

# The Critique of Modern Physics

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Harald Lesch, a well-known astrophysicist in Germany, said in an interview that he sees no contradiction between science and faith. My credo is that science begins where you call your faith into question and find new answers to these questions. The following article is written exactly for this purpose. It questions three beliefs of modern physics and finds astonishingly simple answers.

## The Contradiction Between Modern and Classical Physics

Classical physics ended with the introduction of Relativity by Albert Einstein and Quantum mechanics by Werner Heisenberg and Niels Bohr.

What was the merit of these scientists? They incorporated the observer into the experiment and raised the visual result of observation to the subject of physics. This was a revolutionary new step in the history of physics and was enthusiastically received from a part of the scientific community. Do could be explained a series of observed effects. However, they used two different techniques. While Einstein argued that there was no difference between the object and the observer, Heisenberg relied on data compaction without professing statistics. As a result, the desire to combine both different modes of thought under the concept of quantum gravitation was developed.

In the further development of physics, however, considerable difficulties arose which led to a split-up of physics into a classical and a so-called modern physics because the conclusions from Relativity and Quantum mechanics were not brought into harmony with classical physics and also Quantum theory and Relativity could not find a common basis. Here offers up my following criticism.

Modern physics does not distinguish between reality and the image of reality and attempts to draw conclusions from imagined models and tried to prove them by means of "experiments" which are interpreted in the sense of the conceived. In other words, the will is supposed to dominate reality. In the following, this thesis will be explained by examples.

If we take a textbook about physics, we find that we instead hold a textbook of mathematics in hands. It is indisputable that mathematics is an indispensable tool for physics, but it is **only** a tool. Physics is still primarily an empirical science based on observation, and one must be able clearly to distinguish between observational effects caused by the movement of the observer like the optics on one hand and physical processes, the movement of matter on the other hand.

The observation of the three-dimensional nature produces an image in our eyes on a two-dimensional retina. But this image does not penetrate to consciousness. It is filtered by our beliefs and our faith. So what we observe is not even a photographic image, but much less. We only see what we understand. If we make a model of this, it is not the reality, but a reduced distorted image

of a much more comprehensive reality that we generally do not understand. If we draw inductive conclusions from this model, without giving an account of how the imaging laws work, this will ultimately lead us astray. Nothing is easier to deceive than our optical observation. To reduce these deceptions, human is equipped with different senses, which are arranged in pairs. Another complicating factor is the fact that physics, as an empirical science, has developed into a theory overpowered discipline and thus has to accept further limitations because the observations have been limited to suspected phenomena and all the other unforeseen ones have been sorted out. Finally, it became an alibi of a mathematics that had nothing to do with the real world. All this is bundled in the person Albert Einstein stylized to a monument, who appears here as a sorcerer's apprentice with his theory of Relativity. We will have to deal with some of his abstruse ideas in the following.

There has been no lack of massive [criticism of the theory of Relativity in the scientific community](#) over the last 100 years. Since 2002 [there](#) has been a comprehensive documentation of the judicial publications on the special theory of Relativity, but against all reason, these criticisms are suppressed in the public, so that one has to ask, who benefits?

Relativity includes statements about the cosmos. In the Western world, the Catholic Church had the interpretative control of the cosmos for nearly two thousand years. Will she abandon this control without fighting?

The Christian religion has overthrown the ancient faith by demeaning the ancient gods and extinguishing them under the earth to hell. May God take the good to heaven. There can be no fire in heaven, where the wicked must burn in hell. The ancient gods, who inhabited heaven, possessed the fire that Prometheus stole and brought to man. Heavenly lights and comets have always been seen as a threat. Comet tails were already described in 1767 by Hugh Hamilton as electrical phenomena in his "[Philosophical Essays](#)". The Norwegian physicist [Kristian Birkeland](#) published a theory for the cause of the heavenly light in 1896: He assumed that electrons from the sun excited the gas mixture of the upper atmosphere. This fell into a period of unprecedented boom in electrical engineering.

Then in 1905 Einstein came up with his memorable essay "[On the Electrodynamics of Solid Bodies](#)", in which he banished the fire from the cosmos by means of a Lorentz transformation, with which he corresponded to the spirit of the time. Arthur Schopenhauer had reversed into the opposite the almost a hundred years before appeared hated book of Immanuel Kant, "[Critique of Pure Reason](#)", in his principal work, "[The World as Will and Representation](#)". From this, Einstein derived his principle of relativity, which, according to Schopenhauer, does not know any difference between observer and observed object. For this reason Einstein also made no difference whether a train or the platform is moving, or a light beam or the world. That is why he interpreted so strangely the Lorentz transformation, although Lorentz warned him against this interpretation. A transformation, however, only means taking another angle of view. It is the view from a fast electron, which reminds of how the fictive Baron Munchausen rode on a cannonball. Physically this does change nothing, and Einstein himself has determined that this angle of view is never to be assumed because a proton is already a thousand times heavier than an electron and to accelerate a

few protons to a speed near the speed of light a machine of the dimensions of the LHC in Cern is necessary. But these few protons are not yet an observer.

The wide acceptance of Einstein's Relativity led to a complete overvaluation of the importance of gravitation to the electrical phenomena in the cosmos in the following years. Thus the Christian faith from the heaven of salvation was preserved, and fire and electricity remained under earth in hell. Albert Einstein was celebrated for this! With his even more crazy general theory of Relativity, he laid the foundations for Lemaitre's Big Bang theory, which finally declared Pope Pius XII, in 1951, the scientific validation of Catholicism. On the other hand, attempts by the materialists in the USSR, probably failed because of the popularity of Einstein and because of his writing "[Why Socialism?](#)". He was thought to be a pro-socialist "progressive" scientist.

Thus faith was saved and science had been lost. To the confusion of the image of reality with reality itself three principles of belief were adopted. .

1. The belief in symmetry in nature: Whether symmetry or not, always depends on the point of observation. Nature is at best self-similar. Structures are repeated on different scales with small deviations.
2. The belief that two different modes of observation of physics, a deterministic and a statistical one, can be combined into one and thus attain a uniform physics. In fact, today's physics is split from the classical one, without taking a step closer to the dream of the fusion of the two images.
3. The belief that one can extract from the mathematical model more insights than one has put in. This would be a mental perpetuum mobile. With the expert systems of the artificial intelligence, one quickly realized that one did not succeed with it. A computer remains a speed shroud. It makes all this wrong very quickly, which was not given to him correctly. Computers also need to learn from the environment.

Immanuel Kant already criticized the last doctrine of faith in his *Critique of Pure Reason* in 1786: He wrote: '*Concepts without visual percepts are empty, visual percepts without concepts are blind*'

Since Kant was placed on the index of the prohibitorum librum by the Catholic Church, and the latter claimed the interpretative authority about heavens for near 2000 years, the astrophysicists do not seem to know or misinterpret this theorem. Do they have created a variety of such empty concepts over the last 100 years, from the Big Bang to Black Holes to Dark Energy and Dark Matter without trying to explain the world beyond our earthly experience with our earthly experiences and insights.

It is time to make up for the failure and to recall the basic principles of physics. It does not bring us closer to reality if we want to merge two opposing images into one.

Let us reintroduce the traditions of classical physics and rethink the old. In particular, let us remember where physics has been simplified in the sense of a mathematical description and the consequences of these simplifications. We will explain physics here without mathematics, as

mathematics is nothing more than a language that forces to exactness, but often affects the understanding of people who are not fully capable of this language. In other words, a fact which we can not formulate clearly in our language will be wrong to describe mathematically. In addition, we do not operate physics for our own purposes, but society can also participate in it.

## **Object of physics**

Physics is the doctrine of the motion of matter. Physics, as a natural science, is an empirical science that lives from measuring natural phenomena. This means, in reverse, what I can not measure can not be the object of physics. Physics will not give any answers about things that are not measurable. These are specific questions of cosmology as well as questions of particle physics, which lie outside our observation and measuring range. We call the speculation about such things as metaphysics. The crisis of current physics results from the fact that the boundaries between physics and metaphysics have been increasingly blurred since the beginning of the 20th century. This was made possible by the increasing mathematicalization of physics, which was no longer focused of the measurement, but a "beautiful" mathematical theory, whatever one imagined.

*If any experiment contradicts a beautiful idea, let us forget the experiments*

This sentence expressed by Dirac or Einstein - the sources contradict each other – illustrates the way of thinking, which has been established for several generations among the magnate theorists.

We today face the problem that we can no longer separate the experimental reality from the supposedly “good” idea. Thus we shall have to examine the entire physics of a revision in order to separate physics from metaphysics.

Theoretical physics begins with the Lagrangian function of mechanics, an abstraction which emphasizes symmetry but neglects the interaction between the particles. Symmetry is at all the fundamental motif of theoretical physics. Symmetry, however, is not a fundamental property of matter, but a property that appears only in relation to the viewer. We observe that nature itself is self similar. It repeats structures on different scales. The symbol of such a structure is Romanesco, a cauliflower species whose inflorescence has both fractal structure and Fibonacci spirals. We should be careful not to involve religious beliefs in physics. Symmetry is a belief in Islam that has found its most perfect expression in the conceptions of paradise. One example of this is the Taj Mahal, which is expediently visited in the morning hours or in the evening, so that the illumination through the sun breaks the symmetry along the axis of symmetry.

Let us now begin to question the fundamental concepts of physics and their relations to each other.

## **What is matter and what do we understand by motion?**

Matter is the substance of the world. Matter is all that surrounds us. It is the substance of which we ourselves exist. Matter has an expansion, or volume and energy, as well as material structure in

volume and energy. This means that matter must consist of components. We call them atoms. These differ in mass and forces, which guarantee cohesion. Matter therefore has an atomic structure that occupies a volume. We also refer to their collection as mass. The individual components of the mass have a well-defined distance, which results from the interaction of the forces between the individual components.

This results in a specific volume for each mass. The volume includes the atoms and the forces acting between them, which ensure the cohesion between the atoms. It should be emphasized that it is a volume and not a space. We come later to the concept of space and in which relation are space and volume. The volume is thus not simply a collection of atoms. When we speak of volume, we always mean the forces determining the structure of the atoms too, which are responsible for the aggregate state of a mass. We have distinguished four such states since time immemorial: *Solid, liquid, gaseous and plasma*<sup>1</sup>. The ancients spoke of the four elements: earth, water, air, and fire. We know that these states have something to do with their intrinsic powers. A volume bounds a certain property of matter against another. In particular, aggregate states are distinctly differentiated from each other. In the past, only three aggregate states and the empty space were always considered. When the ether was to be introduced instead of the empty space, it was rejected, because a completely unsuitable experiment, the Michelson Morley experiment, was used for its proof and thus failed. The speed gain in the direction of the moving reference system is lost again in the opposite direction.

Why do astrophysicists resist permanently against the idea that the cosmos consists of more than 99% of plasma? This is a question of faith, as we have pointed out above. The connection of fire and heaven was much more anchored in the ancient pre-Christian myths. The Nordic god Thor hurled his hammer and produced lightning. If one goes further into the past in mythology, one finds the gods themselves as phenomena from fire and brilliant plasma. Even in the Old Testament, God spoke to Moses through a burning bush and proclaimed the laws. Today we know such bushes as sprites, huge lightnings that reach from the earth to heaven. They were observed many times by the space station ISS. There must have been times in the history of mankind in which electric discharges have been much more numerous than today, that the faith of the gods could develop from observed phenomena, and these phenomena were electrical in nature, based on plasma discharges. This is, of course, unacceptable to Christian doctrine. Einstein has shown the Catholic Church - as a steward of heaven - a way to save the kingdom of heaven for the souls. This is his true merit and therefore he was raised to the throne, not because of his merits for physics. Even today, astrophysicists emphasize that science and faith are not mutually exclusive. These people only forget that science begins only when faith is questioned. But religions have their limits there.

We spoke at the outset of the fact that physics is a measuring science. Measure means: I compare the object to be measured with an object of my choice and get a measure which tells me the magnitude relationship between the object to be measured and my comparison object. It is, of course, wise that the comparison object is recognized by as many people as possible. [International efforts](#) to achieve uniform physical measurements of centimeters, grams, and seconds go far back

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1 The term *plasma* for the luminous aggregate state comes from [Irving Langmuir](#) in 1928

until 1790. In order to get reproducible results, I have to name the comparison object, - the unit of measurement - as well as the measure. Unlike in mathematics, a physical variable always consists of the measure and unit of measure. Two of the fundamental comparative measures in physics are space and time. You read correctly. Space and time are not material entities, but spiritual abstractions of the material world. This is always confused. Space and time create relationships of our inner spiritual world to the material external world. They are ordinal relations to our orientation. The physical space is based on the distance. I can determine every point of the space by describing it with three independent directional vectors. These directions are also called dimensions, which is why the space in our perception is three-dimensional. The volume is therefore measured in cubic distances. Physics as an empirical science is based on the perception reinforced by our technical aids. But there are quite a few people, especially astrophysicists, who deny this. They think they live in a curved hyperspace. There is really nothing to be done, we stand for freedom of belief. However, they say they can not perceive it. If we can not perceive it, why do they deal with it? Do they want to be interesting? Didn't we agree that physics is concerned only with measurable phenomena?

Over time, much has been philosophized. Einstein said about the time: *Time is what clocks display*. This is not to be contradicted. What showed clocks in times of Einstein? Clock hands showed a route at the clock face that was completed in a certain time. But how do clocks work? They use a pulsed energy flow. It is not the flow of energy that is interested, but the number of clock pulses that are counted and display today's digital clocks. These clock pulses are directly related to the path traveled by the clock hand on the clock face. The speed of the movement is therefore the ratio of the distance traveled to the past time. The Light Year is the best cosmic expression for the travel distance of light related to the earth as clock hand around the sun.

Now the path at the clock face is not a vector size, but an arc length, a radiant  $2\pi r$ . Also the digital time can not be interpreted as a vector. If Einstein regards time as a directed quantity which is perpendicular to the path, he thus contradicts his above correct statement, because the distance and time depend on the speed of each other. Moreover, the division of path through time as two vectors is neither mathematically explained nor physically meaningful. These simple considerations show that the exaggerated mathematical apparatus of Relativity is practically mischievous. But this mischief led to the Christian faith in the kingdom of heaven being preserved, because the fire was thus banished, as already stated above. Einstein had banished the electrical effects from the sky by means of a Lorentz transformation in his memorable essay "[\*On Electrodynamics of Moving Bodies\*](#)". To this end, he thought of a fast-flying electron, like Munchausen, on a cannonball, and from there looked at the world. The fact that this electron was a train in Einstein's explanation is not so crucial, but that the view (the Lorentz transformation does not signify anything else) is not identical with the abolition, is an old magic trick, an optical illusion. Time distortion and space distortion are only imaging effects as we know them from our familiar optical perspective. Nowhere in the Lorentz transformation is the energy situation between observer and object observed in the gravitational field, and the demand for the constancy of the velocity of light is not experimental knowledge, but a theoretical necessity of transformation because it is used as a transformation

center.

If the speed of light were really constant, there would be no physical discipline Optics. But the cosmic plasma is just as much an optical medium as gases, liquids and glasses or crystals. Where no optical medium is present, light can not be diffracted, not even through the geometry of the space. This would be magic, as geometry is an intellectual product of man. Physics does not know of any spiritual power that causes material phenomena. Consequently, the basic principle of the general theory of Relativity, which asserts that space curvature corresponds to an energy, is a subject of magic. This is the basis for a flourishing entertainment industry in the sense of Star Trek and Star Wars, but has nothing to do with physics.

### **What is the talk about the curved space that stretches?**

Let us return to the volume of a mass. Masses exist in different aggregate states. Consequently, there are spatial boundaries between different masses in different states. One calls such a boundary surface. Surfaces may be planar or curved. To determine whether a surface is curved or planar, a triangle must be constructed on this surface and its angles measured. If the sum of angles is  $180^\circ$ , the surface is a plane. If the angular sum deviates from this, the surface is curved. However, this is only so long as you move on the surface. Each surface, however, is enveloped in a space. That is, three points, connected by straight lines in space, always form a plane represented by a triangle with an angular sum of  $180^\circ$ . This can be easily understood by a ball. Just try it out on an orange by selecting three points on the orange and connecting them and measuring their angles. You will notice that the angular sum is greater than  $180^\circ$ . Then cut the orange so that the cut plane passes through all three points. The triangle in the intersection plane, however, has an angle of  $180^\circ$ . Thus you have established the difference between Euclidean and non-Euclidean geometry. The Euclidean geometry is practiced in the plane and the non-Euclidean on a curved surface. Surfaces are represented mathematically by functions of a dependent variable that depends on two independent variables. In contrast, in a Euclidean space all three variables are independent of each other. This is the crucial difference between space and surface. While a surface can be curved, the space is never curved, since by definition there are no dependencies between the variables. Otherwise one could never distinguish the surface of a mass from its volume. Now one can generalize the space and the surface. That is, you can add any number of variables to the space and to the surface. This does not change the fundamental differences between function and space. The assertion of the curved space is a deliberate misleading of the people, as it was before the claim of Immaculate Conception of the Virgin Mary for their abuse. Relativists and astrophysicists either do not know this difference, or they deny it or believe that they live in a curved hyperspace. This, as Kant put it in his essay on the Enlightenment, proves this peoples as minor<sup>2</sup>. This accusation is justified, since the majority of them is withdrawn from the public debate by permanent silence.

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<sup>2</sup> *Minority is the inability to use one's mind without the guidance of another. This minority is self-inflicted if its cause is not due to lack of understanding, but to resolution and courage to make use of it without the guidance of another.*

A curved surface can either be represented in space or mapped into a plane with corresponding distortion. Globe and Atlas are examples. The depth of the space can also be represented in the plane. Then a perspective image is obtained. This image awakens the illusion of a space, but it is not a space because the depth of space is represented as a function of the length and width within the image. The same applies to the Lorentz transformations for the Relativity. This is a perfect misperception. The distinction is that we can dissolve the misperception of the perspective through our other senses. The misperception of the Relativity can not be solved by our senses, because we can't move with the corresponding velocity. We can do this only by examining the equations for dependencies . If we have talked about the fact that a space has independent variables, and the velocity is defined as the ratio of path to time, we can not study movements in [Einstein's space-time](#), because the path and time are declared as independent. In other words, the study of physics is impossible his space-time. Well, this is the responsibility of the mathematician Hermann Minkowski, who obviously did not understand anything about physics. Einstein himself admitted that he did not understand mathematics. This is the perfect symbiosis for metaphysics.

Because space-time can not be used for physics, images from space-time are either moved into the space as a hologram or into a two-dimensional sequence of images, a film. This results in either the length or time contraction, because the constant speed of light is used as a projection center for these images. Undoubtedly this misunderstanding triggers the fascination of mysticism in many people.

In physics our interest centers on the functional relationship between dependent and independent measured variables. We are interested in the causal connection of measured variables. From this we gain natural constants. Usually so-called natural laws are deduced, without being accountable for the validity range of these relationships. Because these are mathematical functions that model these contexts, it is to be expected that the mathematical function only behaves within the measuring range as the measured relationship, not outside the range

Because spaces are stretched by independent characteristics – otherwise they would be functions– the characteristics must be perpendicular to one another. This is the only way to change a characteristic without changing other characteristics. And that presupposes that the characteristics just form straight beams. We had distinguished between volume and space. A volume can be changed in its shape by a force application. A space is a spiritual reference. Its curvature makes it useless for physics. This must have noticed by Einstein too. On February 4, 1917, he wrote to his friend [Paul Ehrenfest](#): *"Ich habe schon wieder was verbrauchen in der Gravitationstheorie, was mich ein wenig in Gefahr setzt, in einem Tollhaus interniert zu werden."*

It is therefore not sensible to change the reference, be it curving or stretching, without someone feeling deceived. That the same measure must apply from all, is a principle, which must also be enforced in physics and precisely there. After all, it took a lot of effort to introduce an internationally recognized measurement system. It documents the limited scientific expertise of certain international choice committees when the Nobel Prize for Physics was awarded in 2011 for the accelerated expansion of the space.



Without the relation to a fixed space and a constant time, we can not explain movement. We must bear in mind that our relationship is always earthly<sup>3</sup>.

We need a reference point from which we observe motion in time. On the other hand, we must also accept that the movement also takes place without our observation, that it is perhaps taken by a camera. It takes place outside our consciousness, although space and time exist in our consciousness. The mediator between inside and outside are our senses. So we need sensory evidence for the existence of things outside of our consciousness. This really banal statement makes great problems for philosophy, so long as some representatives of this guild completely deny the outer world by asserting that observation is the cause of the movement. But there is also the downside: Ernst Mach polemicised against Ludwig Boltzmann's explanation of the temperature by the movement of the atoms because he lacked the sensory proof. It was only when Einstein explained the movement of petite particles in liquids, discovered by Robert Brown in 1827, as due to the thermal movement of the molecules, and this could be confirmed quantitatively by experiments and measurements by Jean Baptiste Perrin.

## The Energy

After talking about the mental relationships of space and time, we can turn to the fundamental concept of physics, the **energy**. It describes all motions of matter in the macro- and microcosm, which is why it is described in physics in so many forms. In this way, it also forms the bracket for all physical disciplines.

Energy is the sum of all forces on a mass that moves in a limited piece of matter. In this motion, the moving denser mass displaces a mass in a less dense state of aggregation, which is usually ignored in theoretical mechanics. An example is the Lagrange function. Mass points move through an empty space. Masses, however, move in a volume, a solid in a liquid, a gas or a plasma or a liquid in a gas, always a denser mass in a less dense. We must always remember that with our mathematical description, we always form idealized models of reality. We can not get more information from these models than we have put into them, but the more complex these models are, the more people are seduced to draw conclusions from these models that they impute the reality, especially when the practical experience is missing. If Einstein had been concerned with optics, he would never have had the idea that gravity would curl the space. Thus, by reading a book on non-Euclidean geometry, which was not understood as a twelve-year-old boy, he had been encouraged to look at the curvature of light beams as a result of a "space curvature" rather than as a result of a density gradient in cosmic plasma and he would have known that the speed of light was a function of this density. The square of the velocity of light is the reciprocal product of electrical and magnetic field strength, and the latter are material constants of an inhomogeneous plasma, as we now know.

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<sup>3</sup> If we leave the earthly reference, our gravitational field, and thus the basis of our measurement system changes. Furthermore, the flow of energy changes through the rotation conditions of other heavenly bodies, which should have a significant influence on our sense of time. But this was not meant with relativity.

We distinguish the potential energy or energy potential, which is the prerequisite for the energy flow, the movement in the matter with energy equalization. The movement is perceived as the velocity of a moving mass. Consequently, the energy carrier is always a mass. The product of mass and speed is the impulse. The potential energy is the product of mass and the square of velocity. If the speed of light is assumed to be the highest of the known velocities, the potential energy is given by the ratio of mass to the electric and magnetic field strength, often misinterpreted as Dark energy.

The energy flow is exactly half of the potential energy up to potential equalization. This is also called kinetic energy. If I multiply the energy flow over time, I get the effect of energy. In this case, it is indifferent whether the mass as a particle flow has made a location change, or only the pulse has been transmitted over a distance. Light is not a particle current because it has no mass, but the pulse is transmitted over long distances in matter. It is the effect that is transmitted. When hammering on a nail, no hammers remain on the nail. The effect is still transferred to the nail, penetrating the material. We will return to the subject of light again.

Once again, energy is the central and most changeable movement of matter. On the one hand, it is bound to the mass as its carrier. On the other hand, it consists not only of the visible component, but also of the tangible component, which manifests itself as an effect in the field of force between the mass particles. It is quite irrelevant whether the concept of Planck constant is based on an electron jump or a hammer strike.

Once you have understood this, you can regard physics as an unity again. It is not a question of combining a deterministic image with a statistical image of physics, but of recognizing and describing energy as the central cause of the motion of matter.

## **What is mass?**

Modern physics provides a ludicrous explanation of the mass. A virtual particle (divine particle) is to transfer the mass to real particles. To detect this particle requires the largest electric machine mankind has ever built and its probability of detection is so small that reproduction of the event is virtually impossible. Nevertheless, it is claimed that the proof has been successful. The concept of the Immaculate Conception is quite similar, but perhaps somewhat more vivid. You can recognize the misuse of Mary. Abuse in the case of the explanation of the mass conceals itself behind a pseudo-scientific facade, which the layman can not penetrate. He simply misses the experience.

**What experiences can help?** Mass spectroscopy is the discipline that has given us the deepest insight into the material composition of atoms. It can give us the most reliable information about the mass. From mass spectrometry we know that mass flow is the product of charge and magnetic induction, a combination of vortex-free and turbulent motion. In other words, the mass is inextricably linked to the charge and the magnetic induction. This is equivalent to the connection of distance and time with speed. This means that Newton's and Coulombs' law describe only the two ends of the static force that holds together two masses between the ionized and the non-ionized state, and the Lorentz force of the magnetic vortex field also comes as soon as the masses move.

From particle physics we have the statement that a particle occupies all the available volume. This is reminiscent of Descartes' swirl theory, except that he had not yet recognized the importance of charge for the mass. We observe in nature the repetition of similar structures on different scales, as we have described above. However, we have a problem with the observation in the subatomic range. But in the cosmic range of the galaxies, we now have optimal observation possibilities.

Let's take a look at the cosmos and the galaxies and try to derive some new insights from them. Here the masses meet us in their linear and turbulent structure by the arrangement of galaxies in the cosmic web. Hubble has already found various types of galaxies. He has found essentially spiral and elliptical galaxies. Looking at these two species, the difference in the structure immediately becomes apparent. Even more interesting are the spectra of these two types. While the spiral galaxies contain line spectra, the spectra of the elliptical galaxies are thermal. The galaxies can also be sorted according to the falling line intensity of the hydrogen line. The growing nucleus of the galaxies and the increasing resolution of the spiral structure are noticed. These observations can be interpreted in such a way that the electrical forces in the galaxies decrease with decreasing hydrogen line intensity and the radial velocity decreases from the outside to the inside, causing the spiral structure to dissipate slowly, thus transforming spiral galaxies into elliptical galaxies. The whole is related to the hydrogen content of the galaxies. This provides the fuel for core fusion and thus for the electromotive drive of the galaxies.

If we look at our solar system, we find that our sun also emits a more thermal spectrum, and the radial velocity of the planets today also has the velocity distribution decreasing towards the edge. It is therefore reasonable to suppose that the gravitational constant determined during the modern period has probably never been constant over geological periods. Together with the mutual disturbances in multi-body systems, the planets in the past may have moved on other orbits. Together with the mutual disturbances in multi-body systems, the planets in the past may have moved on other orbits. Ancient traditions in the history of mankind draw a picture which could be interpreted as meaning that electrical phenomena in the solar system many thousands of years ago, might have been much stronger when more hydrogen was available for fusion. David Talbott, according to ancient myths around the world, draws the image of a planetary constellation, in which several planets could have stood in a row one after another. Antony Peratt wants to have recognized in early scratches on old rocks so-called "stickman" pictures of electrical discharges, which people around the world have seen in the sky. However, these evidences that are incomprehensible to the established world picture fit into a picture in which matter is seen as a unit of mass, charge, and magnetic induction.

## What is light?

This question was occupied by generations of scientists. In the time before Einstein, light was a wave. Einstein claimed that light consists of particles. Since he polemised against the aether, this explanation was logical. Now we are told the story of the Schildbürger<sup>4</sup> who had forgotten the

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4 *Like Wise Men of Gotham*

windows during the construction of their town hall: The councilors were now sitting in the dark hall, discussing what to do to remedy the situation. One of the councilors came up with an ingenious idea: he suggested the people should sweep together the photons on the streets around the city hall and carry in sacks into the city hall. They would have to lighten the room ...

As matter consists of mass and force field, the energy transfer is either bound to the movement of the mass or the force field. We must, therefore, distinguish between the mass particle and the effect of force field. The electron jump between two energies exerts a light quantum or a photon as effect. Light quantum effects are similar to hammer hits. The cosmic plasma, as well as gases, liquids, and glasses, is a transmission medium. It is totally confusing when is spoken of the double character of the light. It is not a double character, but two different descriptions of the light which describe the core of the phenomenon only inadequately. This misinterpretation leads to considerable contradictions in particle physics.

As often, if one could not agree, it should bring the compromise. So the light has been assigned a double character of wave and particle. Of course, such a thing is scientifically not tenable. Light does not have no double character, just as a house that is documented by a front view and a rear view, does not have a double character.

However, if photons are not particles, they can not postulate a spin, which affects the so-called calibration bosons of particle physics, which are to be responsible, among other things, for gravitation and mass. The postulate of particles to transmit mass and gravitation is physically mischievous. Gravitation is a field strength immanent to the mass, just like the electric field strength. The magnetic field strength is induced by the motion and is ultimately also responsible for the mass growth of the moving mass. When a charge moves, it generates a magnetic field and the square of the speed of light is reciprocal to the product of electric and magnetic field strength. The electrical and magnetic properties of the mass become visible only by energy supply, charge separation and the movement of the charges.

Unlike a space, a volume always contains matter, how thin it may be distributed. A space in contrast is empty. The optical laws apply in a volume, and the light velocity is no longer a constant, but depends on the optical properties of the volume. Thus, the Hubble constant becomes an optical constant which indicates how the light velocity in the cosmos reduces to a parsec on average. In the case of denser areas, when the light must pass through galaxies, this speed is further reduced. The optical properties also effect the diffraction of the light in the density gradient of plasmas clouds around galaxies and stars. This is nothing else but the mirage over the hot road pavement in the summer, named as Fata Morgana.

Another type of optical effect is the Doppler effect. The fact that a light source that moves toward the observer shows a spectrum that is shifted to the blue and that the departing light source appears shifted to red. The source itself always transmits the same frequencies. Only the observer perceives the frequency on the basis of the relative movement between observer and source. This is therefore an observation effect, as is the apparent diminution of objects when they are departed from the observer.

It is a different matter if the red shift is caused by the energy loss of the light quanta that the radiation undergoes when an optical medium is traversed. This is a physical effect.

There is a simple test to distinguish whether a red shift is caused by an energy loss or by the movement of the observed light source relative to the observer. It is the width of the spectral lines. In the case of the relative movement, the line width is independent of the motion because all photons have the same initial situation. In the case of energy loss by an optical medium, the effect on the photons is different and therefore the spectral line must be broadened. This broadening is well demonstrated on the  $H_{\alpha}$  line of hydrogen because it occurs in all spiral galaxies. If the relative line width of the  $H_{\alpha}$  line is plotted over the set of galaxies as a function of the red shift, you obtain a relationship that is a field bounded by a lower and an upper ray. This can not be explained with the Doppler effect. In addition, cosmic masses can only move at speeds below 1000 km/s for energetic reasons, if they are not to decay into charged particles. Thus the red shift due to the Doppler effect is limited to a value of about 0.0035. In view of the fact that the absolute brightness decreases with the red shift to about 0.4 with the Hubble constant, the Doppler effect has only an insignificant portion of the cosmic redshift.

## What remains?

We had already talked about the increase of mass at speed. This is usually referred to as a relativistic mass effect. But this is wrong. The cause lies in the conservation of mass and energy. If energy is the product of mass and the square of the velocity of light, the moving mass can be replaced by the quotient of momentum by velocity. The resultant energy change follows from the product of velocity and the pulse change. Multiplying the energy with the energy change gives the square of the light velocity multiplied by the pulse and the pulse change. The integration over this equation yields the square of the energy on the one hand, and on the other hand the square of light velocity and momentum plus a constant energy of rest, obtained as the integral constant. The product of light velocity and momentum can also be written as the product of energy and the ratio of mass velocity to light velocity. It follows that the energy is equal to the resting energy multiplied by a factor which results as the square root of one minus the square of the ratio of the mass velocity to the light velocity. This factor is actually found in the Lorentz transformations. The same applies to the mass relation between the moving and the resting mass. In these considerations, the relativity between the observer and the observed object played absolutely no role. This result can, however, reduce the variety of elementary particles to a few charge carriers at different speeds.

It looks like we have to rethink everything that has been thought in physics over the last hundred years. This applies in particular to the so-called standard models. The resistance of the theorists, supported by the Catholic Church, should be considerable. Thus, the task of future engineers will be to reform physics and put them back on a solid foundation, which is based on solid verifiable facts, because engineers need physics, but they can not rely on their faith. At the center of this new physics is energy as the product of mass and the square of velocity, mass flow as the product of charge and magnetic induction, and the square of the velocity of light as the inverse product of

electric and magnetic field strength. These three basic equations combine the microcosm and macrocosm and describe the fundamental properties of matter, around which all other physical disciplines are grouped.

The last 60 years of space technology and the engineering sciences have provided the base for a scientific worldview. In physics, the traditions of the Enlightenment have to be re-established to understand the power of sun for our use.

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