF FUTURE FUNDAMENTAL SCIENCE

JOSEPH J. SMULSKY

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The Main Tasks of Future Fundamental Science



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Joseph J. Smulsky

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Selected fragments of the book draft



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Foreword

The book is impressive and does not leave the reader indifferent. The chapter “Fundamentals of Mechanics” provides some very important definitions. The author’s non-hypothesis approach outlined in the chapters on the gravitational and electromagnetic interactions has greatly amazed me as a graduate of Moscow Physico-Engineering Institute with the uncompromising nature of conclusions. In the chapter “Pathways of Social Development” everything is written in a correct and emotional manner. I fully support the author. In general, I believe that the book will be very useful to the reader. The author clearly deserves high praise as a versatile and profound erudite, a true scientist, and a caring citizen.

Vladislav G. Polnikov
D.Sc. in Physics and Mathematics
Leading scientist
Institute of Atmospheric Physics,
Russian Academy of Sciences
Moscow, Russia

Professor Smulsky advocates the removal of hypotheses from modern science and stands for the return to determinism in mechanics and electrodynamics. I very much appreciate this approach as an important step towards overcoming metaphysical speculations and achieving progress. The book provides examples of how this goal can be achieved and describes the benefits that will result.

Walter Babin
Independent researcher,
Founder of the General Science Journal,
Canada

The cultural and material development of mankind is based on ideas that have arisen due to the brainpower of individuals and have penetrated into the consciousness of societies. In this historical process and, especially, under modern conditions, it is important to hear those who try to disagree with the mainstream science (scientific dissidents), who are able to see the weaknesses of their time and propose new paths. The author of this work points to the need to revise the foundations of fundamental science about the world, since he connects science with the understanding of tasks faced by mankind and the search of new paths for its development. The author's monologue, addressed to the modern reader, contains provisions of fundamental importance concerning the foundations of mechanics, electrodynamics and gravitodynamics. At the same time, the author is filled with anxiety and shares his thoughts about our common future with the reader, discussing the role of science and education, and the moral principles of mankind, which feature undoubtedly presents an attractive side of the book.

Vladislav V. Cheshev
D.Sc. in Philosophy
Professor
National Research Tomsk State University
Tomsk, Russia

In terms of the range of the issues considered and the method of their coverage, this book written by the outstanding scientist Joseph Smulsky titled "The Main Tasks of Future Fundamental Science" is a unique work. The author begins with a thoughtful analysis of the basic principles of mechanics and a hypothesis-free method of obtaining knowledge about the world. This is followed by chapters that show the real nature and form of gravitational and electromagnetic interactions and convincingly proves the inconsistency of many presumptions used in modern physical theories, in particular, in the Theory of Relativity. At the same time, unsolved problems that require further research are highlighted. The next chapter is devoted to a new concept of climate fluctuations, which, according to the author, are based on the interactions in the Solar System and the resulting changes in solar heat reaching Earth. Chapters 5 and 6 describe the rational structure and management of society and outline paths for future scientific development, containing original and valuable ideas and suggestions. The book ends with a chapter discussing the fictional objects of modern physics

and proposes methods for improving science, which have begun to emerge from recent discussions among various researchers. Modern cosmology puts forward absurd and contradictory hypotheses such as the Big Bang, inflation, dark matter, dark energy, and the like. One can only admire Professor Smulski's style and presentation: everything is insightful, precise, clear, logical, and definitive. I strongly recommend that anyone who wants to know how the physical world really works and is interested in the development of humanity and science should carefully study this extraordinary book.

Borislav Vankov,
Independent researcher,
Sofia, Bulgaria

Preface

Modern fundamental science is defective and false. Why is it defective and false? First, present-day science is false because it has invented an unrealistic picture of the micro- and macroworld. Second, science is false because it does not pave the way for further development of society. Third, science is false because it does not prevent negative trends in society. Society does not need such science. Society is aware of the situation encountered. It treats scientific discoveries as circus tricks, searching for a solution to the problems, while gazing at journalists and politicians.

Over 50 years of research, I have identified a number of erroneous points in fundamental science and found ways to solve them (Smulsky, 1994a, 1995, 1999, 2002a, 2002b, 2007a, 2011a, 2014a, 2014b, 20014c, 2018a, 2019a). Based on the results of these studies, I will try to formulate its future tasks.

The basis of fundamental science is mechanics. Mechanics is the branch of science that studies the movements and interactions of bodies. Unless all the bodies involved in the phenomenon of interest are established, their movements are already determined, and all of their interactions with each other are revealed, this phenomenon remains incomprehensible to people. As soon as these conditions are met, the phenomenon under study becomes fully mastered by man. He can create it in numerous variations, combine it with other phenomena, and form on its basis new phenomena that have never existed in the world previously.

In modern fundamental science, the basic principles of mechanics turned out distorted. These distortions are one of the reasons for the falsity of fundamental science. On the basis of the distorted foundations of mechanics, it is impossible to comprehend the shortcomings of modern fundamental science. Therefore, Chapter 1 examines the undistorted foundations of mechanics (Smulsky, 1999, 2004a). The first section focuses on the surrounding world and its characteristics, such as the variability and size of

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objects. The second and third sections examine the characteristics of motion and interaction.

The structure and functioning of the macrocosm are determined by gravitational interactions. Chapter 2 is devoted to the analysis of these interactions. The main law of these interactions is Newton's law of gravitation, and the main problem is the two-body problem, or the problem of interaction of two bodies. The first and second sections are devoted to those issues.

The two-body problem is solved analytically precisely and in full, i.e., for all possible cases. Two more problems for N bodies are solved in the same way. In the first problems, N_3 bodies are disposed axisymmetrically around the central body in a circle, and in the second, there can be N_2 such circles. In the first problem, the bodies can simultaneously perform identical movements, for example, along ellipses or hyperbolas. In the second problem, the entire structure of the bodies rotates as a single whole. The third and fourth paragraphs of Chapter 2 are devoted to these problems, respectively.

The fifth section of Chapter 2 examines analytical solutions to the problem of interaction of bodies located in space, for example, on a sphere. The sixth section examines the solution to the problem in which all the gravitating bodies get merged into a central body. The velocities of the bodies, time of their fusion, and the thermal energy of the resulting final body are determined.

Other problems of gravitational interaction of N bodies can be solved by numerical methods. For solving those problems with high accuracy, the Galactica system has been developed. The main features of this software and some results obtained using it are presented in the seventh section, and the eighth section shows what secrets of the Universe can be discovered with its help.

Above, we discussed the translational motion of bodies. The ninth section examines rotational motion. The problem of Earth's rotation has been solved for the period of millions of years. Its solution has made it possible to understand why Ice Ages have repeatedly occurred during the history of the Earth.

The structure and functioning of the microworld is determined by the interaction of charged particles. Chapter 3 is devoted to such interactions. The main law of interaction of two particles motionless relative to each other, the Coulomb law, is considered in the first section. Here, a new law for the force of two particle interaction is substantiated and presented when

one of the particles moves relative to the other. The second section analyzes the force of action of a magnet on a moving charged particle.

The above forces both depend on the distance between the interacting particles and on their velocity relative to each other. In mechanics, not all actions are applicable to such forces: this point is discussed in the third section of Chapter 3. Therefore, many concepts of modern physics, including the dependence of mass on velocity, proved to be incorrect.

The new law of forces results in other particle motions. In the fourth section, new fundamental trajectories arising during the interaction of two particles are considered. Five points in this section present the master differential equations, an overview of the spectrum of trajectories, trajectories at the speed of light at the pericenter, closed orbits, and trajectories in the case of strong interactions.

The fifth section of Chapter 3 explains the fallacy of the known relativistic statement on the connection between mass and energy. The sixth section reports on alternative studies in the microworld, and the seventh section shows the necessity of switching to a new force and taking into account the effect of N particles.

The eighth section of Chapter 3 is devoted to the Coulomb interaction of N particles. Both exact analytical solutions and numerical ones are considered. For numerical solutions, a Galactica module with Coulomb interaction was created.

Section nine presents the differential equations of motion for the N -particle problem with the new expression for the force. Prospects for solving those problems are outlined. A number of sections in Chapter 3 also discuss the coming tasks in microworld physics.

Chapter 4 is devoted to long-term climate fluctuations. Such oscillations are caused by oscillations in the parameters of the orbital and rotational motion of the Earth. Oscillations occur due to the interaction of bodies in the Solar System. This matter is treated in the first section. In the second section, the variation of solar heat over the Earth's latitude is considered, both in the modern epoch and in the coldest and warmest epochs. For example, in a period from the cold to warm epoch at high latitudes the amount of heat changes by a factor of two.

The third section of Chapter 4 shows what fluctuations in solar heat, i.e., the insolation of the Earth, occurred over a million years. The fourth section examines the insolation periods of climate change and their gradations, such as moderately cold, cold, and extreme cold ones. In the fifth section, the insolation periods and paleoclimate are compared over the duration of 50

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thousand years, and it is shown that these periods completely coincide with paleoclimate changes. Thus, it is established that the interactions in the Solar System determine the long-term climate oscillations on Earth.

The sixth section of Chapter 4 examines changes in insolation that occurred over a period of 20 million years. The fluctuations are not periodic, and such fluctuations are usually called random and chaotic. Yet they are strictly deterministic, and their aperiodicity is due to the influence of many factors. These results give an example of how phenomena that we perceive as chaotic can be unambiguously determined at any given time when we understand them.

Chapter 5 examines the paths of social development. The first section shows that the development of society is determined by the labor of all people aimed at improving the world around them. The preservation of the world and its further development are impossible without rational consumption. This is the subject of the second section with a number of points discussed. The third and fourth sections examine the development of empty spaces on the Earth and the settlement of man in space. Conscious and reasonable development of mankind is impossible with defective morality, so the fifth section is devoted to discussing the purity of moral principles.

The development of society proceeds due to the activity of each person. For this, a person must possess all the knowledge available in society. Therefore, free education is not a gift from society to an individual, but a guarantee of successful development of society. The sixth section examines the main problems and tasks in education. The seventh section deals with the questions of society management. There is an opinion that the elite should be formed to manage society. It is shown here that such elites inevitably turn out to be in opposition to society, and the situation leads to a crisis. People who have proven themselves to be in permanent movement at all stages of their activity should come to govern society. Other people will treat them with respect: these people are in power not by kinship, nepotism or connections, but due to their ability to solve various problems throughout the entire activity.

Each of these sections formulates tasks of science. There are many problems in society that are still unknown how to solve. They must be studied by science, various options for their solution must be investigated, and the optimal ones chosen.

However, in solving these problems society cannot trust modern, defective and false science. In order for science to become a guiding star for society, it needs to be substantially updated. Chapter 6 examines scientific

development paths. First of all, it is necessary to eliminate presumptions, i.e., hypotheses, out of science. This matter is discussed in the first section. The second section focuses on determining the quality of science: which science is good and which is bad. The modern measure of quality by number of publications in mainstream journals is absurd. The third section discusses the issue of replenishing scientific personnel. With the growth of education, inexhaustible sources of researchers are those who, based on their internal motivation, began to be engaged in research. The fourth section is devoted to the improvement of the scientific press. In its current state, this press preserves the delusions of mainstream science and hinders the development of true science. Only open and transparent peer review of works is a direct way to honest consideration achieving the reliability of scientific results.

The sixth chapter ends my book “The Upcoming Tasks of Fundamental Science” published in Russian in 2019. The present monograph is supplemented by a seventh chapter “Discussions on Improving Science.” This chapter discusses such fictitious objects of present-day physics as gravitational waves, dark matter, neutrinos, etc. It also suggests some ways to improve science that were recently initiated in the process of researchers’ discussions of the shortcomings of modern science. This chapter is based on my articles published during the period of the past few years.

Acknowledgments

This book is the result of more than 35 years of my activity at the Institute of Earth's Cryosphere, Tyumen Scientific Center of the Siberian Branch of the Russian Academy of Sciences, which in recent years has been carried out under Contract No. FWRZ-2021-0007. The numerical solution of treated problems was obtained on supercomputers of the Siberian Shared-Use Supercomputer Center of ICMMG SB RAS.

My sons, Leonid Smulsky and Yaroslav Smulsky, helped me in my work.

Chapter 1

The Fundamentals of Mechanics

1.1. The Surrounding World, Its Variability and Size

Everything consists of two parts: the surrounding world and its description (Smulsky, 2004a).

The *surrounding world* is a part of everything that does not depend on human reasoning.

Description of the surrounding world is an understanding, or interpretation, of the surrounding world, i.e., an idea of it.

Knowledge is an understanding of the surrounding world that will not undergo significant changes over time.

Truth is knowledge, which results when used, in human actions corresponding to his intentions.

In the form of truth, some fundamental part of knowledge is usually accepted, playing an important role always or at a certain moment.

Science is an area of human activity aimed at obtaining new knowledge about the surrounding world.

Theory is a description of the properties of objects in the surrounding world, methods of human activity and their results.

Time characterizes the variability of objects and is determined as a result of comparing the change in objects with the change in some reference body (object).

It should be noted that all properties of bodies are determined by comparing them with the properties of a standard body chosen by people as a reference body.

The lifetime, lifespan, duration of a phenomenon or an object is the number of cycles of the standard change equivalent to the change of the object or phenomenon under consideration.

A moment in time in the change of an object is the assignment of a certain stage of its change to a certain stage or cycle of the standard change.

The time interval between two different stages of an object's change is the number of cycles of the standard change that occurred between those stages.

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Mathematical time is the result of comparing changes in objects with a stable cyclic change of an imaginary standard.

Mathematical time is used in the theoretical description of the surrounding world.

The size of an object (body) is the result of comparison when superimposing a standard on an object; it is expressed by the number of standards or the number of fractions of a standard that can be superimposed on an object.

The size of an object is determined in three mutually perpendicular directions, which in decreasing order are called length, width and thickness.

The name of the size of an object can be tied to the vertical: height (depth); to the horizontal: length, width; to the cardinal directions: latitude, longitude, etc.

The size of the gap between objects is the result of comparing the placement of standards between objects; it is expressed by the number of standards or their fractions.

The gaps between objects are determined in three mutually perpendicular directions.

The sizes of the gaps are called distances.

Space is a set of objects and the gaps between them.

This physical definition of space should be distinguished from the word “space” used in mathematics, poetry, science fiction and other areas of human activity.

Mathematical space is an imaginary coordinate system in which the position of a point on a body is fixed by three numbers (coordinates) in three directions.

A system of rectilinear and mutually perpendicular coordinate axes is called Cartesian coordinate system.

Mathematical space is used for the theoretical description of the surrounding world.

1.2. Motions and Interactions in the Surrounding World

The *velocity (speed)* of one object relative to another object is the change in the distance between the two objects having occurred during a unit of time.

Speed characterizes the movement of an object relative to a second object. One and the same object may have different velocities relative to several different objects.

An *inertial system* is an imaginary coordinate system that moves with a constant velocity, i.e., without acceleration. In the latter situation, the coordinate system is also called a coordinate system moving by inertia.

The *acceleration* of an object is the change in its velocity relative to the inertial system per unit of time.

The acceleration of an object characterizes its movement regardless of other objects, i.e., acceleration is an intrinsic characteristic of the object (if we neglect the dependence on the choice of the inertial system). This property of acceleration is mathematical. When measuring acceleration, real standards of length and time are used instead of mathematical coordinates and time, and an object, for example, the earth's surface, which moves with acceleration, is used instead of an inertial system. The measured acceleration is expressed relative to the standards used.

The action of one object on another object is the ability of the first object to set the second object in motion or change its motion, i.e., to impart acceleration to the second object.

If no action is exerted on an object, then this object has no acceleration, i.e., it is at rest or moves uniformly along a straight line. This is the essence of *the first law of mechanics*.

The force of action of one object on another object is a characteristic of the action, expressed in a change in the properties of a third object, which counteracts the motion of the first two.

For example, a spring of length l , located between a body and the Earth's surface, decreases its length by the value Δl , which characterizes the force of the Earth's action on the body.

The force is directed along the acceleration of the body.

The interacting bodies have oppositely directed accelerations.

The force of action applies to both the first body and the second, and its magnitude is the same. It follows that the forces of interaction of two bodies, which are mentally applied to the bodies when a person describes the interaction, are equal in magnitude and opposite in direction. This is the essence of *the third law of mechanics*.

The mass of a body is the number of reference bodies that, when acted upon by a force characterized by the same acceleration of the body, lead to the same change in the properties of the counteracting body as the body under consideration.

For instance, the Earth acts upon a stone and m weights with the same acceleration. The mass of the stone is equal to the number of weights m that deform the spring resisting their fall by the same amount as the stone.

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Since the force is determined by the change in the properties of the counteracting body, the mass of the body is the number of reference bodies that, when exposed to an action characterized by the same force, acquire the same acceleration as the body.

When acted upon by a standard that is characterized by an acceleration of 1 m/s^2 , the change in the counteracting body is taken as a 1-newton (N) unit of force F . Note that since 1889 the kilogram has been accepted as the standard, – a platinum-iridium cylinder with a diameter and height of 39.17 mm.

The impact on the standard, characterized by acceleration $w \text{ m/s}^2$, is also determined by the magnitude of the force

$$F = w.$$

The impact on a group of m standards, which is characterized by acceleration $w \text{ m/s}^2$, is also described by the force

$$F = m \cdot w.$$

When actions on a body and on a group of m standards, which are characterized by the same acceleration w , the force of action on the body is equal to

$$F = m \cdot w.$$

If, when action on a body of mass m , this body moves with acceleration w , then the force of action on the body is equal to

$$F = m \cdot w,$$

which is the essence of *the second law of mechanics*.

It follows from the definition of mass that it does not depend on the type of interaction.

There is no gravitational and inertial mass. The mass of bodies is the same and is measured in accordance with its definition.

Only those objects that can be acted have mass, i.e., they can be accelerated or slowed down.

Particles that do not experience an action, such as a photon, graviton, neutrino, etc., cannot be assigned mass.

The mass of a body is the coefficient of correspondence between the force of action on the body and its acceleration, which shows how many times, with the same force of action, the acceleration of the body is less than the acceleration of the standard.

The force of action on a body is nothing more than the acceleration of the body, but expressed in other units.

The relationship between force and acceleration can only be in the form $F = mw$, and there can be no other dependence of force on acceleration.

The laws of mechanics are not laws of nature; they are consequences of the accepted method of describing interactions.

The laws of mechanics are the same for any interactions. They cannot be changed without changing the method of describing interactions.

A physical body, including a physical particle, is an object of the surrounding world whose magnitude, i.e., dimensions, as well as mass can be measured. That is, a body can be accelerated or decelerated. A change in a body or its movement can also be tracked over time.

A physical body can be of an indefinite shape, for example, in the form of a liquid or gas. To determine its magnitude, it can be given a shape, then its mass can be determined and its change or movement over time can be tracked.

All objects of the surrounding world are essentially physical bodies.

Until an object is identified as a body, it cannot be considered an object of the surrounding world.

From the standpoint of modern knowledge of the world, all its objects are bodies. If something is considered an object of the surrounding world, but is not a body, this something should be attributed to the object of our understanding of the surrounding world.

Science is engaged in identifying new objects in the surrounding world and studying their properties.

1.3. Some Characteristics of Interaction

Electric charge expresses the force of interaction between equally charged bodies located at a distance of one unit of length. In this case, it is defined as $\sqrt{F}$, where F is the force.

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An *electromagnetic wave* created by a charged or magnetized body exerts a variable effect at each point remote from the body, which will be experienced by another charged or magnetized body placed in it.

A field is a mathematical term for the distribution of any function A over a spatial coordinate system x, y, z at a time t , which is written as $A(x,y,z,t)$.

An *electromagnetic field* is a mathematical term for the characteristics of an electromagnetic action, for example, electrical intensity $E(x,y,z,t)$. Recall that the electrical intensity E is the force of action on a charged body with a charge equal to unity.

Gravitational field is a mathematical term for a characteristic of gravitational action, such as the distribution of the acceleration of gravity $g(x,y,z,t)$. Recall that the intensity of the force of gravity g is the force of action on a body with a mass equal to unity.

Chapter 7

Discussions on Improving Science

7.1. Introduction

The sixth chapter concludes my monograph (Smulsky, 2019d) that was published in Russian in 2019. The present chapter is based on articles (Smulsky, 2021a, 2023a, 2023b, 2024c, 2025) that were issued during the period of the past six years. They appeared as a result of discussions of various scientific problems while reviewing articles or analyzing them on discussion platforms of different researchers. The first two articles (Smulsky, 2021a, 2023a) analyze such fictitious objects of science as gravitational waves, dark matter, neutrinos, etc. The other three articles (Smulsky, 2023b, 2024c, 2025) discuss the directions for improving science that have emerged during the above-mentioned discussions. Most of these issues were analyzed from different points of view, allowing a better understanding of problems under consideration. Therefore, such an approach was adhered to in the present chapter.

7.2. No Dark Matter and Gravitational Waves

7.2.1. Contemporary Knowledge of the World Through Hypotheses

The method of cognition of the surrounding world with the help of hypotheses has taken root in contemporary science. To explain any phenomenon, a hypothesis about its mechanism is put forward. On its basis, a ramified explanation of this phenomenon is built, i.e. its theory is developed. With the appearance of new data, this explanation contradicts them. To get rid of the contradiction, an additional hypothesis is introduced. In the future, new contradictions appear which are then eliminated by new hypotheses. And so, the process has been going on for 100 years.

Let us give an example. When studying the light of distant astronomical objects, it was found that with an increase in the distance to them, its frequency decreases, i.e., the light turns more red. Such reddening of light, as

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well as a decrease in the frequency of sound, occurs as their sources move away from the observer. This phenomenon is called the Doppler Effect.

It was hypothesized that the reddening of the light of distant stars and other objects is due to the Doppler Effect. Therefore, these objects are moving away from us.

However, it turned out that this reddening of light occurs in all directions relative to the Earth. The second hypothesis was accepted that all stars are moving away from us, i.e., the whole Universe is expanding.

The expansion takes place in the future, and in the past, all objects must come closer, and the Universe will turn into a point. Therefore, it is accepted the third hypothesis about the Big Bang, what led to the birth of the Universe from a point.

However, it turned out that the further away an astronomical object is, the more reddening of its light, and, consequently, the greater the removal velocity. For example, for the quasar OH471, the relative shift of the wavelength λ towards the red side is $z = 3.4$, and for the quasar GB1508+5714 $z = 4.3$, where $z = \Delta\lambda/\lambda$. According to the classical Doppler Effect, in the first case, the quasar moves away with a velocity equal to 3.4 the speed of light, and in the second – 4.3. For the Doppler Effect in the Theory of Relativity, different authors give different formulas. For quasar GB1508+5714, according to some of them, the removal velocity is 0.93 times the speed of light, and according to others, this quasar moves 1.13 times faster than light.

However, an increase in velocity is not possible. Since, in accordance with Newton's law of universal gravitation, bodies are attracted to each other, then after the explosion, the velocity of their removal will decrease, and not increase. Here, it would seem, it is necessary to abandon all these hypotheses. However, a fourth hypothesis about dark energy is accepted. Thanks to dark energy, bodies after the Big Bang accelerate, but not slow down. For example, a well-known expert on models of the early Universe offers the following explanation in his popular lectures. Nobody knows yet what dark energy is, what its properties are. But it certainly exists. Indeed, without it there would be no expanding Universe and there would be no Big Bang.

This example shows what kind of understanding of the surrounding world appears as a result of the method of cognition using hypotheses. This method gives us an imaginary world, not a real one.

The followers and participants of creating such an imaginary world themselves, over time, begin to doubt its truth. Towards the end of their

lives, they come to complete frustration. But new generations continue this process of world creation with enthusiasm. It may take years or decades to thoroughly study all the features of the phenomenon, their connections with other phenomena, to set up experiments and observations and perform cumbersome calculations; even a lifetime may not be enough. And a hypothesis can be put forward immediately and thus win worldwide recognition. Therefore, the creation of an imaginary world continues.

Within a few weeks of each other, two journals in the fields of astronomy and physics sent me papers by such participants in the creation of this world for review. Some extended reviews of these papers are offered to the reader's attention.

7.2.2. Models of Galaxies

The paper "Adding Dark Matter to the Standard Model" examines mathematical models of galaxies using various imaginary particles such as bosons, neutrinos of various types, etc. To explain the rotational velocity profile of galaxies, dark matter is used, consisting of these particles.

These particles are proposed by theoretical physicists when considering various models of the micro-world in the framework of the Theory of Relativity (TR). The hypothesis about the change in the mass of two relatively moving charged particles was introduced in the Theory of Relativity to explain their interaction.

However, the Theory of Relativity is erroneous (Smulsky, 1999, 2004a, 2019a). The interaction of two such particles q_i and q_k is determined by the force (23), which depends on the distance $\vec{r}_{ik}$ and velocity $\vec{v}_{ik}$ between them (Smulsky, 1999, 2002a, 2002b, 1994c). Therefore, the change in particle mass accepted in TR does not exist. All imaginary particles also do not exist (Smulsky, 2019a). Therefore, there is no dark matter, consisting of bosons, neutrinos and other such particles.

The Theory of Relativity always considers the interaction of two particles. Not two particles always interact, but several. Formula (23) expresses the force of action of particle k on particle i . Moreover, each of them is influenced by the rest particles. Therefore, to describe the real interaction by the method of the Theory of Relativity, it is necessary to introduce as many changes in mass, time and distance associated with particle i as there are particles k . These changes with particle i must occur simultaneously. This shows how absurd the Theory of Relativity is. This is

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first. And secondly, this also shows that the calculations of the interactions of charged particles in the Theory of Relativity are not correct.

In the paper “Adding Dark Matter to the Standard Model,” a new type of substance is introduced. Meteorites coming to Earth and all space missions convince us that there are only bodies in space that consist of the same substance that exists on Earth. Stars, constellations and galaxies are built from this substance. It is necessary to consider models of galaxies based on such matter. A number of complex mathematical problems have been solved (Smulsky, 2003, 2015a, 2017a, 2019c, 2024a). Methods for solving problems of interaction of many bodies have been created (Smulsky, 2012a, 2012b). They allow creating deterministic models of globular star clusters (Figure 7) and galaxies (Smulsky, 2018b, 2024a). These models will reveal the mechanism of interactions and movements of bodies in these objects.

The Theory of Relativity should be thrown away and be forgotten (Smulsky, 1999, 2004a, 2019a). It is also necessary to throw away and forget all invented particles, as well as imaginary objects and phenomena, such as the Big Bang, the expanding universe, black holes, etc. (Smulsky, 1996, 2019a).

The paper “Adding Dark Matter to the Standard Model” presents a perverse understanding of the world around us. Therefore, it should not be published.

7.2.3. Gravitational Waves

The paper “A Lunar LIGO For NASA’s Return To The Moon” proposes a Laser Interferometer Gravitational Wave Observatory (LIGO) on the Moon. It is designed to discover gravitational waves.

Such an observatory on the Moon has several advantages over an observatory on Earth. There is no atmosphere on the Moon and the force of gravity much less. Therefore, there is no need to make evacuated canals for the light beam and there are lower requirements for the strength of the LIGO structure. This will lead to significant reductions in the cost of creating LIGO and its operation.

In addition, the accuracy of LIGO is increased due to the possible increase in the length of the beam path. And together with the terrestrial LIGO, the length of the base can be increased to the radius of the lunar orbit.

The paper notes that after decades of studying the elusive phenomena predicted by Einstein’s general theory of relativity, gravitational waves had

been discovered. Therefore, it is important to continue this research and create LIGO on the Moon.

In reality, no gravitational waves have been detected. By the centenary of General Relativity, a paper by B. P. Abbott and more than 1100 of his co-authors was published (Abbott et al., 2016), which allegedly provided evidence of the detection of gravitational waves. Elementary analysis shows that this paper is a gross hoax (Smulsky, 2019a - section 5, 2016g - section 4, 2019d). There is no evidence in this paper for the existence of gravitational waves.

There are no gravitational waves and cannot be. In General Relativity, they were introduced on the basis of the hypothesis that gravity propagates at the speed of light. This hypothesis was adopted to explain the excess of rotation of the Mercury's perihelion, equal to 43 arc seconds per century (arcsec/century). A. Einstein borrowed the equations and their solution from the work of Paul Gerber (Gerber, 1898), which showed that at the luminal velocity of gravitation, the rotation of the perihelion of Mercury occurs by 43 arcsec/century. However, Paul Gerber's solution is wrong. The luminal velocity of gravitation gives the rotation of the perihelion 0.23 arcsec/century (Smulsky, 1999, 2004a), and not 43 arcsec/century, i.e., in 187 times less.

Therefore, the luminal velocity of the gravity propagation cannot explain the excess of rotation of the Mercury's perihelion!

A more accurate analysis of observations showed that relative to motionless space, the excess of rotation of Mercury's perihelion is 53 arcsec/century, and not 43 arcsec/century (Smulsky, 2011a). As a result of the interaction of bodies in the Solar system according to Newton's law of gravity, Mercury's perihelion rotates at a speed of 530 arcsec/century (Smulsky, J. & Smulsky, Ya. 2012), while according to observations this speed is equal to 583 arcsec/century. When solving the problem of the interaction of bodies in the Solar system, bodies are considered as material points. The action of a strictly spherical body is equivalent to the action of a material point. But the Sun is not spherical, but flattened. Taking into account the Sun's shape gives the missing before observations 53 arcsec/century (Smulsky, 2008d, 2011a, 2018b). A more detailed Addition for Mercury's perihelion is presented below.

So, the calculated motion of the Solar system bodies, using Newton's law of gravity, completely coincides with observations (Smulsky, 2008d, 2011a, 2018b; Smulsky, J. & Smulsky, Ya. 2012). Therefore, there is no need to introduce the luminal velocity of gravity propagation. General relativity, including gravitational waves, must be thrown away and forgotten.

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The paper “A Lunar LIGO For NASA’s Return To The Moon,” offering meaningless work, should not be published.

For future missions on the Moon, necessary and useful research needs to be planned (Smulsky, 2022a). It is necessary to study the geography and geology of the Moon. It is necessary to study the Earth, the Sun and outer space from the Moon. It is necessary to study the flow of solar substance on the Moon, as well as its content in the lunar surface. These results will open up a lot of new things in understanding not only outer space, but also in understanding many phenomena on Earth. Such results will be beneficial to humanity.

There is no need to waste energy and money on worthless tasks due to delusion. As an example of one such problem, one can cite the installation of corner reflectors on the Moon. The funds were spent, but there is no effect from them.

This also applies to the mentioned in the paper laser interferometer space antenna (LISA) of the European Space Agency (ESA), which is also designed to detect gravitational waves. This 400 million Euros verification mission has been completed but will continue in full in 2034. This useless work doesn’t need to be done either.

Addition for Mercury’s perihelion. Consider again the cause for the excessive rotation of the perihelion of Mercury. As noted above, the luminal velocity of gravitation gives a perihelion rotation of 0.23 arcsec/century (Smulsky, 1999, 2004a), and not 43 arcsec/century, i.e., in 187 times less. In addition, the luminal velocity of gravitation leads to changes in the eccentricity of the orbit, its semi-axis and the period of revolution of the same order as the perihelion rotation (Smulsky, 1994a, 1995, 1997, 2002a, 2002b, 2008d). With the Newtonian gravitational interaction, changes in all orbital parameters for all planets coincide with observations (Smulsky, J. & Smulsky, Ya. 2012; Smulsky, 2018b), with the exception of Mercury’s perihelion. Therefore, the finite velocity of the propagation of gravitation in no way can be the reason for the excessive rotation of Mercury’s perihelion, because in this case other parameters of the orbit will not coincide with the observations.

So, what is the real cause for the excessive rotation of Mercury’s perihelion?

In the above-mentioned works (Smulsky, 1994a, 2011a, 2018b), the oblate shape of the Sun was modeled by a ring of bodies around the Sun (Figure 30), while the mass of such a compound model of the Sun was equal to its mass. At a certain mass of peripheral bodies, the total speed of rotation

of the perihelion coincides with the observed speed of 583 arcsec/century. At the same time, changes in all other parameters of the Mercury's orbit and other planets coincide with observations.

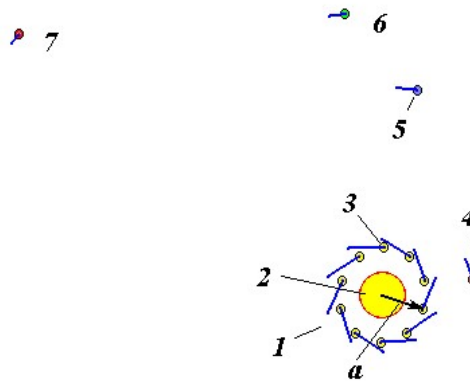


Figure 30. The compound models for Sun's rotation and their parameters for the Sun mass $M_S = 1.98892 \cdot 10^{30}$ kg and radius $R_S = 6.97113 \cdot 10^8$ m: 1 – compound model for the Sun; 2 – central body; 3 – peripheral body; 4 – Mercury; 5 – Venus; 6 – Earth and Moon; 7 – Mars. Other planets are outside the field of the picture. The positions of the bodies are indicated for December 30, 1949. The line bars at the bodies indicate their velocity vectors. In table: n_l – number of peripheral bodies; a – radius of their orbit; m_l – mass of a peripheral body.

No of models	n_l	$m_l \cdot 10^{-23}$	$a \cdot 10^{-10}$
		Kg	m
2	5	604.8	2.528358
3	5	1.966	2.528449
4	5	1.565	2.528449
5	10	0.782	2.528449
15	5	3495.308	0.06742779

The compound Sun model simulates the oblateness of the Sun. However, the bodies on the ring move with certain velocity in orbit around the Sun. Therefore, it may be assumed that this velocity affects the rotation of the perihelion. The compound model of the Sun was developed with half the velocity (Smulsky, 2018b). This model gave exactly the same rotation of the perihelion. That is, the result does not depend on the velocity of the bodies on the ring.

A model was also developed with half the masses of bodies on the ring (Smulsky, 2008d). It led to half the excess rotation of the perihelion. It should be noted that a total of 15 compound models of the Sun were created.

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In the latest models, the radius of the ring was equal to the equatorial radius of the Sun.

Therefore, the real cause for the excessive rotation of Mercury's perihelion is the flattened shape of the Sun.

7.2.4. Discussion

The above text has been reviewed by the reviewer. This is followed by the text of the review, in which I had marked points by letters in parentheses. Below, in accordance with these points, I present my explanations and answers.

7.2.4.1. Review

7.2.4.1.1. Summary

The paper is concerned with a presentation and a review of two papers speaking about the big bang model, dark matter, special relativity and gravitational waves. The author claims that the big bang model is wrong because the large red shift of quasars requires them to move faster than the speed of light in free space (A). He also said that no gravitational waves exist because they have been proposed to explain excess rotation of Mercury perihelion. According to his view such perihelion can be explained using Newton's laws and assuming it is resulting from the sun oblateness. He also claims that the numerical value of the excess rotation is 0.23 arcsec/century and not 43. Thus, it does not agree with observations (B). He thinks that special relativity itself suffers from some setbacks. He thinks that the explanation of charged particles interactions assuming change of particles masses (as proposed by special relativity) is wrong. It can be explained using velocity and spatial dependent force. He also thinks that no dark matter exists in reality or at least the nature of dark matter is misleading.

7.2.4.1.2. General Comments

The paper is written properly. Where the abstract is concerned with the methodology, results are obtained. The introduction gives a brief survey of the studies indicating the setbacks of the big bang model specifically that are concerned with the existence of gravitational waves and dark matter. Fluent English language was used to write the paper. However, there is few, weak,

evidence to support the claims of throwing away the big bang model and relativity theory.

7.2.4.1.3. *Constructive Criticism*

1. The suggestion that no gravitational waves exist because the Mercury perihelion can be explained using Newton's laws and oblate sun is very weak. This is due to the fact that no derivation was made to confirm this claim. Such derivation is needed (C). Even if such derivation was made, this does not mean that no gravitational waves exist, because much other evidence from binary pulsars and black holes as that detected by LIGO on 2016 due to black holes collision confirm the existence of gravitational waves (D). Thus, there is a need to explain these observations on a new basis. Even the claim that calculated values of excess rotation is wrong needs more detail. The author should write down the basic equations, and then show that the excess rotation value is wrong (E). Thus, all these big bang predictions should be shown using basic laws to be incorrect.
2. There are many suggestions proposed by many authors to confirm the existence of dark matter or finding new pathways to remove the conflict of observed and predicted actual and critical densities of the universe, without abandoning the big bang model. One can refer to Arbab paper (Astrophys. Space Sci (2014) 355), or M. Dirar (Modern Physics Letters A, V. 13, No. 37 (1998)) to see some of these models. Thus, the critical and present mass density problem also needs more strong evidence to confirm the failure of the big bang model (F).
3. The claim that the interaction of charged particles can be explained assuming constant mass and using a new force expression is very hard to justify. The postulates on which this new force expression is found needs to be mentioned and written properly (G). The experimental observations that confirm the fact that the particles masses change like nuclear fission and fusion beside pair production and particles annihilation make it difficult to believe that the particle masses are constant physical quantities (H). This needs to be explained using the new force expression or any other model (I).
4. The very brief information extracted from the cited references forces readers to refer to these references, which is time consuming. From

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the physical standpoint, it is preferable for the authors to spend more time giving more details so as to gain time for all of the readers of this manuscript.

7.2.4.2. Author's Response

A. Here it is needed to clarify why the Big Bang theory is wrong.

Any incorrect statement has multiple contradictions with reality. Some of them are main or initial, and the second are their consequences. Let's note the main contradictions.

First, there is no reason for the birth of the Universe from a point, i.e. there is no reason that could create such an explosion of a point.

Secondly, in a bang, the expansion velocities should decrease with increasing distance. Therefore, the interpretation of the red shift by the Doppler Effect is incorrect, because with this interpretation of the observations velocities increase with distance. Therefore, there is no expanding Universe and there is no Big Bang.

B. Gravitational waves follow from the theory of gravitational action, which propagates at the speed of light. An analogue of such action is an electromagnetic one. Therefore, it is assumed that, like electromagnetic waves, there must be gravitational waves. In the Theory of Relativity, by analogy with electromagnetic interaction, equations are created for gravitational interaction propagating with the speed of light. For such an interaction, the excess rotation of the perihelion of Mercury is 0.23 arcsec/century, not 43 arcsec/century. The value 43 arcsec/century obtained by Paul Gerber (Gerber, 1898) is incorrect. And according to observations, the excess rotation of the perihelion of Mercury is 53 arcsec/century, and not 43 arcsec/century.

C. Excessive rotation of the perihelion of Mercury 53 arcsec/century due to the Sun's oblateness was established as a result of the numerical solution of the problem of the Newtonian interaction of the compound model of the Sun (Figure 30) and Mercury for ± 3000 years from the modern epoch (Smulsky, 2008d). The complete rotation of the perihelion of Mercury 583 arcsec/century was too established as a result of the numerical solution of the problem of the interaction of the planets of the Solar system and the compound model of the Sun (Figure 30) for ± 3000 years from the modern epoch (Smulsky, 2011a, 2018b). At the same time, secular changes in all parameters of the orbits of Mercury and other planets were determined. They

were being compared with observations. The calculation results coincide with observations (Smulsky, 2018b).

These works were carried out for two decades. The results have been published in dozens of papers and in several monographs. This material is huge, and it is impossible to give it in this paper.

D. The signals detected in 2016 are not evidence of gravitational waves (Smulsky, 2019a). B.P. Abbott et al. have described results of their observation of gravitational waves emitted as a result of a collapse of a double Black hole (Abbott et al., 2016). This is the so-called LIGO experiment.

On September 14, 2015 at 9:50:45 the employed device had recorded a pulse with several oscillations, which lasted about 0.15 seconds ... the fusion of the black holes had imparted the test body with acceleration of 10^{-21} cm/sec² (Abbott et al., 2016).

The first point. The reader can imagine that the equipment used to perform the LIGO experiment should register test-body displacements as small as $1.1 \cdot 10^{-23}$ cm. The diameter of the hydrogen atom is $0.529 \cdot 10^{-8}$ cm. Therefore, it can be said that, for performing the LIGO experiment, an apparatus was created that allows measuring lengths constituting $2 \cdot 10^{-15}$ fraction of the atom size.

The second point. The collision of the black holes and their merging together had occurred at a distance of 410 megaparsecs (Abbott et al., 2016). This distance was determined with an accuracy of -180 to +160 megaparsec. If expressed in light years (l.y.), this distance is 1.34 billion l.y., lying somewhere in the interval from -0.59 to +0.52 billion l.y.

Since gravitational waves propagate at the speed of light, the fusion of black holes could happen within a time interval from 590 million years ago till 520 million years in the future (!).

The third point. The collision of two objects of size D moving at velocity v occurs in a time $t = D/v$. The pulse from their collision will have approximately the same duration t . For example, a collision of two bullets normally occurs in a time of $t = 60$ microseconds, and the collision of two ocean-going liners, in a time of $t = 0.5$ minutes. Such will also be the duration of the collision-generated pulses. Consider now the collision time of two galaxies, with black holes residing at their centers. The standard diameter of galaxies is $D = 10^5$ l.y., and their relative velocity is $v = 1000$ km/sec. We will take into account the fact that one light-year is equal to $9.461 \cdot 10^{12}$ km. Then, the collision time can be evaluated as $t = 30$ million years.

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So, the duration of the pulse produced by two merging galaxies moving at a relative velocity of 1000 km/sec is $t = 30$ million years, and not $t = 0.15$ sec, which time was registered in the LIGO experiment.

Suppose that LIGO scientists are right, and they have indeed detected a collision of two black holes. Let us evaluate the velocity of the colliding black holes; for this velocity, we obtain a value $v = D/t = 21000$ billion $\cdot c$, where c is the speed of light.

That is, in the LIGO experiment, the galaxies moved at velocities exceeding the speed of light by twenty-one thousand billion times.

The Theory of Relativity is based on the presumption that nobody can move faster than light. The publication of the LIGO experiment was timed to coincide with the 100th anniversary of the General Theory of Relativity to allegedly confirm this theory.

Evidently, the LIGO experiment has in fact disproved the Theory of Relativity. Therefore, based on this “discovery of the century” in mainstream science, once again I say: the Theory of Relativity and the entire modern physical picture of the micro- and macro-world must be thrown away and forgotten!

E. The actual excess of rotation of Mercury’s perihelion of 0.23 arcsec/century was determined as follows (Smulsky, 1999, 2004a). By analogy with the electromagnetic action (23), the force of the gravitational interaction propagating at the speed of light has the following form:

$$\vec{F}_{ik} = - \frac{G m_i m_k (1 - \beta_{ik}^2) \vec{r}_{ik}}{\{ r_{ik}^2 - [\vec{\beta}_{ik} \times \vec{r}_{ik}]^2 \}^{3/2}}, \quad (48)$$

where G is the gravitational constant;

m_i and m_k are the masses of the i -th and k -th bodies; other designations are the same as for force (23).

The problem of interaction of two bodies with force (48) was solved. The trajectory equation is obtained in the following dimensionless form:

$$\phi = \int \frac{d\bar{R}}{\bar{R}^2 \bar{v}_r}, \quad (49)$$

where $\bar{v}_r = v_r/v_p$ is the dimensionless radial velocity of Mercury relative to the Sun, which is determined by the equation:

$$\bar{v}_r = \frac{1}{\beta_p} \sqrt{1 - \frac{\beta_p^2}{\bar{R}^2} - (1 - \beta_p^2) \exp \left[2\alpha_1 \beta_p^2 \left[\frac{1}{\sqrt{\bar{R}^2 - \beta_p^2}} - \frac{1}{\sqrt{1 - \beta_p^2}} \right] \right]}, \quad (50)$$

$\bar{R} = r/R_p$ is dimensionless distance from the Sun to Mercury;

$\beta_p = v_p/c_1$ is the velocity of Mercury at perihelion, reduced to the speed of light;

R_p and v_p are the radius of the orbit perihelion of the Mercury and its velocity at perihelion;

$\alpha_1 = -G(m_S + m_{Me})/(R_p v_p^2)$ is trajectory parameter;

m_S and m_{Me} are the masses of the Sun and Mercury.

It should be noted that the expression for the radial velocity (50) was previously given in Sub-subsection 3.4.1 in the form of equation (30) for the interaction of two particles q_1 and q_2 .

The trajectory equation (49) is given in the polar coordinate system (r, φ) , in the center of which the Sun is located, and the polar angle φ is measured from the perihelion. For the interaction of the Sun and Mercury $\alpha_1 = -0.829$ and $\beta_p = 1.96 \cdot 10^{-4}$.

The trajectory equation (49) - (50) cannot be solved by an exact analytical method. Its solution by approximate analytical methods at very small values β_p is difficult due to the presence of singularities at the end points, i.e. at perihelion and aphelion.

The trajectory equation (49) - (50) was solved numerically with variation α_1 and β_p in the entire range of their variation (Smulsky, 1994a, 1995). Equation (48) was integrated from the perihelion radius to the aphelion radius. Based on these numerical solutions, an asymptotic solution was obtained. For $\alpha_1 = -0.829$ and small β_p , the displacement of the perihelion of Mercury for its full revolution in orbit is

$$\Delta\phi = 1.6\pi\beta_p^{2.5}. \quad (51)$$

For 100 Earth's years, Mercury makes 415 revolutions, which, according to (51), gives a displacement of the perihelion of Mercury of 0.23 arcsec/century.

F. As shown in point A, the Big Bang hypothesis is wrong. Therefore, the entire interpretation of phenomena in the macrocosm using this hypothesis is incorrect, and it is necessary to get rid of it.

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G. Expression (23) for the force of action on a particle with a charge q_1 of another particle with a charge q_2 is obtained on the basis of the experimental laws of electromagnetism (Smulsky, 1994a, 1995, 2014a). The second particle moves at a velocity $\vec{v} = \vec{v}_{ik}$ relative to the first one. Therefore, its motion is identical to the current I , which, in accordance with the Biot-Savart-Laplace law, creates a magnetic field with a strength H at the point where the first particle is located (see Figure 10 - Figure 12). Since the second particle is moving, field H is variable. In accordance with Faraday's law of induction, an alternating magnetic field H at the point where the first particle is located creates an electric field with a strength E . By definition, the strength E is the force acting on the first particle with a charge equal to a unit. These two laws are differential equations. Eliminating the strength H from them, we obtain the following differential equation for the force of interaction of a moving charge q_2 on a motionless charge q_1 :

$$\frac{\partial^2 \vec{F}}{\partial x^2} + \frac{\partial^2 \vec{F}}{\partial y^2} + \frac{\partial^2 \vec{F}}{\partial z^2} - \frac{1}{c_1^2} \frac{\partial^2 \vec{F}}{\partial t^2} = \frac{4\pi q_1}{\varepsilon} \left[\frac{1}{c_1^2} \frac{\partial(\rho \vec{v})}{\partial t} + \text{grad } \rho \right], \quad (52)$$

where ρ is the charge density q_2 distributed over space.

As a result of solving equation (52) for a point charge q_2 , an equation for the force (23) is obtained (Smulsky, 1994a, 2014a). The solution to equation (52) is a significant achievement in mathematics. It was received by the author in 1968.

H. There are many incomprehensible phenomena in the microcosm. However, the introduction of hypothetical mechanisms of phenomena does not contribute to a clearer understanding of the surrounding world. The introduction of hypotheses leads to new contradictions and ambiguities. As a result, we come to a completely imaginary and fantastic world.

I agree with the reviewer that modern interpretation of experimental observations makes it difficult to believe that the particle masses are constant physical quantities. However, this interpretation was created on the presumption that the mass of one particle changes depending on its relative velocity to another particle. In fact, as shown above, there is no reason for a change in mass. The dependence of mass on velocity is an incorrect position. Like any wrong statement, it contradicts reality in many ways. I have cited one of these contradictions above. A particle in relation to other particles moves at different velocities. Therefore, a particle at the same moment must have as many masses as there are particles in the world.

These contradictions confirm that the hypothesis about the change in mass with velocity is erroneous. Therefore, this statement must be thrown out from science. It is also necessary to discard the entire structure of the microworld built on this presumption.

For 100 years of building the world around with the help of hypotheses, several generations of physicists have changed. Introduced imaginary objects by their first generations, by subsequent generations were perceived as real objects. Now everything that supposedly exists in the surrounding world is taken for granted by the majority. Therefore, the entire contemporary structure of the micro- and macrocosm needs to be revised today. As an example, I will give the history of the creation of neutrinos (Smulsky, 2014a, 2023a).

Reckardo Cerezani and David de Hilster in their works (Carezani, 1997a, 1997b; de Hilster, 2011) clearly outlined the situation with neutrinos. Radioactive radium converts to polonium and emits electrons. In 1927, C.D. Ellis and W.A. Wooster (Ellis & Wooster, 1927) measured the electron energy with a calorimeter and obtained its value 0.36 MeV. In 1931, Wolfgang Pauli calculated the kinetic energy of an electron from the standpoint of the Theory of Relativity and received 1.16 MeV. This value is due to the dependence of the electron mass on the velocity, accepted in the Theory of Relativity. In reality, the mass is unchanged, and the force depends on the velocity. However, relativists believe that such an erroneous energy of 1.16 MeV is real, so they invent a neutrino particle, which should carry a false energy of $1.16 \text{ MeV} - 0.36 \text{ MeV} = 0.86 \text{ MeV}$.

For more than half a century, science has been conducting grandiose experiments to search for neutrinos. It is not known how it can be found, since a neutrino without interaction can pass through both the Earth and the Sun. In different radioactive transformations, different neutrinos with different energies must be added. Nevertheless, neutrinos have now been introduced into all nuclear reactions. All their energy balances have been experimentally measured. Theorists increased the experimental values by the fictitious energy of neutrinos, and immediately they are reduced by this value, due to the fact that all neutrinos freely fly away.

I. Using force (23), interactions of a moving charged particle with charged bodies of various shapes, with conductors with current and with magnets were considered (Smulsky, 1999, 2004a). The theory of particle accelerators has been developed. It is shown that calculations using force (23) are more accurate than those based on the Theory of Relativity. For example, in the experiment of Bucherer (Bucherer, 1909) at the velocity of

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electrons approaching the speed of light, the Theory of Relativity gives an incorrect result. And the calculations using the force (23) completely coincide with the results of this experiment (Smulsky, 1994a, 2014a).

7.2.5. Science Should Study the World, not Create It

Now such words can be heard from the followers of the Big Bang. The Big Bang might not have happened. Perhaps the Universe is constantly “shrinking” and “expanding.” Or maybe the Universe is infinite, but space and time have always existed. But if there was no Big Bang, what was there instead?

This is the result of fundamental research that has been going on for 100 years. The fictional world raises doubts even among its creators.

Now fundamental science is faced with the task not of creating a new surrounding world, but of analyzing the constructed ideas about the micro- and macro-world. It is necessary in these constructions to reveal unreasonable hypotheses and remove the chains of imaginary constructions associated with them from science. By consistently doing this work, we will receive real knowledge about the world around us.

I encourage novice researchers to engage in this work, and not get carried away with the creation of grandiose structures from hypotheses, which will disappoint them with their meaninglessness by the end of their lives.

7.3. The Neutrino Particle Does not Exist

7.3.1. Introduction

The decay of a number of radioactive elements is accompanied with β -radiation in a continuous spectrum, i.e., with the emission of electrons with a continuous velocity distribution. This phenomenon contradicted the concept of the discreteness of energy levels in atoms. In the 1920s, it was deduced from the developing quantum mechanics that the energy spectrum of particles emitted during the decay of nuclei had to be discrete. The energy of particles must be corresponding to the difference between energy levels. Therefore, for the followers of quantum theory the continuous spectrum of

emitted electrons was a serious obstacle to all quantum mechanical constructions (de Hilster, 2011; Neutrino, 2023).

In order to save quantum mechanics, on December 4, 1930 W. Pauli writes a letter to the participants of the physics conference in Tübingen. In that letter, he puts forward a hypothesis that β -decay is accompanied by the emission of a neutral particle, which takes away so much of the decay energy that the sum of the energy of the newly introduced particle and the energy of the electron remains unchanged. This particle was later given the name neutrino. Initially, this hypothesis, due to its absurdity, was rejected, but with time it was fitted by the supporters of quantum mechanics into the modern picture of the microworld.

7.3.2. Continuous β -Decay Spectrum

Apparently, it was A. H. Bucherer who for the first time experimentally identified the continuous spectrum of electron velocities during the radioactive decay (Bucherer, 1909). The central element of the Bucherer arrangement (Figure 31a) was a flat circular capacitor 8 cm in diameter (Figure 31b). The spacing between the capacitor plates was defined by 4 quartz flakes with a diameter of 5 mm and a thickness of 0.25075 mm. A 0.5-mm pellet of radioactive radium fluoride was placed at the center of the capacitor. The capacitor was located in an 8-cm high brass cylindrical box 16 cm in diameter, which was placed in a uniform magnetic field of strength H . Inside the box, photographic film 2, stretching along the cylindrical surface of the box, was located (Figure 31b).

The radium pellet emitted β -rays in all possible directions. Those electrons passed through the narrow slot of the capacitor, where the action of the electric field E due to the capacitor and the action of the magnetic field H , perpendicular to it, were mutually compensated.

As is evident from Figure 31b, the negative electron will be acted upon inside the capacitor by the upward force due to the capacitor and by the downward force due to the magnetic system. Therefore, only those particles, for which the magnetic and electric forces turn out to be mutually balanced, will leave the centrally located radioactive source. After leaving the capacitor, the “compensated electrons” enter only one magnetic field, experience a deflection in it, reach the photographic film, and produce blackening on the film.

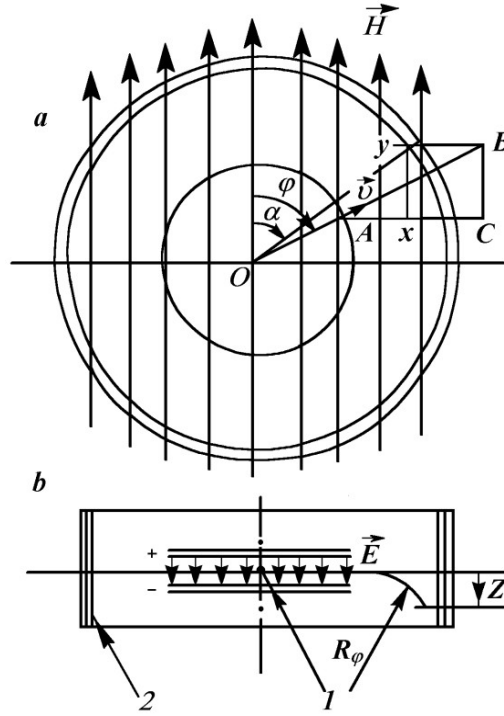


Figure 31. Schematic of the Bucherer experiment (Bucherer, 1909): *a* – view along the central axis of the capacitor; *b* – view on the diametrical section of the capacitor. *1* – source of β -rays; *2* – photographic film.

The angle φ is reckoned on the film from the direction of the magnetic field H (Figure 31a). In the direction $\varphi = \pi/2$, the electrons fly out of the capacitor at the lowest velocity. Therefore, in the magnetic field they acquire the largest deviation (Figure 32). The more the angle φ differs from $\pi/2$, the faster the electrons fly out of the capacitor, and the less they become deflected by the magnetic field. The larger the angle φ differs from $\pi/2$, the faster the electrons escape from the capacitor and the less they become deflected by the magnetic field. At angle $\varphi = \arcsin E/H$, electrons fly out of the capacitor at a velocity approaching the speed of light c . As is seen from Figure 32, such particles are not deflected in the magnetic field. The line obtained on the photographic film thus represents the spectrum of electron velocities during the decay of radioactive radium. With the polarity of the fields E and H having been reversed, a line appears in the upper half-plane. The photographic film also shows a horizontal line produced by γ -

radiation and fast electrons. A characteristic feature of the electron spectrum line is that this line intersects the horizontal line at an acute angle.

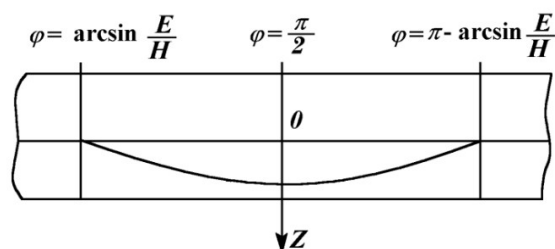


Figure 32. Curve of deviation of the electrons with different velocities on the photographic film in Bucherer's experiments (Bucherer, 1909).

A study of the continuous spectrum of the β -radiation of radioactive RaE, or bismuth ($^{210}\text{Bi}_{83}$), was performed in 1927 by C. D. Ellis and W. A. Wooster (Ellis & Wooster, 1927). At the beginning of their article, the authors cite the results of a study by Mr. Madgwick of the Cavendish Laboratory, concerning the energy distribution of emitted electrons. Those measurements were carried out using an ionization chamber. The distribution curve of electrons exhibits smooth behavior with a maximum at 0.30 MeV energy. In this case, the electron energy varies from 0.040 to 1.050 MeV, with the average value being $W_m = 0.39$ MeV. The aim of the work by C. D. Ellis and W. A. Wooster was the determination of the total energy of electrons using a calorimeter. As a result of several series of experiments, a calorimetric mean electron energy $W_{cm} = 0.35 \pm 0.04$ MeV was obtained. That is, the energy that was determined using the calorimeter proved to be coincident within experimental error with the mean energy W_m .

In a later paper by W. W. Buechner and R. J. van de Graaff (Buechner & Van de Graaff, 1946), it was confirmed that the calorimetrically determined energy of electrons corresponded to their energy spectrum. Therefore, according to the authors, there were no reasons for the occurrence of additional energy losses due to emission of any other radiation, including neutrinos.

Thus, those experiments showed a continuous spectrum of β -radiation, with the calorimetrically measured energy corresponding to this spectrum. As already noted, the continuous spectrum was in contradiction to quantum-mechanical concepts, and the measured energies did not agree with the electron energies calculated using the Theory of Relativity. For example, W.

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Pauli has calculated the kinetic energy of an electron using the relativistic formula (Buechner & Van de Graaff, 1946; de Hilster, 2011):

$$W_{cr} = m_e c^2 (1/(1 - \beta^2) - 1), \quad (53)$$

where m_e is the electron mass;

c is the speed of light; $\beta = v/c$ is the electron velocity reduced by the speed of light, and obtained the following value of W_r : $W_r = 1.16$ MeV.

This value was in excess of the experimental value of 0.36 MeV by 0.8 MeV. It was proposed to assign the excess energy of 0.8 MeV to neutrino. It was assumed that during the decay of each atom, the neutrino, together with the electron, took away the energy of 1.16 MeV. Since no other particles were detected during the decay of an atom, the properties of the neutrino as a particle without mass, moving at the speed of light and not interacting with the matter, were accepted.

The introduction of such a particle led to many contradictions. For example, since the electrons had different velocities and energies, neutrinos would also have different energies for the decay of each atom to be accompanied by the release of the same energy. Meanwhile, all these contradictions were ignored. The energies of all nuclear reactions have been experimentally measured. Neutrino energy was added to them, and then this energy was immediately subtracted as neutrinos disappear without a trace.

7.3.3. Interaction of a Moving Charge with a Stationary Charge

Neutrinos and many other particles were invented by theoretical physicists when considering various microcosm models based on the change of the mass of a moving particle in the Theory of Relativity (TR):

$$m = m_0 / (1 - \beta^2), \quad (54)$$

where m_0 is the mass of the particle, which in the TR is called the rest mass.

The above relativistic expression (53) for the kinetic energy of a particle is due to the change of mass (54). The hypothesis about the change of the mass of two charged particles moving relative to each other was introduced into the Theory of Relativity to explain the interaction of two particles.

However, the Theory of Relativity is erroneous (Smulsky, 1999, 2004a, Smulsky, 2019d). The force of interaction of two charged particles q_i and q_k (Figure 33) is determined by equation (23), which depends on the velocity $\vec{v}_{ik}$ and the distance $\vec{r}_{ik}$ between them.

Since the force (23) changes with a change in particle velocity, the change in particle mass accepted in the TR does not exist. Neither exist all imaginary particles (Smulsky, 2019a).

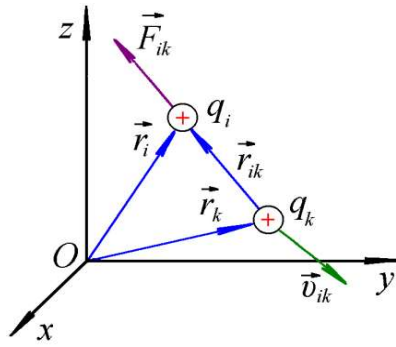


Figure 33. The force $\vec{F}_{ik}$ exerted on the charged particle q_i from the side of the charged particle q_k , moving with a velocity $\vec{v}_{ik}$ relative to the particle q_i .

The Theory of Relativity always treats the interaction of two particles. In reality, not two, but several particles interact simultaneously. Formula (23) expresses the force exerted by a k -th particle on an i -th particle. In this case, each of the i -th particles is acted upon by the remaining k -particles. Therefore, in order to describe the real interaction within the Theory of Relativity, one has to introduce as many changes of mass, time, and distance related with the particle i as there exist k -th particles. These changes must occur to the particle i simultaneously. This shows how absurd the Theory of Relativity is. This is first. Second, this inference also shows that the calculation of the interactions between charged particles in the Theory of Relativity is incorrect.

7.3.4. The Force of action of a Moving Charge on a Stationary One

Expression (23) for the force of action of a particle with charge q_2 on a particle with charge q_1 was obtained based on the experimental laws of

electromagnetism (Smulsky, 1994a, 1999, 2014a). Like Figure 33, Figure 34 illustrates the interaction between particles q_1 and q_2 but, here, under the stationary particle q_i we understand the particle q_1 , and under the particle q_k , the moving particle q_2 .

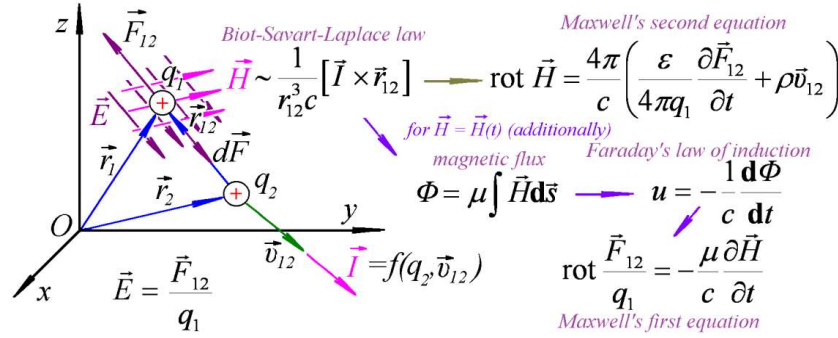


Figure 34. The mechanism of the electromagnetic action of a particle with charge q_2 , moving at a velocity $\vec{v}_{12}$, on a particle with charge q_1 .

The motion of particle q_2 is equivalent to a current $\vec{I}$ that creates a magnetic field $\vec{H}$. The alternating magnetic field $\vec{H}(t)$ creates an electric field $\vec{E}$, thus resulting in the emergence of an additional force $d\vec{F}$. Those processes are expressed in the form of the experimental Biot-Savart-Laplace and Faraday laws, whose differential form gives respectively the second and first Maxwell equations.

The particle q_2 moves at the velocity $\vec{v} = \vec{v}_{12}$ relative to the particle q_1 (see Figure 34). Therefore, the movement of particle q_2 is identical to a current I defined as the rate of charge, change $I = dq_2/dt$. In order to pass to differential quantities, one has to distribute the charge q_2 over space. For this purpose, the charge density ρ is introduced, which is defined by the expression

$$q_2 = \int_V \rho dV, \quad (55)$$

where V is the volume occupied by the charge q_2 .

After differentiating the charge q_2 , we obtain an expression for the current $\vec{I}$, which can be conventionally written as $\vec{I} = f(q_2, \vec{v}_{12})$ (Figure 34).

In accordance with the Biot-Savart-Laplace law, this current creates a magnetic field

$$\vec{H} = \frac{1}{r_{12}^3 c} [\vec{I} \times \vec{r}_{12}] \quad (56)$$

with strength H at the location of the first particle. In Figure 34 this magnetic field is shown with orange arrows $\vec{H}$.

The magnetic field is also characterized by the magnetic flux Φ . Since the second particle q_2 is moving, field H and the flux Φ appear as variable quantities. According to the Faraday law of induction

$$u = -\frac{1}{c} \frac{d\Phi}{dt}. \quad (57)$$

alternating magnetic field H at the location of the first particle creates an electric field with strength E , whose potential difference u is determined by the rate of change of the magnetic flux Φ . In Figure 34, the electric field with strength E is shown with brown arrows $\vec{E}$.

According to the definition of field strength E , this quantity is the force of action exerted on the first particle with its charge being equal to unity, i.e., $E = F_{12}/q_1$. It was shown in (Smulsky, 1999, 2004a) that the Biot-Savart-Laplace law in differential form gives the second Maxwell equation

$$\text{rot } \vec{H} = \frac{4\pi}{c} \left(\frac{\varepsilon}{4\pi q_2} \frac{\partial \vec{F}_{12}}{\partial t} + \rho \vec{v} \right), \quad (58)$$

and the Faraday law gives the first Maxwell equation

$$\text{rot } \frac{\vec{F}_{12}}{q_2} = -\frac{\mu}{c} \frac{\partial \vec{H}}{\partial t}. \quad (59)$$

Eliminating strength H from these equations, we obtain the following differential equation for the force exerted by the moving charge q_2 on the stationary charge q_1 :

$$\frac{\partial^2 \vec{F}_{12}}{\partial x^2} + \frac{\partial^2 \vec{F}_{12}}{\partial y^2} + \frac{\partial^2 \vec{F}_{12}}{\partial z^2} - \frac{1}{c_1^2} \frac{\partial^2 \vec{F}_{12}}{\partial t^2} = \frac{4\pi q_1}{\varepsilon} \left[\frac{1}{c_1^2} \frac{\partial(\rho \vec{v}_{12})}{\partial t} + \text{grad } \rho \right], \quad (60)$$

where ρ is the spatially distributed density of charge q_2 .

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Note that this equation with slightly modified notations has already been given earlier in the form (52). As a result of solving Eq. (60) for a point charge q_2 , expression (23) for the force was obtained (Smulsky, 1994a, 2014a). The solution of equation (60) is a significant achievement in mathematics. This solution was obtained by the author in 1968. It should be borne in mind that in this case the indices in expression (23) are as follows: $i = 1, k = 2$.

With the help of force (23), the interactions of a charged moving particle with charged bodies of various shapes, a current-carrying conductor, and magnets were analyzed (Smulsky, 1999, 2004a). The theory of accelerators for elementary particles was developed. It is shown that calculations using force (23) are more accurate than the calculations based on the Theory of Relativity.

For example, in the experiment by A. H. Bucherer (Bucherer, 1909) (see Figure 31), for the electron velocity approaching the speed of light it was found that the Theory of Relativity yields incorrect results. In 1919, in his article (Shaposhnikov, 1919) K. N. Shaposhnikov showed that for particles whose velocity approached the speed of light, the particle velocity distribution line intersects the horizontal line at the right angle (Figure 35). On the contrary, when the calculations are carried out using force (23) (Smulsky, 1994a, 2014a), this line intersects the horizontal line at an acute angle, like it is shown in Figure 32. Therefore, the calculations of the interactions between charged particles in the Theory of Relativity are approximate; and at velocities approaching the speed of light they become incorrect.

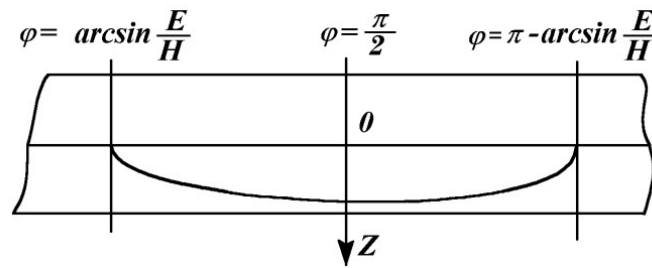


Figure 35. The deflection of electrons moving at different velocities in a capacitor as calculated in the article by K. N. Shaposhnikov (Shaposhnikov, 1919) according to the Theory of Relativity.

7.3.5. New Particle Trajectories

As a result of the action of one on another particle according to the Coulomb law, the trajectory of the latter particle can be an ellipse, a parabola, or a hyperbola. These trajectories were used in the analysis of inter-particle interactions. This analysis has led researchers to knowledge about the occurrence of many different particles in the microcosm. However, when particles interact with one another according to law (23), the trajectories will be different.

We solved the two-particle interaction problem using the force (23) (Smulsky, 1994a, 2014a). The trajectory equation is obtained in the dimensionless form (49), where $\bar{v}_r = v_r/v_p$ is the dimensionless radial velocity of particle q_1 relative to particle q_2 . The expression for this velocity has already been given earlier by equation (30), where $\bar{R} = r/R_p$ is the dimensionless distance from particle q_2 to particle q_1 ;

$\beta_p = v_p/c_1$ is the reduced velocity of particle q_1 at pericenter (under pericenter, we understand the shortest distance between the particles on their trajectory);

R_p and v_p are the pericenter radius of the orbit and the particle velocity at the pericenter;

$\alpha_1 = \mu_1/(R_p v_p^2)$ is the trajectory parameter;

$\mu_1 = \frac{q_1 q_2 (m_1 + m_2)}{\varepsilon m_1 m_2}$ is the electromagnetic interaction constant;

m_1 and m_2 are the masses of particles q_1 and q_2 , respectively.

The trajectory equation (49) is written in the polar coordinate system (r, φ) . At the center of this system, the particle q_2 is located, and the polar angle φ is measured from the pericenter. It is evident from expressions (30) and (49) that the dimensionless trajectories are determined by two parameters, α_1 and β_p . In the case of attraction, i.e., with a positive charge at the central particle q_2 and a negative charge at the particle q_1 , for the trajectory parameter we have $\alpha_1 < 0$.

In the case of the inter-particle interaction proceeding according to the Coulomb law, the trajectories depend on the parameter α_1 only (Smulsky, 1999, 2004a), and, depending on the magnitude of that parameter, those trajectories will be either elliptical orbits ($-1 \leq \alpha_1 < -0.5$) or hyperbolic trajectories ($-0.5 < \alpha_1 < 0$). At $\alpha_1 = -1$, the orbit is a circle, and at $\alpha_1 = -0.5$ the trajectory is a parabola. It should be noted that Coulomb orbits result from equations (30) and (49) with $\beta_p \rightarrow 0$. Therefore, these expressions

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appear as generalized equations for the trajectories of electromagnetically interacting particles, and they are valid both for the Coulomb and electromagnetic interactions of particles.

Expressions (30) and (49) define a wide spectrum of trajectories. In Figure 13, this spectrum is shown for varied parameters α_1 and β_p . For example, at $\alpha_1 = -0.8$ and $\beta_p = 0.3$ the point represents the positively charged particle q_2 . The negatively charged particle q_1 is located at the right of the horizontal axis at the orbit pericenter, whose dimensionless radius is $\bar{R}_p = 1$. The particle moves to the left along a quasi-elliptical orbit and reaches the apocenter, or the most distant point of the orbit, with dimensionless radius $\bar{R}_a = 1.54$. In this case, the polar angle is $\varphi_a = 3.243$, i.e., this angle is greater than π , so that an angular displacement of the apocenter occurs. During the second half-period, the same angular displacement will occur as well and, as a result, the pericenter will become shifted over the period by the double angle $2 \cdot (\varphi_a - \pi)$. At this value of the trajectory parameter, $\alpha_1 = -0.8$, the apocenter radius of the Coulomb orbit is $\bar{R}_a = 1.667$, and the polar angle is $\varphi_a = \pi$.

At a higher velocity of the particle, $\beta_p = 0.5$, and at the same trajectory parameter $\alpha_1 = -0.8$ (see Figure 13), we have $\bar{R}_a = 1.27$ and $\varphi_a = 3.601$, i.e., here the apocenter radius has decreased even more, and the displacement of the pericenter has further increased in comparison with the Coulomb trajectory. As the particle velocity further increases, the apocenter radius $\bar{R}_a$ approaches unity, the angle φ_a increases, and the orbit becomes a circle. On line *l* or on line *C*, the orbits become either circles or trajectories turning into circles.

As the absolute value of α_1 decreases, the orbits become more elongated; and at $\alpha_1 = -0.5$ they open, i.e., the orbit becomes a parabola. Along the parabola, the particle moves away from the attracting center with a velocity equal at infinity to zero. On line *2* or on line *P*, there are quasi-parabolic trajectories.

With a further decrease in the absolute value of α_1 , the orbits become quasi-hyperbolic, i.e., the particle moves away from the attracting center with a certain velocity at infinity. As evident from Figure 13, as the velocity β_p increases, the trajectory at infinity approaches the horizontal axis. This means that the angle between the asymptote and the horizontal line decreases, and it may even become negative.

On the line *S* (Figure 13), there are trajectories with a velocity at pericenter tending to the speed of light, i.e., at $\beta_p \rightarrow 1$. Here, there is a wide

range of trajectories exhibiting very unusual particle motions (Smulsky, 1999, 2004a). In this case, parameters of the attracting center are such that, as a result of the Coulomb interaction, the center imparts the infinitely distant particle the speed of light on its surface. In a similar case with gravitational interaction, the attracting center was called the Black Hole. According to law (3), in the case of electromagnetic interaction the particles move freely in such a “black hole.” Therefore, their trajectories for $\beta_p \rightarrow 1$ were called in (Smulsky, 1999, 2004a) intra-hole trajectories, or trajectories inside the “black hole.” Here, under the “black hole” we mean not some new natural object, but an attracting center with certain proportions of parameters. Particles can freely enter it and freely leave it. Those trajectories can explain many particle interaction processes proceeding in nuclei.

The previous trajectories were obtained by numerical integration of equation (49) at the pericenter, i.e., initial radius of integration R_0 was equal of R_p ($R_0 = R_p$). With the velocity at pericenter tending to c_1 , there arises a double uncertainty at this point. That is why in this case the integration of the equations began at an intermediate point $R_0 > R_p$, and the integration in our calculations proceeded from this point in two directions: towards the pericenter and towards the remote points of the trajectory. For each trajectory, at the starting point R_0 the radial velocity v_{r0} and the transversal velocity v_{t0} , perpendicular to the radial velocity, were specified so that the particle velocity at pericenter v_p tended to the speed of light c_1 . With variation of governing parameters, the whole spectrum of trajectories was obtained in (Smulsky, 1999, 2004a).

Some of these trajectories were analyzed earlier. Figure 14 shows three trajectories with the parameter $\alpha_1 = -0.498$ and the transverse reduced velocity $\beta_{t0} = 0.93$. They differ in different radial reduced velocities β_{r0} . At $\beta_{r0} = 0.1$, the angular period of trajectory 1 is 119.6° , i.e., in three periods the particle makes an almost complete revolution, without 1.2° . The period is understood as the particle's motion from the pericenter to the apocenter, and then its return to the pericenter.

At $\beta_{r0} = 0.129$ (trajectory 2), during one period the particle makes almost 3.5 revolutions, without 6.4° .

At $\beta_{r0} = 0.2$, trajectory 3 in Figure 14 becomes quasi-hyperbolic. This trajectory has a negative angle between the asymptotes, equal to -18.24° . The trajectory intersects itself at a distance 30 times greater than R_p and ahead of the attractive center. When determining the parameters of the attractive center based on the characteristics of such a trajectory using Coulomb's law,

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errors may be made. For example, if the particle tracks are analyzed in a cloud chamber, the size of the attractive center may be overestimated or this attractive interaction may be interpreted as repulsion.

For the trajectories in Figure 14, as applied to a proton and an electron at the pericenter, the particles will approach each other at a distance equal to $1.53(R_{pr} + R_e)$, where R_{pr} and R_e are the radii of the proton and electron, respectively.

The quasi-elliptic orbits in Figure 14 explain why during the decay of a neutron, the electrons can be ejected at different velocities, which vary over a wide range and even approach the speed of light. For example, the electron at points of its orbit 2 has such a velocity. With a third particle affecting the electron, the electron will leave its orbit at roughly the same velocity it had at that moment.

The quasi-elliptical trajectories in Figure 14 are not closed. Trajectory 1 has an apocenter angle of $\varphi_a^\circ = 59.8^\circ$, and trajectory 2 has $\varphi_a^\circ = 626.8^\circ$. Therefore, over a full period, the pericenter rotates by an excess of a full revolution $\Delta\varphi_p^\circ = 2 \cdot \varphi_a^\circ - 360^\circ$. If this excess is a multiple of 360° according to equation (31) with a multiplicity coefficient k , then the trajectory will be closed. Figure 15 shows such a closed orbit with $k = 4$ and an apocenter angle of $\varphi_a^\circ = 225^\circ$. Over four periods, the particle makes five full revolutions around the central particle. In the case of interaction between a proton and an electron, the particles at the pericenter will approach each other at a distance of $2.4(R_{pr} + R_e)$.

The angular period of closed orbits is determined by two integers n and k according to expression (33). For example, the trajectories in Figure 15 correspond to the numbers $n = 1$ and $k = 4$. If for trajectories 1 and 2 in Figure 14 the apocenter angle φ_a° were 60° and 630° , then they would correspond to closed orbits with the numbers $n = 0$ and $k = 3$ for trajectory 1 and $n = 3$ and $k = 2$ for trajectory 2.

The examples of trajectories 1 and 2 in Figure 14 show that the period of a closed orbit of two interacting particles φ_c is capable of varying over a wide range: from 120° to 1260° , i.e. by a factor of 10. In this case, the closed orbits are characterized by integer values of n and k . Since the trajectories and the angle φ_a are determined by the parameters α_1 and β_p , the integer values of n and k correspond to discrete values of α_1 and β_p . These results about the discrete (quantum) parameters of closed orbits are important for understanding atomic physics and the phenomenon of radioactivity.

As noted above, the Coulomb trajectories have been used in the analysis of inter-particle interactions in the microcosm. According to law (23), in the case of electromagnetic interaction the trajectories at velocities $\beta_p < 0.1$ differ little from Coulomb trajectories. As shown in Figure 13 - Figure 15, as the velocity β_p increases, the particle trajectories show transformations. Analysis of results on inter-particle interactions with the help of those trajectories will lead to another microcosm. Therefore, the Special Theory of Relativity must be thrown away and forgotten. It is necessary to investigate the real microworld with the help of new trajectories.

7.3.6. The Path to Knowledge of the Real World

The continuous spectrum of β -radiation contradicted quantum mechanics and the measured energy of β -radiation contradicted the Theory of Relativity, so neutrino particles were invented. However, the continuous spectrum of β -radiation is not canceled by the supposed existence of neutrino particles, and the Theory of Relativity is erroneous, with its calculations of interactions being incorrect. Therefore, there are no reasons for postulating neutrinos. The neutrino does not exist. This is a figment of the imagination of theoretical physicists of the 20th century.

In the 20th century, the Theory of Relativity was created based on the misconception of the interaction of charged particles moving relative to each other. Based on the hypotheses of this erroneous theory, an imaginary four-dimensional world with various transformations in it was constructed. This construction was then extended to gravitational interaction. In this way, a four-dimensional curvilinear world with various transformations supported by tensor mathematics was built.

Based on these fanciful fantasies, the construction of an imaginary micro- and macrocosm began. For theoretical physicists, there were enough examples of how to populate the surrounding world with their fantasies. And this world began to be populated by them continuously, without stopping and without any embarrassment.

Throughout this time, there have been many scientists, real explorers of the surrounding world, who opposed those fantasies. But fantasies are sweet to the soul, and they were more attractive to people than sober truths. Therefore, the Mainstream is rooted in science, which still continues to

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populate the world with various chimerical objects like quarks, bosons, Black holes, gravitational waves, Big Bangs, etc. (Smulsky, 2021a).

Many neutrino detectors, or neutrino telescopes, have now been built: at FermiLab in the USA, Super-Kamiokande in Japan, ANTARES in the Mediterranean Sea, IceCube in Antarctica, Baikal-GVD at Baikal, etc. Those setups allegedly detect neutrinos. However, when analyzing the reported results, this is not confirmed. For example, Argentine physicist Ricardo Cerezani has come to the conclusion that these expensive experiments provide super proof of neutrino non-existence (Cerezani, 1997b, 1997c). Exactly the same can be said about one of the other macrocosm fantasies, gravitational waves, with the tremendously sophisticated installations for their detection proving the absence of such waves (Smulsky, 2021a).

By the end of their lives, all those dreamers-theorists come to be utterly disappointed by their fantasies (Smulsky, 2021a). The time has come to put an end to the widespread errors.

All interactions in the microworld are determined by the experimental laws of electromagnetism: Coulomb law, Biot-Savart-Laplace law and Faraday's induction (Smulsky, 2019d), which together give the right expression for the force (23). As a result of electromagnetic interactions, particles move along trajectories that were not known previously. The misinterpretation of particle motions has led scientists to the introduction of fictitious particles that now inhabit the imaginary microcosm. It is necessary to revise physics on the basis of real interaction forces. This revision must begin with Rutherford experiments without invoking the Theory of Relativity and Quantum Mechanics.

All interactions in the macroworld are determined by the Newton experimental law of gravity (Smulsky, 2018b, Smulsky, 2019d). The General theory of relativity must be discarded and forgotten. All imaginary constructions and objects must be eliminated from modern cosmology (Smulsky, 2019d, 2021a). We need to study and explore the world around us. For this, the researcher needs a lot of time and much effort to spend, but as a result he gets knowledge about the world, which will long serve future generations. It is this knowledge that was obtained in the works by Euclid, Archimedes, Hipparchus, Ptolemy, Copernicus, Galileo, Newton, Coulomb, Laplace, Faraday, Mendelev and many other researchers. This knowledge has served us well, and it will continue to serve our descendants.

7.4. Responsibility of Science to Society

7.4.1. The Review of the Book by J. Dunning-Davies

On July 20, 2023, I received a letter from Italian-American journalist Fabrizio Ciancio. He sent it on behalf of the Center for Scientific Information and offered to express his opinion on the review of the book by Jeremy Dunning-Davies (Dunning-Davies, 2007). I translated the title of this book into Russian, which would sound more understandable in English: “Destruction of the myth: Accepted understanding or scientific truth?”

The review says that in the first chapter, Dr. Jeremy Dunning-Davies denounces the organized opposition by some mainstream physicists against the pursuit of new fundamental knowledge. The following are well-known philosophers and scientists who have denounced the positions of Mainstream scientists. Karl Popper, John Horgan, Barton Richter, Paul Dirac, and others are mentioned among them. Nobel nominee Ruggero Santilli argues that our failure to address serious environmental issues is mainly caused by organised resistance from Mainstream physics and chemistry, which, supported by compliant media, hinders the pursuit of essential new knowledge. In other chapters, Jeremy Dunning-Davies highlights the serious consequences for society from the obscurantism of Mainstream science, including in the Theory of Relativity and in Quantum mechanics. These shortcomings led to the creation of such concepts, objects and phenomena as the Big Bang, Black holes, dark energy and similar “inventions” of Mainstream science.

The book (Dunning-Davies, 2007) also shows the role of the subservient news media in justifying the dominance of Mainstream science. Therefore, the subject of Fabrizio Ciancio’s letter was called: Mainstream physics, chemistry and news media responsibility for environmental problems.

7.4.2. Opposition of Mainstream to the Search for Fundamental Knowledge

I agree with the opinions presented that Mainstream physicists have organized opposition to the search for fundamental knowledge.

For more than 100 years there has been a false Theory of Relativity. In order to preserve it, its supporters by all means prevent the publication and distribution of works that prove its fallacy and establish the real properties of

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the world around us. In addition, the supporters of the Theory of Relativity have imposed their approach and their methods on almost all other sciences. Their essence lies in the fact that hypotheses are accepted, an explanation of the surrounding world is built on their basis, and then this explanation, i.e. this theory is taken for the real world around us.

Therefore, almost all modern fundamental science represents for humanity an imaginary world that is completely different from the real world! Since, in accordance with the properties of the imaginary world, the life of human society begins to be built, this life is directed along false paths that lead to the deterioration of the state of Humanity. Examples are the carbon dioxide theory of modern warming; the US wars in the late 20th and early 21st centuries to impose American “democracy”; the Covid-19 epidemic, and the third world war launched in Ukraine for US world domination.

Modern fundamental science is to blame for all this! In confirmation, I will cite the opinion of Chinese scientists (Zifeng Li, 2007) about the detrimental effect of it and the Theory of Relativity on science, philosophy and society. The paper (Zifeng Li, 2007) I translated into Russian and accompanied by comments <http://www.ikz.ru/~smulski/Papers/EssenceSR2r.pdf>. In English, these comments are located here: <http://www.ikz.ru/~smulski/Papers/EssenceSR2.pdf>.

Therefore, I agree with the subject of the letter “Mainstream physics, chemistry and news media responsibility for environmental problems.”

7.4.3. Contemporary Fundamental Science Is Defective and False

Contemporary fundamental science is defective and false. Why is it defective and false? Because it has created an unrealistic picture of the micro- and macroworld, it does not pave the way for the further development of society and does not impede negative trends in it. Such a science is not needed by society. Society is aware of this. People refer to the discoveries of science as circus tricks, and in searching for a solution to the problems facing it society directs its eyes to journalists and politicians (Smulsky, 2019d).

This phrase from my book (Smulsky, 2019d) was voiced by the outstanding thinker Borislav Vankov from Sofia, Bulgaria, in Russian <https://youtu.be/60oQqIP1a3Q>, English <https://youtu.be/ypMHq1LN6EU>, German <https://youtu.be/R1lQh1a15NM> and Bulgarian https://youtu.be/k215_StxuFA.

All the “inventions” of modern fundamental science: four-dimensional space-time, the curvilinear world, the expanding Universe, the Big Bang, dark energy, Black holes, gravitational waves, neutrinos, bosons, quarks, etc. are fantasies that do not exist in the world. This is real mysticism.

7.4.4. Demystification of Science

In the USA, the YouTube channel “Demystify Science” has been created https://www.youtube.com/@DemystifySci_Podcast. It is visited by thousands of researchers. As the news media does not talk about it, few people know about this. Russia is conducting a Special Military Operation for denazification of Ukraine. Everyone knows about it. And everyone knows that the USA leadership is Russia’s main opponent in this operation.

The ideology of Nazism is based on various mystical images and ideas. Therefore, Nazism and mysticism are inextricably linked with each other. It is quite remarkable that the citizens of the USA have created the channel “Demystification of Science,” as if in opposition to the policy of the USA leadership.

This example shows that sane people of the Earth can and should prevent the hostile actions of the Mainstream, both in science and in public life. I note that the mainstream in public life is globalism.

Supporters of the Theory of Relativity, i.e., relativists, make up a small fraction of all scientists: they are less than 0.01%. But they have established their dominion over the world! The relativists have taken over all the establishment journals and Publishing houses. According to publications in them, ratings of scientists are established. Only conventional scientific papers are published in rating journals and Publishing houses, i.e., those that do not contradict the ideas of the Mainstream. According to the rating of scientists, funding for their work is allocated, prizes and awards are awarded to them, and the prestige of Mainstream scientists is created. This whole system ensures the dominance of the Mainstream.

Mainstream scientists say to their national governments: We are big scientists, and you the government need to build LIGO observatories to search for gravitational waves, create neutrino telescopes and other large-scale projects that are false and have no real basis.

Almost everyone who begins to delve into relativistic works comes to the conclusion that they are absurd. Therefore, most researchers, 99.99%, are anti-relativists. Many of them have written and continue to write articles and

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books. There are a lot of these researchers: there are tens of thousands of them. In terms of criticism of the Theory of Relativity, many of their opinions coincide. However, there are very few similar opinions regarding the further development of science. Many anti-relativists offer their ideas based on relativistic ideology. That is, they put forward new hypotheses, on the basis of which they build their imaginary world. Of the above-mentioned scientists, I include Ruggero Santilli among them.

7.4.5. Science of the Future

Nevertheless, there are enough studies to establish the real properties of the surrounding world, which now allow the Theory of Relativity to be thrown out and forgotten!

I should mention the book by Sjaak Uitterdijk (Uitterdijk, 2021), one of the latest works known to me, in which he shows the fallacy of modern models of the atom and nucleus, as well as a number of constructions in the macroworld. Sjaak Uitterdijk concludes that models of the nucleus without exotic particles and magical forces can be considered. He believes that “all modern physical models and phenomena that are based to one degree or another on the Theory of Relativity have to be rejected.”

I will mention a few of my recent works.

In the book (Smulsky, 2019d), I presented a program for the further development of science without the Theory of Relativity. Here is too my idea of the direction in which Mankind needs to develop. I will quote Borislav Vankov's words about this book: “Given the spectrum of the issues addressed and the method of their coverage, the book by the outstanding scientist Joseph Smulsky “The Upcoming Tasks of Fundamental Science” is a unique work. The author begins with a deeply thought-out presentation of the basic principles of mechanics and a non-hypothetical way of acquiring knowledge about the world. The following chapters show the real nature and form of gravitational and electromagnetic interactions and convincingly prove the inconsistency of a number of provisions of contemporary physical theories, in particular the Theory of Relativity. At the same time, unresolved problems that need further research are highlighted. The next chapter is devoted to a new vision of climate oscillations which, according to the author, are based on interactions in the Solar system and the resulting changes in solar heat on the Earth. The book ends with chapters on the rational structure and management of society and on the ways of the

development of science, containing original and very valuable ideas and theses. I strongly recommend that anyone who wants to find out how the physical world is really organized and how humanity and science should develop get acquainted with this exceptional book” (Smulsky, 2019d).

Information (Smulsky, 2023c) reports on my lecture “Old and New Foundations of Fundamental Science” on January 8, 2023, in Haifa, Israel. This lecture was made in Russian and is available here <https://youtu.be/Vvkq4nWOsHg>.

This report, with minor changes and with the title “Actual Problems of Physics,” was also made in Israel on May 15, 2023: <https://youtu.be/gA4JaMePiOU>. The report ends with a Conclusion, which states that the foundations of modern physics are hypotheses. An imaginary picture of the world is built on them. Gradually this approach moved to other sciences. The entire set of hypotheses rests on existing facts and phenomena. As soon as a new fact appears, the entire structure built on hypotheses falls apart. In physics, this has been happening continuously for 100 years. If this construction, for example in microbiology, concerns the entire society, then the emergence of a new fact like Covid-19 leads to the fact that society is unprotected by such presumptive science.

Humanity faces many problems. Many of them grow out of seemingly harmless trends. And there is no one who could tell society: these trends are dangerous. Only science, honest science, based on reliably established knowledge, can become such an authority and protect society. Therefore, Humanity is faced with the task of creating such a science.

As for physics, Newton’s experimental law of gravitation determines all gravitational interactions in the macrocosm, and the experimental laws of Coulomb, Bio-Savart-Laplace and Faraday determine all interactions in the microcosm. This is the foundation of interactions in the world. All hypothetical constructions and the chains of consequences associated with them must be removed from science. Physics purified in this way will become a reliable basis for its further development, as well as the basis of other sciences.

These two reports are in Russian, but in YouTube one can set up subtitles in English. To do this, click on the subtitle icon (the fifth icon at the bottom (from left to right)). Then click the settings icon (sixth icon) select subtitles in the submenu, translation and the language you want to translate into.

In information (Smulsky, 2022b) I discuss the Theory of Relativity with its adherent.

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In the article (Smulsky, 2019a), in a thesis form, I, as one of the representatives of academic science, present my understanding of the problems of science and society. This understanding coincides with the opinion of many of my colleagues. It contrasts with the understanding of mainstream scientists. However, it exists in academic science, and will eventually become predominant.

The article (Smulsky, 2021a) shows that dark matter and gravitational waves are caused by an incorrect description of interactions in the Theory of Relativity. That is, dark matter and gravitational waves are mystical objects. I will give a fragment from the Introduction from this article. When studying the light of distant astronomical objects, it was found that with an increase in the distance to them, its frequency decreases, i.e., the light turns more red. Such reddening of light, as well as a decrease in the frequency of sound, occurs with the distance of their sources from the observer. This phenomenon is called the Doppler Effect.

It was hypothesized that the reddening of the light of distant stars and other objects is due to the Doppler Effect. Therefore, these objects are moving away from us.

However, it turned out that this reddening of light occurs in all directions relative to the Earth. The second hypothesis was accepted that all stars are moving away from us, i.e., the whole Universe is expanding.

The expansion takes place in the future, and in the past, all objects must come closer, and the Universe will turn into a point. Therefore, the third hypothesis about the Big Bang is accepted, which resulted in the birth of the Universe.

However, it turned out that the further away an astronomical object is, the more reddening of its light, and, consequently, the greater the removal velocity. However, an increase in velocity is not possible. Since, in accordance with Newton's law of universal gravitation, bodies are attracted to each other, then after the explosion, the velocity of their removal will decrease, and not increase. Here, it would seem, it is necessary to abandon all these hypotheses. However, a fourth hypothesis about dark energy is accepted. Thanks to dark energy, bodies after the Big Bang accelerate, but do not slow down. For example, a well-known expert on models of the early Universe offers the following explanation in his popular lectures. Nobody knows yet what dark energy is, what its properties are. But it certainly exists. Indeed, without it there would be no expanding Universe and there would be no Big Bang.

This example shows what kind of understanding of the surrounding world appears as a result of the method of cognition using hypotheses. This method gives us an imaginary world, not a real one.

In the article (Smulsky, 2023a) it is shown that for the same reason neutrinos and many particles of the Mainstream science microworld are mystical objects.

After the Theory of Relativity is thrown out and forgotten, Mankind faces the task of analyzing the development of science: how such obscurantism as the Theory of Relativity could have been created in science. This is a dangerous phenomenon for Humanity. It must not be repeated in the future. Therefore, it is necessary to create an International Scientific Tribunal, which will impartially study the history of creation and existence of the Theory of Relativity, establish the reasons for its appearance and develop rules that will prevent the occurrence of such a phenomenon in the future.

7.5. Discussion of the Shortcomings of Science and Ways to Eliminate Those

7.5.1. ResearchGate for Better Science

The effectiveness of scientific research largely depends on the exchange of knowledge between researchers. The ResearchGate (RG) portal provides great assistance in this regard. The creators of RG dream of societies based on science (ResearchGate, 2008). However, to make the world a better place, science must improve itself.

The creators of RG believe that science is humanity's most important tool. It is responsible for the great leaps society is making in understanding our Universe, and the best means we have to meet the challenges of our future.

However, contemporary science is not without problems. The systems that support research are too slow and inaccessible to address the global challenges of our time. Complex funding processes and proprietary interests hinder progress towards open science.

The creators of RG hope to change that. RG is committed to providing researchers with access to each other and to the resources they need to thrive.

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RG is committed to making science faster, fairer, and more accessible to learn.

No one can solve these problems alone — RG recognizes the need to work with others in this quest. RG strives to evolve with the scientific community, challenging the status quo in the scientific ecosystem and always putting the researcher first (ResearchGate, 2008).

More than 25 million researchers are registered with RG. Each of them receives a weekly report on the acquaintance of other researchers with his works, broken down by country, specialty, qualifications, etc. The researcher also continuously receives information on the publication of the works of other researchers on his field. And he has the opportunity to discuss issues of interest to him with colleagues.

There are a number of other operations at RG that are quite useful to the researcher. For example, a researcher may ask a question that other researchers can answer. These answers can provide significant assistance to the researcher, without which he could spend years working on a dead-end problem.

7.5.2. Disadvantages of Contemporary Fundamental Science

Contemporary fundamental science, especially physics, is in a deep crisis. Many researchers are concerned about this. To discuss pressing scientific issues, they ask rhetorical questions. Each question is accompanied by a detailed rationale. Therefore, the essence of the issue is clear to everyone, and its discussion through collective efforts reveals very subtle problems that were not previously known. I shall give several examples of such questions, as well as their authors.

1. Is the modern approach to cosmology fundamentally flawed? – by Michael Peck (Peck, 2015).
2. Am I the only one that is doubtful of LIGO's detection of gravitational wave GW150914? – by Peter Hahn (Hahn, 2016).
3. Is Any Effective Refutation of Einstein's Theories of Relativity Possible? – by Abdul Malek (Malek, 2018).
4. Am I the only one that believes the Theory of Relativity is defective and false, and it should be thrown away and forgotten? – by Joseph J. Smulsky (Smulsky, 2018g).

5. Are you aware of the Nobel Prizes awarded for fake scientific results? – by Joseph J. Smulsky (Smulsky, 2021b).
6. Fundamental Physics is stuck in conceptual crisis and reached a dead end. What exactly is wrong with Fundamental Physics Research? – by Gurcharn Singh Sandhu (Sandhu, 2023).

Many of these questions have been debated for years and involve thousands of researchers. For example, as of May 31, 2024, question 1 has been discussed since October 2015, read by 107602 researchers and contains 12767 answers; and question 2 has been discussed since February 2016, read by 95022 researchers and has 8293 answers.

The main disadvantage of contemporary fundamental science lies in its method. It is accepted that science is based on hypotheses. On their basis, theories are built to explain natural phenomena. These constructions are then perceived as the real world. This method began with the Theory of Relativity. Therefore, many participants in the discussion offer their own constructions based on the hypotheses they put forward. There are also realistically minded researchers who reject the hypothetical constructions of contemporary fundamental science. One of them is independent researcher Gurcharn Singh Sandhu. I shall give a few thoughts from his rationale for question 6 (Sandhu, 2023). Here I do not strictly adhere to the text (Smulsky, 2021c), so I do not enclose this text in quotation marks.

Throughout the last century, Physicists have occupied themselves with working out Quantum Mechanics, Relativity, Particle Physics, Astrophysics and Cosmology in all their implications. In the process, Fundamental Physics has absorbed mathematical ideas and notions of increasing sophistication and abstraction. The tragedy of the last century was the gradual shift in our focus from the physical reality to the abstract mathematical formulations, which are supposed to describe physical reality.

I will comment on the words of G. S. Sandhu. He adheres to the traditional ideas of philosophy about the division of knowledge in the form of abstract, phenomenological and other sciences. I believe that knowledge should be classified differently (Smulsky, 2019d). Therefore, my analysis of the shortcomings of contemporary science is expressed in other categories. What G. S. Sandhu calls “abstract mathematical formulations,” I call “constructions built on hypotheses.”

The words of G. S. Sandhu come next. Now we are stuck in plethora of unfounded Belief Systems which are hindering any real progress in Fundamental Physics Research... Fundamental Physics researchers have

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inadvertently adopted certain abstract mathematical concepts into their physical worldview. For example, the notions of virtual particles, exchange theory of interaction, probability density representing instantaneous particle location, space-time curvature, Black Holes, Big Bang, metric expansion of Space, etc. are truly abstract mathematical concepts which have been erroneously adopted in our physical worldview as physical realities.

...it is a part of Human Nature that we find ourselves so prone to mass indoctrination by dominant vested interest groups in all fields. Our inherent capacity to use Logic and Reason gets restricted or diminished under such a state of mass indoctrination and we involuntarily join 'Group Thinking'. Fundamental Research is one such area where indoctrination of innocent students and mass hypnosis of general public is inhibiting the use of Reason and Logic for discarding erroneous beliefs like Black Holes, Big Bang, probability waves, space-time curvature etc.

...even if a few researchers do put up valuable research contributions for advancement of Fundamental Physics, we cannot distinguish their voices from the background noise. In my opinion, one possible way to put Fundamental Physics Research back on the Right Track, is to appoint an International Experts Panel for Research Evaluation, by co-opting experts from various specialist and multi-disciplinary fields. This Panel may Evaluate and Grade all published research papers that may be referred to it by various research bodies (like ResearchGate) and academic institutes. Only High-Grade research papers may then be released to public media for wider dissemination.

7.5.3. Discussion of the Disadvantages and Ways to Overcome Those

I shall give an example of a discussion of these issues in RG. When discussing question 3 G. S. Sandhu marked the following answer on March 1, 2024: "Crucial points highlighting the shortcomings of Astrophysics."

1. It is fundamentally wrong to assume, implicitly or explicitly, electrons, protons and ions to be non-interacting particles under any circumstances, especially under a high-density environment. It is well-known that electrostatic repulsion between two protons is 10^{36} times stronger than the gravitational force between them, yet in astrophysics of stellar cores, electrons, protons and ions are often assumed to be non-interacting for invoking the use of Electron Degeneracy Pressure and hydrodynamic Equation of State under a high-density environment.

2. Application of Fermi-Dirac Statistics to degenerate electrons, by treating them as non-interacting particles, to accelerate those to high kinetic energies through the action of Pauli's Exclusion Principle is fundamentally wrong. Electrons can never be accelerated to high kinetic energy without electromagnetic interaction in some or other form. The kinetic energy density of degenerate electrons can never be declared as the Electron Degeneracy Pressure just because their dimensions ($\text{ML}^{-1}\text{T}^{-2}$) are common, without incorporating a physical mechanism to enable electrons to exchange their momentum with protons and ions through elastic collisions.

3. Since the Astrophysics textbooks do not cover the theory of elasticity, the students of Astrophysics are not prepared to handle the solid state of stellar cores or to work out stresses and strains in solid spherical bodies under self-gravitation. That is why Astrophysicists make use of invalid Electron Degeneracy Pressure and hydrodynamic Equation of State, by implicitly assuming all electrons, protons and ions to be non-interacting, and wrongly collapse solid iron stellar cores into Neutron Stars and Black Holes.

[Article Black Holes are a Mathematical Fantasy, not a Physical Reality.](#)

[Article Ionic Gravitation and Ionized Solid Iron Stellar Bodies.](#)

On the same day I answered in such a way.

"Dear Gurcharn Singh Sandhu,

I completely agree with you. Similar to your paper "[Black Holes are a Mathematical Fantasy, not a Physical Reality.](#)"

I have the paper (Smulsky, 1996).

All modern fundamental science is defective and false. It is built on hypotheses and gives a fantastic world that does not exist in reality.

It is necessary to create a new science without the theory of relativity and quantum mechanics (Smulsky, 2019d, 2023d).

To prevent young researchers from wasting their lives on meaningless fantasies, an International Scientific Tribunal must be created (Smulsky, 2023b).

Sincerely yours, Prof. Joseph J. Smulsky."

On the same day, G. S. Sandhu responded.

"Dear Prof. Joseph Smulsky,

I too completely agree with you. You say, "*To prevent young researchers from wasting their lives on meaningless fantasies, an International Scientific Tribunal must be created.*" Before creating such

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a Tribunal, the mainstream scientific community must first get convinced about the need for doing so.

On similar lines I have raised a question on ResearchGate, “Fundamental Physics is stuck in conceptual crisis and reached a dead end. What exactly is wrong with Fundamental Physics Research?” (Sandhu, 2023).

Best Regards, Gurcharn.”

After reviewing the rationale behind G.S. Sandhu question 6, as well as some of his works, on March 11 I presented my thoughts in this form.

“Dear Gurcharn Singh Sandhu!

In your comment of March 1, 2024, you note that before creating the International Scientific Tribunal (Smulsky, 2023b), it is necessary to discuss the reasons for the emergence of fake fundamental science. In your analysis “Fundamental Physics is stuck in conceptual crisis and reached a dead end. What exactly is wrong with Fundamental Physics Research?” you put forward three reasons and also propose the creation of the International Experts Panel for Research Evaluation. This Experts Panel could authoritatively declare the fallacy of a number of modern constructions of fundamental science.

I agree with you that such Experts Panel needs to be created. In the future, an International Scientific Tribunal (Smulsky, 2023b) may be created on its basis. Such Experts Panel may be created in the near future. You and I note the same shortcomings of modern science. If five or six more researchers join us, then we can consider this to be the beginning of the creation of the International Experts Panel on Misconceptions of Fundamental Science.

As for the three reasons for the fallacy of fundamental science, I agree with you. I also agree with a number of other researchers who put forward other reasons. But there is a main cause, which is that modern constructions of fundamental sciences are based on hypotheses. Starting with Albert Einstein, instead of studying and understanding the world around us, the method of creating it using hypotheses was adopted.

You offer a broad discussion of the shortcomings of science. I agree that such a discussion needs to be carried out. But that’s not the main thing. It is necessary to discard all false constructs of science and

explore the world around us, develop this research and implement it into life.

Much has already been done. I mentioned a number of such studies in (Smulsky, 2023b). The Polish researcher Michał Gryziński did a lot (see for example (Gryziński, 1987)). I have too done a lot: I created the foundations of a new fundamental science (Smulsky, 1999, 2004a, Smulsky, 2019d). This is science without hypotheses. I have created more than a dozen different theories, for example, the new Astronomical Theory of Climate Change (Smulsky, 2016d, 2021c). It explains the cause of long-term climate changes such as Ice Ages and definite them. But these are not theories like the Theory of Relativity or the Quantum Mechanics, in which hypotheses are accepted, and an explanation of the surrounding world is created on their basis. My theories are like the theory for locksmiths, like the theory of a ship or the theory of an airplane. They describe how to cut out a part, how to build a ship or an airplane. For example, the Theory of Interaction (Smulsky, 1999, 2004a) shows how to determine the forces of interaction between bodies and calculate their movements.

You define yourself as an independent researcher. There are many independent scientists at ResearchGate. Most of them are highly educated and talented researchers. This allows them to delve into the intricacies of the Mainstream's constructions and see their worthlessness. Such researchers, united, could create an Institute for Independent Research. Among independent researchers there are those who, based on their hypotheses, also create an imaginary world. Therefore, it is necessary to distance ourselves from these works by introducing an additional definition, such as, for example, the Institute of Independent and Non-hypothetical Research.

This Institute can, having discarded all the false constructions of Mainstream science, begin to study the world around us. The results of knowledge of the real world will immediately be perceived in society, and the authority of this Institute will quickly grow. Such an Institute can remain independent if it provides its own funding. As I already mentioned, independent researchers are talented people. Therefore, each of them has ideas that can be transmitted into products and goods that will be used in society.

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There are a lot of other works needed by society that such an Institute could carry out. For example, there is the problem of contemporary climate warming. Mainstream science has accepted that climate warming is caused by anthropogenic CO² emissions. There are a huge number of works that show that there are other causes of climate warming, and the carbon dioxide cause is insignificant. Society could order this Institute to analyze these two scientific directions and issue recommendations in which direction society should develop further.

The second problem: atomic weapons and the danger of their use. Now the leaders of a number of NATO countries speak out without embarrassment in favor of the use of atomic weapons. So this problem becomes one of the main ones. How can this be solved so that all nations, both those who have atomic weapons and those who do not have them, feel safe? I believe that only the Institute for Independent Research can solve such problems.

As this Institute matures, its capabilities will increase. It will create its own scientific journals, nominate worthy scientists for Nobel Prizes, submit its proposals to future space research programs (Smulsky, 2022a), train the younger generation of future researchers, etc.

There are 20 million researchers on ResearchGate. If only one out of 100 of these researchers begin to study the world around us, and not fantasize about its structure, our lives will quickly begin to change for the better.

Sincerely yours, Prof. Joseph J. Smulsky.”

On the same day, independent researcher Dale Fulton, in response to question 6 (Sandhu, 2023), approved my reasoning in the following form.

“Joseph,
with the abundance and preponderance now of publications of all kinds, we now face the inevitable “needle in the haystack” problem. Even if there were a revolutionary developed idea, it might be lost in the blizzard of quantity, not quality.
Thank you for your contribution.
Dale.”

On March 12, I responded to Dale Fulton this way.

“Dear Dale!

Our destiny is in our hands!

What needs to be done so that the Truth, like a needle, does not get lost in a haystack, or, in other words, in a stack of straw?

If you find a needle in a stack of straw, do not lose it and tell everyone about it. If everyone does this, not a single needle will be lost!

On the other hand, never pass straw to others. If everyone does this, then there will be no stacks of straw, and all the needles will be in plain sight!

Our destiny is in our hands!

Sincerely yours, Joseph.”

April 21, 2024 Dale Fulton approved of my words as follows.

“Hear, here, Joseph!

Well said. I concur; the future must be built one truth at a time.

Regards.”

On the same day G. S. Sandhu posted the following response.

“Dear Dale and Joseph,

Let us attempt to implement the suggestion, *“If you find a needle in a stack of straw, do not lose it and tell everyone about it. If everyone does this, not a single needle will be lost!”*

I have observed on ResearchGate that almost all researchers are trying their level best to promote their own research work, their own viewpoint. Most often each researcher firmly believes that his own viewpoint is most valuable, and if followed or adopted by others, can solve most of the current problems faced by fundamental physics. Unfortunately, each researcher laments that other researchers do not spare sufficient time to study his research work in depth to fully appreciate it.

To overcome this situation, each researcher must stop promoting his own research work and sincerely start promoting the research of some other researchers which he finds the BEST of all that came to his notice. For this each researcher must spare some time for in-depth study of some research papers that appear promising to him on the first look itself...

Best Regards.”

Joseph J. Smulsky

Many other researchers also took part in this discussion. Their opinions can be found at the link (Sandhu, 2023) to question 6. A number of them approved of the opinions presented here, and some did not. It should be noted that other researchers also followed the discussion, and some left their opinions in the “Recommendations” option. In addition, there were researchers who were not interested in the above judgments, and they promoted their works.

On April 23, to one of these researchers, G. S. Sandhu has provided an answer, of which I will only quote the relevant part.

“...In spite of tens of thousands of advanced research papers being published every year, there is hardly any perceptible advancement in Fundamental Physics. One reason is that... when a researcher develops a model of a certain aspect of Nature, due to long mental association and efforts put in, psychologically he starts feeling that his model is the best under the sun and other researchers must take note of it.

It is quite possible that many researchers, who continue to repeatedly push their models for wider acceptance, may not be succeeding because their models may be flawed for one or the other reason...

As I have suggested in my last post, if we start promoting the high-quality research work of other researchers, instead of promoting our own work, then many flawed models will get filtered in the very beginning and only good quality research work will come up for wider discussion and further evaluation. Once we start promoting the high-quality research work of other researchers, then sooner or later, our own high quality research work too will get noticed by the wider scientific community.

Regards.”

On April 24, 2024, I expressed my approval to the words of G.S. Sandhu.

“Dear Gurcharn Singh Sandhu,

Your word is good: “Once we start promoting the high-quality research work of other researchers, then sooner or later, our own high quality research work too will get noticed by the wider scientific community.”

I like Indian wisdom. It seems that Krishna said: “No matter what I do, no matter how I act, no one will condemn me in all three worlds. But if I act unrighteously, then others will act unrighteously!

Joseph.”

7.5.4. Conclusion

The above discussion presents judgments about the disadvantages of contemporary fundamental science and ways to overcome them. Much of the discussion not included here represents a heterogeneous range of hypothetical constructs. However, these constructions are not welcomed by the overwhelming majority of researchers. And more and more of them are beginning to take their words responsibly. Over time, all researchers, like Krishna, will realize that everything is allowed to them, but there should be nothing in their works except the Truth. And everyone will do the same. Then science will become a guiding star for society, and society will follow the path of successful development.

7.6. System of Published Works Selection

7.6.1. Introduction

The shortcomings of contemporary fundamental science are now being discussed by many researchers, including myself (Smulsky, 2023b, 2024c). In this regard, ways to overcome these shortcomings are being sought. One of the encouraging ways was proposed by Indian researcher Gurcharn Singh Sandhu September 24, 2024 (Sandhu, 2023). I will cite some of his thoughts with some rearrangements and contractions, so I will not put them in quotation marks.

ResearchGate was founded with a mission to connect the world of science and make research open to all. With current ResearchGate membership of over 25 million, that mission appears to have been achieved.

But there are two major problems still pending. At present, despite hundreds of thousands of advanced research papers being published every year, there is hardly any perceptible advancement in Fundamental Physics. One reason is that even if a few researchers make valuable research contributions to the development of fundamental physics, we cannot distinguish their voices from the background noise. The second reason is that under the current system of research funding, research work that tends to be critical of the currently accepted viewpoint, is never encouraged.

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Hence, to put the Fundamental Physics research back on the right track, we need to create a centralized public review and evaluation system for all fundamental research papers. Through such an evaluation system we need to bring out and showcase high quality research papers uploaded on ResearchGate. It is therefore proposed that we get together to create an evaluation and grading system for all research papers within the available ResearchGate (RG) environment.

Let us consider the evaluation system proposed by G. S. Sandhu.

7.6.2. Evaluation System for Research Papers on ResearchGate

The proposed evaluation system will be managed and operated by a team of dedicated researchers who will volunteer to join this noble endeavor. This management group, called the RG Research Panel, may consist of approximately five RG members and may be registered as such on ResearchGate. The proposed review and evaluation system will operate in three distinct parts or streams:

- Part 1 – The Proposal Stream;
- Part 2 – The Evaluation Stream;
- Part 3 – The Data Compilation Stream.

In Part 1 – The Proposal Stream, the RG members will post the works that they consider worthy of further evaluation. To select worthy works, a number of criteria are proposed, which need to be further improved and supplemented. From this stream, other RG members will propose works for their evaluation on a 10-point scale.

In Part 2 – The Evaluation Stream, the works will be posted for evaluation by the reviewers. The evaluation will also be carried out according to the criteria that will be further improved and supplemented. Each work will be evaluated by several reviewers.

In Part 3 – The Data Compilation Stream, the evaluated works will be posted. Each work will be assigned a score equal to the average of all its evaluations by the reviewers. And all the evaluated works will be ordered according to their evaluations.

This is a brief description of the evaluation system proposed by G. S. Sandhu. You can find more details in (Sandhu, 2023). There are also a

number of G. S. Sandhu's ideas that led him to the need to create this system. There are also some discussions about it here.

I was very interested in G. S. Sandhu's proposal. Such a system is necessary. It will reduce the number of papers that a researcher needs to read in order to keep up with the latest scientific achievements. This system will also reduce the release of sensational and extravagant hypotheses into the media, which will turn out to be erroneous in a few days.

However, after a few days, I began to have doubts about the principles of this system. It depersonalized the scientific work, since only its DOI was mentioned, the names of the reviewers were not included, and the work was characterized only by a numerical assessment. Such an assessment system can be called statistical. It seems to me that in order to select worthy scientific works, it is necessary to create a meaningful assessment system, not a statistical one.

7.6.3. Selection System for Research Papers on ResearchGate

I put myself in the shoes of a Reviewer and asked myself: what do I need to decide whether to review an article for a positive assessment? After all, we are supposed to select only good research papers, and we do not select bad papers.

To do this, I need to know the authors of the research work, its title, its summary, who recommended it and their recommendation. Based on this information, I can decide whether this research work is good or bad.

Therefore, in Sub-subsection 7.6.5. System scheme, I am attaching the form of two examples of research works in which they should be presented in the *Proposal Stream* (Sub-sub-subsection 7.6.5.1). The first example is an article, and the second one is a book, and not in English. The second example shows how research works in other languages can be presented.

I propose to consider research papers not only with DOI, not only those contained in RG, but also all other research works that RG members deem necessary to recommend for evaluation. Only two requirements must be met: 1) the work was published; 2) the work is available on the Internet.

In the future, based on this information (see 7.6.5. *System scheme*), the Automated System RG (AS RG) will offer these research papers to RG members for review. Therefore, the members of the Research Panel of RG will be exempted from this obligation.

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As examples (see 7.6.5. *System scheme*), I have provided my own works, since I have them at hand. One can provide examples of other papers.

I thought about the procedure for placing the evaluated research works in the second stream, the *Evaluated Stream*. It seemed to me that it was possible not to create a third stream of finally selected papers. A research paper from the second stream is being placed in it based on the summation of reviews on it. This principle of the summation of reviews is in effect now, and it has led to false science. I foresee that in this case, authors and their supporters will initiate dozens of very good reviews; as a result of which very bad works will be rated as very good (I note that the practice of initializing good personal articles exists in Wikipedia).

I propose that the selected work posted by the Reviewer be considered as finally selected. There may be several recommendations for it in the first stream. The names of the recommenders and the reviewer's name are the guarantor of an honest choice.

One of the reasons for the shortcomings of contemporary fundamental science is the anonymity of the reviewer. Society should allow the Reviewer to decide the fate of scientific work. But the actions of the Reviewer should be known to society. Therefore, each RG members has the right to comment on the review (not the article, but the review). In Sub-subsection 7.6.5. *System scheme*, I place example 1 in the form in which it should be posted in the *Evaluated Stream* (Sub-sub-subsection 7.6.5.2). After the Review, there are comments from RG members. After the Reviewer places the research work in the *Evaluated Stream*, it will be removed from the *Proposal Stream*. This operation can be performed by AS RG.

Proposals, reviews and comments will be made according to criteria that will be further improved and supplemented. The automated RG system will monitor that these criteria are not violated. The names of the authors of proposals, reviews and comments will forever remain with the scientific work selected as worthy. Therefore, these authors will be proud of their work. They will approach the evaluation of scientific works with great responsibility, and will not allow themselves to have bad or erroneous work included in the selected works.

Not every RG member can be a reviewer. There were hundreds of reviewers along my way, and only 10% of them could be used to select good works. I have written about one of these reviewers in (Smulsky, 2009b).

All contemporary fundamental Mainstream science, not only physics, is presumptical science, since it is built on hypotheses. Therefore, it is necessary to introduce the Selection System for all science. Let's divide it

into the following areas: 1) Mechanics; 2) Physics; 3) Chemistry; 4) Biology; 5) Geology; 6. Astronomy; 7. Medicine; 8. Space sciences; 9) Other sciences.

Mechanics studies the motion and interaction of bodies. Therefore, we include works on Electrodynamics, Special and General Relativity in Mechanics. As one can see, the physical works mentioned in the RG discussions will be placed by those who propose to evaluate them in the areas 1, 2, 6, 8 and 9.

Each of the 9 areas should have Streams of *Proposal* and *Evaluated* works.

7.6.4. Conclusion

The *Evaluation System* conceived by G. S. Sandhu is a grand system, both in its functioning and in its significance for human society. For the first time, Humanity will receive a tool that will constantly improve science and eliminate its shortcomings. But in order for this tool to start working, all researchers need to get involved in its creation and functioning. At this stage, it is necessary to consider several approaches to its creation. Depending on the approach, such a system can differ significantly. These differences allow us to see the characteristics of the system that will need to be implemented.

7.6.5. System Scheme

7.6.5.1. Part 1 – The Proposal Stream. Research Papers Proposed for Evaluation

Example 1

Smulsky, J. J. (2024) Development of Multilayer Models of Globular Star Clusters and Study of Their Evolution. *Journal of Modern Physics*, 15, 1246-1300. doi: 10.4236/jmp.2024.158051. https://www.ikz.ru/~smulski/Papers/DMMGSCE2_7JP.pdf.

Abstract

Joseph J. Smulsky

Usually, models of globular star clusters are created by analyzing their luminosity and other observation parameters. The goal of this work is to create stable models of globular clusters based on the laws of mechanics. It is necessary to set the coordinates, velocities and masses of the stars so that as a result of their gravitational interaction the globular cluster is not destroyed. This is not an easy task, and it has been solved in this paper. Using an exact solution of the axisymmetric gravitational interaction of N-bodies, single-layer spherical structures were created. They are combined into multilayer models of globular clusters. An algorithm and a program for their creation are described. As a result of solving the problem of gravitational interaction of N bodies, evolution of 5-, 10-, and 15-layer structures was studied. During the inter-body interaction, there proceeds a transition from the initial specially organized structure to a structure with bodies, uniformly distributed in space. The number of inter-body collisions decreases, and the globular cluster model passes into the stable form of its existence. The collisions of bodies and the acquisition of rotational motion and thermal energy by them are considered. As a result of the passage to scaled dimensions, the results were recalculated to the conditions of globular star clusters. The periods of rotation and the temperatures of merged stars are calculated. Attention is paid to a decreased central-body mass in the analyzed models of globular star clusters.

Keywords: N-Body Problem, Solution, Globular Star Clusters, Properties

Recommendations

David L. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Dr. Joseph M. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

John D. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Example 2

Smulsky J. J. (2019) The Upcoming tasks of Fundamental Science. M.: Sputnik+ Publishing House, 134 p. ISBN 978-5-9973-5228-8. (In Russian). <https://www.ikz.ru/~smulski/Papers/InfPrZaFN.pdf> – book's information in English. The book in pdf-format in Russian can be downloaded here: https://www.ikz.ru/~smulski/Papers/PrZadFuNa02_2.pdf.

Abstract

The monograph uses a non-hypothesis method of studying the surrounding world. The knowledge about it is based on mechanics: the science of motion and interaction of bodies. The main provisions of mechanics are considered. The structure of the world and its existence are due to gravitational interactions. The main laws and tasks of these interactions are considered. Such space objects as planetary systems, star clusters and galaxies exist due to the interaction of N bodies. Exact solutions to the N -body problem, as well as the results of its numerical solution, are considered. The structure of the microworld and its existence are due to electromagnetic interactions. A new law for the force of interaction of two charged particles moving relative to each other is substantiated. Gravitational and electromagnetic interactions allow us to know the real world. It differs from the contemporary scientific picture of the world, which is built on hypotheses. On the same basis, long-term fluctuations in the Earth's climate are considered. It is shown that theoretical results determine the known changes in the paleoclimate. All the achievements of society are obtained by its labor. Man has acquired power over the entire living world, so he is responsible for its existence and development. These provisions present the further path of development of society. According to the text of the monograph and at the end, the upcoming tasks of fundamental science are formulated.

The book is intended for a wide range of readers of different specialties and different ages.

Recommendations

Dr. David L. Smith

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Joseph M. Smith

Joseph J. Smulsky

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Dr. John L. Smith

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

7.6.5.2. Part 2 – The Evaluated Stream. Evaluated Papers.

Example 1

Smulsky, J.J. (2024) Development of Multilayer Models of Globular Star Clusters and Study of Their Evolution. *Journal of Modern Physics*, **15**, 1246-1300. DOI: /10.4236/jmp.2024.158051. https://www.ikz.ru/~smulski/Papers/DMMGSCE2_7JP.pdf.

Abstract

Usually, models of globular star clusters are created by analyzing their luminosity and other observation parameters. The goal of this work is to create stable models of globular clusters based on the laws of mechanics. It is necessary to set the coordinates, velocities and masses of the stars so that as a result of their gravitational interaction the globular cluster is not destroyed. This is not an easy task, and it has been solved in this paper. Using an exact solution of the axisymmetric gravitational interaction of N-bodies, single-layer spherical structures were created. They are combined into multilayer models of globular clusters. An algorithm and a program for their creation are described. As a result of solving the problem of gravitational interaction of N bodies, evolution of 5-, 10-, and 15-layer structures was studied. During the inter-body interaction, there proceeds a transition from the initial specially organized structure to a structure with bodies, uniformly distributed in space. The number of inter-body collisions decreases, and the globular cluster model passes into the stable form of its existence. The collisions of bodies and the acquisition of rotational motion and thermal energy by them are considered. As a result of the passage to scaled dimensions, the results were recalculated to the conditions of globular star clusters. The periods of rotation and the temperatures of merged stars are calculated. Attention is paid to a decreased central-body mass in the analyzed models of globular star clusters.

Keywords: N-Body Problem, Solution, Globular Star Clusters, Properties

Recommendations

David L. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Dr. Joseph M. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

John D. Scott

A rationale for the recommendation is given: why this work should be included in the **Proposal Stream**.

Review

Prof., Dr. Victor B. Pomeranchuk

The Review should have three parts.

1. A brief summary of the work as presented by the Reviewer (but not the authors).
2. What is useful in the work?
3. Noticed shortcomings and wishes to the authors in their future work.

Comments on Review

Leon L. Smith

I agree with the Reviewer's decision because...

Dr. Invar B. Smith

I do not agree with the Reviewer's decision. The article contains a gross error that invalidates all its results. Evidence to support this claim should be provided below.

Afterword

The present book describes my understanding of the main tasks in future fundamental science. Even with a vast field of scientific activity, it is hardly possible for one person to cover with his/her analysis all of science. I therefore hope that this book will help other researchers to provide their own vision to further science and society's development paths. Such people exist, and by way of example I would like to mention here two books by Doctor of Physics and Mathematics Sciences V. G. Polnikov (Pol', 2015, 2017).

The tasks of fundamental science are outlined in different places in my book so as to make them tightly bound to context and properly understood. Here I will mention several generalizing tasks. The first task is the elimination of hypotheses from science. The hypothetical science of the 20th century must be revised through an analysis of all previously adopted presumptions and eliminating them from science. In this way, some scientific propositions will be able to obtain reliable confirmation. The remaining propositions, about validity of which science presently says nothing, must be also eliminated from science together with the related chains of reasoning. Future science must give such knowledge to society and our descendants that they will never be able to reject it.

The second task of fundamental science is to put into use the results of researchers who were rejected by Mainstream Science for a hundred years. In the present book I have mentioned only few of them. In his list Jean de Climont (de Climont, 2018) mentions 9000 dissident scientists. Such information is also available in other sources:

NPA-World SCI (<http://www.worldsci.org/php/index.php?tab0=Home>),
Ekkehard Friebe (<http://www.ekkehard-friebe.de/>),
Gertrude Walton (<http://www.btinternet.com/~sapere.aude/>),
Galilean Electrodynamics
(<http://home.comcast.net/~adring/GEPeople.htm>),
General Science Journal (founder Walter Babin)

(<http://www.gsjournal.net/>) and
Physics Essays (<http://physicsessays.org/>).

Doctor of Chemistry Sorin Cosofret sends me his information sheets with the number dissident-14748, under which I am listed on one of these lists.

As I have already noted, society should allocate grants for the study of dissident scientists' research, and their results should be published. It is necessary to hold seminars and conferences on the most significant works and ideas of dissident scientists. In this way, the scientific community will be imbued with their heritage, and that heritage will be used in fundamental science.

It is also necessary to remove obstacles to the publication of works by authors working in the fields that differ from the Mainstream. How to remove these obstacles was discussed on March 5, 1990, at the general meeting of the SB RAS in the Novosibirsk Akademgorodok, Russia. As a result, the Presidium of the SB RAS adopted a resolution on the introduction of the section "Publication by way of discussion" in all SB RAS journals. On the personal instructions of the Chairman of the SB RAS, Academician V. A. Koptug, my article was published as a preprint (Smulsky, 1992b). Unfortunately, this single publication has finalized the implementation of the above-mentioned resolution.

The third task is to ensure that at least part of the scientific staff is now replenished with amateur researchers available in society. It is important to establish an environment that supports the advancement and development of their scientific expertise.

Those of them whose work becomes significant should be transferred to a professional basis, and some – to temporary work for the period necessary for completing a certain topic.

Society faces a huge number of unresolved and insoluble problems. For example, one of such problems is the threat of nuclear war. States possessing nuclear weapons have concluded an agreement on its non-proliferation. Countries that do not possess nuclear weapons are prohibited from developing it, and they are under threat of using the weapon against them. Therefore, the development of nuclear weapons will be carried out secretly, inevitably, and such a weapon may appear in the hands of forces hostile to the entire human society. This can be prevented in only one way: all nuclear weapons must be under the control of everyone.

How can this be done? This is the task of science.

Various negative trends are constantly emerging in society: directing all the interests of individuals to sex, teenagers to suicide, adults to religious cults and sects, young people to pompous competitions, Olympiads, and championships. Such trends are becoming the life norm in society. A clear example of negative trends is the emergence of the Islamic State (ISIS), which has introduced sophisticated and demonstrative executions of innocent people. Terrorist attacks with the murder of dozens of innocent people are taking place in almost all countries. This is becoming the life norm in society.

All those Eurovision contests, world Olympics, championships, for example, the World Cup in football are covered in the media as the most important circumstances of society's life. They are of interest only to some people, being imposed only on some part of the youth and being of no interest to the other part of society.

Who will tell society that these are not the actions that contribute to the healthy state of society and its development? Only science can say this.

We are the best; we must be the best; we must do everything to become the best – a crazy idea that has swept the world. The leaders of many countries proclaim this goal. The Russian Federation is no exception. How much money is spent on sports for these purposes? In order to achieve the entry of five of Russian universities into the top hundred of the world by 2020, a lot of money had been allocated, and science was restructured for this purpose. Its criteria and indicators are being created, which, as their initiators believe, will bring science to the forefront. Unfortunately, these actions lead to the opposite results, as everyone later becomes convinced.

Who will say that these are not the goals of society which the society should strive for? Every nation has its own land, there are hands eager to work, and there are bright minds. With their own hands, every nation can organize a happy life for themselves. And this life will be the one most desirable for them. If another nation does something better, it can also be done in your own country, if there is a need for it. There is no need to move to another country to take advantage of the achievements of its people and parasitize on them.

Who will show this path to society? Only science, if its authority is like that of the gods.

The people who are most obsessed with false ideas are those who form the ruling elite. These people, as a rule, have long since broken away from their people. The average American has no desire to rule the entire world, and the average citizen of another country also has no desire or aspiration for

his country's sports or science to break ahead at any cost. Sometimes, this elite becomes obsessed with such false ideas as the creation of a united Europe, the establishment of "democracy" in Yugoslavia, Iraq, Libya, Syria and Ukraine; the establishment of tolerance for sexual minorities; demonstrations of love for one's neighbor, as a result of which millions of people become refugees. These ideas affect all countries, and the problems that arise become global.

There is a movement of the masses against this globalism. The "Green" movement has formed. In France, a movement of yellow vests has begun against the policy of globalism, and it is understood and supported in other countries. And what is globalism? There are different definitions of this concept, but in general it has not yet been defined, since this phenomenon of modern society has not yet formed and is in development. One thing is clear, – there is a certain Mainstream, which forces the whole society to move in a direction that seems unacceptable to the majority of it. I encountered this Mainstream in science. In over 50 years of my research, I have reliably established many of its absurdities. The Mainstream absurdities also exist in other areas of society. How to eliminate these absurdities in our lives is discussed in the present book. Researchers working in academic institutions have agreed with many of the results and conclusions presented in the present book. And I also agree with many of their views. Therefore, I have no doubt that what is said in this book corresponds to the interests of the majority of society and will find understanding among the representatives of modern science. All the noted shortcomings and problems of society require study, research and a search for their solutions.

Only science, based on real knowledge of the world, can overcome them. There have been and are many outstanding minds in the world who understand all these problems and are able to solve them. One of them was the Chairman of the Siberian Branch of the Russian Academy of Sciences, Academician

V. A. Koptug. With the words that are the title of his book (Koptug, 1997), I would like to conclude this Afterword: **Science will save humanity!**

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