

We find out that only this movement projects the concept of "matter" and with it the concepts like "force, energy, mass etc."

Every movement system of matter made as an area of new adjusting of coordinates is separated totally mathematically signed by the imaginary number j .

If anything is moved of a substance character that we cannot explain, because that is not a spacetime-like apparent substance, but it is a given condition, then this **primordially moved anything firstly makes the phase angle** and **secondly the imaginary number**. Both magnitudes are ideal non-spacetime-like coordinates. With the premise of a firstly spacetime coordinate R_0 and t_0 moved by velocity c , which is a product of real infinity like ϕ and j , we find inside the $\text{const}_{(r,t)}$ from equations (2.9,11) and (2.9,15) that the receptacle cosm is oscillating on the base of elementary cosms. Consequently, the term " $\text{const}_{(r,t)}$ " is forming the measurement of an elementary cosm amplitude R_0' or the measurement of its amplitude time t_0' .

$\text{Const}_{(r,t)}$ is an arbitrary measurement as long as we haven't a relative measurement. The first measurement of all measurements remains arbitrarily, what is the non-material "anything moved". But then this **anything moved** has formed **something moved** defined physically by us but known under the name COSM. The phase angle ϕ gave the orientation of movement to the anything moved namely to reflect an oscillation. The largest measurement was noticed with the velocity of c .

Consequently, the term " $\text{const}_{(r,t)}$ " indicates the **non-congruence** of oscillation zero passing of all primary protocosms in $R = 0$ of a receptacle cosm. The gravitational center of the cosm inside is in $R = 0$ but the gravitational centers of the protocosms causing the primary center lay beside them! In this meaning, our concept is confirmed of **cosm system**.

Let us say it with pictures. If the first and strongest cosms are rolling in such a way that second, third cosms etc. are installing a cosm hierarchy on the base of primary cosms – making the maximum cosm *universe* – then an **ideal gearing** is given (an ideal transmissions). With well-known magnitudes, it will be possible to calculate the unknown "wheels" of this gearing correctly with their values (see section 4.5.)!

3. Foundations of United Field Theory of Electrogravitation

3.1. Reversible Thermodynamics in the Cosm System

Thermodynamics only can be understood as a branch of electrition and of the magnetism electrically caused in the bottom of unification! Each clearing will be coupled with the electrition solution of relativity theory (knowledge of parity of magons and antimagons as well as the existence of those electromagnetic wavequanta, section 2.5., page 328).

According to our reference, the first main law of thermodynamics reads:

"The internal energy" of a system "is a state dimension.

So it is a definite function of state variables, for example, of volume and temperature," $E = E(V, T)$. "Mathematically this statement is made for expression that a change " ∂E " is described by a total differential " dE , $dE = \partial E - p dV$." After running of circular process the observed system comes back to its starting state. Because the [...] energy is a state dimension, it has the same amount as at the start of the circular process. If the system has worked while the circular process is running for example," (naturally relatively the system environment) "then according to the first main law, it must have been supplied a corresponding large heat-energy to it. [...] There is no perpetuum mobile of the first type. [...]"

$$\oint dE = 0 \quad (/Q 12/, \text{page } 120)$$

(E - energy, p - pressure.)

The first main law of thermodynamics also says that the energy sum of universe is constant. Just this fact includes that an observer has to start his opinion of macrocosm as an isolated system. There, the total change of mechanic energy into heat and reversed would be really possible, because in principle no energy is excepted from its change into another energy form.

We speak of open systems of mass and energy exchange, of locked or closed systems of energy exchange and of isolated systems without any exchange to the outside. For our cosm theory, this means that only the macrocosm is isolated, consequently, it is a perpetuum mobile of the first type. Inside of it, circular processes are really running. The microcosms (generally cosms) are closed. For them, the following condition is valid.

Supplying electric energy from the outside of a cosm (magons/antimagons mediate their photons) then two processes must follow:

1st External energy balance for example momentum exchange or/and pair formation. No direct exchange of mass over the horizons r_0 provided that the elementary cosms will not be exchanged. Otherwise the particles change themselves like in weak interaction.

2nd Isolated energy balance: the isolated inside of two particles pregnant with energy is interacting while they are meeting externally, because they are meeting internally at the same time.

Particle become unstable as long as they are "eating" energy. Then they decay into stable particles under equal energy ejection while the energy which was escaping contributes formation of particle pairs if there is enough energy.

Now could be objected to this explanation that the isolated system universe must be held constantly regarding the thermodynamic volume. Such a process seems to prove difficult in practice. Actually, how it is supposed to work in the universe?

The spacetime "universe" is limited by the stationary vacuum. That vacuum body has a finite volume, which doesn't change by pair formations and annihilations at all, because the contents of universe only can be changed by their apparent forms. The complete system is living from itself. In addition, the cosm vacuum is a state like a compensation of gas and anti-gas, liquid and anti-liquid and solid body with solid antibody, which are able to be given free in pairs and to be coupled to vacuum again. Consequently, keeping the valume of the universe constant doesn't matter. Therefore, the universe cannot contract or expand itself while temperature would change itself. Only local systems can exist, which are relatively observed as an area from the inside and the outside. There is a density as agreed in them, which change proves a local expansion by red shift of photons especially the reduction.

The second main law of thermodynamics is read as follows:

"It is part of the in principle experiences of the theory of heat that a temperature compensation takes place at the heat contact of two systems of various temperature and that this heat-energy will be transferred from the warmer to the colder system. [...] Heat-energy cannot be changed completely into work - the experience teaches so. The reversed is possible[...]" (/Q 12/, page 120) A perpetuum mobile of the second type cannot be constructed. In this respect, an empirical law limits the theory of the first main law of thermodynamics. The cold body does not warm itself by collecting of heat spontaneously. Then the kinetic of heat would be distributed itself to the other bodies while the reversed event of collecting must be forced by energy. In this context, the concept thermodynamically caused of *entropy* was coined. The thermodynamic disorder would increase with positive entropy. Because movements and the existence forms of bodies are coupled with heat, one can also take the entropy concept on general order and disorder states of matter. In the result of this experience, even for almost isolated systems it was impossible to change back that heat completely into mechanic energy, which was made from mechanic energy. So the questions is whether it is even possible to completely convert heat into a form of energy from which it would have arisen. So far, this question has been answered with "no, it can't" for the known forms of energy.

We assume an isolated receptacle (vessel) in which low-energetic photons are located. If a quantity of high-energetic photons now enters this receptacle, the interaction energy is distributed almost evenly over all pairs of magons by interaction between the electrogravitational particles (cosms). There is only this one way of new adjusting of heat energy of the system (temperature of the body) namely in principle down to the mixed temperature. That phenomenon became the precondition for the definition of the thermodynamic concept of entropy. But with increasing density by gravitation, we raise the wave energy consequently at the inside of the receptacle till it reaches the energy of pair formation, then the photon energy will be stored during this particle pair formation. The reversed way is possible now why heat is changed into gravitational energy (cf. section 2.14.).

Photons interaction with the particles of a system give their radiation energy e.g. to the atoms. The kinetic gas theory at which one explains the temperature as average kinetic energy of all the particles of that body cannot be confirmed here. In reality, the picture of the mobile atoms is only the projection of the radiation energies $\Delta E_{(n)}$ – transferred between the particles according to eq. (2.4,14) - , which exchange the electromagnetic energy between their electromagnets and which lead then to the movement change of atoms (cf. page 318). The kinetic energy E_{kin} is the axiomatic equivalent of radiation energy $\Delta E_{(n)}$ in non-relativistic calculations. But the reality is always relativistic.

The actual cause of virtual photons lies in real magon pairs, which only lack electric wave energy and thus an electromagnetic momentum. They will pumped up by other electromagnetic momenta. After this, they transfer these things and then, they go back into their zero-divergent energy state. The problem is much more complicated.

In stationary gravitational vacuum is just an "ocean" of charge pairs of less wave energy. In form of the stationary electric vacuum, they are ready to transfer the wave energies of those separating wavequanta while their energetic separation. Therefore, the wavequantum theory only explains wavequantum exchange processes – these are wave energy transfers. Its handle according to our United Field Theory must remain incomplete without the knowledge of the cosm character of corpuscles, because the wavequantum theory expects particles, which are not such particles but exactly wavequanta, which have the wave energy to revive a particle pair from the real cosm vacuum. "Quantum Theory" in form of "GUT" contributes to the uncovering of wave energies till the origin of the primary wave energy. This means in due clarity: the "Quantum Theory" just clears up a quality scale, because the temperature as an established measurement of radiation energy is a qualitative magnitude. On this base of waves, "Quantum Theory" explains the formation energy of real particles as protons and electrons and their unstable states. Additionally, this theory thinks to be able to extrapolate the processes up to the imaginary "Big Bang" since formation energies of "subparticles" like "quarks" and "gluons" are known. It lifts up the claim to explain the structure of the world from a quality scale. Can one investigate the anatomy of the backside of a pig from the fractionated distillation of lard? Is it really possible to lay the structural origin of universe into the "Big Bang" observing temperature equivalents? Certainly, both ideas are not from this world!

But if just now the heat is distributing all over the universe, how should then their retrieval go? The experience in second main law of thermodynamics teaches the reversed process. Simply that experience one wouldn't be able to change heat into mechanic work completely is been won from an open system of the local observer in which he doesn't know any process or any law that would be valid for a completely locked system – for an isolated system. The General Relativity Theory could give him the explanation. After it, the steady-state condition in resting matter system leads to the interpretation "that in equilibrium that temperature change *compensates* just this energy, which had to be supplied or led away while (virtual) transport of a volume element in gravitation field." (/Q 15/, page 192)

This means nothing else than the given shift of electric energy into positive as well as into negative direction by working of gravitational energy inside of an isolated gravitational system. This is an arbitrary cosm:

The gravitational work is able to equalize the electromagnetic work completely. Or the universe is an oscillator between gravitation and electrition.

The proof was given by eq. (1.2,6) with the frequency shift of electric spectrum by gravitation. While the emission of electromagnetic wavequanta from an electrogravitational radiator of some mass, a

decrease of frequency and energy appears. The e. m. radiation gets an increase approaching at the electrogravitational receiver of some mass, which is an energy increase (a blue shift).

This sentence gives the equivalence of electric and gravitational work and that law we'd been searching for, disproving the experience of the second main law of thermodynamics. *The gravitational energy is able to increase the e. m. energy forming particle pairs!*

In universe of protocosmic processes, the complete red shift arising while unpacking (evaporation) of matter will be reversed into the blue shift while packing (condensation) of matter by newly formed protocosms!

Our opinion of entropy does not contradict this law being a measurement of disorder of a thermodynamic system. "The entropy is a state dimension. While a state changing from the state 1 into the state 2, the entropy change is independent on the way from which the system is led from 1 into 2,

$$\int_1^{(a)2} dS = \int_1^{(b)2} dS = S_2 - S_1 \cdot [...]$$

For a circular process is valid

$$\oint dS = 0 \quad " \quad (/Q 12/, \text{ page 123})$$

Following the experience law of thermodynamics no. 2, disorder of systems shall increase over self-running events. The entropy increases. Additionally, processes always run working exothermically as well as with entropy increase. These processes are exergonic. We describe them with type 1. Two further exergonic events are connected with temperature. For type 2 is valid that the entropy is decreasing and the reaction is strongly exothermic. With type 3, the entropy can strongly increase while the process is running endothermicly though. Endergonic reactions connected with endothermic enthalpy balance and entropy decrease don't run spontaneously or "accidentally" from themselves.

A "Big Bang" would increase the already extremely increased entropy by start distribution of "original substances". This event would be the homogenization of an already homogenized state after the origin. Now the distributed heat should spontaneously collect endothermicly itself, and during this event, it should also overcome the homogeneity while the entropy should decrease. Such a process is endergonic. It never runs accidentally from itself! If we tried to help us, we could assume that an exergonic process of order forming would be included on the way after the "Big Bang" – the crystallization of particles from pre-particles – from the "quarks" - as exergonic process of type 3. Such a strange construction is possible, because the present physics has no solid understanding about particles as bodies according to its opinion that a particle can have each kind of a body, if it only satisfies the physical magnitudes, which are seen as dot-like (gravity center as gravitational center point).

*Our theory does not know any law from which particles would be able to crystallize! Corpuscles remain identical cosms, which have an everlasting programmed body that property is given to load energy and to increase then the external mass while the sphere Σ_o of this particle is oscillating faster. So this frequency is the expression of the increased external energy E_A or its mass m_A . Therefore, we are able to bring the radiation just got free into those particles, which got stable in the end of radiation after this, they will get unstable again. At short resonant stop points of energy, we give names to the states of unstable particles. That "Big Bang" only has to be impossible concluding from the contradiction to the general **law of entropy**. It says that an initial order (a completeness) will degenerate, but with much energy, it will be newly formed up. This law demands the diversion (distribution) of substances by processes of diversion of radiations as long as these radiations haven't come back yet.*

We noticed that the oscillating world is closed completely into itself. If we see the internal state of a given spacetime as that "first" hierarchy plane, the laws of thermodynamics are valid for the observer

of this plane; but also completely separated from the events running in second, third or further hierarchy planes at each of those spacetime planes. The already told General Relativity Principle is valid. We make the conclusions as following:

1. Ideal oscillators (cosms) don't require an external supply of materials from the outside. Therefore, they don't require a filling of electromagnetic energy (special form of it: heat energy). But if one gives energy to a stable microcosm from the outside, one gets back exactly and absolutely the same quantity of energy.
2. Their really *isolated* energy is keeping itself. This means that at the inside of a cosm is a conservation law, which looks carefully that there does not be lost some heat or electricity.
3. Their isolated entropy is reproducing itself. *This means: loss of order will be compensated automatically by a process of win of order at universal life in a cosm.* This way, there will never be such a death of heat. That process is connected with the annihilation of protocosm pairs and the connected change of cosm seeds to stable particles and those back-change to protocosm pairs and cosm seeds on another way over the same change steps.
4. Consequently, a cosm is a perpetuum mobile of the first type.
5. **Ultimately, the universe is a structure with reversible thermodynamics!**

It is told: if an isotherm expansion is running statically (so to say), then the event is reversible. An explosive expansion (climbing) will become to an irreversible process if one sees the system working in relatively open environment (*irreversible thermodynamics*).

So-called present "world models" on base of the incompletely solved Friedman cosm including the above called wavequantum dynamics (QD) think of a high-dynamic expansion of one single so-called "cosmological singularity" localized in the open infinity ("Big Bang") in an incomplete thinking. After the next compression of the universe, one expects a difference of entropy. But under our conditions, this thought is not necessary for our universe.

Our cosm does not explode totally or singularly. Local density changes cause the local shifts of spectra (plurality). Pair formation and annihilation (destruction) are connected with a conservation law of energy. The stable particles won't be lighter from change to change and our environment wouldn't become permanently warmer after such a process. In the course of the gravitational reorganization of protocosms, those particle pairs will be formed again, which came from these protocosms.

We look for the origin of heat. It was set free during a pre-process. At that time, particles and antiparticles including a small surplus of particles existed in a high unstable form. This means: their microcosms were maximally filled with radiation energy, which external masses were increased. Starting from some maximum, from one stop point of radiation, at which it returns, those extremely unstable particles began to decay by ejecting of radiation and losing of external mass. That energy of ejected radiation decreased along the run of world time (oscillation period) until the particle pairs were decayed into their stability area. After annihilation of stable particle pairs, residual radiation continued to decrease. Only that surplus of coinoparticles remained at which some part of radiation is coupled to be the so-called warmth. This way, mass and antimass were changed into heat during an especially intensive push of radiation.

The radiation can be revived to particles and antiparticles by increasing gravitation energy. That process of pair formation makes possible the complete change of heat into coded energy forms - into gravitational and negatively gravitational energy (particle and antiparticle masses and their charges) according to the first main law of thermodynamics and Einstein's equation $E = m \times c^2$. The General Relativity Theory confirms this relationship by the possibility of transformation of gravitation energy into radiation energy, and vice versa. It's interesting that the radiation itself has a quality of gravitation according to General Relativity Theory collecting itself at a defined density.

Whenever there is a birth of two external radiation momenta, in every world point a sensitive decision is given for the ways of both radiation quanta. The primary radiation energy will be divided on its world way. One half radiates into the matter, which is already installed and decreases then under entropy increase. The other half is running with light velocity ahead of the installation of the following matter,

turns around if the reinstallation of matter begins and will be compensated gravitationally. The energy is increasing again and running back where it hits the lost space area. There, it shoots together the collected coinomatter forming particle pairs from single but double high-energetic radiation quanta.

This way, the complete energy can be reproduced by the fact that the pairs are closed in a reborn Black-White Hole, which newly collects by subprotocosms and those hierarchies at its inside and which is giving an order to them by internal energy concentration and entropy decrease. Connecting, it opens its order, which main part annihilates and sets free mass and energy bodies in quanta of ordinary coinomatter, which now starts into an exothermic process of increasing disorder (increasing entropy, the born original life is dying). That exergonic process without some additional assumptions agrees with other theories. Reversed, the pair formation as endothermic reaction agrees with the entropy decrease forced by the hierarchy of Black-White Holes. The endergonic inverse process never runs spontaneously.

In the universe, however, it is an inevitable consequence of the interaction of gravitation and electromagnetism, which cause the oscillation of the macrocosm.

The inhabitant of an isolated system is not allowed to build a perpetuum mobile, because he himself is working with open or closed systems in principle. However, our universe is the only, really and objectively existing isolated system itself. So it is the only perpetuum mobile of first type. Microcosms of stable feature represent the perpetuum mobile of second type. They are changing radiation into mass and the mass back to radiation or/and pair formation.

According to the General Relativity Theory, the concept of energy exists only then, if the spacetime has a total curvature. The interpretation has been kept with the static observation of sigma-sphere, but it shows already that the energy conservation doesn't seem to exist at all. Our construction leads to an oscillating horizon. The resting energy of the system is increasing and decreasing at the inside. Therefore, the sum of all energies can be just constant in one of each instants (time points).

In this respect, the existence of first main law of thermodynamics has been confirmed of an experience law, which couldn't lead ad absurdum in lack of experimental time. The changes are just small that they are not measurable with our instruments.

If the cosm wouldn't be isolated, this time-like conservation law would not be existing at all. The whole topic is connected together logically (subordinated logic isn't definitely experimentally provable; it will keep discuss of religious believers and unbelieving):

The isolated system universe

- as perpetuum mobile,
- with conservation law of energy,
- in complete spatiotemporal curvature as non-stationary Black-White Hole,
- in which the heat distribution, the substance distribution and the entropy increase alternate the phase of heat collection, substance collection and of entropy decrease,
- which is oscillating as a Black-White Hole between two changes of the states,
- and which lives its birth, its death and its rebirth
in the shape of a turn, which is not able to finish from the inside of this kind of perpetuum mobile.

All the systems rotating there are open or closed. They exchange mass and/or energy making the system of universe fundamentally by conservation laws relatively thought from the outside (the oscillation energy is constant). That universe is ideally stable. Stable particles in universe must interact. They cannot keep their state eternally.

Particles swallow energy and change their stability signs at this changing their mass or generating unstable states. The identity of those particles is not broken similar to a body, which only stores heat, which even runs more than one different state of aggregation, which gives back the heat again to get back the original state before.

Particles as non-stationary Black-White Holes are not only black like the universe to its outside but also white: non-stationary Black-White holes. We call them simply microcosms or shortly with plural **cosms** while there is only one macrocosm – the **universe**.

Everything else is a question of the quantum-mechanical definitions of each oscillation and wave phenomena. The problems of order of the relativity theory join when the General Relativity Theory controls the order of oscillator-hierarchy and the Special Relativity Theory controls the order of oscillator-movements. Orders are the result of programming in principle. We start thinking at the point of rebirth of universe where is the highest state of programmed order, which is losing in the course of world time. The trend of the increasing entropy is ubiquitous. Almost in the end of the building up, the disorder is processed in the non-stationary Black-White Holes into the Black-Hole-State. At this, the order is restored, which becomes reborn by ejecting from the White-Hole-State.

The universe has neither a measurable beginning nor an end. That program can have started at every arbitrary time. Analogously, nobody can make a statement in the face of a vibrating pendulum, when and in which position it ever has started to vibrate. But there, one can choose defined points of oscillation about them we can philosophize: these inverse points (reflection of the largest internal mass M_o of universe M_U) and zero passing (cold vacuum body without free mass and radiation).

3.2. Ideal Oscillator and General Relativity Theory

3.2.1. Kerr's Solution (Kerr, 1963)

Following Kerr's solution analogously to the electric rotational fields, there are also gravitational rotation fields. For our theory, this is a base of the assertion of unity of the electrogravitation. The principle is obtained particularly on the theoretical question of rotating Black-White Holes. According to this opinion, the Black-White Hole would be determined by its mass M_o , by its electric charge Q and its electrogravitational angular momentum I . (/Q 15/, page 222f)

Howver, unfortunately, one didn't take into account adequately that both a gravitational and also an electric wave mass will be causes by the angular momentum I (wave energy of the wavequantum): a rotating charge generates a dipole, no matter if the cosmos are electric or gravitational or both types.

Because the particle matter consequently realizes relative rotations, we must start thinking from a Black-White Hole in the shape of Kerr's metrics.

According to his solution, two radii can exist inside of the horizon:

$$r_+ = R_o + (R_o^2 - a_r^2)^{1/2} \quad \text{and} \quad (3.2.1,1)$$

$$r_- = R_o - (R_o^2 - a_r^2)^{1/2} \quad . \quad (/Q 15/, \text{page } 223, (24,4)) \quad (3.2.1,2)$$

The variable a_r fills the real set of values: $+R_o \geq a_r \geq -R_o$. From this term, the dependence of radii r_+ and r_- follows:

$$2R_o \geq r_+ \geq R_o \quad \text{as proportionate radius of vacuum sphere } \Sigma$$

and $0 \leq r_- \leq R_o \quad \text{as radius of amplitudical sphere } \Sigma_o$.

With the surface of a sphere $\Sigma = 4\pi R^2$, the *limit area of stationarity* Σ always must be measured above of $r = r_+$. One can take it as the surface of the vacuum sphere $R = 2R_o$ or $r_o = 2R_o$.

In opposition to this, we think to be able to describe the spherical surface dependent on the cosm amplitude R_o with the amplitudical limit area Σ_o :

$$\Sigma_o = 4\pi R_o^2 \quad . \quad (/Q 15/, \text{page } 224, (24,10)) \quad (3.2.1,3)$$