# To the derivation of the Heim mass formula

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## 1. The gravitation in the microbe realm

1. Since Einstein's discovery that itself the gravitational field (in the context of general relativity theory, KIND) by geometry of space-time lets explain, it strives the physicists to interpret also the remaining fields and also the particles by geometrical structures. Theories seem most successful to be, be examined in those geometrical last one the latter (stringers) as causes of physical effects (see chapter C).

The structure of the KIND resulted from the deep insight into the logic of the physical laws. On the other hand a general understanding of their logic is missing in the superstringer theory. The stringers, which physical characteristics of elementary particles are to determine, are settled in ranges, where no physics is more defined. Because the square of the Planck length is a natural constant *(Treder* 1974). After the uncertainty relation there cannot be physical objects with smaller expansions. Thus the concept of unphysikalischer points is only insignificantly shifted on that unphysikalischer stringers, if these are comparable with the Planck length.

The attempts of Einstein and its pupils to be able to understand material Feldquanten by a theory of its geometrical structures seemed to become offering no prospects by the inflation of the elementary particles registered in accelerators. Turned around it gives today too many alternative theoretical beginnings, which forecast many new particles, for whose proof enormously high energies to be produced must.

The question is justified from there whether the standardization efforts and investigations of the reciprocal effects exclude not in principle a finding from particle masses, because these theories set a second logical step before first? The first logical step should be finding the internal structures and/or the internal dynamics of matter field quanta and of their masses. Only then should be able to be decided, for which reciprocal effects and exchange bosons must be searched.

How physical fields can be geometrisieren, Einstein for the gravitational field showed in the KIND. In its Feldgleichungen the divergence of the Riemann curvature tensor of the divergence of the phenomenological energy impulse density tensor is directly set. Permits global cosmological investigations, if for example the subject of the galaxies is regarded as homogeneous distributed over the area. But the kind, how space-time geometry is linked with the subject distribution, disturbed even Einstein always. It was very conscious itself that a geometrical representation of the phenomenological energy portion for the gravitational field equation, particularly for elementary sources of gravitation, had to be delivered subsequently thus particles.

The occurrence of the singularity at the beginning of time of the universe decreases/goes back only to the fact that Einstein's Feldgleichungen are still incomplete, i.e. that in this theory space-time exists even if energy subject is present. In a completely geometrisierten theory only elementary geometrical structures should develop in the course of the space-time evolution, which would have the characteristics of energy or subject, and a Big Bang did not need to have taken place.

2. By Einstein's uniform field theory of the gravitation and electromagnetism lively, Burkhard home tried at the beginning of the 50's of the last century to modify Einstein's beginning in the way that it replaced the metric (and likewise as of Einstein nichthermitesch selected) tensor of Riemann geometry by a Polymetrie and used in place of the Differentialgeometrie difference geometry. In the microbe realm the Feldgleichungen must become eigenvalue equations for discrete conditions of space-time geometry.[i]

Logical starting point of a uniform description of the subject should be that all particles common characteristic, the inertia and the equivalence principle of inertia and gravitation as well as the equivalence principle of measure and energy. In order to treat the gravitation within the microscopic range, must be differentiated between the measures the source of field and the energy measures of the field. For the place-dependant measures of m (r) received home an expression, how it also to *Arnowitt, Deser* and *Misner* (1962) indicated. A relativistic description of moved and resting masses led home to a field strength tensor of the gravitational field, which has similarities with the electromagnetic field strength tensor of the Maxwell theory. The gravitative source of field and that of it excited gravitational field form a unit.[ii]

The uniform power density tensor is however nichthermitescher art. in the KIND would have thus the metric fundamental tensor of Riemann geometry nichthermitesch to be likewise set. As in the KIND if the structural portion is proportionally set for the phenomenological portion, then the not along ashes Feldgleichungen are to be understood as equivalence principle, since the not along ash power density tensor already describes field and source uniformly.

If the KIND is to be extended into the microbe realm and be examined within the range of material sources, then the Feldgleichungen must be brought into a quantized version, which must lead to eigenvalue equations, which resemble the time-independent Schroedinger equations. These microbe realms by outside fields is not no more affected. The stationary solutions of the Schroedinger equation read then:

$$H\,\psi_n = E_n\,\psi_n. \tag{1.1}$$

In it are $E_n$ the eigenvalues of the energy, to that in each case a certain proper function $\psi_n$ heard.[iii]

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[i] This program communicated B. Heim *Einstein*, who could not answer at that time no more and letter let which answer by its coworker at the uniform field theory *Vaclav Hlävaty*.

[ii] From the uniform field strength tensor for example relations between gravitation and magnetism can be derived, can which be examined experimentally. In the 60's home wanted such an experiment together with *P. Jordan,* Hamburg, and in the 70's with the company MBB, Ottobrunn, would drive through. But the costs of these experiments became DM estimated on 2 millions, which could not be applied so far. Home deduced also a relationship between the electromagnetic radiation vector and acceleration effects, which should noticeable-make themselves in one „kontrabarischen effect ". This effect home tried to prove in the 50's in its Institut, what did not succeed to it because of the limited moneys at the financing of coworkers. The discovery of this effect would make new field drives possible for space. B. Home did not publish the derivation of the kontrabarischen equation. After sifting of its deduction these considerations are to be examined by the fiber plastic Heim theory and published if necessary.

[iii] These equations are nonlinear. The square of the wave amplitude or the wave function $|\psi_n|^2$ those gives
Probability for it on, the particle with the energy $E_n$ to find at a certain place in the area. The Kopenhagener interpretation of the probability interpretation, with which wave particle dualism is described, was rejected by some physicists (e.g. *Einstein, deBroglie, Bohm),* because the character of a Observablen by that

It was frequently assumed that the obviously fundamental linear structure of the quantum theory is only one approximation of something different one, and that the approximate character would show up clearly in the context of the quantum gravitation *(Isham* 1998).

An eigenvalue equation, itself not on the wave $\psi$, but on the particle, its material character - similar to the KIND - refers by must express curved geometry. In place of the linear operator in the Schroedinger equation from there a nonlinear operator, as he arises in the Riemannschan geometry, is needed.

*Home* (1979/89) proceeds from the following consideration: In Riemann geometry the curvature tensor can $R^{i}_{kmp}$ by an operator $C_p$ are defined, on those Christoffelsymbole $\Gamma^{i}_{km}$ works

$$R^{i}_{kmp} = C_p \Gamma^{i}_{km}. \tag{1.2}$$

The curvature tensor becomes thus by the effect of a nonlinear operator on a field $\Gamma^{i}_{km}$ described. During the transition of the macro range to the microbe realm the Christoffelsymbole goes into „particle fields " $\varphi^{i}_{km}$ over, - contrary to the pseudo tensors $\Gamma^{i}_{km}$ - when tensors 3rd stage can be understood, there those $\varphi^{i}_{km}$ in the observed final microbe realm, into which it, are exposed to no outside field except affinen, are subjected to no curvilinear Koordinatentransformationen. Because of the correspondence between macro and microbe realm the operator has $C_p$ within both ranges the same shape:

$$( C_p\Gamma^{i}_{km} \rightarrow C_p \varphi^{i}_{km}).$$

In the macro range is the tapered curvature tensor (i = p) power densities proportionally. Therefore one has to expect their eigenvalues in the microbe realm eigenvalue equations, $\lambda_p$ (with the dimension energy and/or measure and/or inverse length) likewise power densities are proportional. Therefore (1.1) the shape of an equation with tensors on both sides gets:

$$C_{(p)} \varphi^{(p)}{}_{km} = \lambda_{(p)} \varphi^{(p)}{}_{km} \text{ , also } p,k,m = 1,...,4. \tag{1.3}$$

(The clips mean that for this index the sum convention is waived).

In this system of tensorieller operator equations (1.3) three indexings go through independently the four numbers of the space-time dimensions. There are from there 64 discrete eigenvalue spectra of metric structural stages.

Since this system of eigenvalue equations is nonlinear, can $| \varphi_{km} |^2$ not as Probabilities to be interpreted, since the solutions do not superponieren as structural functions of the metric condition of space-time additive. The power density that

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Experimenter is defined and not by nature. The Schroedinger equation is based on experience. Indeterminism could be only pretended however through „hidden variable ", was assumed. The dualism of the particle characteristic, could be explainable also by the fact that the objects would be structures in higher-dimension areas, which projected themselves only by different reciprocal effects with Meßapparaturen into the area and presented there - depending upon equipment - its waving or particle character. This interpretation, which could save the Determinismus, was not considered by *John v. Neumann* 1932 seriously.

Source of gravitation has therefore a defined situation in the area, which changes continuously and is causally defined.

Due to that to operator ago rent quotation and convergence exists a Hilbert function area. The functional operator is a condition operator of the metric space-time condition, whose effect takes place on a convergent condition function, which represents a metric condition of modified Riemann geometry. Apart from this circumstances also all identities and theorems of Riemann geometry are valid (in particular those hermitescher symmetry). [iv]
Into the macro range changes (1.3) into the Einstein Feldgleichungen:

$$C_p\, \varphi^p{}_{km} \;\rightarrow\; R_{km} \;\text{ and }\; \lambda_p\, \varphi^p{}_{km} \;\rightarrow\; \kappa\,(T_{km} - \tfrac{1}{2}\, g_{km} T) \qquad (1.4)$$

$\lambda_p$ depends only on k and m, i.e. $\lambda_p = \lambda_p$ (k,m). In the microbe realm is valid:

$$C_p\, \varphi^i{}_{km} = \varphi^i{}_{kp,\,m} - \varphi^i{}_{km,\,p} + \varphi^i{}_{sm}\, \varphi^s{}_{kp} - \varphi^i{}_{sp}\, \varphi^s{}_{km} \qquad (1.5)$$

(In (1.5) as in the following for the partial derivative e.g. after m one writes alternatively: $(\,)_{,m} = \partial_m = \partial / \partial x_m$ ). For m = p becomes $C_{(m)}\, \varphi^i{}_{k(m)} = 0$ and with it

$$\lambda_m\,(k,m) = \lambda_m\,(m,k) = 0.\,. \qquad (1.6)$$

There the indices m, k from 1 to 4 run, are this $2\cdot 4 \cdot 4 - 4 = 28$ Equations. Of the 64 Power density spectra $T_{km} \;\hat{=}\; \varepsilon^{(p)}{}_{km}$ remains from there only 36 as geometrisierte energy levels a uniform elementary matter field quantum. Because of the demanded invariance of the energy levels, the 36 equations must be elements of a 6-reihigen of tensor. This tensor can be defined in a 6-dimensionalen diversity. Home designed from there one $R_6$ as carrier area of the Hilbert space with the signature $I(+++\,-\,-\,-)$ in such a manner that those degenerated illustrations of these $R_6$ - Structures into the Unterräume $R_4$ and/or. $R_3$ Elementary structures represent.
The power density tensor $T_{ik}$ in the <u>6-dimensionaler hyperarea $R_6$</u> reads for example:

$$T_{ik} = \begin{pmatrix} T_{11} & T_{12} & T_{13} & T_{14} & 0 & 0 \\ T_{21} & T_{22} & T_{23} & T_{24} & 0 & 0 \\ T_{31} & T_{32} & T_{33} & T_{34} & 0 & 0 \\ T_{41} & T_{42} & T_{43} & T_{44} & T_{45} & T_{46} \\ 0 & 0 & 0 & T_{54} & T_{55} & T_{56} \\ 0 & 0 & 0 & T_{64} & T_{65} & T_{66} \end{pmatrix} \qquad (1.7)$$

Differently than in Kaluza small theories the coordinates become $x_5$ and $x_6$ not kompaktifiziert, but physical meanings receive. Two additional times cannot be it, like Penrose in its 6-dimensionalen (three-dimensional complex) theory

[iv] The nonlinear eigenvalue equations (1.3) correspond to those in the causal and continuous description of the deBroglie Bohm version of the quantum theory, in which a particle is understood consisting of nonlinear and linear wave components (Gueret and Vigier 1982). In it is the wave function $\varphi$ a solitonartiges thing of nonlinear kind, which couples as guidance wave with the particle and in the form of waves interacts to its environment. Particles and environment form a unit, consist however of differently curved space-time structures. After the quantum field cybernetics a particle points a nonlinear completely geometrisierte structure to (majority-sing 2000).

first had assumed. Also they cannot affect the movements of point particles. Because in areas with more than 3 dimensions planet course computations lead to spiral courses, which are not observed *(Cole* 1980). Therefore these coordinates are identified by home with organizational and informative effects, which only structures, not however on points and their courses to affect.[v] They are regarded of home as genuine world dimensions. Because of (1.3) and (1.4) is $C_p\, \varphi^i{}_{km} + C_m\, \varphi^i{}_{kp} = \lambda_p\, \varphi^i{}_{km} + \lambda_m\, \varphi^i{}_{kp} = 0$, which for k = p too
$\lambda_{(p)}(p,m)\, \varphi^i{}_{(p)m} + \lambda_m(p,p)\, \varphi^i{}_{(p)(p)} = 0$ leads. There $\lambda_{(p)}(p,m) \hat{=} 0$ (from 1.6) becomes also $\lambda_m(p,p) = 0$.
Therefore further 4 disappears • 4 - 4 = 12 eigenvalues.

In the tensor pattern $T_{km} \hat{=} \varepsilon^{(p)}{}_{km}$ of the $R_6$ remain the components $T_{k5}$ , $T_{k6}$ and $T_{5m}$ , $T_{6m}$ with k, m = 1, 2, 3, zero. Structures, only of the Transkoordinaten $x_5, x_6$ depend, have from there no influence in $R_3$ .

Elementary structures of the subject become thus after home by 6-dimensionale Eigenvalue equations formulates:

$$\boxed{C_p\, \varphi^i{}_{km} = \lambda_p(k,m)\, \varphi^i{}_{km}\,,} \qquad (1.8)$$

with i, k, m = 1,…, 6. therein is the eigenvalue $\lambda_p(k,m)$ an energy and $\varphi^i{}_{km}$ a field function proportionally. The quantization of the effect has the consequence that the eigenvalues $\lambda_p(k,m)$ a discrete character have.

3. In the microbe realm must no longer absolutely be valid the usual differential calculation of geometry. Because minimum space-time volumes of the area integration cannot be fallen below no more, which suggests geometrical these continuities in the sense of geometrical elementary sizes.
From home computation of two extremal principles measure smallest over the gravitational field quantum resulted the product of two lengths as a natural constant. This smallest surface is the square of of the Planck one length, which also by *Treder* (1974) was determined, and of home as Metron $\tau$ one designates. Home was first, which drew the conclusion from the discovery of this natural constant that this two dimensional element makes a counting on different cross-sectional areas necessary and for Metronen calculation justified. (Contrary to the KIND, it can come with counting on Metronen not to infinity places and singularities.) Although investigations were already present for differential calculus *(Nörlund* 1924, gel fund 1958, *Meschkowski* 1959), developed home its *Metronenkalkül* independently of these work. The Metron is defined through:

$$\tau = \frac{3}{8}\frac{\gamma h}{c^3} \approx 6{,}15 \cdot 10^{-70}\, m^2\,,$$

where $\gamma$ = Gravitation constant, $h$ = Planck quantum of action and C =
Speed of light mean. Home theory no further natural constants than these three enter.

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[v] There it itself with the coordinates $x_5$ and $x_6$ in order qualitative value supplies acts, for which the alternative statements of the Aristoteli logic are not valid any longer, by B. Heim an aspect logic one developed, in order to be able to describe Qualitatäten and quantities of physics formally uniformly. Whereupon cannot be received here further.

In the continuous $R_6$ descriptive infinitesimal tensorielle eigenvalue relationship of metric structural stages becomes from home into a discrete $R_6$ transfer, whereby tensors selectors and space curvatures become condensations (of Metronen). By space-time curvatures one has to understand thereby compressions and/or condensations of smallest surfaces of the intermittent world continuum with the projection on cartesian reference areas. Correspondences to the Christoffelsymbolen work as condensor lenses. Therefore in the following instead of of curvatures of condensations one speaks.

The Metron appears cosmological as a very slowly dropping scalar function of the world age. With increasing expansion of the cosmos the Metronen continued to itself divide always. It
one time can be determined, when in the past time a Metron had been so large that its surface the entire cosmos umschloß. In place of a Big Bang the first division of the Metrons steps then with the expansion of the area continued in the Heim' cosmology. Very long time was coined/shaped space-time only by this structural dynamics. Only as the fluctuations of the compressions and of Metronen and their exchange in the Unterräumen of the $R_6$ became more numerous, formed what we can measure as energy and subject.

Since in the context of this essay with home Gravitationstheorie and cosmology cannot be dealt, the Metronentheorie does not need to be introduced, because four ranges of validity of the components of the fundamental condensor lens can related to the three-dimensional area be differentiated:

A. „a metronischer range ", within which the number of Metronen is relatively small,
b. a range of high Metronenanzahl,
C. „an infinitesimal range ", within which the Metronenzahl is so large that those
Structural quantization to be neglected can exist, but to quantum stages, and
D. „a macroscopic range ", in that the fundamental condensor lens exponentially one
constant fixed value zustrebt.

The micro-physical processes are empirically only in the third range of validity given (C). Therefore use normal tensor algebra can do in the consequence without the Metronenrechnung and. With the treatment of the evolution of the quantum cosmology the use of the Metronenkalküls is however essential.

## 2. The solutions of the 6-dimensionalen Feldgleichungen for the microbe realm

### 2.1Die three structural units of the world

1. Before the solution of the eigenvalue equations (1.8) it is to be examined whether all or if necessary which of the 6 coordinates must be taken part with a curvature. The spectrum $\lambda_p$ could itself for example only on a k-dimensional Unterraum $V_k$ (also $1 \leq k \leq 6$) refer, in
each fundamental tensor from the Euclidean unit tensor deviates. An interpretation of the possible k-dimensional deformationable Unterräume represents one „to Hermeneutik of world geometry ". This depends on physical conditions. A deviation of Euclidean geometry lies in one $V_k$ forwards, then this of home **Hermetrie** in the k world dimensions is called. If k coordinates are *metric,* then those remain $(6\text{-}k)$ Euclidean coordinates *anti-metrically.*

That appears physical $R_3$ with its three real, exchangeable coordinates as a semantic architecture unit of the $R_6$:

$(x_1,x_2,x_3) \equiv s_{(3)}$.

The time coordinate differs from the spatial and forms the unit
$(x_4) \equiv s_{(2)}$ .

The additional Transkoordinaten represents again something else as the spatiotemporal and forms the semantic unit
$(x_5,x_6) \equiv s_{(1)}$ .

The coordinates $x_4,x_5,x_6$ prove as imaginary. The solutions of the eigenvalue equations (1.8) must thus in different way of the groups of coordinates $s_{(1)}$, $s_{(2)}$, $s_{(3)}$ depend.

As physical solution variousnesses the structural deformations in following coordinate combinations and/or **Hermetrieformen** prove**:**

$$\boxed{\begin{aligned} a &\equiv s_{(1)} \\ b &\equiv s_{(1)},\ s_{(2)} \\ c &\equiv s_{(1)},\ s_{(3)} \\ d &\equiv s_{(1)},\ s_{(2)},\ s_{(3)} \end{aligned}} \qquad (2.1)$$

Into all physically possible actions the group of coordinates goes $(x_5,x_6) \equiv s_{(1)}$ up.
The groups of coordinates of the $R_3$ and the time $x_4$ can appear in each case for itself and together not as exclusive structural deformations. In the KIND only the coordinate combination becomes $s_{(3)}$, $s_{(2)}$ - space-time - accepted. The additionally arising Hermetrieformen in the Heim theory is the actual cause for the large solution diversity in this theory. Because it will be shown that a reciprocal effect between this Hermetrieformen may not be neglected.

First it is to be noticed that in place of the Riemann curvature tensor in the KIND with home the *space compressor* $\rho^{i}{}_{klm}$ steps, just like this of the first derivatives and of products of the shift symbols and/or fundamental condensor lenses consists.

The Feldgleichungen (1.8) are eigenvalue equations with the structural condition functions $\varphi^{i}_{kl}$. The tapered curvature tensor (and/or - selector) becomes by effect of a condition operator $K_{(p)}{}^{k}$ on the condition function $\varphi^{i}_{kl}$. expressed. The real eigenvalues $\lambda_p$ the operators $K_p$ lie in discrete point spectra:

$$\boxed{\rho_{ik} \equiv K^{k}_{(p)}\varphi^{(p)}_{ik} = \vec{\lambda}_{(p)}(ik)\varphi^{(p)}_{ik}.} \qquad (2.2)$$

This equation is an analog for the proper value problem of infinitesimal operators and can as metronisches proper value problem be designated. Its existence can be deduced from the existence of metronischer stencils, which are hermitesch and of the square type. $K^k$ a along ash is condition function, which describes the condition of the structure.

The eigenvalues $\lambda_{ik}$ describe material quantumful metric structural stages of at the basis put metronischen hyperstructure, which are interpreted as structural condensations. Over this hyperstructure an abstract metronischer function area exists, in which along ash condition functions work.

If the different cross-sectional areas (Metronen) within larger space ranges become the continuum and the Partialstrukturen is reduced to only one, the equations (2.2) change into the Feldgleichungen (1.4) of the KIND.

The metric structural stages $\lambda_m$ correspond in their $R_3$- Projections the energetic quantum stages. To the Feldgleichungen in the microbe realm (2.2) - contrary to the KIND - no physical dimension (e.g. energy impulse density) are introduced. With which physical dimension $\varphi^p{}_{ik}$ in (2.2) to be identified must, from the characteristics of the solutions one opens. Thus one of hopes of Einstein was fulfilled to express the phenomenological portion in the gravitational field equations likewise geometrically. The eigenvalues $\lambda_m$ are not to be identified however yet by any means with physical particle conditions.

The set of equations (2.2) can with (1.5) for the groups of coordinates

$y_a = \sqrt{x_5{}^2 + x_6{}^2}$ ; $y_b = \sqrt{x_4{}^2 + x_5{}^2 + x_6{}^2}$ ; $y_c = \sqrt{x_1{}^2 + x_2{}^2 + x_3{}^2 + x_5{}^2 + x_6{}^2}$ ; and

$y_d = \sqrt{\left(\sum_{i=1}^{6} x_i{}^2\right)}$ are solved (home B. 1979/89). With eigenvalue conditions

$a_{km} = -\dfrac{\lambda_l(k,k)}{\lambda_k(k,m)}$, and the shortening

$$a_m^{(kl)} = \frac{a_{km}}{a_{kl}}, \qquad b_{ms}^{(kl)} = \frac{a_{ls}a_{km}}{a_{lk}a_{kl}} - \frac{a_{ms}a_{km}}{a_{mk}a_{kl}}, \qquad \varphi_{kl} = b_i^{(kl)}\varphi_{kl}^i \tag{2.3}$$

arises out (2.2) $\rightarrow$ $\partial_l\varphi_{km}^i - \partial_m\varphi_{kl}^i + \varphi_{ls}^i\varphi_{km}^s - \varphi_{ms}^i\varphi_{kl}^s = \lambda_m(k,l)\varphi_{kl}^i$ the relationship

$$\left(a_m^{(kl)}\partial_l - \partial_m\right)\varphi_{kl}^i + b_{ms}^{(kl)}\varphi_{kl}^i\varphi_{kl}^s = \lambda_m(k,l)\varphi_{kl}^i \;. \tag{2.4}$$

One sums up along the metric inducing m, then is simplified (2.4) with the further shortening (2.5)

to the Bernoulli differential equation

$$a_{kl} = 1/[a(k,l) - 1] - (q-1)\,,\; a(k,l) = \sum_{m=1}^{q} a_{ms}^{(kl)}\,,\; b_s^{(kl)} = \sum_{m=1}^{q} b_{ms}^{(kl)}\,,\; \lambda(kl) = \sum_{m=1}^{q} \lambda_m(k,l)\,,\; \Phi_{kl} = b_i^{(kl)}\varphi_{kl}^i \tag{2.5}$$

$$\frac{\partial\Phi_{kl}}{\partial y} + a_{kl}\Phi_{kl}^2 - a_{kl}\lambda(k,l)\Phi_{kl} = 0\,. \tag{2.6}$$

For these arises with the integration constant $C_{kl}$ and the simplified way of writing $\lambda_{kl} = a_{kl}\lambda(k,l)$ as well as $\psi_{kl} = \Phi_{kl}/\lambda(k,l)$ the standardized solution:

$$\boxed{\Psi_{kl} = (E + C_{kl}e^{-\lambda_{kl}y})^{-1}} \tag{2.7}$$

Equation (2.7) is called of home standardized solution of the monometric Feldgleichungen. It has a fundamental meaning.

**2.2 the solution of the Feldgleichungen for the four Hermetrieformen**

The eigenvalue spectra $\lambda_{kl}$ arise as functions of integral indices as quantum numbers of the deformation stages. Only the imaginary part $Im(\lambda_{kl}\ \ y)$ supplies in Eigenvalue spectrum as discrete point spectrum. That real part remains ineffective against it regarding the education by metric deformation stages, i.e. only the existence of three imaginary absolute Cartesian coordinates causes the metric structural curvatures.
The solution for the four individual Hermetrieformen supplies two wave equations and two equations, which mean that this Hermetrieformen cannot move faster than with speed of light. The eigenvalues $\lambda_{kl}$ must in the case of the complex condensations C and D quantum stages of ponderabler matter field quanta describe. The following allocations between Hermetrieformen and physical objects can be manufactured: Hermetrieform/physical object

| | | |
|---|---|---|
| $a \equiv s_{(1)}$, | :Gravitationswellen | |
| $b \equiv s_{(1)}, s_{(2)}$ | :Photonen | (2.9) |
| $c \equiv s_{(1)}, s_{(3)}$ | :ungeladene Teilchen | |
| $d \equiv s_{(1)}, s_{(2)}, s_{(3)}$ | :geladene Teilchen | |

An estimation already supplies referring to a first mass spectrum.

a) The analysis of the effects of the Hermetrieform A results in that the imaginary absolute Cartesian coordinates $x_5$ and $x_6$ in $R_3$ become effective. The solution of the Feldgleichungen leads for
$\varphi(\xi) = \varphi(x_5,x_6) = \{{}_5{}^5{}_6\} + \{{}_5{}^6{}_6\}$ on the equation:

$$d\varphi/d\xi + \varphi^2 = \lambda\varphi ,$$

also $\lambda = a\,\lambda_6(5,5) + b\,\lambda_5(6,6)$ (2.10)
how $a = \{{}_5{}^i{}_5\}/\{{}_5{}^i{}_6\}$ , $b = \{{}_6{}^i{}_6\}/\{{}_5{}^i{}_6\}$ and shortening $\xi = (i/2)\,\rho$, also $-\rho^2 = x_5^2 + x_6^2$.

Therein hangs $\varphi(\xi)$ only of the imaginary coordinates (not however of the time) off. One physical interpretation is possible only if the Hermetrieform (A) effects on that $R_4$ has, if thus $\xi$ in any form of that $R_4$- Coordinates depends. That is the case, if A fulfills the condition of a geodetic zero line:

$$ds^2 = \sum_{k=1}^{6} dx_k^2 = dr^2 + d\xi^2 = 0. \qquad (2.11)$$

Then is $d\xi = i dr$, and step in the area with the speed $\omega$ progressive Gravitational field disturbances up.[vi]

[vi] B. Home had in its first publication (1980) a value of $4/3\ c$ for the propagation speed of gravitativer field disturbances calculates, which was to due to the use of a wrong operator expression. In the following on C as the propagation speed of gravitational field disturbances one counts. (Details in addition on P. 58). Publications of authors, - like home in former times -$4/3\ c$ use, by us are not carried.

Also in the structures (B), (C) and (D) are the coordinates $x_5$ and $x_6$ effectively. From there it may be accepted that the integration of the Hermetrieform (A) has the effect from gravitational fields into the elementary matter field quanta.

b) In the Hermetrieform (B) are all imaginary coordinates $x_4$, $x_5$, $x_6$ metrically. Those Solutions of the Feldgleichungen lead on a transversal wave equation for photo niche Matter field quanta in the area:

$$\text{div grad } \varphi - d^2\varphi/c^2dt^2 = 0. \qquad (2.12)$$

In the solution (2.7) for (2.2)

$$\psi_{kl} = [1 - \exp(-\lambda_{kl} y)]^{-1} \qquad (2.13)$$

meant $y^2 = -(\rho^2 - r^2) = -(c^2t^2 + \varepsilon^2 + \eta^2 - \sum_{k=1}^{3} x_k^2)$. The function $|\psi_{kl}|$ reached periodically

Minimum, if in $e^{-iy\lambda_{kl}} = \cos(\lambda_{kl} y) - i\sin(\lambda_{kl} y)$ that real part the value - 1 assumes and that Imaginary part disappears,[vii] takes place for the portions:

$$\lambda^-_{kl}\, y = \pi(2n - 1), \qquad (2.14)$$

if n the quantum numbers are. These are through $\varphi^i_{kl}$ descriptive metric deformation stages of the metric curvature field, those as curvature conditions of a metric Unterraumes $R_4$ of the $R_6$ (also $q \leq 6$) to arise can. After (2.14) is

$$(\lambda^-_{kl}\, y)^2 = (\lambda^-_{kl})^2(\rho^2 - r^2) = (\lambda^-_{kl})^2(\vec{\rho} + i\vec{r})^2 = \pi^2[\mathbf{e}_\rho(2n_\rho + 1) + i\,\mathbf{e}_r(2n_r + 1)]^2. \qquad (2.15)$$

Split up into real and imaginary part, becomes from it:

$$i\,\lambda^-_{kl}\, r = i\,\pi(2n_r + 1), \qquad (2.16)$$

$$\lambda^-_{kl}\, \rho = \pi(2n_\rho + 1). \qquad (2.17)$$

Home forms from it the peak-to-valley ratio: (2.18)

$$\boxed{r = \frac{(2n_r + 1)}{(2n_\rho + 1)}\rho\ .} \qquad (2.18)$$

c) With the Hermetrieform C is $c^2t^2 = 0$, thus $\rho^2 = \varepsilon^2 + \eta^2$. And out (2.18) becomes, if on that singular surface $r = \varepsilon$ one sets:

$$\eta / r = \pm\frac{2}{2n_r + 1 - j}\sqrt{(n_\rho + n_r + 1)(n_\rho - n_r)}\ . \qquad (2.19)$$

There $n_r < n_\rho$ to be must, can for $n_r = n_\rho - j$ or also $n_\rho = n$ also $n_r = n - j$ are set. Then follows out (2.20):

[vii] If that accepts real part the value +1, then becomes $\psi_{kl}$ singularly $(\pm\infty)$. Home excludes singular values.

$$\eta / r = \pm \frac{2}{2n+1-2j}\sqrt{j(2n+1-j)} = \pm 2f \qquad (2.20)$$

and for $j = 1$ and considering the demand for reality, if $\eta/r$ a mass spectrum to supply is, $\eta/r > 0$:

$$f = \frac{\sqrt{2n}}{(2n-1)}. \qquad (2.21)$$

The investigation of the characteristic lengths $\eta$ and r leads on the identification for $\eta$ with the Comptonwellenlänge $\lambda_C$: $\eta \equiv r_0 = \lambda_C/2 = ½\ h/mc$, and r as that Gravitation wavelength for a minimum matter field quantum:

$$r = \Lambda = h^2/\gamma m^3. \qquad (2.22)$$

From this a mass spectrum for Neutrokorpuskeln lets itself indicate:

$$\eta/r = r_0/\Lambda = ½\ m^2\gamma/hc = 2\ f(n) \text{ and/or.}$$

$$\boxed{m(n) = \frac{2\sqrt[4]{2n}}{\sqrt{2n-1}}\sqrt{\frac{ch}{\gamma}}} \qquad (2.23)$$

With space condensations the projections that describe $x_6$ - Coordinates into the area the quantumful subject wavelength $(\eta = \lambda_C/2)$ and the projection that $x_5$ - Component as Gravitation wavelength $\Lambda$ the border of the attractive gravitational field.

d) One takes because of the ambiguous square root into (2.23) the 4th power of the masses, then is the relationship from an uncharged to electrically charged measure to the 4th power $(m_c/m_d)^4$ around addends $w^2$ of 1 differently, if through $w^2$ the portion that Field measures of the load field one expresses: $(m_c/m_d)^4 = U = 1 + w^2$, and/or.

$$w^2 = (m_c^4 - m_d^4)/m_d^4. \qquad (2.24)$$

This portion is determined in chapter 2.3.

In the mass formula (2.23) the quantum numbers n stand. They are determined by the measures, which define again characteristic distances. Therefore the relationship n = n (R) must to be visited. After home each matter field quantum defines $m_0$ by its Comptonwellenlänge a maximum radius $R_+$ for the range of its gravitational field and, the black sign radius appropriate smallest range $R_-$. The product that both characteristic lengths is a constant of A and reads with (2.22):

$$\Lambda^2 = R_+ R_- = h^2/\gamma m_o^3. \qquad (2.25)$$

The border of the attractive gravitational field defined through:

$$R_+ = \Lambda^2/R_- = 2\ \Lambda^2\lambda/e\tau. \qquad (2.26)$$

Becomes the volume $2\,\Lambda^2\lambda$ with a lattice lector, thus an operator C, that on the number the Metronen $\tau$ influences, into the Meridianfläche of the matter field quantum $m_0$ projects, then the source of field expressed by the Metronenzahl n along the distance $R_+$ : $2\,\Lambda^2\lambda = C;n$. Is $\varepsilon$ a projektiver factor, then is: $C;n \;=\; \varepsilon\,\sqrt{\tau}\;\, n$ .
F the unit area is, those after a projection of all spatial potential surfaces of the field structure into the level $R_2$ by a contour one limits: $F \equiv \pi\, s_0^2$, and
$\varepsilon^2\sqrt{F} \;=\; s_0 = 1\;[m]$ . Then is (2.26):

$$e\sqrt{\tau}\;\, R_+ \;=\; \varepsilon\, F\, n \quad . \qquad (2.27)$$

For the smallest possible measures $m_0$, reaches $n$ a maximum $n_N$, and out (2.27) becomes also
$\varepsilon = \sqrt{s_0}\sqrt[4]{F} = \pi^{-1/4}$ :

$$e\sqrt{\tau}\;\, R_+ \;=\; \pi^{-3/4}\, n_N\, s_0^{\,2} \qquad (2.28)$$

and with (2.26) and shortening $\mu = \sqrt{ch/\gamma}$ one receives for $n_N$ an expression as function the lower barrier of the mass spectrum $m_q$

$$\boxed{n_N = \frac{16}{3}\pi^{-3/4}\frac{h^2\sqrt{\tau}\mu^4}{s_0^2\gamma m_q^7}} \qquad (2.29)$$

**2.3 theoretical determination of the elementary charge and the fine structure constant**

The derivation of the elementary charge is to be somewhat in more detail treated, because it gives a reference the fact that the beginning of the Heim theory is promising, and because to it is to be demonstrated that the characteristics of the subject can be understood only completely with geometry, in which also the Partialstrukturen of the Hermetrieformen with one another interacts.

The space-time condensation of the Hermetrieform D is bound as electrically charged matter field quantum to the form b. The structure of the field can be derived from the Feldgleichungen (1.8), if by the microbe realm into the macro range one changes over: $\varphi^{i}_{kl} \;\rightarrow\; \{^{\;i}_{k\,l}\}$.
Designated $\vec{\xi}_4$ the force density, then follows out (1.8):

$$\vec{\xi}_4 = \mathrm{div}_4\ \mathrm{sp}\ C_q\{^{\;i}_{k\,l}\}_q = \mathrm{div}_4\ \mathrm{sp}\ \vec{\lambda}_q\ \{^{\;i}_{k\,l}\}_q. \qquad (2.30a)$$

Is $\lambda_q$ the energetic portion $E \,\hat{=}\, \lambda_q$ and $\vec{F}$ the portion given by the geometrical regional structure $\vec{F} = \{^{\;i}_{k\,l}\}_q$ the load field with the index q, then is after track evaluation

$$\vec{\xi}_4 = \sim\ d\,(E\vec{F})/d\Omega, \qquad (2.30b)$$

with the four-dimensional volume element $d\Omega \;=\; dx_1dx_2dx_3dx_4$. On the left side of (1.8) the square terms compensate themselves as consequence of the summation by track evaluation i = k, so that it comes to the linearization of the component representation, which leads to a rotation field:

$$C_q \{^{\,i}_{k\,l}\}_q = \partial_m\{^{\,k}_{k\,l}\}_q - \partial_l \{^{\,k}_{k\,m}\}_q = \mathrm{rot}_q\ \mathrm{sp}\{^{\,i}_{k\,l}\}_q. \qquad (2.31)$$

The swelling and reduction field between the load fields $Q_+$ and $Q_-$ forms as $R_4$- Rotor a unit. The Viererkraft $\vec{K}_{(4)}$ the integral is over the force density $\xi_4$ and that
Volume element $d\Omega$

$$\vec{K}_{(4)} = \int \xi_4\, d\Omega. \qquad (2.32)$$

Is $\mathbf{K}_q$ a force vector in $R_3$ and $\mathbf{K}_4^{(4)}$ a temporal component of the Viererkraft
$\mathbf{K}_{(4)} = \vec{K}_{(4)} = \mathbf{K}_q + \mathbf{K}_4^{(4)}$, then is

$$\int \mathbf{K}_{(4)} d\xi_4 = \int \mathbf{K}_q ds + \int \mathbf{K}_4^{(4)}\, dx_4 = \int E \vec{F}\, d\vec{s}_{(4)}. \qquad (2.33)$$

Because of the rotor representation (2.31) $\mathrm{rot}_q\ \mathrm{sp}\{^{\,i}_{k\,l}\}_q = \vec{\lambda}_q \times \{^{\,i}_{k\,l}\}_q$ ist $\vec{\lambda}_q \perp \{^{\,i}_{k\,l}\}_q$ and with it $\mathbf{K}_4^{(4)} \perp \vec{x}_{(4)}$.
Therefore the second integral disappears in (2.33). In the static case becomes

$$\int \mathbf{K}_q d\vec{s} = 2\,\pi\, V_q = 2\pi \frac{1}{4\pi\varepsilon_0} \frac{Q_\pm^2}{r_q} = E\vec{F}d\vec{s}_{(4)} \qquad (2.34)$$

and it is $\vec{F}\, d\vec{s}_{(4)} = \sum_{k=1}^{4} F_k dx_k$. For symmetry reasons it can be accepted that for all components $\int F_x\, dx = Z$ the same Stammfunktion Z exists. Thus is valid:

$$E \int \vec{F}\, d\vec{s}_{(4)} = 4\, EZ. \qquad (2.35)$$

It is valid $2\,\pi\, V_q = 4\, EZ$ with $E = ch/\lambda_q = c\hbar/r_q$ and with (2.34) follows

$$Q_\pm^2 = 2\, c\hbar Z \qquad (2.36)$$

and with the vacuum characteristic impedance $\Re_{--} = 1/c\varepsilon_0$

$$Z = 1/(8\,\pi)\, Q_\pm^2\, \Re_{--}. \qquad (2.37)$$

Because of $Z(Q_\pm) \sim Q_\pm^2$ and $w(Q_\pm)$ from the load field a function exists $w(Z)$. To the determination this connection become the dimensionless quantities w and Z with the unit distance $s_0 = 1$ [m] in distances dimensions: $G = w\ s_0$, $H = Z\ s_0$, so that with unit vectors $\vec{H}_0^2 = \vec{G}_0^2 = 1$ Orientations too $\vec{H}$ and $\vec{G}$ become possible and a triangle ABC with the vectors $\overline{AB} = \vec{x}$, $\overline{BC} = \vec{G}$ and $\overline{AC} = \vec{H}$ with $\vec{G} \,||\, \vec{y} \perp \vec{x}$ to design lets. In this
Triangle is $\varphi = \angle(\vec{x}, \vec{H})$ and $\angle(\vec{G}, \vec{H}) = \pi/2 - \varphi$. Then is $(\vec{G}, \vec{H})^2 = w^2/Z^2 = \sin^2\varphi$, i.e. $w^2 = Z^2 \sin^2\varphi$. Related to this unit radius $s_0$ is the load contained in it

$$\varepsilon_\pm = \int_o^{s_0} Q_\pm 4\pi r^2 dr = \frac{4}{3}\pi Q_\pm \qquad (2.38)$$

H is taken as radius of a circle, a regular Polygon out $N \geq 3$ Edge is in-descriptive, then is in the radian measure for the center angle of a sector $2\,\pi/N$ and for those
Edge length $2H\sin\alpha$, if $\alpha = \pi/N$ the half center angle is. With the hypothesis $\alpha\varphi = 1/Z$
is

$$\varphi\, \pi Z = N \qquad (2.39)$$

and

$$w(Z) = Z \sin(N/\pi Z). \qquad (2.40)$$

Because of $U = 1 + w^2 = 1 + Z^2\sin^2(N/\pi Z)$ reaches U a maximum value for $\sin^2(N/\pi Z) = 1$ and/or.
$\sin\varphi' = \pm 1$ , $\varphi' = \varphi_{max} = N/(\pi Z_{min})$ . Then follows out (2.40):

$$N/\pi Z = \pm \text{arc} \sin 1 = \pm \pi/2\ (2p + 1) \qquad (2.41)$$

with integral $p \geq 0$ and $N \geq 2p + 1$. Begun in (2.37) for Z and $\varepsilon_\pm = 4/3\ \pi Q_\pm$ supplies

$$\pm 9\ N(2p + 1)^{-1} = \pi^4/\hbar\ \varepsilon_\pm^2\ \Re_{--} \qquad (2.42)$$

For the elementary load field $\varepsilon_{min}$ $(N=2p + 1) = \varepsilon_{0\pm}$ the constant results

$$\boxed{\varepsilon_{0\pm} = \pm \frac{3}{\pi^2}\sqrt{\frac{\hbar}{\Re_-}}} \qquad (2.43)$$

This theoretical value lies over +0,125% over the measured electron charge.
With quantization $\varepsilon_\pm = q\ \varepsilon_{0\pm}$ becomes out (2.40) and (2.42)

$$w^2 = U_{max} + 1 = (Z^2\sin^2\varphi)_{max} = (2\pi\ \varepsilon_\pm\ \Re_{--}/9\hbar)^2 = 4q^4/\pi^4 \qquad (2.44)$$

and for the representation of the D-Hermetrieform

$$m_d^4 = m_c^4/U_{max} \qquad (2.45)$$

and also $m_d = m(n,q)$ and $m_c = m(n)$ out (2.21):

$$\boxed{m(n,q) = m(n)\ \eta_q} \qquad (2.46)$$

whereby

$$\eta_q^4 = 1/U_{max} = (1 + 4\ q^4/\ \pi^4\ )^{-1}, \qquad (2.47)$$

thus

$$\boxed{\eta_q = \sqrt[4]{\frac{\pi^4}{4q^4 + \pi^4}}} \qquad (2.48)$$

The upper barrier for possible Energiequanten represents to n = 1:

$$m_{max} = \sqrt{\frac{ch}{\gamma}}\sqrt[4]{2}\eta_q\ . \qquad (2.49)$$

These measures *Maximon* one calls. In the literature becomes $\mu = \sqrt{(ch/\gamma)}$, *Planck' Measures, to* frequently so called, but places $\mu$ only one calibration factor in the spectra.

The deviation of the theoretical value (2.43) of the measured value for the elementary charge $e_\pm$ their reciprocal effect could be justified a reduction up after home in it that there are different components of the load field, $e_\pm$ caused.
$V_{xy}$ is the potential of the reciprocal effect of two of such load components $e_x$ and $e_y$ over the distance r by a field $f(r)$ given:

$$V_{xy} = e_x\, e_y\, f\,(x), \tag{2.50}$$

whereby the central field for large values of r the relationship

$$f \rightarrow 1/4\pi\varepsilon_0' r \tag{2.51}$$

assumes ($\varepsilon_0$' is the influence constant, $\varepsilon_{0\pm}$ is the theoretically determined elementary charge). It is $e_r$ a reduced load field for q = 1, so that the relationship of the energies of a loaded to an uncharged term with same quantum number n is described through

$$\frac{E(n,1)}{E(n)} = \frac{V_{r,r}}{V_{\varepsilon,\varepsilon}} = \left(\frac{e_r}{\varepsilon_{0\pm}}\right)^2 \tag{2.52}$$

or

$$\frac{m(n,1)}{m(n)} = \eta_{q=1} = \eta \tag{2.53}$$

also

$$\boxed{\eta = \sqrt[4]{\frac{\pi^4}{(4+\pi^4)}}} \tag{2.54}$$

Then is the reduced load field:

$$e_r = \varepsilon_{0\pm} \sqrt{\eta}. \tag{2.55}$$

The difference $e_d = \varepsilon_{0\pm} - e_r = \varepsilon_{0\pm}(1 - \sqrt{\eta})$ then a further component supplies, like also that arithmetic means $e_w$:

$$2e_w = \varepsilon_{0\pm} + e_r = \varepsilon_{0\pm}(1 + \sqrt{\eta}). \tag{2.56}$$

The empirically accessible elementary load field $e_\pm$ is by the potential $V_{e,e} = e_\pm^2 f(r)$ marked. Therefore it can as arithmetic means out $V_{r,r}$ and $V_{w,w}$ are accepted:

$$e_\pm = \tfrac{1}{2}\,(e_r^2 + e_w^2) = \tfrac{1}{4}\,[4\eta + (1 + \sqrt{\eta})^2]\varepsilon_{0\pm} = \tfrac{1}{4}\,\varepsilon_{0\pm}^2\,\vartheta \tag{2.57}$$

with shortening:

$$\boxed{\vartheta = 5\eta + 2\sqrt{\eta} + 1)} \tag{2.58}$$

Thus the value for the measurable <u>elementary charge</u> results<u>:</u>

$$\boxed{e_\pm = \pm\frac{3}{4\pi^2}\sqrt{\frac{2\vartheta\hbar}{\Re_-}}} \tag{2.59}$$

This value agrees with for the empirical elementary charge. Becomes (2.59) into the relationship for those<u>*Sommerfeld*-Fine structure constant</u> assigned, $\alpha = e^2/2hc\varepsilon_0$' thus arises
a theoretical value:

$$\boxed{\alpha = \frac{9}{(2\pi)^5}\vartheta .} \qquad (2.60)$$

$\alpha$ hangs only of the number $\pi$ off and has the reciprocal value $1/\alpha = 137{,}038$. This value lies over 0,0015% over the empirical. A complete correction succeeds only in the polymetrischen theory with consideration of the reciprocal effects of the Partialstrukturen. But this value is already a reference to the correct way to a uniform field theory. Because after *Dirac* (1964) each field theory must, the requirement on a real standardization to have wants, A as pure number to represent be able. The nonlinear spinor theory of *Heisenberg* (1967) led to a value $1/\alpha \approx 120$, with which Heisenberg at that time was already very content.

From the relationship for the relationship between the values of the loaded to uncharged measures out (2.46) now the elementary matter field quanta know directly as functions of the natural constants $\gamma$, $h$ and C to be indicated. Out (2.21) and (2.29) follows with (2.46) for very large $n = n_N$:

$$\eta_q^{-4}\left(\frac{m_q}{\mu}\right)^4 = \frac{2n_N}{(2n_N-1)^2} \approx \frac{1}{2n_N}, \qquad (2.61)$$

which results in the smallest for matter field quantum, which can carry still another load, an expression, that only of the natural constants $\gamma$, $h$ and C depends. With $s_0 = 1$ [m] is valid:

$$\boxed{m_q\,\eta_q\,\sqrt[3]{\eta_q} = \frac{4}{cs_0}\sqrt[4]{\pi}\sqrt[3]{3\pi s_0\gamma\hbar}\sqrt{\frac{c\hbar}{3\gamma}} .} \qquad (2.62)$$

For the lower barrier of the C-spectrum is because of q = 0 and $\eta_0 = 1$:

$$\boxed{m_1 = \frac{4}{cs_0}\sqrt[4]{\pi}\sqrt[3]{3\pi s_0\gamma\hbar}\sqrt{\frac{c\hbar}{3\gamma}} .} \qquad (2.63)$$

On the other hand is valid because of (2.46) $m_q = m_1 = m_{(0)}\,\eta$ because of $\eta < 1$: $m_{(0)} > m_1 > m_0$.
For $\eta = \eta_q$ becomes out (2.62)

$$m_1\,\eta\sqrt[3]{\eta} = m_0 \qquad (2.64)$$

and also $m_1 = m_q = m_{(0)}\,\eta$:

$$m_{(0)}\,\eta^2\,\sqrt[3]{\eta} = m_0 \qquad (2.65)$$

There the value of $m_1$ ($m_1 = 0{,}5137$ MeV) with the empirical value for the measures of the Electron up to 0,53% , interprets home agrees m1 first with one
Approximate value for the electron mass. The minimum condensations of the C-spectrum lead to a somewhat smaller value $m_0 \approx 0{,}5069$ MeV. During the value of $m_{(0)} = 0{,}5189$ MeV
something over that the electron mass lies.

The deviations from $m_1$ of the empirical electron mass $m_e$ can be corrected only then if a term lector is found to the Separation of the spectra of imaginary and complex condensations in (2.21). Because the terms in the spectrum of the inertia masses $m(n,q,)$ with the quantum numbers n and q in (2.21) and/or (2.46) lie so
closely that only of a pseudo continuum can be spoken. This pseudo continuum contains all possible photo niches field masses, which a discrete spectrum of ponderabler C and D of terms are overlaid.

With these preliminary investigations fundamental characteristics of material structures, like loaded and uncharged particles, are shown photons and gravitons.

Since the used geometrical calculation for the investigation of the internal structural processes in particles is obviously still too rough, home makes a refinement of Riemann geometry, by it in this arising fundamental tensor $g_{ik}$ by one
Combination of Partialstrukturen develops, like it the semantically different geometrical world structures and/or groups of coordinates $s_{(1)}$, $s_{(2)}$, $s_{(3)}$ suggest. Into the further
Investigations from there polymetrische non-Euclidean geometry is used and their structural dynamics are examined.

## 3. Polymetrische geometry 3,1 the polymetrischen Feldgleichungen

1. In the KIND at the basis the metric fundamental tensor goes to lying Riemann geometry $g_{ik}$ in the linear element

$$ds^2 = g_{ik}\, dz_i\, dz_k \tag{3.1}$$

from a Koordinatentransformation $x_m = x_m(z_k)$ with $x_m$ as Euclidean and $z_k$ as non-Euclidean coordinates out: $g_{ik} = \partial x_m/\partial z_i \cdot \partial x_m/\partial z_i$ .

The metric tensor $g_{ik}$ by Einstein with the gravitation potential one equates.

The extension of Riemann geometry now thereby introduced that two different coordinate systems are accepted, for which an interdependence will be indicated can, so that apparently only again a coordinate system is noticed: $y_\alpha = y_\alpha(z_k)$ (Drö and home 1996):

$$x_m = x_m(y_\alpha(z_k)) = u_m(z_k). \tag{3.2}$$

The metric tensor is thereby defined through:

$$g_{ik} = \partial x_m/\partial y_\alpha \cdot \partial y_\alpha/\partial z_i \cdot \partial x_m/\partial y_ß \cdot \partial y_ß/\partial z_k = \sum_{\alpha,\beta=1}^{6} g_{ik}^{(\alpha\beta)} . \tag{3.3}$$

By clips it is indicated that the summation convention for these indices is waived, then is valid:

$$\left(\frac{\partial x_m}{\partial y_{(\alpha)}}\frac{\partial y_{(\alpha)}}{\partial z_i}\right)\left(\frac{\partial x_m}{\partial y_{(\beta)}}\frac{\partial y_{(\beta)}}{\partial z_k}\right) = \kappa_{im}^{(\alpha)}\kappa_{mk}^{(\beta)} = g_{ik}^{(\alpha\beta)} \tag{3.4}$$

with $\kappa_{im}^{(\alpha)} = \left( \frac{\partial x_m}{\partial y_{(\alpha)}} \frac{\partial y_{(\alpha)}}{\partial z_i} \right)$ and $\kappa_{mk}^{(\beta)} = \left( \frac{\partial x_m}{\partial y_{(\beta)}} \frac{\partial y_{(\beta)}}{\partial z_k} \right)$.

The kompositive *fundamental tensor* $g_{ik}$ consists now of several *Partialstrukturen.* Because those $\kappa^{(\alpha)}{}_{im}$ in $x_m$ $(y_\alpha(z))$ $= \int \kappa^{(\alpha)}{}_{im}\, dz^i$ when integral cores appear, they become as polymetrische Fundamental cores designates. Physically the coordinates form $y_1,y_2,y_3$ a structural Unit($R_3$), those not with the structural unity$_4$ (Time t) to be exchanged can. Likewise are $y_5$, $y_6$ one of $R_3$ and t different structural unit.

The coordinates of the $R_6$ are designation also $\alpha$, ß $\in (1,2,\ldots,6)$. The groups of coordinates $(y_1\ y_2\ y_3)(y_4\ )(y_5\ y_6)$ become through $\mu,\ \nu = 1,\ 2,\ 3$ symbolized, and the coordinates within the groups read:

$$\mu_\alpha\,,\ \nu_\alpha \quad = 1_\alpha \equiv\ 5,\ 6,$$
$$= 2_\alpha \equiv\ 4,$$
$$= 3_\alpha \equiv\ 1,\ 2,\ 3.$$

Thus becomes out (3.3):

$$g_{ik} = \sum_{\alpha=1}^{6} \kappa_{im}^{(\alpha)} \sum_{\beta=1}^{6} \kappa_{mk}^{(\beta)} = \left( \sum_{\alpha=1}^{3} \kappa_{im}^{(\alpha)} + \kappa_{im}^{(4)} + \sum_{\alpha=5}^{6} \kappa_{im}^{(\alpha)} \right) \left( \sum_{\beta=1}^{3} \kappa_{mk}^{(\beta)} + \kappa_{mk}^{(4)} + \sum_{\beta=5}^{6} \kappa_{mk}^{(\beta)} \right) =$$
$$= \left( \kappa_{im}^{(3)} + \kappa_{im}^{(2)} + \kappa_{im}^{(1)} \right)\left( \kappa_{mk}^{(3)} + \kappa_{mk}^{(2)} + \kappa_{mk}^{(1)} \right) = \sum_{\mu=1}^{3} \kappa_{im}^{(\mu)} \sum_{\nu=1}^{3} \kappa_{mk}^{(\nu)} = \sum_{\mu,\nu}^{3} g_{ik}^{(\mu\nu)} \tag{3.5}$$

with

$$g_{ik}^{(\mu\nu)} = \sum_{\mu_\alpha,\nu_\beta}^{3_{\alpha,\beta}} g_{ik}^{(\mu_\alpha \nu_\beta)}$$

and

$$\kappa_{ik}^{(1)} = \kappa_{ik}^{(1)}(x_5, x_6) \qquad \equiv \boldsymbol{\kappa}^{(1)}$$
$$\kappa_{ik}^{(2)} = \kappa_{ik}^{(2)}(x_4) \qquad \equiv \boldsymbol{\kappa}^{(2)} \tag{3.6}$$
$$\kappa_{ik}^{(3)} = \kappa_{ik}^{(3)}(x_1, x_2, x_3) \qquad \equiv \boldsymbol{\kappa}^{(3)}.$$

Four complexes of metric fundamental tensors can be formed, so-called **correlator**:

$$\hat{g}^{(x)} = \hat{g}^{(x)}(g_{ik}^{(\mu\nu)}, \kappa_{ik}^{(\mu)})\ , \qquad x = 1,\ldots,4\ ;\ \ \mu,\nu = 1,2,3\ \ ;\ \ i,k = 1,\ldots,6. \tag{3.7}$$

These polymetrischen fundamental tensors are **Partialstrukturen** of the $R_6$ , in mutual correlations stand.

Because of the difference of the semantic structural units of the world, in accordance with (3.6) four different supertensors or *correlator* leave themselves $\hat{g}_{(x)}$ design:

$$\hat{g}_{ik} = \hat{g}_{ik}\left( g_{ik}^{(\mu\nu)}, \kappa_{ik}^{(\mu\nu)} \right)_{\mu,\nu}^{3} = \hat{g}_x \ \text{ with } x = a,b,c,d:$$

$$\hat{g} = f_d(\kappa_{ik}^{(1)}, \kappa_{ik}^{(2)}, \kappa_{ik}^{(3)}) = \begin{pmatrix} g^{(11)} & g^{(12)} & g^{(13)} \\ g^{(21)} & g^{(22)} & g^{(23)} \\ g^{(31)} & g^{(32)} & g^{(33)} \end{pmatrix} = \hat{g}_d \tag{3.8}$$

For example is $g^{(21)} \equiv g_{ik}^{(21)} = \kappa_{mi}^{(2)} \kappa_{mk}^{(1)}$. (i) describes symbolically the coordinates up the metric Partialstrukturen refer:

$$
\begin{aligned}
{}^{(1)} &\equiv s^{(1)} \equiv (x_5, x_6) \equiv a \\
{}^{(2)} &\equiv s^{(2)} \equiv (x_4) = t \\
{}^{(3)} &\equiv s^{(3)} \equiv (x_1, x_2, x_3) = R_3 .
\end{aligned}
\tag{3.9}
$$

On this supertensor filter operators can $S[n]$ influence, which the structural units $n = s^{(1)}, s^{(2)}, s^{(3)}$ in equation (3.8) to make Euclidean can. Therefore exist except $\hat{g}_d$ still three further supertensors (with the shortening $\kappa_{ik}^{(\mu)} \equiv \kappa^{(\mu)}$ and $g_{ik}^{(\mu\nu)} = g^{(\mu\nu)}$):

$$
\hat{g}_c = S(2)\hat{g} = f_c(\kappa^{(1)}, \kappa^{(3)}) = \begin{pmatrix} g^{(11)} & \kappa^{(1)} & g^{(13)} \\ \kappa^{(1)} & E & \kappa^{(3)} \\ g^{(31)} & \kappa^{(3)} & g^{(33)} \end{pmatrix} \tag{3.10}
$$

$$
\hat{g}_b = S(3)\hat{g} = f_b(\kappa^{(1)}, \kappa^{(2)}) = \begin{pmatrix} g^{(11)} & g^{(12)} & \kappa^{(1)} \\ g^{(21)} & g^{(22)} & \kappa^{(2)} \\ \kappa^{(1)} & \kappa^{(2)} & E \end{pmatrix} \tag{3.11}
$$

$$
\hat{g}_a = S(2,3)\hat{g} = f_a(\kappa^{(1)}) = \begin{pmatrix} g^{(11)} & \kappa^{(11)} & \kappa^{(1)} \\ \kappa^{(1)} & E & E \\ \kappa^{(1)} & E & E \end{pmatrix} \tag{3.12}
$$

In place of the Christoffelsymbole $\Gamma^{i}_{km}$ in the KIND the polymetrischen field functions are valid in the microbe realm $\varphi^{i}_{km}$, which are called **fundamental condensor lenses**, because they consolidate the quantity of the Metronen projected on the Euclidean reference area

and/or condense. With $g^{is}_{(\kappa\lambda)} = \sum_{j=1}^{3} \kappa^{i}_{j} \kappa^{s}_{j}$ . is valid:

$$
\boxed{
\begin{aligned}
&\varphi^{i}_{km}{}^{(\mu\nu)} = g^{is}{}_{(\kappa\lambda)}\, \varphi_{skm}{}^{(\mu\nu)} = \\
&= \tfrac{1}{2} \sum_{\kappa,\lambda=1}^{3} g^{is}_{(\kappa\lambda)} \left( \sum_{\mu,\nu=1}^{3} \left( \frac{\partial g^{(\mu\nu)}_{sk}}{\partial z^{m}} + \frac{\partial g^{(\mu\nu)}_{sm}}{\partial z^{k}} - \frac{\partial g^{(\mu\nu)}_{km}}{\partial z^{s}} \right) \right) \equiv \sum_{\kappa\lambda\mu\nu}^{3} \left[{}^{\;i}_{km}\right]^{(\kappa\lambda)}_{\substack{-+ \\ (\mu\nu)}} \equiv \left[{}^{\kappa\lambda}_{\mu\nu}\right]^{\frown} .
\end{aligned}
}
\tag{3.13}
$$

$(\kappa\lambda)$ meant in the shortened way of writing the *retort signature* and $(\mu\nu)$ *the basis signature.* (- +) *the effect signature* between against and basis signature describes. It means here that the against variant index i of the Partialstruktur $\kappa$ one supplies. The index s of the Partialstruktur $\lambda$ makes possible the summation.

The condensor lenses cause that with the projection of a regular Metronengitters on an even reference area, which is on a curved surface, which appears project Metronen pressed together and/or condensed. They obtain external reciprocal effects, which are called correspondences.

In the Metronentheorie leave themselves translations of vectors (and/or *selectors)* would likewise drive through as in Riemann geometry. However there are more representations because of the richer structure of the correlators very many. In place of the Christoffelsymbole in Riemann geometry step now $3^4 = 81$Fundamental
Condensor lenses up.

Contrary to Riemann geometry, in which the product results in out ko and kontravariantem metric tensor the Kroneckersymbol:

$$g_{ik}\, g^{kj} = \delta^i_j \text{ (with 1 for } i = j \text{ and 0 for } i \neq j\text{)}, \quad (3.14)$$

can be accomplished into the Metronentheorie a repeated change of variance stage in the sense of a reciprocal effect and/or a correlation. The product of the fundamental tensors results in from there not the Kroneckersymbol, but a *correlation tensor*

$$\boxed{g^{ij}_{(\mu\nu)} g_{(\kappa\lambda)jk} = Q^i_k \binom{\kappa\lambda}{\mu\nu}.} \qquad (3.15)$$

The correlation tensor uncouples in each case two different elements $\hat{g}$.

Beside translations also $\overset{\frown}{\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}}$ leave also such with correlation tensors

would drive through, so that in place of the Riemann Christoffel symbols a four-fold sum of all possible translations (with 81 fundamental condensor lenses) is to be set:

$$\boxed{\hat{\varphi}^i_{kl} \equiv \sum_{\mu,\nu,\lambda,\sigma=1}^{6} \left( \overset{\frown}{\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}} + Q^i_j \binom{\kappa\lambda}{\mu\nu} \overset{\frown}{\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}} \right)} \qquad (3.16)$$

The correlation tensor $Q^{(\kappa\lambda)}_{(\mu\nu)}$ is to be considered also in the correlators:

$$\boxed{p^{ik} = \left\{ g^{ik}_{(\mu\nu)} + Q^k_j \binom{\kappa\lambda}{\mu\nu} g^{ji}_{(\mu\nu)} \right\}.} \qquad (3.17)$$

If $\hat{g}$ only one element$(\mu\mu)$contains, then no correlation exists, i.e. $Q^{(\mu\mu)}_{(\mu\mu)} = 0$,
as in monometric Riemann geometry of the art.

Coordinates, which are Euclidean, are called *anti- metric* and become by in
Queue symbol characterized $\tilde{k}$ . With a anti-metric coordinate $\tilde{k}$ disappear the not-metric fundamental condensor lenses

$$\begin{bmatrix} l \\ \tilde{j}k \end{bmatrix}^{(\kappa\lambda)}_{(\mu\nu)\; -+} \equiv \overset{\frown}{\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}}_{-} = 0. \qquad (3.18)$$

Hence it follows that in these arising antihermitischen components $g^{(\mu\nu)}{}_{-il}$(after (3.5)) a rotation field

$$\partial_{\tilde{k}} g^{(\mu\nu)}_{il} = \partial_i g^{(\mu\nu)}_{\tilde{k}l} - \partial_l g^{(\mu\nu)}_{\tilde{k}l} \equiv \partial_{\tilde{k}} g^{(\mu\nu)}_{-il} \qquad (3.19)$$

form, which causes the area overlaid spin structure. The along ashes of portions $g^{(\mu\nu)}_{+il}$ determine the condensation stages as a function of the respective *metric* or

*anti-metric* behavior of the coordinates. A partial Hermetrie, which causes a partial metric structural condensation, entails a metronische change of the spin field vector in the appropriate not-metric structural units. Within the metric condensation range $V_k$ work the components of $g^{(\mu\nu)}{}_{-il}$ as components one
*Field activator,* i.e. as one „Vorprägung of a metric field ". If metric condensation stages in the sense of correlations superponieren, this composition takes place in such a way that the spin field vectors of all Partialstrukturen compensate themselves.

2. The translation sizes, which represent the deviations of a metric structural condition of the Euclidean area in Riemann geometry, are more complex in the Heim theory, in accordance with (3.16), around a multiple and enter the curvature tensor and its taper ratio. Riemann geometry is thereby around polymetrische fundamental tensors with differential calculus, and the KIND beyond that by extension of the symmetrical metric fundamental tensor in $R_4$ on non- along ash tensors in one $R_6$ extended.

The space compressor $\rho^i{}_{klm}$ causes structural condensation stages, i.e. level of compressions of the Metronen in $R_6$. The set of equations (1.8) contains now $6^4 = 1296$ For equations for all possible condensation mass, i.e. curvatures, which leave the Metron invariant, but compressions in the projection into the flat reference world form.

In component form written equation (1.8) reads:

$$\boxed{\sum K_{(\mu\nu)}^{(\kappa\lambda)};\left[(1+Q_{(\mu\nu)}^{(\kappa\lambda)})+D_{(\mu\nu)}^{(\kappa\lambda)}\right];\begin{bmatrix} \kappa\lambda \\ -+ \\ \mu\nu \end{bmatrix}^{\cap} = \sum \overline{\lambda}_{(\mu\nu)}^{(\kappa\lambda)}\left(1+Q_{(\mu\nu)}^{(\kappa\lambda)}\right);\begin{bmatrix} \kappa\lambda \\ -+ \\ \mu\nu \end{bmatrix}^{\cap}.} \qquad (3.20)$$

In it are $K_{(\mu\nu)}^{(\kappa\lambda)}$ *the structural compressor* in $R_6$ (according to the curvature tensor that KIND), $Q_{(\mu\nu)}^{(\kappa\lambda)} \equiv Q^i{}_k{}_{(\mu\nu)}^{(\kappa\lambda)}$ the correlation tensor and $D_{(\mu\nu)}^{(\kappa\lambda)}$ the correlations more characteristic Correlation tensor, which is squarely composed of the correlation tensors and fundamental tensors. With shortening $\partial_l = \partial / \partial x^l$ and $\hat{\varphi}_{kl}^i \mathrel{\hat{=}} \varphi_{kl(\mu\nu)}^{i(\kappa\lambda)}$ and $\varphi^i{}_{kl}$ out (3.16) reads (3.20):

$$\partial_l \hat{\varphi}_{km}^i - \partial_m \hat{\varphi}_{kl}^i + \hat{\varphi}_{sl}^i \begin{bmatrix} s \\ km \end{bmatrix}_{(\mu\nu)}^{(\kappa\lambda)} - \hat{\varphi}_{sm}^i \begin{bmatrix} s \\ kl \end{bmatrix}_{(\mu\nu)}^{(\kappa\lambda)} = \lambda_m(k,l)\hat{\varphi}_{kl}^i . \qquad (3.21)$$

The metric structural stages $\lambda_m$ correspond in their $R_3$-Projections the energetic quantum stages. To these eigenvalue equations - contrary to the KIND - no physical dimension (e.g. power density) is introduced, but only purely geometrical structural sizes arise. Thus one of hopes of Einstein was fulfilled. The eigenvalues $\lambda_m$ are not to be identified however yet by any means with physical particle conditions.

**3,2 correlations of the Partialstrukturen and their extrema**

1. The solution of the eigenvalue equations (3.21) takes place as in the monometric case. The 2nd term differs now from equation (2.4):

$$[a_m(k,l)\partial_l - \partial_m]\ \hat{\varphi}^i_{kl} + \{a_{(1)}[{}_k{}^s{}_m] - a_{(2)}[{}_k{}^s{}_l]\}\ \hat{\varphi}^i_{kl} = \lambda_m(k,l)\ \hat{\varphi}^i_{kl} \qquad (3.22)$$

with $a_{(1)} = \hat{\varphi}^i_{sl} / \hat{\varphi}^i_{kl}$ , $a_{(2)} = \hat{\varphi}^i_{sm} / \hat{\varphi}^i_{kl}$ , $\hat{\varphi}^i_{sm} \equiv \varphi^i_{sm}\binom{\kappa\lambda}{\mu\nu}$,

$$\underline{\lambda_m}(k,l) \equiv \lambda_m(k,l)\binom{\kappa\lambda}{\mu\nu}. \qquad (3.23)$$

With shortening $\underline{b_s}(k,l) = a_{(1)}[{}_k{}^s{}_m] - a_{(2)}[{}_k{}^s{}_l]$, Summation along inducing $1 \le m \le q$ and

$$a_{kl} = [a(k,l) - 1]^{-1} - (1 - q) \qquad (3.24)$$

the gradient equation results

$$\mathrm{grad}_q\ \hat{\varphi}^i_{kl} = a_{kl}\ \{\underline{\lambda_m}(k,l) - \underline{b_s}(k,l)[{}_k{}^i{}_l]\ \hat{\varphi}^i_{kl}, \qquad (3.25)$$

using the shortening

$$\lambda_{kl} = a_{kl}\,\underline{\lambda_m}(k,l), \qquad c_s = a_{kl}\,\underline{b_s}(k,l) \qquad (3.26)$$

to simplify is permitted:

$$\boxed{\partial \ln \hat{\varphi}^i_{kl} / \partial y = \left\{\ \lambda_{kl} - c_s[{}^{s}_{kl}]\ \right\}.} \qquad (3.27)$$

The Intergration results in:

$$\hat{\varphi}^i_{kl} = A^i_{kl} \exp[\lambda_{kl}\, y - c_s \textstyle\int [{}_k{}^s{}_l]\ \partial y] \qquad (3.28)$$

With (2.5) and (2.6) the second exponent reads

$$c_s \int [{}_k{}^s{}_l]\ \partial y = \alpha_{kl}\ \lambda_{kl} \int [E - e^{-\lambda_{kl} y}]^{-1}\ \partial y = \ln B_{kl}\ (e^{-\lambda_{kl} y} - E)^{\alpha_{kl}} \qquad (3.29)$$

In it is $\alpha_{kl} = c_s/(\underline{b_s}\ a_{kl})$ the relationship between the eigenvalues in the polymetrischen and those in the monometric case. $\alpha_{kl}$ *correlation exponent* is called. $\alpha_{kl} = \lambda_{kl}/\lambda)$ , if to Shortening $\lambda_{kl} = \lambda_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)}$ and $\lambda = \lambda(k,l)$ one writes. Thus and with the new Integration constant $C^i_{kl} = A^i_{kl}/B_{kl}$ follows for the solution:

$$\boxed{\hat{\varphi}^i_{kl} = C^i_{kl}\, e^{\lambda_{kl} y}\, (e^{\lambda y} - E)^{-\alpha_{kl}} = C^i_{kl}\, (E - e^{-\lambda y})^{-\alpha_{kl}}} \qquad (3.30)$$

The korrelative condensor lens aggregate $\underline{\psi}_{kl} = \varphi_{kl} / C_{kl}$ is for $\alpha_{kl} = 1$ identically to the linear kompositiven $\psi_{kl}$ out (2.6), i.e. $\underline{\psi}_{kl} = \psi^{(\kappa\lambda)}_{kl(\mu\nu)} = \psi^{\alpha_{kl}}_{kl}$

The correlation exponent can also as relationship between the consequence of whole numbers in the monometric case $n_{kl}$ and in the polymetrischen case $n^{(\kappa\lambda)}_{(\mu\nu)kl} = \underline{n_{kl}}$ are expressed:

$$\alpha_{kl} = n^{(\kappa\lambda)}_{(\mu\nu)kl} / n_{kl} = \underline{n_{kl}} / (2\, n_{kl} + 1) \qquad (3.31)$$

The special correlations in the structures of the condensation stages of the possible Hermetrieformen A to D can from the specific correlation tensor $Q_{k(\mu\nu)}^{i(\kappa\lambda)}$ in (3.16) also

(3.30) to be received. The invariant scalar sum

$$\sum_{i,k=1}^{q} Q_{k(\mu\nu)}^{i(\kappa\lambda)} = Q_{(\mu\nu)}^{(\kappa\lambda)}$$

the korrelative coupling of in each case two elements of the correlator describes. 2.
The metric fundamental tensors can be determined out (3.16):

$$\hat{\varphi}_{km}^{i} = \left[{}_{km}^{\ i}\right]_{(\mu\nu)}^{(\kappa\lambda)} - Q_{m(\mu\nu)}^{i(\kappa\lambda)}\left[{}_{kl}^{m}\right]_{(\mu\nu)}^{(\kappa\lambda)} = \sum_{i=1}^{q}\left(g_{(\kappa\lambda)}^{is} + Q_{m(\mu\nu)}^{i(\kappa\lambda)} g_{(\kappa\lambda)}^{ms}\right)[skl]_{(\mu\nu)}$$

$$= p^{kl}\frac{1}{2}\left[\partial_k g_{sl}^{(\mu\nu)} + \partial_l g_{ks}^{(\mu\nu)} - \partial_s g_{kl}^{(\mu\nu)}\right]. \tag{3.32}$$

Therein shortening (3.17) was used, which lets itself describe:

$$p_{kl} = \sum_{s}\left(\sum_{i}(g_{(\kappa\lambda)}^{is} + Q_{m(\mu\nu)}^{i(\kappa\lambda)} g_{(\kappa\lambda)}^{ms})\right)^{-1} = \sum_{s} g_{ss}^{(\kappa\lambda)}(E + Q_{s(\mu\nu)}^{(\kappa\lambda)})^{-1}. \tag{3.33}$$

Out (3.32) the relationship follows

$$\partial g_{kl}^{(\mu\nu)} = 2\underline{\hat{\varphi}_{kl}^{i}}\ \underline{q_{kl}}\ \partial \mathrm{y}\ , \tag{3.34}$$

with the shortening

$$\underline{\hat{\varphi}_{kl}} = \hat{\varphi}_{kl(\nu\mu)}^{(\mu\nu)}\ ,\ \underline{q_{kl}} = q_{(\mu\nu)}^{(\kappa\lambda)} = \underline{\mathrm{C}}_{\mathrm{kl}}\ \mathrm{p}_{\mathrm{kl}}\ ,\quad \underline{\mathrm{C}}_{\mathrm{kl}} = \text{const.}. \tag{3.35}$$

If $\kappa$, $\lambda$ = $\mu$, $\nu$ is, then is valid:

$$\hat{\varphi}_{(\mu\nu)kl}^{(\nu\mu)} q_{(\mu\nu)}^{(\nu\mu)} = \hat{\varphi}_{(\mu\nu)}^{(\kappa\lambda)} q_{(\mu\nu)}^{(\kappa\lambda)} \tag{3.36}$$

with

$$q_{(\mu\nu)}^{(\nu\mu)} = \frac{1}{2} C_{kl}^{(\mu\nu)} g_{ll}^{(\mu\nu)}. \tag{3.37}$$

Out (3.34) follows

$$\partial \ln\ g_{ll}^{(\mu\nu)} = \hat{\varphi}_{ll} = \psi_{kl}^{(\mu\nu)} \sum_{l=1} C_{ll}^{(\nu)}\ . \tag{3.38}$$

With the shortening $Q_{(\mu\nu)}^{(\nu\mu)} = E$ , x = $\underline{\lambda_{ll}}$ iy and $\underline{a_{ll}} = \underline{C_{ll}}^{(\mu\nu)} / \underline{\lambda_{ll}}^{(\mu\nu)}$ as well as with (3.30) becomes out
(3.38):

$$\partial \ln\ g_{ll}^{(\mu\nu)} = \underline{a_{ll}}(e^{x} - E)^{-1} e^{x}\, \partial \mathrm{x}\ =\ \partial \ln (e^{\lambda_{kl} iy} - E)^{\underline{a_{kl}}} \tag{3.39}$$

and thus the solution of the integral too

$$\boxed{g_{ll}^{(\mu\nu)} = C_{ll}^{(\mu\nu)} \prod_{l=1}^{q} \left(e^{\lambda_{kl}iy} - E\right)^{\underline{a_{ll}}}} \tag{3.40}$$

Therein means $C^{(\mu\nu)}$ an integration constant. This equation supplies the elements of $\hat{g}$ not explicitly, probably however the tensor spectra of their elements.

3. To the <u>determination of the coupling tensors</u> $Q_{s(\mu\nu)}^{i(\kappa\lambda)}$ becomes the relations (3.34), (3.30) and (3.40) consulted and

$$p_{(\mu\nu)}^{(\kappa\lambda)} = \sum_{l} \underline{C}_{ll} \underline{\psi}_{ll} = \sum_{l=1}^{q} \underline{C}_{l} (E - e^{-\lambda_{ll}iy})^{-\underline{a_{ll}}} \tag{3.41}$$

used. For $\kappa$, $\lambda$ = $\mu$, $\nu$ becomes (3.41) too:

$$p_{(\mu\nu)} = \sum_{l} C_{l}^{(\mu\nu)} \psi_{ll}^{(\mu\nu)} = \sum_{l=1}^{q} C_{l}^{(\mu\nu)} (E - e^{-\lambda_{ll}iy})^{-1}. \tag{3.42}$$

The explicit solution for the correlation tensor reads:

$$Q_{l(\mu\nu)}^{k(\kappa\lambda)} = g_{ll}^{(\mu\nu)} p_{(\mu\nu)}^{(\kappa\lambda)} g_{(\mu\nu)kl}^{(\kappa\lambda)} p_{(\mu\nu)} - qE \tag{3.43}$$

and/or $\quad Q_{l(\mu\nu)}^{k(\kappa\lambda)} = \sum_{k=1}^{q} \underline{C_k} \psi_{kl} g_{ll} \left( \sum_{l=1}^{q} C_l^{(\mu\nu)} \psi_{ll} g_{ll} \right)^{-1} - qE$

and publicized with shortening $A_{(\mu\nu)}^{(\kappa\lambda)} = 2C_{(\kappa\lambda)} C_{(\mu\nu)}^{-1}$ for the new integration constant:

$$\boxed{Q_{l(\mu\nu)}^{k(\kappa\lambda)} = \sum_{i,l=1}^{q} Q_{(\mu\nu)l}^{(\kappa\lambda)i} = A_{(\mu\nu)}^{(\kappa\lambda)} \sum_{l=1}^{q} C_{(\mu\nu)l}^{(\kappa\lambda)} (E - e^{-\lambda_l iy})^{-\alpha_l} \left( \sum_{k=1}^{q} C_k^{(\mu\nu)} (E - e^{-\lambda_l^{(\mu\nu)} iy})^{-1} \right)^{-1} \prod_{k=1}^{q} (e^{\lambda_l^{(\mu\nu)} iy} - E)^{\alpha_{kl}^{(\kappa\lambda)}} \times \times \{ \prod_{l=1}^{q} (e^{\lambda_l^{(\mu\nu)} iy} - E)^{\alpha_{kl}^{(\mu\nu)}} \}^{-1} - qE} \tag{3.44}$$

The correlation tensors hang only of the linear combination of the metric coordinates

$y^2 = (\sum_{k=1}^{3} x_k + i \sum_{l=4}^{6} x_l)^2$ off. The coupling extrema $Q_{s(\mu\nu)}^{i(\kappa\lambda)}$ extr fall after (3.43) with the extrema

the fundamental tensors $\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}^{\frown}$ extr and the elements out $\hat{g}$ together. With $\overline{g}_{(\kappa\lambda)} = g_{(\mu\nu)ik}$ results in itself:

$$\partial Q_{l(\mu\nu)}^{k(\kappa\lambda)} = \partial\psi_{ll} = \partial \begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}^{\frown} = \partial^2 (\overline{g}_{(\kappa\lambda)}) = \partial^2 (\overline{g}_{(\mu\nu)}) = 0 \tag{3.45}$$

Within the coupling range a pseudo *Antihermetrie* is present regarding the condensor lens signature, i.e. there is no condensation of the Metronen and from there a pseudoEuclidean lattice. In each coupling extremum becomes the whole everything out $\hat{g}$ picturable condensor lenses $\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}^{\frown}$ pseudoanti-metrically. Extrema of the metric components of $\hat{g}_{(x)}$ that is in coincidence with eigenvalues $\psi_{kl}$.. The compression condition in the correlator $\hat{g}_{(x)}$ remains independent of the change of the Partialstrukturen $g^{ik}_{(\mu\nu)}$ received. It is shown that the maximum that

Structural deformation $\psi_{kl}^{(max)}$ with the minimum of the internal correlation $Q^i_l\binom{\kappa\lambda}{\mu\nu}_{extr.}$ collapses. As will be still shown, the condensation maxima *(correspondences)* during a temporal oscillation process constantly exchange themselves over the *correlation minima*. While the KIND is static geometry, dynamics come into geometry by these exchange processes of the maxima and minima of condensations, which is strange to Riemann geometry.

From the possible combinations of the indices $\mu$, $\nu$, $\lambda$, $\sigma$ for the correlators $\hat{g}_{(x)}$(with that H e r m e t r i e f o r m e n ) leave themselves several coupling tensors $Q^i_l\binom{\kappa\lambda}{\mu\nu}$ as extrema $x = a, b, c, d$
in each case into a group of couplings summarize.

The condensation structure $\psi_{kl}$ a system hangs substantially of the internal correlations $Q^i_k$ and/or of the course of the structure of all coupling extrema $g^{ik}_{(\mu\nu)}$ and
$Q^i_l\binom{\kappa\lambda}{\mu\nu}$ off. Therefore the stability time can after the analysis of the entire coupling structure are determined. After the duration of stability it comes to the restructuring of the coupling structure and to the change of the condensation fields.

**3,3 groups of couplings and condensor lens rivers**

1. After (3.45) each coupling extremum causes $Q^{i(\kappa\lambda)}_{s(\mu\nu)}$ extr a group of couplings, all this
, Those contains coupling extrema by permutation of the signature numbers $\kappa$, $\lambda$, $\mu$, $\nu$ develop. Concerning such a group 3.44 after () all condensor lenses must behave appropriate signature pseudoanti-metrically. Primary pseudo Antihermetrie is present for those condensor lenses, which carry both signature data of the group of couplings as basis and retort signature. Secondary pseudo Antihermetrie gives it if condensor lenses contain any pair of numbers of the group of couplings as basis signature. If all signatures are alike, then there is no correlation and $Q_{(\mu\mu)}{}^{(\mu\mu)} = E$ becomes the unit tensor.

In the simplest case of the Hermetrie of only one coordinate, for example $x_6$, no correlation tensors and no metric condensation stages exist. Only with the self condensations of the Partialstrukturen $\kappa_{ik}^{(1)}$ with the coordinates $(x_5, x_6)$, into those
Space-time as gravitons appear project, can to the training of condensation stages come.

In case of a-Hermetrie only two coupling structures exist:

$$\overset{\frown}{\begin{bmatrix}\kappa\lambda\\ \mu\nu\end{bmatrix}} = \overset{\frown}{\begin{bmatrix}\kappa\\ g\end{bmatrix}} \equiv \overset{\frown}{\begin{bmatrix}1\\ 11\end{bmatrix}}, \quad \overset{\frown}{\begin{bmatrix}g\\ \kappa\end{bmatrix}} \equiv \overset{\frown}{\begin{bmatrix}11\\ 1\end{bmatrix}}$$ and the coupling tensors $Q_{(\kappa)}{}^{(g)}$, $Q_{(g)}{}^{(\kappa)}$.

Between two groups of couplings also *sources of condensor lens* and *condensor lens lowering* are conceivable, if there are metric condensor lenses (sources), which appear pseudoanti- metric in the other group in a system (primary or secondary lowering). Between two groups of couplings thus metric (h) and anti-metric *condensor lens bridges* (A), since there are identical condensor lenses for both groups, exist those primarily(Ia) or secondarily pseudoanti-metrically(IIa)are. The condensor lens lowering therefore always cause the actual coupling of the Partialstrukturen.

An investigation of the coupling structure to the one class condensor lens signatures $Q_i = \binom{\kappa\lambda}{\mu\nu}_i \equiv Q^{(\kappa\lambda)}_{(\mu\nu)extr}$ heard, must for everyone of the four of possible structural condensations (3.8), (3.10), (3.11) and (3.12) to be accomplished separately.

2.Im case of a-Hermetrie (graviton) exist to 2 groups of couplings and ($2^2 - 2 = 2$ Condensor lenses).
For the b and C-Hermetrie (photon and/or neutral corpuscle) it gives to 6 groups of couplings $g_{(\mu\nu)}g^{(\mu\nu)} - g_{(\mu\mu)}g^{(\mu\mu)} = 6^2 - 6 = 30$ Condensor lenses.

The coupling extrema $Q_i = (^{\kappa\ \lambda}_{\mu\ \nu})$ become by the condensor lenses $\overset{\frown}{\begin{bmatrix} \kappa\lambda \\ \mu\nu \end{bmatrix}} \equiv [^{\kappa\ \lambda}_{\mu\ \nu}]$ caused. It gives

many possible combinations of the groups of couplings. Exemplarily C the networking between different coupling structures is to be indicated for the Hermetrieformen b and.

With the shortening $\mu,\nu \equiv g^{(\mu\nu)}$, $\mu \equiv \kappa_{(a)}$ as well as $\hat{g}_{(a)} \equiv (1)$, $\hat{g}_{(b)} \equiv (\alpha) = 2$ and $\hat{g}_{(c)} \equiv (\alpha) = 3$ read in this symbolic way of writing the 6 groups of couplings for this Hermetrieformen:

$$1 \equiv (1),\ \ 2 \equiv (\alpha),\ \ 3 \equiv ((1\alpha)),\ \ 4 \equiv (1\alpha),\ \ 5 \equiv (1(1\alpha)),\ \ 6 \equiv (\alpha(1\alpha))$$

(e.g. $4 \equiv (1\alpha) = [_1{}^1{}_2]$, if the Hermetrieform b is regarded). Become these groups that Condensor lens extrema also $Q_i$ $(i = 1,\ldots,6)$ described, then are the first 3 groups *homonom,* i.e. the condensor lenses exhibit same basis and retort signatures. The other 3 groups are *heteronom,* i.e. their basis and retort signatures are different. The hetero nouns groups are divided again into the sub-groups A and b: then is:

$$\begin{aligned}
&Q_1 : \begin{bmatrix} 11 \\ 1 \end{bmatrix} \begin{bmatrix} 1 \\ 11 \end{bmatrix},\ \ Q_2 : \begin{bmatrix} \alpha\alpha \\ \alpha \end{bmatrix} \begin{bmatrix} \alpha \\ \alpha\alpha \end{bmatrix},\ \ Q_3 : \begin{bmatrix} 1\alpha \\ \alpha 1 \end{bmatrix} \begin{bmatrix} \alpha 1 \\ 1\alpha \end{bmatrix},\\
&Q_{4a} : \begin{bmatrix} 1 \\ \alpha \end{bmatrix} \begin{bmatrix} 1 \\ \alpha\alpha \end{bmatrix} \begin{bmatrix} 11 \\ \alpha \end{bmatrix} \begin{bmatrix} 11 \\ \alpha\alpha \end{bmatrix},\ \ Q_{4b} : \begin{bmatrix} \alpha \\ 1 \end{bmatrix} \begin{bmatrix} \alpha \\ 11 \end{bmatrix} \begin{bmatrix} \alpha\alpha \\ 1 \end{bmatrix} \begin{bmatrix} \alpha\alpha \\ 11 \end{bmatrix},\\
&Q_{5a} : \begin{bmatrix} 1 \\ 1\alpha \end{bmatrix} \begin{bmatrix} 1 \\ \alpha 1 \end{bmatrix} \begin{bmatrix} 11 \\ 1\alpha \end{bmatrix} \begin{bmatrix} 11 \\ \alpha 1 \end{bmatrix},\ \ Q_{5b} : \begin{bmatrix} 1\alpha \\ 1 \end{bmatrix} \begin{bmatrix} 1\alpha \\ 11 \end{bmatrix} \begin{bmatrix} \alpha 1 \\ 1 \end{bmatrix} \begin{bmatrix} \alpha 1 \\ 11 \end{bmatrix},\\
&Q_{6a} : \begin{bmatrix} \alpha \\ 1\alpha \end{bmatrix} \begin{bmatrix} \alpha\alpha \\ 1\alpha \end{bmatrix} \begin{bmatrix} \alpha \\ \alpha 1 \end{bmatrix} \begin{bmatrix} \alpha\alpha \\ \alpha 1 \end{bmatrix},\ \ Q_{6b} : \begin{bmatrix} 1\alpha \\ \alpha \end{bmatrix} \begin{bmatrix} 1\alpha \\ \alpha\alpha \end{bmatrix} \begin{bmatrix} \alpha 1 \\ \alpha \end{bmatrix} \begin{bmatrix} \alpha 1 \\ \alpha\alpha \end{bmatrix}.
\end{aligned} \tag{3.46}$$

The primary and secondary pseudo antihemetrischen condensations become m i t u n d , Ia IIa and the metric condensor lenses also Ih and IIh marked. The groups of couplings distribute themselves on the consequence of the also metric and anti-metric condensor lenses occupied aggregates as follows:

| | $G_1$ | $G_2$ | $G_3$ | $G_4$ | $G_5$ | $G_6$ | |
|---|---|---|---|---|---|---|---|
| Ia | $Q_1$ | $Q_2$ | $Q_3$ | $Q_1Q_2Q_4$ | $Q_1Q_3Q_5$ | $Q_2Q_3Q_6$ | |
| IIa | $Q_{4b}Q_{5b}$ | $Q_{4a}Q_{6b}$ | $Q_{5a}Q_{6a}$ | $Q_{5b}Q_{6b}$ | $Q_{4b}Q_{6a}$ | $Q_{4a}Q_{5a}$ | (3.47) |
| Ih | $Q_2Q_3Q_6$ | $Q_1Q_3Q_5$ | $Q_1Q_2Q_4$ | $Q_3$ | $Q_2$ | $Q_1$ | |
| IIh | $Q_{4a}Q_{5a}$ | $Q_{4b}Q_{6a}$ | $Q_{5b}Q_{6b}$ | $Q_{5a}Q_{6a}$ | $Q_{4a}Q_{6b}$ | $Q_{4b}Q_{5b}$ | |

| Number of condensor lenses into the number of condensor lenses into that 3 homonomen groups $G_1$ to $G_3$ | 3 hetero noun groups $G_4$ to $G_6$ |
|---|---|
| Ia = 2 | Ia = 12 |
| IIa = 8 | IIa = 8 |

Ih = 12 Ih = 2
IIh = 8 IIh = 8

In these groups of couplings common symmetries arise. The combinatorial mathematics of the occupation of all systems behaves antisymmetrically to occupations of the systems. Ia- Ih- Within each group of couplings results the occupation of IIh from of IIa and in reverse, if the basis and retort signatures are exchanged. Therefore there is still another symmetry of the secondary systems. Within the 6 groups $G_i$ there are same condensor lenses, which can be connected by one „bridge ". (e.g. heard $Q_1$ in Ih both $G_2$ and $G_3$ and $G_6$ on. If the condensor lenses are connected by a bridge K, then the following bridges can be indicated:

$K(Ih) = K^{++}$ in detail: $K_1^{++} = G_2 , G_3 , G_6$ ; $K_2^{++} = G_1 , G_3 , G_5$ ; $K_3^{++} = G_1 , G_4 , G_2$
$K(Ia) = K^{--}$ in detail: $K_1^{--} = G_1 , G_4 , G_5$ ; $K_2^{--} = G_2 , G_4 , G_6$ ; $K_3^{--} = G_5 , G_3 , G_6$

and the secondary bridges:

$K(IIh) = K^{+}$: $K_1^{+}= G_3G_6$ ; $K_2^{+}= G_2G_6$ ; $K_3^{+} = G_3G_5$ ; $K_4^{+} = G_1G_5$ ; $K_5^{+} = G_2G_4$, $K_6^{+} =G_1G_4$
$K(IIa) = K^{-}$: $K_1^{-} = G_1G_4$ ; $K_2^{-} = G_1G_5$ ; $K_3^{-} = G_2G_4$ ; $K_4^{-} = G_2G_6$ ; $K_5^{-} = G_3G_5$, $K_6^{-} =G_3G_6$.

In the condensation forms the b and C-Hermetrie give it in principle four to different classes q von Quellen- and Senkensystemen, those after the Hermetriegrad bzw. Ih, IIh, IIa, Ia according to the strength of the downward gradient of the condensations to be arranged can:

$$
\begin{aligned}
&q_1 \ ( Ih \rightarrow Ia ) \\
&q_2 \ ( Ih \rightarrow IIa ) \ \text{bzw.} \qquad q_3 \ (IIh \rightarrow Ia ) \\
&q_4 \ (IIh \rightarrow IIa ) \\
&q_5 \ (Ih \rightarrow IIh ) \ \text{bzw.} \qquad q_6 \ (IIa \rightarrow Ia ).
\end{aligned} \tag{3.48}
$$

From these relations results primarily: $q_1 = q_1 (K_j^{++} \rightarrow K_j^{--})_1^3$ and secondarily: $q_4 = q_3 (K_j^{+} \rightarrow K_j^{--})_1^6$
In these systems the condensor lens bridges themselves appear as sources and lowering, which with bridge-free primary sources the case is not.

One receives: $q_1^{(o)} = q_1 (G_1, G_2, G_3 \rightarrow G_6, G_5, G_4)$,

whereby itself $G_1$, $G_2$, $G_3$ on Ih and $G_6$, $G_5$, $G_4$ refer to Ia.

From the pattern of the groups of couplings results for the metric primary and secondary sources, if $K_{\alpha,\beta} \equiv (K_\alpha, K_\beta)$ two condensor lens bridges of the same kind mark:

$$q_2 = q_2 (G_1, G_2, G_3 \rightarrow K^{-}_{3,5}, K^{-}_{1,6}, K^{-}_{2,4})$$

The same groups of couplings in Ih stand with in each case two secondary lowerful condensor lens bridges in connection. In the bridge-free anti-metric source class in each case two groups of couplings from IIh influence on two corresponding in Ia:

$$q_3 = q_3 \{(G_1, G_6) (G_2,G_5) (G_3,G_4) \rightarrow (G_4G_5) (G_4,G_6) (G_5,G_6)\}.$$

The two external source systems are:

$$q_5 = q_5\,(G_1, G_2, G_3 \rightarrow K^{+}_{5,3}, K^{+}_{6,1}, K^{+}_{4,2})$$
$$q_6 = q_6\,(K^{-}_{2,4}, K^{-}_{1,6}, K^{-}_{3,5} \rightarrow G_4, G_5, G_6)$$

Those are the different dynamic coupling structures of the Hermetrieformen b and C (Abb.1). All bridges form primarily two antisymmetric, pseudocyclic and secondarily two antisymmetric cyclic systems regarding the groups of couplings. For the condensation forms b and C gives it to four different classes q von Quellen and Senkensystemen, if these after the Hermetriegrad $Ih,\ IIh,\ IIa,\ Ia$ are evaluated. That
strongest Hermetriegefälle points the primary swelling and reduction systems $q(Ih \rightarrow Ia)$ up. With $q_1^{(0)}$ the bridge-free source distributions are seized.

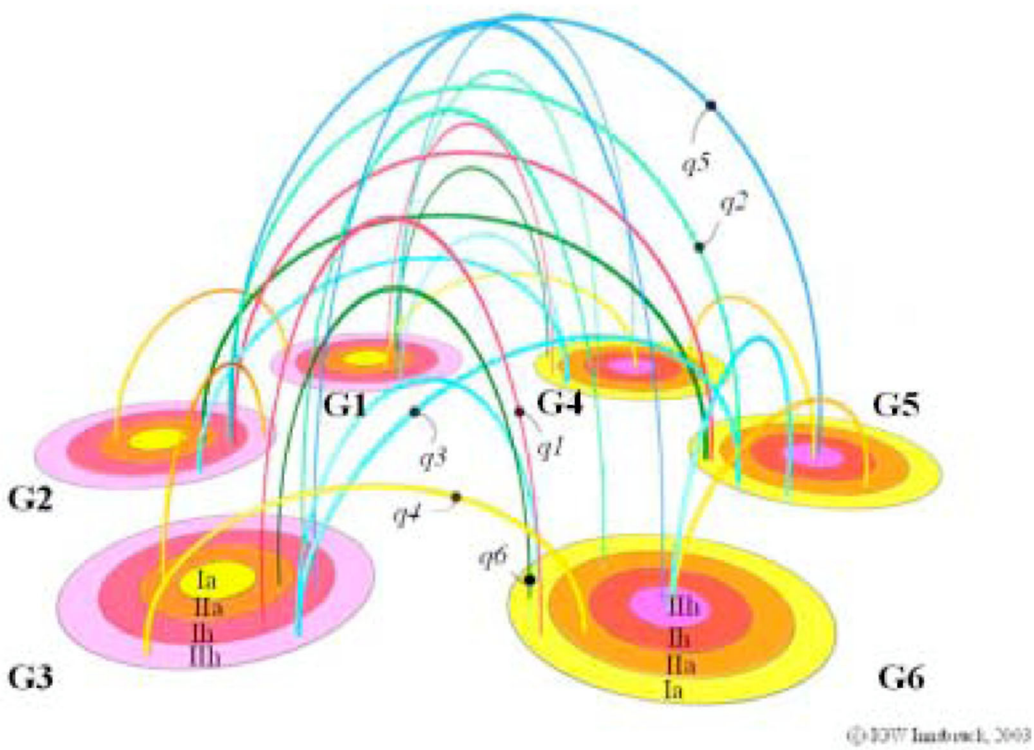



**Illustration 1: Dynamic exchange processes of maxima and minima of structural condensations in a Neutrokorpuskel or in a photon**

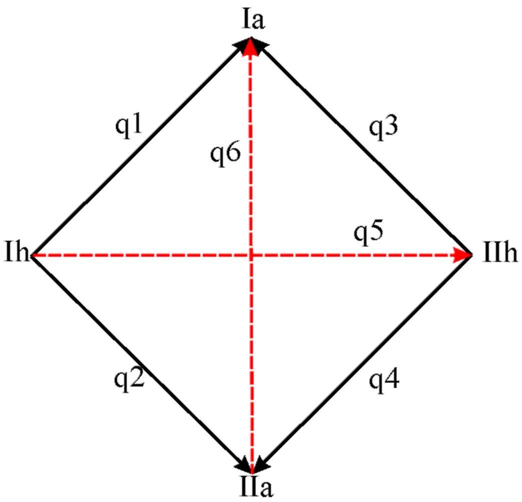
In the case of the b-Hermetrie the coordinate sum y is imaginary as in a-Hermetrie, but in the C-Hermetrie is complex y, on which the fundamental phenomenological difference of photons and Neutrokorpuskeln must be based.

In these coupling structures periodically the maxima and/or Nebenmaxima with the minima and Nebenminima of the structural condensations exchange themselves. Such a system marks in case of $\alpha = 2$, thus with the b-Hermetrieform, the imaginary structural dynamics of the photons and for $\alpha = 3$, with the C-Hermetrieform the dynamic processes of
Neutrokorpuskeln in $R_6$.

With the D-Hermetrie (electrically charged particles) form $9^2 - 9 = 72$ Condensor lenses Groups of couplings. For the coupling extrema exist $G_i = 18$ different
Groups of couplings, between the primarily anti-metric condensor lens lowering (Ia)there are three primarymetric condensor lens bridges; between the metric condensor lens lowering (Ih) there is already 18, and between the secondary systems IIa and IIh in each case 30 condensor lens bridges. All condensor lens bridges form complicated networking systems.

3. In case of of only one condensor lens river **$\nu = 1$**, is the number of river aggregates $4$:$q_1$, $q_2$, $q_3$, $q_4$ . The following diagram is to illustrate the possible river classes in the system of the metric and anti-metric condensor lens rivers. It gives in each case $\omega = 1$Cycle, that
, and the possibility of a spin of the condensor lens river concerned thus already repairs the initial condition.

**$\nu = 2$** can itself 2 river aggregates out $q_1$ to $q_4$ in 3 possible combinations build up, over in $\omega = 3$ Cycles in
to return a defining initial condition:




$q_1q_2$, $q_1q_5$, $q_1q_6$,
$q_2q_4$, $q_2q_5$, $q_2q_6$,
$q_3q_1$, $q_3q_5$, $q_3q_6$,
$q_4q_3$, $q_4q_5$ $q_4q_6$.

The condensor lens pin is ambiguous, which too a Spinisomerie leads.

For **$\nu = 3$** it comes also to S t r u k t u r i s o m e r i e n . There are 4 possible Grundtypen,
$(3! = 6)$
if of 3 condensor lens rivers each 4 possible triangle forms of the rivers are composed, then is $\omega = 2$.
Or if 3 condensor lens rivers a bundle with ever one the common 4
Starting points (Ih, Ia, IIh, IIa) form, then is $\omega = 4$.
With **$\nu = 4$** There are river classes $4! = 24$ Stereoisomerien and 15 Grundtypen compound Aggregates.
**$\nu = 5$** Condensor lens rivers can $\nu! = 120$ Structural isomers exist. There are 6 River aggregates.
For **$\nu = 6$** There are river classes 720 possible Strukturisomerien and a Flußaggrgat, its only cyclic figure from all $q_i = 6$ River classes (shown as in the above diagram) is compound.
The really arising aggregates are selected according to criteria from the theorems of the condensor lens river.

# 4. The microscopic structural dynamics as a cause of the inertia of 4,1 condensor lens rivers

1. Each condensation form becomes by a system of condensor lenses $\left[\overset{\frown}{\substack{\kappa\lambda \\ \mu\nu}}\right] \equiv [^{\kappa}{}_{\mu}{}^{\lambda}{}_{\nu}]$ determined. In there are such systems to each basis signature $(\kappa\ \lambda)$ and $(\lambda\ \kappa)$ a series of condensor lenses for those in each case the appropriate geo data relation to be valid must (whereby the point means the time derivative):

$$\boxed{\ddot{x}^{(\mu\nu)i}_{(\kappa\lambda)} = -\left[{}^{i}_{kl}\right]^{(\mu\nu)}_{(\kappa\,\lambda)} \dot{x}^{k}\,\dot{x}^{l}} \tag{4.1}$$

There is the possibility of transforming a coordinate system belonging to a basis signature by the choice of a reference system belonging to this signature away. The condensations of other basic systems remain however. In the condensations b, C and D exist those $\hat{g}$ from more than one structural unit, contrary to the Hermetrieform A. only
these condensations A leave themselves from there by regarding $\kappa,\ \lambda\ =\ 1,\ 1$ geodetic
System away transform. The gravitation is therefore a fictitious force, although the sources of gravitational field remain, there it condensations of the Hermetrieformen b, C and

D are. Because of the geo data equation (4.1) the fundamental condensor lenses can $\left[\overset{\frown}{\substack{\kappa\lambda \\ \mu\nu}}\right]$ as

Tensor components of possible reciprocal effects to be interpreted. A condensor lens defines a compression condition of Metronen or after structural curvature (1.4) and/or (2.2), described by the structural compressor $\rho^{i}{}_{klm}{}^{(\mu\nu)}{}_{(\kappa\lambda)} = \boldsymbol{\rho}^{(\mu\nu)}{}_{(\kappa\lambda)}$ :

$$\rho^{i}{}_{klm}{}^{(\mu\nu)}{}_{(\kappa\lambda)} = K^{i(\mu\nu)}_{klm(\kappa\lambda)}\left[\overset{\frown}{\substack{\kappa\lambda \\ \mu\nu}}\right] = \lambda_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)}\left[\overset{\frown}{\substack{\kappa\lambda \\ \mu\nu}}\right] \tag{4.2}$$

or after track evaluation i = m (2.11):

$$\mathrm{sp}\ \rho^{i}{}_{klm}{}^{(\mu\nu)}{}_{(\kappa\lambda)} = \rho^{(\mu\nu)}_{kl(\kappa\lambda)} = \lambda_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)}\left[\overset{\frown}{\substack{\kappa\lambda \\ \mu\nu}}\right] \sim T_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)} - \tfrac{1}{4}\, g_{kl} T^{(\mu\nu)}{}_{(\kappa\lambda)} \tag{4.3}$$

with the energy impulse density
tensor$T_{kl}$ : $T_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)} = \rho^{(\mu\nu)}_{kl(\kappa\lambda)} - \tfrac{1}{2}\, g_{kl(\kappa\lambda)}\, \rho^{(\mu\nu)}{}_{(\kappa\lambda)}$ According to the variation principle (1.4)

$$\delta \int \boldsymbol{\rho}^{(\mu\nu)}{}_{(\kappa\lambda)} \sqrt{g}\, d\Omega = 0\ , \qquad \text{mit}\ \ d\Omega = \prod_{i=1}^{6} dx_i \tag{4.4}$$

tries each structural compressor a minimum value of the curvature and/or Kompression from Metronen to reach. The conservation of energy is expressed by divergence formation, and concomitantly the preservation of the structural compression in the composition field:

$$\mathrm{div}^{(\mu\nu)}{}_{(\kappa\lambda)}\, T_{kl}{}^{(\mu\nu)}{}_{(\kappa\lambda)} = \mathrm{div}^{(\mu\nu)}{}_{(\kappa\lambda)}\, (\rho^{(\mu\nu)}_{kl(\kappa\lambda)} - \tfrac{1}{2}\, g_{kl(\kappa\lambda)}\, \rho^{(\mu\nu)}{}_{(\kappa\lambda)}) = 0. \tag{4.5}$$

The compression condition in the composition field remains, independently of changes of the Partialstrukturen.

The condensation maxima determine the coupling classes Ih and IIh, and within the range $N_+$ defined structural compressors $\boldsymbol{\rho}^{(\mu\nu)}{}_{(\kappa\lambda)}$. The minima of the structural compressors lie

$N_-$, i.e. $\left[\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}\right]^{\frown} = 0$. Because of (4.5) it must an exchange of $\boldsymbol{\rho}^{(\mu\nu)}{}_{(\kappa\lambda)}\, N_+ \rightarrow \boldsymbol{\rho}^{(\mu\nu)}{}_{(\kappa\lambda)}\, N_-$

give, and/or an exchange procedure: $N_+ \leftrightarrows N_-$, by that the coupling extrema to be exchanged can. This procedure is called **condensor lens river**:

$$N_+\,(\kappa\lambda,\ \mu\nu)\,N_- \qquad (4.6)$$

2. The coupling extrema $\partial Q^i_1\left(\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}\right) = 0$ characterize through $\left[\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}\right] = 0$ those Kopplungsklassenund, which has because of (3.20) t o a l s o - t o consequence. In

$$\text{Ia IIa}\,\hat{\varphi}^i_{kl} = \psi^{\alpha_{kl}}_{kl} \sum_i C^i_{kl} = 0$$

this case there is no condensations of the Metronen, but a pseudoEuclidean lattice structure. The number of deformation Metronen n is in this coordinate range a minimum, descriptive through $N_-$. The composition field is in the open interval $0 < \psi_{kl} < 1$ defined. There must be from there in the definition range also one time, in that the number of condensed Metronen a maximum $N_+$ and in that the extremal condition is

$\partial Q^i_1\left(\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}\right) = 0$ is fulfilled.

The situation of $N_+$ follows from the relationship

$$0 = \partial\left[\begin{smallmatrix}i\\ kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)} + \partial\left[\begin{smallmatrix}s\\ kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)} Q^{(\mu\nu)i}_{(\kappa\lambda)s} + \left[\begin{smallmatrix}s\\ kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)} \partial Q^{(\mu\nu)i}_{(\kappa\lambda)s} - \partial\left[\begin{smallmatrix}s\\ kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)} \partial Q^{(\mu\nu)i}_{(\kappa\lambda)s} \equiv \partial\psi^{(\mu\nu)}_{(\kappa\lambda)kl} \qquad (4.7)$$

In their definition range the condensation maxima with eigenvalues of the composition field cover themselves. They determine the coupling classes Ih and IIh.

A condensor lens river can come only under completely determined conditions. For it portion of the fundamental tensor is responsible to the not along ash. With shortening $g_{(\mu\nu)ik} = \mathbf{g}_{(\mu\nu)}$ is because of (3.5):

$$\begin{aligned}\mathbf{g}_{(\mu\nu)} &= \mathrm{sp}\,(\boldsymbol{\kappa}_{(\mu)} \times \boldsymbol{\kappa}_{(\nu)}) = (\boldsymbol{\kappa}_{(\mu)+} + \boldsymbol{\kappa}_{(\mu)-})\,(\boldsymbol{\kappa}_{(\nu)+} + \boldsymbol{\kappa}_{(\nu)-})\\ &= (\boldsymbol{\kappa}_{(\mu)+}\boldsymbol{\kappa}_{(\nu)+} + \boldsymbol{\kappa}_{(\mu)-}\boldsymbol{\kappa}_{(\nu)-}) + (\boldsymbol{\kappa}_{(\mu)+}\boldsymbol{\kappa}_{(\nu)-} + \boldsymbol{\kappa}_{(\mu)-}\boldsymbol{\kappa}_{(\nu)+}) = \mathbf{g}_{(\mu\nu)+} + \mathbf{g}_{(\mu\nu)-}. \qquad (4.8)\end{aligned}$$

With the linear aggregate for the metric coordinates y the lattice cores leave themselves $\boldsymbol{\kappa}_{(\mu)}$ when functions of these coordinates write, $\boldsymbol{\kappa}_{(\mu)\pm} \sim f^{\pm 1}(y)$. One receives:

$$\mathbf{g}_{(\mu\nu)+} = \mathbf{a}_{(\mu\nu)+}\, f_\mu f_\nu \quad \text{with } \mathbf{a}_{(\mu\nu)+} = \text{const.}, \qquad (4.9)$$

$$\mathbf{g}_{(\mu\nu)-} = \mathbf{a}_{(\mu\nu)-}\,(f^2_\mu + f^2_\nu)/\, f_\mu f_\nu = \mathbf{a}_{(\mu\nu)-}\, ß_{\mu\nu}, \qquad (4.10)$$

For $ß_{\mu\mu} = 2$ becomes with (3.39)

$$\mathrm{sp}\,\mathbf{g}_{(\mu\nu)} = \mathrm{sp}\,\mathbf{g}_{(\mu\nu)+} \sim f_\mu f_\nu \sim (e^{\lambda_l \mu} - E)^{\alpha_l}\, \delta_{kl}\,. \qquad (4.11)$$

For a condensor lens component arises out (4.9) and (4.10) with the shortening

$$\lambda_{(\mu\nu)skl} = ½\,(a_{(\mu\nu)sl+}\,\partial_k + a^{(\mu\nu)}{}_{ks+}\,\partial_l - a^{(\mu\nu)}{}_{kl+}\,\partial_s), \qquad (4.12)$$

$$\Lambda^{(\kappa\lambda)i}_{(\mu\nu)kl} = a^{(\mu\nu)}_{(\kappa\lambda)kl}\lambda_{(\mu\nu)skl}\,, \qquad (4.13)$$

$$\left[{}^{i}_{kl}\right]^{(\kappa\lambda)}_{(\mu\nu)} = g^{is}_{(\kappa\lambda)}\left[{}_{skl}\right]_{(\mu\nu)} = \left(\Lambda^{(\kappa\lambda)i}_{(\mu\nu)kl} / f_\mu f_\nu + a^{is}_{(\kappa\lambda)-}\lambda_{(\mu\nu)skl}\right) f_\kappa f_\lambda\,. \qquad (4.14)$$

The metronische spin tensor $\mathbf{a}_{(\kappa\lambda)-}$ existed both in $N_-$ and in $N_+$ and one causes Spin orientation of the hyperstructure in the definition range N of the condensor lens concerned, whereby a field activation takes place. The same spin orientation makes a condensor lens river possible. The constant field activators must exist for both condensor lens signatures, come thus it to the condensor lens river (4.6) can, i.e. it must in $N_\pm$ beside $[{}^{\kappa\lambda}_{\mu\nu}]$ also the signature transposition $[{}^{\mu\nu}_{\kappa\lambda}]$ occur, thus in $N_\pm$ the field activators $\mathbf{g}_{(\kappa\lambda)-}$ and $\mathbf{g}_{(\mu\nu)-}$ to give can. The living condition for condensor lens rivers therefore is:

$$N_+\left([{}^{\kappa\lambda}_{\mu\nu}],[{}^{\mu\nu}_{\kappa\lambda}]\right)(\kappa\lambda\mu\nu)\,N_-\left([{}^{\kappa\lambda}_{\mu\nu}],[{}^{\mu\nu}_{\kappa\lambda}]\right) \qquad (4.15)$$

This condition is often fulfilled in the four coupling structures. Therefore there is always a condensor lens river in the individual Hermetrieformen. During the space compressor after (4.4) a minimum level aims at, comes it due to the general field activation to a constant condensor lens river, which works against the balance principle of the compressor. This by the condensor lens rivers caused equilibrium as *Kompressorisostasie* is designated.

In this geometrical dynamics of the exchange of maxima and minima of structural deformations and/or compressions of surface quanta the cause for physically registerable particles lies.

3. With (4.15) an explicit analysis of the internal correlations of the coupling structures becomes possible. Different systems of condensor lens rivers must be possible, because each system of sources and lowering can cause a condensor lens river, if (4.15) is fulfilled.

For the Hermetrieformen b and C are because of the 6 condensor lens bridges the 6 rivers $q_j$ after (3.48) possible. The condensor lens rivers can itself, as described, too $1 \leq \nu \leq 6$ Classes of Unite to river aggregates. Each river class $\nu$ is also $\binom{6}{\nu}$ River aggregates $F(q_j)_\nu$ occupied. Because $[{}^{\alpha\beta}_{\kappa\lambda}]_+$ the river aggregate $F_\nu$ certainly, the river aggregate descriptive through:

$$F_\nu = Q_i^{\,k}\left({}^{\alpha\beta}_{\mu\nu}\right)_{ext} F(q_j)_\nu \;\hat{=}\; N_+(\alpha\beta\mu\nu)\,N_- \quad \text{, mit } \alpha,\beta = \mu\,,\,\nu \qquad (4.16)$$

Such an aggregate depends on the order of the exchange processes, so that it to each element of the river class $\nu!$ isomers of river aggregates gives. Thus the total number becomes

possible river aggregates $Z = \sum_{\nu=1}^{6} \nu!\binom{6}{\nu} = 1950$. But this number reduced by those

Demand that a condensor lens river should be temporally stable that after an initial condition for the condensor lens signature concerned in the coupling structure at the expiration of a certain time a final state is thus reached, which is identical to this initial condition. In this case a stable cyclic circulation of the river aggregates develops. The number of cyclic river aggregates is many smaller than Z (which could be called vacuum fluctuations). The temporal stability interval becomes by a certain number from cyclically rotating transients determines. Because of its rotation each cyclic condensor lens river possesses a spin. If the spins of the condensor lens rivers do not adjust themselves, the terms of the condensation spectra can have spins and Spinore. Each cyclic condensor lens river which can be understood as oscillation process

$$N_{\pm}\ (\ )\ N_{\mp}$$

a natural frequency can $\eta$ , those are assigned with the river speed $w_f$ the wavelength $\lambda = w_f/\eta$ as aggregate diameter defines. Between inertia masses m and $\eta$
the proportionality exists $m \sim \eta \sim 1/\lambda$ . Empirical quantum dualism $\lambda = h/mc$ finds by the Zyklizitätsbedingung of all river aggregates a absorbed interpretation. Is $\omega$ the number of periods, then becomes an exchange process only after $\omega > 1$ manufactured its.
River aggregate is thereby defined through:

$$F_\nu = Q_i^k\left(\begin{smallmatrix}\alpha\beta\\ \mu\nu\end{smallmatrix}\right)_{ext}\ F(q_j)_\nu\ \omega \qquad (4.17)$$

4. The diameter of a condensor lens river lets itself determine as follows:

$\mu = \sqrt{\frac{hc}{\gamma}}$ the condensor lens constant of the mass spectra of the Hermetrieformen is C and D. That

associated diameters results from their Comptonwellenlänge $\lambda_0$ . Because of the Kompressorisostasie is valid:

$$m\ \lambda_{(c,d)} = \mu\ \lambda_0 = \text{const.} \qquad (4.18)$$

According to the spectral function (2.31) is with (2.56) and (2.57)

$$(\mu/m_c)^4 = (2n-1)^2/(2n\ \eta^4) \qquad (4.19)$$

and with (4.18) the diameter of a condensor lens river results too:

$$\lambda_{(c,d)} = \sqrt[4]{\frac{(2n-1)^2}{2n}[1+4(q/\pi)^4]\lambda_0^4} \qquad (4.20)$$

5. In the following, like the imaginary A-Hermetriegrößen those is to be demonstrated
Space condensation cause. In space condensations only the real structural unit exists
$s_{(3)} = x_1, x_2, x_3 \equiv R_3$ . Then is after (3.16) and (3.28) and because the coordinates of the structures $s_{(3)}$ are real:

$$\Re e\ \{\left[\begin{smallmatrix}33\\33\end{smallmatrix}\right]_+^{\frown} + Q_{(33)}^{(33)}\left[\begin{smallmatrix}33\\33\end{smallmatrix}\right]_+^{\frown}\} = \Re e\ \{A^i_{kl(3)}\exp\{\lambda_{kl}V - c_i \int\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]\partial V\}; \qquad (4.21)$$

therein V designates the coordinate sum $V = \sum_{i=1}^{3} x_i$ . In the second exponent that can

Real part $c_s \left[\begin{smallmatrix}s\\kl\end{smallmatrix}\right] = \frac{c_s}{C_{kl}}\psi_{kl} = a\,\psi_{kl}$ set and after (2.6) through $\psi_{kl} = (E - e^{-\lambda_{kl}Q})^{-1}$
are expressed. If $Q = \sum_{i=1}^{6} x_i$ the sum of all coordinates is or also $\omega = x_4 + x_5 + x_6$ and
$r = x_1 + x_2 + x_3$ arises for $\psi_{kl}$:

$$\psi_{kl} = [E - e^{-\lambda_{kl}r}(\cos\lambda_{kl}\omega - i\sin\lambda_{kl}\omega)]^{-1}. \tag{4.22}$$

Begun in (4.21) with the way of writing $\left[\begin{smallmatrix}33\\33\end{smallmatrix}\right]^{\frown}_{+} = \left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]_{(3)}$ and $\lambda = \lambda_{kl}$ follows:

$$\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]_{(3)} + Q^{i}_{m(3)}\,[{}_{k}{}^{m}{}_{l}]_{(3)} = A^{i}_{kl(3)}\,e^{\lambda r}\{\tfrac{1}{2}(E + \cos\lambda\omega)\cdot$$
$$[E + (e^{\lambda} - \cos\lambda\omega)^2]\sin^{-2}\lambda\omega\}^{-a/2\lambda} \tag{4.23a}$$

The imaginary absolute Cartesian coordinates cause the space condensations $[3] \equiv [3]^{i}_{kl} \equiv \left[\begin{smallmatrix}33\\33\end{smallmatrix}\right]^{\frown}_{+}$.
Because
if $\omega = 0$, thus $\sin\lambda\omega = 0$ to be, would have this should also $[3]$ to the consequence. Maximum one Space condensations result for the spectrum $\lambda_{kl}\ \omega = \pm\ \pi/2\ (2n + 1)$ and with it is simplified (4.23a) too

$$\{[{}_{k}{}^{i}{}_{l}]_{(3)} + Q^{i}_{m(3)}\,[{}_{k}{}^{m}{}_{l}]_{(3)}\}_{\max} \rightarrow A^{i}_{kl}e^{\lambda_{kl}y}[1/2(E + e^{2\lambda y})]^{-a/2\lambda}. \tag{4.23b}$$

For large $y = r$ arises also $b = \cos\lambda\omega = \mathrm{const}(R_3)$ and $a = \lambda_{kl}/\alpha$:

$$\{[3] + Q^{i}_{m(3)}\,[3]\}_{\max} \rightarrow \hat{\varphi}^{i}_{lk} \sim e^{\lambda_{kl}r}\left(\frac{1}{2}\sqrt{\frac{1+b}{1-b}}(e^{\lambda r} - b)^2\right)^{-a/2\lambda} \tag{4.24}$$

$$\hat{\varphi}^{i}_{lk} \approx e^{-\alpha r}$$

The space condensation forms thus a gradate-free field, contrary to the imaginary structural units, which can form all condensation stages.

**4.2 the inertia of all Hermetrieformen**

Each system of sources of condensor lens and - lowering can cause a condensor lens river. The correlation minima N - are at the same time maxima of the fundamental condensations, which are centers of maximum acceleration effects. Becomes the geo data equation (4.1) also $\dot{x}_m\lambda_m(k.l)$ multiplied, then is valid:

$$\lambda_m(k,l)\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)}\dot{x}^k\dot{x}^l\dot{x}^m = -\ddot{x}^i\lambda_m(k,l)\dot{x}^m. \tag{4.25}$$

The expression on the right side of (4.25) can be received also from equation (3.20) (also $\hat{\varphi}^{i}_{kl} = \left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]^{(\mu\nu)}_{(\kappa\lambda)}$, if the correlation signatures are let go away):

$$\overline{\lambda}\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]\dot{x}^i\dot{x}^l\dot{x}^m = \left\{\partial_l\left[\begin{smallmatrix}i\\km\end{smallmatrix}\right] - \partial_m\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]\right)\dot{x}^k\dot{x}^l\dot{x}^m + \left(\left[\begin{smallmatrix}i\\sl\end{smallmatrix}\right]\left[\begin{smallmatrix}s\\km\end{smallmatrix}\right] - \left[\begin{smallmatrix}i\\sm\end{smallmatrix}\right]\left[\begin{smallmatrix}s\\kl\end{smallmatrix}\right]\right)\dot{x}^k\dot{x}^l\dot{x}^m =$$
$$= -\left[\begin{smallmatrix}i\\km\end{smallmatrix}\right]\dot{x}^l\partial_l(\dot{x}^k\dot{x}^m) + \dot{x}^l\partial_l\left[\begin{smallmatrix}i\\km\end{smallmatrix}\right]\sum_{l=1}^{q}\partial_l(\dot{x}^k\dot{x}^m) + \left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]\dot{x}_m\partial_m(\dot{x}^k\dot{x}^l) - \dot{x}^m\partial_m\left[\begin{smallmatrix}i\\kl\end{smallmatrix}\right]\sum_{m=1}^{q}\partial_m(\dot{x}^k\dot{x}^l) -$$
$$-\left(\dot{x}^l\left[\begin{smallmatrix}i\\sl\end{smallmatrix}\right]\ddot{x}^s - \dot{x}^m\left[\begin{smallmatrix}i\\sm\end{smallmatrix}\right]\ddot{x}^s\right) = 0. \tag{4.26}$$

There $\ddot{x}^i \neq 0$ so long $[\ ] \neq 0$ is, can the disappearance of (4.25) only through $\overline{\lambda}\dot{x}^i = 0$ fulfilled become. There also $\overline{\lambda}$ and $\dot{x}^i \neq 0$ it remains, means this that $\overline{\lambda} \perp \dot{x}^i$ to be valid must.

**v** a possible temporal change of location is in the area and **w** is the speed of the cosmic expansion. If itself $\dot{\varepsilon}$ and $\dot{\eta}$ do not change temporally, is $w = c$. If $\dot{x}_i$ as
*World speed* $\mathbf{Y}(6)$ in $R_6$ one designates

$$\mathbf{Y}(q) = \sum_{i=1}^{q=6} \dot{x}_i = \overline{v} + i\overline{w} \quad \text{with} \quad \overline{v}^2 = \dot{x}_1^2 + \dot{x}_2^2 + \dot{x}_3^2 = \mathbf{v}^2 \quad \text{and} \quad \overline{w}^2 = c^2 + \dot{\varepsilon}^2 + \dot{\eta}^2 = \mathbf{w}^2,$$

from it the Orthogonalität of the vector of kompositiver condensation stages follows $\lambda_m(k,l)$ in the case
the complete Hermetrie q = 6. for the Partialstrukturen $\overline{\lambda}^{(\kappa\lambda)}_{(\mu\nu)}$ the same consideration is valid.

Related to the metric Unterraum $x(\kappa, \lambda, \mu, \nu)$ show $\overline{\lambda}^{(\kappa\lambda)}_{(\mu\nu)}$ and $\overline{\lambda} \equiv \lambda_m(k,l)$ one

Congruence those in the fact exists that those $\overline{\lambda}^{(\kappa\lambda)}_{(\mu\nu)}$ those $\overline{\lambda}$ develop as mosaic sample.

If those $\overline{\lambda}$ - Structures to the world speed **Y**, as a general expansion,
orthogonal run it must, means this that if related to a self-system $(\mathbf{v} = 0)$ a space movement of the condensation develops itself, those $\overline{\lambda}^{(\kappa\lambda)}_{(\mu\nu)}$ and $\overline{\lambda}$ again to adjust must,
which one of **v** dependant complex turn in $R_6$ (and/or in $R_4$) represents. This new employment takes place during the entire duration of acceleration $d\mathbf{v}/dt \neq 0$. With it
connected reactive resistance works as fictitious force, which goes as inertia into action. Therefore behave all condensor lens terms and thus accordingly also energy terms slowly-acting. Also the temporal position change of a metric condensor lens maximum, thus the cyclic condensor lens river takes place in such a way that the condition $\overline{\lambda} \perp \dot{x}^i$ is fulfilled. From there only such river aggregates exist with which the cyclic river directions of the condensation stages $\overline{\lambda}^{(\kappa\lambda)}_{(\mu\nu)}$ run **Y** too orthogonal viii .

The condensor lenses $\begin{bmatrix} \mu\mu \\ \mu\mu \end{bmatrix}$ , those in each case by only one Partialstruktur $\kappa_{(\mu)}$ with that
Indexings $\mu = 1, 2$ or 3 to be determined, is correlation-free. They form from there none
Structural rivers out, but fields of quantized space compressions. The Hermetrieformen C
and D become also by real condensor lenses of the type $\mu = 3$, i.e. $\begin{bmatrix} 33 \\ 33 \end{bmatrix} \equiv [3]$, accompanied and are from there ponderabel, contrary to the forms A and b.

There all Hermetrieformen the condensor lens $\begin{bmatrix} 11 \\ 11 \end{bmatrix}$ contained, all Hermetrieformen is sources from gravitational fields, because this condensor lens appears with the projection into that $R_3$ as gravitative field structure of the area. The gravitational field of each body tries, a condition of minimum Kompression of the Metronen, i.e. an isotropic distribution of the lines of flux to adjust. If this structure is disturbed by the field of another body, then a tension works toward between both bodies, which an isotropic Feldverteilung of both bodies tries to aim at. This tension is just as large as the inertia resistance, which the body develops against a change of movement.

Inertia and weight are equivalent from there, have however related to the structural dynamics completely different causes. Inertia is a consequence of the expansion of the universe. Weight is a field, which is caused by the condensor lens with a-Hermetrieformen. Inertia is not a characteristic of the absolute area. It does not go also on those

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viii Something other explanation for the inertia finds *Drö* (2003) in its extension of the domestic theory on 8 dimensions. Another beginning than after (4.25) leads on the relationship $\lambda_{kl}\ \mathbf{Y} = \text{const}$. That means that those $\lambda_{kl}$ -Vectors parallel or antiparallelly too **Y** are aligned, which is caused by a probability field. There those $\lambda_{kl}$ the dimension reciprocal of a length and/or measures possesses, can $\lambda_{kl}\ \mathbf{Y} = \text{const}$ as momentum conservation to be understood.

Effect of distant stars back (Mach principle) and is also not to fluctuations of the vacuum to attribute *(Rudea, Haisch and-PUT-hope* 1994) separates it is after *home* and a *Drö* consequence of the expansion of the universe.

## 5. The prototypical basic river processes and prototrope Konjunktoren

In the following become according to as for the real structural unit
$\widehat{\left[{}^{33}_{33}\right]}_{+} = \left[{}^{i}_{kl}\right]_{(3)} \equiv [3]^{i}_{kl} \equiv [3]$ also for the condensor lenses of the imaginary structural units the shortening $[\mu] = [1]$ and/or.$[2]$ used:

$$\left[{}^{i}_{kl}\right]^{(\mu\mu)}_{(\mu\mu)} \equiv \widehat{\left[{}^{\mu\mu}_{\mu\mu}\right]}_{+}, \widehat{\left[{}^{\mu}_{\mu\mu}\right]}_{+}, \widehat{\left[{}^{\mu\mu}_{\mu}\right]}_{+} = [\mu]. \qquad (5.1)$$

The condensation stages forming f = 6 classes for the Hermetrieformen $x \hat{=} (a, b, c, d)$ are:

$$[1], \; [2], \; [1,2], \; [1,3], \; [2,3], \; [1,2,3] \;\equiv\; f$$

(In it means for example $[1,2] \equiv [^{1}{}_{1}{}^{2}{}_{2}]_{+} + [^{2}{}_{2}{}^{1}{}_{1}]_{+}$). For the Hermetrieformen x can also (3.28) for the condensor lens class f in the metric aggregate $V = s_{(i)}$ out (2.10) (also $i = 1, 2, 3$) are written:

$$F_f(x) = (A^{i}_{kl})^{-1} \left\{\left[{}^{i}_{kl}\right]^{(\mu\mu)}_{(\mu\mu)} + Q^{i}_{m}\left[{}^{m}_{kl}\right]^{(\mu\mu)}_{(\mu\mu)}\right\} = \exp\left\{\lambda_{kl}V - c_i \int \left[{}^{i}_{kl}\right]\partial V\right\}. \qquad (5.2)$$

With (2.6) the second exponent is in (5.2)

$$c_s \int [{}_{k}{}^{s}{}_{l}]\, dV = (c_s/V_{kl}) \int \psi_{kl}\, dV = a\, \lambda^{-1} \int (E - e^{-\lambda Q})\, d(\lambda V), \qquad (5.3)$$

if $a = c_s/V_{kl}$ and $Q = s_{(1)} + s_{(2)} + s_{(3)}$ meant. With the fragmentation of the Hermetriegrades $Q = V + P$ is

$$c_s \int \left[{}^{s}_{kl}\right]\partial V = \frac{a}{\lambda}\int (E - e^{-Q})^{-1}\partial(\lambda V) = \frac{a}{\lambda}\ln(e^{\lambda V} - e^{-\lambda P}) + const = \ln\left(\frac{e^{\lambda V} - e^{-\lambda P}}{E - e^{-\lambda P}}\right)^{\alpha}. \qquad (5.4)$$

Begun in (5.2) follows for $F_f(x)$:

$$F_f(x) = e^{\lambda_{kl}V}\left(\frac{e^{\lambda V} - e^{-\lambda P}}{E - e^{-\lambda P}}\right)^{-\alpha} \qquad (5.5)$$

The eigenvalue spectrum of the correlating fields $\lambda_{kl} \equiv \lambda_{kl}{}^{(\mu\nu)}_{(\kappa\lambda)}$ differs only by that

Factor $\alpha$ from the spectrum of the condensation stages for only one Partialstruktur and becomes for $\alpha = 1$ identically to this: $\alpha = \lambda_{kl}/\lambda$ (also $\lambda \equiv \lambda(k,l)$).

The individual gradate-forming condensation classes can after (5.5), and/or after (3.30) if $Q = V$ is, for which possible types are examined. The cyclic processes express itself in the fact that the imaginary coordinates in the exponent arise.

The condensor lens rivers in (5.5) can be now indicated explicitly. The minimum of a condensor lens $N_x^-$ (for $F_{\{f\}}(x) = 0$) changes periodically off with the condensor lens maximum $N_x^+$

$$\boxed{N_x^{+}\,(f)\,N_x^{-} \equiv F_f\,(x) \quad \text{mit} \quad x = a,b,c,d} \tag{5.6}$$

For $V$ and $P$ the following shortening are introduced:

$s_{(3)} \equiv r = x_1 + x_2 + x_3$ , $s_{(2)} \equiv t = x_4$ , $s_{(1)} \equiv \omega = x_5 + x_6$

The simplest possible processes of the cyclic structural condensations $F_f(x)$ are:

$$\left.\begin{aligned}
F_1(a) &= [E - e^{-i\lambda\omega}]^{-\alpha} \\
F_1(b) &= e^{i\lambda_{kl}\omega}(E - e^{-i\lambda t})^{\alpha}(e^{i\lambda\omega} - e^{-i\lambda t})^{-\alpha} \\
F_2(b) &= e^{i\lambda_{kl}t}(E - e^{-i\lambda\omega})^{\alpha}(e^{i\lambda t} - e^{-i\lambda\omega})^{-\alpha} \\
F_{1,2}(b) &= [E - e^{-i\lambda(\omega + t)}]^{-\alpha} \\
F_1(c) &= e^{i\lambda_{kl}\omega}(E - e^{-\lambda r})^{\alpha}(e^{i\lambda\omega} - e^{-\lambda r})^{-\alpha} \\
F_{1,3}(c) &= [E - e^{-\lambda(r + i\omega)}]^{-\alpha} \\
F_{1,3}(d) &= e^{\lambda_{kl}(r+i\omega)}(E - e^{-i\lambda t})^{\alpha}(e^{\lambda(r+i\omega)} - e^{-i\lambda t})^{-\alpha} \\
F_{2,3}(d) &= e^{\lambda_{kl}(r+it)}(E - e^{-i\lambda\omega})^{\alpha}(e^{\lambda(r+it)} - e^{-i\lambda\omega})^{-\alpha} \\
F_{1,2,3}(d) &= [E - e^{-\lambda(r + it + i\omega)}]^{-\alpha}
\end{aligned}\right\} \tag{5.7}$$

In the Hermetrietyp D step $[1]$ and $[2]$ only in shape of $\begin{bmatrix} 11 \\ 11 \end{bmatrix}_+$ and $\begin{bmatrix} 22 \\ 22 \end{bmatrix}_+$, thus without correlation up and form from there no condensor lens river: $F_{1.}(d) = 0$.

The coupling maxima of all condensor lens systems are attached $F_f(x)_{extr}$ , if those Condensations a minimum $N^-$ have. The density of the Metronen $N^{\pm}$ hangs only of the correlation exponent $\alpha$ the condensor lens signature concerned off. If that Condensor lens system the conditions of the field activation of the condensor lens rivers and the Zyklizität $N^{\pm}$ fulfill, give it the following condensor lens rivers after (4.16), whereby some the rivers correspond themselves, if $\lambda_{kl} = \alpha\,\lambda$ one uses. The shorter representation the classes become by numbers symbolizes:

$$\left.\begin{aligned}
1 &\,\hat{=}\, F_1(a) = F_1(b) = F_1(c) \equiv N_a^{+}(1)N_a^{-} \equiv N_b^{+}(1)N_b^{-} \equiv N_c^{+}(1)N_c^{-} \\
2 &\,\hat{=}\, F_2(b) \equiv N_b^{+}(2)N_b^{-} \\
3 &\,\hat{=}\, F_{1,2}(b) = F_{1,2}(d) \equiv N_b^{+}(1,2)N_b^{-} \equiv N_d^{+}(1,2)N_d^{-} \\
4 &\,\hat{=}\, F_{1,3}(c) = F_{1,3}(d) \equiv N_c^{+}(1,3)N_c^{-} \equiv N_d^{+}(1,3)N_d^{-} \\
5 &\,\hat{=}\, F_{2,3}(d) \equiv N_d^{+}(2,3)N_d^{-} \\
6 &\,\hat{=}\, F_{1,2,3}(d) \equiv N_d^{+}(1,2,3)N_d^{-}
\end{aligned}\right\} \tag{5.8}$$

For these six condensor lens rivers the coupling structures of the Hermetrieformen must be examined. Since starting from the river class 3 two different indexings of the Partialstrukturen arise, by the internal correlation of the structural units cyclic condensor lens rivers and their superpositions are described to a composition field. The classes 1 to 6 are *prototypical basic river processes,* which develop each river aggregate. Home calls such a basic river process **Flukton.** For degenerated condensor lens rivers, i.e. if basis and retort signatures are identical, there are no correlation and from there no condensor lens rivers. Such condensor lenses produce static fields, accordingly (4.24). If in

such condensor lenses $\begin{bmatrix} \overset{\frown}{\mu\nu} \\ {}^{-+} \\ \mu\nu \end{bmatrix}$ the signatures $\mu = \nu$ are, then **singular screen fields** become

trained, for $\mu \neq \nu$ develop **korrelative screen fields.** It acts with that metric coordinates around the spatial, i.e. $\mu = \nu = 3$, then the singular becomes Screen field a **Straton** mentioned.
In case of of gravitons, $x \hat{=} a$, there are 1 singular screen field and two possible Condensor lens rivers. For photons and neutral particles, $x \hat{=} b$ and C, exist 6 screen fields, of it are 4 singular screen fields $[{}_1{}^1{}_1{}^1]$, $[{}^1{}_1]$, $[{}^\mu{}_\mu{}^\mu{}_\mu]$, $[{}_\mu{}^\mu]$, . . . and 2 korrelative Schrimfelder $[{}_1{}^1{}_\mu{}^\mu]$, $[{}^\mu{}_\mu{}^1{}_1]$ and there are 30 condensor lens rivers in the coupling structure. In the case $x \hat{=} d$ (loaded particles) there are 9 screen fields (3 singular and 6 korrelative) and among them a Straton, which encloses 72 coupled condensor lens rivers. From 6 no screen field can be deduced. Because it in all Unterräumen of the $R_6$ existed it is called **Weltflukton**. The classes 1 to 6 are Urgestalten of world architecture or **Prototrope.** The material characteristics result however only from correlation of several Prototrope. There is appropriate the following shortening:

| |
|---|
| *fluktonenhafte Prototrope* $\hat{=} [-(1,...,6)] = (-k)$ |
| *Schirmfeld-Prototrope* $\hat{=} [{}^\mu{}_\mu{}^\nu{}_\nu] \hat{=} [+(1,...,5)] = (+k)$ |
| *Straton*: $\hat{=} [{}^3{}_3{}^3{}_3] \equiv [3] \hat{=} (+7)$ |

The screen fields with the condensation stages $(+k)$ encloses the Fluktonen, thus the P r o t o t r o p e . The Straton determines the Ponderabilität of the Hermetrieformen C un D. Those $(-k)(+7)$ Prototrope $k \leq 5$ form already simplest structural systems $(\pm k)$, the **Protosimplexe** mentioned
become. There it to the Weltflukton $(-6)$ no screen field and too $(-7)$ no Flukton gives, exists only 5 Protosimplexe:

$$p_x = (\pm k), \qquad 1 \leq k \leq 5 \qquad (5.9)$$

Of this Protosimplexen the groups of couplings consist, their sources and a lowering itself over those $q_j$ to exchange can.

The Hermetrieformen x is defined as follows by the Protosimplexe:

Self condensation, time condensation, space condensations,
a: $(\pm 1)_a$
b: $(\pm(123))_b$
c: $(\pm(14))_c(+7)_c$
d: $(+(127))_d(\pm(345))_d(-6)_d$ Space-time condensations.[ix*]) (5.10)

[ix] Example: It means: $(+(127) \hat{=} [1] + [2] + [3]$ with $(+1) \hat{=} [{}^1{}_1{}^1{}_1] \equiv [1]$, $(+2) \hat{=} [{}^2{}_2{}^2{}_2] \equiv [2]$, $(+3) \hat{=} [{}^3{}_3{}^3{}_3] \equiv [3]$

| particles | x\k | (±1) | (±2) | (±3) | (±4) | (±5) | (-6) | (+7) | protosimplexes |
|---|---|---|---|---|---|---|---|---|---|
| gravitons | a | (1) | | | | | | | $p[1] \equiv (\pm 1)_a$ |
| photons | b | (1) | (2) | (1,2) | | | | | $p[123] \equiv (\pm 123)_b$ |
| neutral particles | c | (1) | | | (1,3) | | | (3) | $p[14][7] \equiv (\pm 14)_c, (+7)_c$ |
| charged particles | d | | | (1,2) | (1,3) | (2,3) | (1,2,3) | (3) | $p[123][4567] \equiv (+127)_d, (\pm 345)_d, (-6)_d$ |
| | | $(x_5 x_6)$ | $(x_4)$ | $(x_4 x_5 x_6)$ | $(x_1 x_2 x_3 x_5 x_6)$ | $(x_1 x_2 x_3 x_4)$ | $(x_1 x_2 x_3 x_4 x_5 x_6)$ | $(x_1 x_2 x_3)$ | condensations |
| | | x | | | x | | | x | inertia field |
| | | | x | x | | x | x | | charge field |
| | | fluctons | | | | | world flucton | straton | |

**Table 1: Basic Elements of Hermetries a-d**

The number of at all possible Isomerien one out $N$ different basic rivers developed Fluktons is extremely large. Each Flukton covers a crowd of elementary basic rivers, which differ by the number of possible signature permutations.

The eigenvalue spectra $\lambda$ and $\lambda_{kl}$ are out $n_x^{(k)} \geq 1$ Protosimplexen$(\pm k)_x$ constructed. It becomes from there the term of the *Protosimplexladung*

$$Q_x^{(k)} = n_x^{(k)}(\pm k)_x \qquad (5.11)$$

for the description of the material Hermetrie terms defines. For the condensation stages composed of Partialstrukturen is valid thereby:

$$(\lambda, \lambda_{kl}) \sim Q_x^{(k)}. \qquad (5.12)$$

The composition to the terms of the respective Hermetrieformen is determined by a correlation law, which by a Konjuktionsgesetz of the Prototrope is defined. It must *prototrope Konjunktoren* -( )- give, which the composition of the coupling structures

$$(\pm 1)_a$$
$$(\pm 1)_b(\pm 2)_b(\pm 3)_b$$
$$(\pm 1)_c(\pm 4)_c(+7)_c$$
$$(\pm(127))_d(\pm(345))_d(-6)_d$$

make possible to the appropriate Hermetrieformen. The appropriate Konjunktor law consists of an exchange process of the Fluktonen also $(\pm p)$ and $(\pm q)$. The exchange takes place then only if the correlating condensor lens rivers in the same Unterraum of the $R_6$ lie. They must thus the same structural unit $\kappa_{(\mu)} \hat{=} \kappa_{kl(\mu)}$ possess (also $\mu = 1,2,3$), with that **Konjunktor** -( $\mu$)- over the same structural unit **(Konjunktiv):**

$$(\pm p) \ \text{-}(\mu)\text{-} \ (\pm q). \qquad (5.13)$$

Three Konjunktive are to be differentiated:

a) *Correlation Konjunktiv* as (5.13). In this case refers $\mu$ on that Fluktonenaustausch regarding $\kappa_{(\mu)}$ : $\text{-}(\mu)\text{-} \hat{=} \kappa_{(\mu)}$

b) *Contact Konjunktiv:* $(\pm q)$ -$(\mu)$- $(\mp q)$. A Flukton turns into -$(\mu)$- into a screen field over, which obtain the contact to another Flukton.
c) *Straton Konjunktiv:* If $\mu = 3$ and the mediating screen field $(+7)$ is: $(\pm q)$ - $(3)$ - $(+7)$

However all basic rivers of a Fluktons do not have to come over a Konjunktor for the correlating change. In case of a-Hermetrie $(\pm 1)_a$ exists no Konjunktor.
On the other hand the Protosimplex triad becomes in accordance with the b-Hermetrie

$$(\pm 1)_b \text{ -(1)- } (\pm 3)_b \text{ -(2)- } (\pm 2)_b$$

only by correlation Konjunktive determines. In the triad of the C-Hermetrie

$$(\pm 1)_c \text{ -(1)- } (\pm 4)_c \text{ -(3)- } (\pm 7)_c$$

still another Straton Konjunktiv works beside the correlation Konjunktiv. With the D-Hermetrie steps the screen field triad $(+(127))$ up. It comes to the influence of $(-6)_d$ in the contact Konjunktiv to that $(+(127))$. The cyclic contact structure is thus:

$$(+1)_d \text{ -(1)- } (-6)_d \text{ -(2)- } (+2)_d \text{ -(2)- } (\pm 5)_d \text{ -(3)- } (-6)_d \text{ -(3)- } (+7)_d \text{ -(3)- } (\pm 4)_d \text{ -(1)- } (+1)_d$$

The Fluktonen coming to the conjunction $(-(q,p))$ aggregates are more cyclic Condensor lens rivers, between structures more maximally $N^+$ and minimum $N^-$ correlate. The spin of a river aggregate is specified by the number of cycles, which offense up to the re-establishment of the initial condition. The cyclic condensor lens rivers are activated by the anti- along ashes of portions of their retort signatures.

Accepted, p and q become by the signatures

$$(-p) \mathrel{\hat{=}} \binom{\kappa\lambda}{\nu\mu} \quad \text{und} \quad (-q) \mathrel{\hat{=}} \binom{\alpha\beta}{\gamma\mu} \tag{5.14}$$

characterized, then the same structural unit is in both condensor lenses $\kappa_{(\mu)}$ contained, and over these the conjunction can -$(\mu)$- take place. If $N^{\pm}(p,q)$ the correspondence maxima for p and q in $\mu$ represent, then is valid:

$$(-p) \equiv F_p(\mu) = N^+(p)\binom{\kappa\lambda}{\nu\mu}N^-(p) \tag{5.15}$$

and

$$(-q) \equiv F_q(\mu) = N^+(q)\binom{\alpha\beta}{\gamma\mu}N^-(q) \tag{5.16}$$

In $\kappa_{(\mu)}$ exists between the periods of maximum condensations in $F_p$ and $F_q$ a phase difference of $\varphi = \pi/2$. The conjunction refers to the respective condensor lens maximum in $N^+$., if $F_p(N^{\pm})$ with $F_q(N^{\mp})$ collapses. Those $F_p$, $F_q$ are regarding $\kappa_{(\mu)}$ oriented. Therefore can for the current vectors of the river aggregates $\vec{F}_{pq} \mathrel{\hat{=}} \mathbf{F}$ are set. Regarding $\kappa_{(\mu)}$ exist also partial spin vectors $\boldsymbol{\sigma}_{pq}$, with the number of cycles $\omega_{pq}$: $\boldsymbol{\sigma}_{pq} = \omega_{pq}\, \mathbf{s}_{pq}$, if $\mathbf{s}_{pq}$ *the Fluktonspin* in $\kappa_{(\mu)}$ is (how $\mathbf{s}_p \,||\, \mathbf{s}_q$ to be must).
After correlation conjugation (5.13) is only on the condition

$$\mathbf{F}_{pq}(\mu) \perp \boldsymbol{\sigma} \tag{5.17}$$

possible. With the spin unit vector $|\mathbf{s}_{pq}| = 1$ is $\mathbf{s}_{pq} = \mathbf{s}^0_{pq}\ s_{pq}$. In it is $\mathbf{s}^0_p = \pm\,\mathbf{s}^0_q$ ambiguously. For $\mathbf{s}^0_p = +\mathbf{s}^0_q$ would be -(μ)- *a Orthokonjunktiv.* For $\mathbf{s}^0_p = -\,\mathbf{s}^0_q$ , i.e. in case of that Anti-parallelism, is -(μ)-*a Parakonjunktiv.* Through -(μ)-called correlation river *Konjunktor* is designated. From the ambiguity the existence of a general *Konjunktorspins* follows

$$\boxed{\mathbf{S}\,[(\pm p)_x\ \text{-}(\mu)\text{-}\ (\pm q)_x] = {}^p{}_x(\mu)^q{}_\pm \equiv (\mu)_\pm} \tag{5.18}$$

with $\cos\,[(\mu)_+, (\mu)_-] = -1$ and $x \,\hat{=}\, (a, b, c)$.

Protosimplex and the Konjunktorstruktur is always overlaid all Hermetrieformen x, which is defined by Konjunktivgesetze, a structure of Konjunktorspinen. That leads to a further Isomerie: the Konjunktor Isomerie.

For the time condensations (B) gives it to 16 conjugation Isomerien. In the space condensation to (C) 4 exists, and in the space-time condensation (D) already 512 of conjugation isomers.

## 6. The geometrodynamische causes of spin, isospin, heli coil quotation and anti-structures

1.Wie with the river aggregates, then concerns it also with the Konjunktorspin cyclic structural processes, whereby the Konjunktivgesetz concerned describes a stable condensation. For the description of the spin of prototroper Konjunktive also the law of the preservation of the angular momentum must be valid. $\hat{M}^i{}_{kl}$ an angular momentum tensor is in the area $R_6$ and w the imaginary part of the world speed vector $Y_k$ (i.e. $w^2 = c^2 + \dot{\varepsilon}^2 + \dot{\eta}^2$) is valid, then:

$$w\,M^i{}_{kl} = \boldsymbol{\xi} \times T_{kl}\,, \tag{6.1}$$

if $T_{kl}$ the power density tensor in $R_6$ a n d i n radius vector are. For those

$$\boldsymbol{\xi} = \sum_{i=1}^{6} x_i$$

Sources of $w\,M^i{}_{kl}$ is valid:

$$\mathrm{div}_6\,(w\,M^i{}_{kl}) = \mathrm{div}_6\,(\boldsymbol{\xi} \times T_{kl}) = T_{kl} - T_{kl}{}^* = 2\,T_{kl\,-}\,. \tag{6.2}$$

There the anti- along ash power density tensor $T_{kl\,-} = 0$ is, preservation forces of the Angular momentum the Hermitesierung, and because of (1.4)

$$T_{kl\,+} \sim (R_{kl} - \tfrac{1}{2}\,g_{kl}R)^*. \tag{6.3}$$

On the other hand the field activation (3.18) causes a spin overlay (3.19) and thus the preservation of the angular momentum of all structures in $R_6$. $M_{kl}$ an angular momentum density is, bez ogen on the spatial spin density $\boldsymbol{\sigma} = \mathrm{sp}\,M^i{}_{kl}$ reads:

$$\sigma = M_{ik} = (1/w)\ \mathrm{sp}(\boldsymbol{\xi} \times T_{kl}) = (1/w)\,\boldsymbol{\xi}T_{ik}\,, \tag{6.4}$$

and for the spin moment (spin):

$$\mathbf{s} = \iiint 1/w\,\boldsymbol{\xi}T_{ik}dx_1dx_2dx_3 \tag{6.5}$$

(in the Euclidean case). Describe in the non-Euclidean continuum $\lambda_{kl}{}^{(\kappa\lambda)}{}_{(\mu\nu)}$ Condensation stages of the structural units, so that itself in the case of the divergence (3.20) the power density tensor $W_{ik}$

$$sp\ K_{ik}{}^{(\kappa\lambda)}{}_{(\mu\nu)} \left[\overset{\frown}{\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}}\right] \sim W_{ik}{}^{(\kappa\lambda)}{}_{(\mu\nu)} \tag{6.6}$$

results in. With being present a x-Hermetrie with a Korrelationskonjunktor (5.13) this entails the Konjunktorspin (5.18), whose spatial is described after density (6.4), if
$\xi(\mu)$ the radius of the cyclic conjugation in $\kappa_{(\mu\nu)}$ and $P_{ik}(\mu) = \sum_{\varepsilon} W_{ik(\kappa\lambda)}^{(\mu\nu)}$ that

Power density tensor is, which is compound from all portions, which the Protosimplexe p and q in the conjunction $-(\mu)-$ construct:

$$d\ [{}_x{}^p(\mu)^q{}_\pm]/dV = 1/w\ \xi(\mu)P_{ik}(\mu). \tag{6.7}$$

$\varepsilon$ is the number signature isomers of basic rivers. Out (6.7) the Konjunktorspin in the area with the volume element results $dV = dx_1\ dx_2\ dx_3$:

$${}_x{}^p(\mu)^q{}_\pm \sim \int (1/w)\,\xi(\mu) \sum_{\varepsilon} spK_{ik(\mu\nu)}^{(\kappa\lambda)} \left[\overset{\frown}{\begin{smallmatrix}\kappa\lambda\\ \mu\nu\end{smallmatrix}}\right] dV \tag{6.8}$$

or approximately:

$${}_x{}^p(\mu)^q{}_\pm \sim \int (1/w)\,\xi(\mu)P_{ik}(\mu)\ dV = \int (1/w)\,\xi(\mu)\ dE_{ik}(\mu) \tag{6.9}$$

with the Energiedifferenzial $dE_{ik}(\mu) = h\ \nu_\mu\ m_{ik(\mu)}{}^{(pq)}$.

The components of $m_{ik(x)}{}^{(pq)}$ consist of quantum numbers, within $\mu$ the simplex one $(p,q)$ mark. $\xi_i(\mu) = \xi_i{}^{(0)}(\mu)\ \ u_i(\mu)/2\pi$ interpreted as radius of the cyclic Konjunktorflußbahn $u(\mu)$, that with „the recurrence rate " of the condensations $\nu'(\mu)$ in Connection $u(\mu)\nu'(\mu) = w$ stands. $\nu'(\mu)$ can by the rotative frequency $\nu(\mu)$ of the Condensor lens river in the Konjunktor to be expressed. A Konjunktor is a condensor lens exchange between two Fluktonen of the Protosimplexe in the Konjunktiv. From there „accumulate "$u(\mu)$ in each case 2 condensor lenses with the river frequency $\nu(\mu)$„around " and for the recurrence rate of the condensor lenses lengthwise $u(\mu)$ is $\nu'(\mu) = 2\ \nu(\mu)$ to set. Then becomes out (6.9):

$${}_x{}^p(\mu)^q{}_\pm = \pm\ \hbar/2\int \xi_{i(\mu)}^{0}\, dm_{ik(x)}^{(pq)}\,. \tag{6.10}$$

$\mathbf{m}_{(x)}{}^{(pq)}$ tensors of whole positive quantum numbers are, from that $m_{ik(x)}{}^{(pq)}$ are formed and $\mathbf{s}_\mu$ the unit vector of this Konjunktorspins:

$$\xi_i{}^{(0)}(\mu)\,\partial m_{ik(x)}^{(pq)} = \mathbf{s}_\mu\ \ \partial\mathbf{m}_{ik(x)}^{(pq)}\,. \tag{6.11}$$

Thus arises for (6.10):

$$\boxed{{}_x{}^p(\mu)^q{}_\pm = \pm\frac{\hbar}{2}\,\mathbf{s}_\mu \int \partial\ \mathbf{m}_{(x)}{}^{(pq)} = \pm\frac{\hbar}{2}\,\mathbf{s}_\mu\ \mathbf{m}_{(x)}{}^{(pq)}} \tag{6.12}$$

This spin is called **Stratonspin**, because it in $R_3$ arises, into each Straton $(+7)$ for the Hermetrieformen C and D is defined. The sum of the Konjunktorspin integrals is valid also for the imaginary condensations A and b. like these in $R_3$ work, through (4.23) one describes. The imaginary structural units coming to the condensation cause one $R_3$ - Condensation, which either when Straton the Ponderabilität of the C and D-Hermetrien determines or as pseudostratonischer spatial effective range appears. Thereby we the empirically observed transformation more imaginary (photons) into complex forms (electrons) possible. Thus also pseudostratonische characteristics of a space pin come to the imaginary Hermetrieformen.

It is $m_x = \sum_{p,q} \mathbf{m}_{(x)}^{(pq)}$ the sum of whole spin quantum numbers of a Straton or Pseudostratonspins $\mathbf{s}_x$ and $\mathbf{s}_0 = \sum_{\mu} \mathbf{s}^{\mu}$ the appropriate unit vector, then is (6.12):

$$\mathbf{s}_x = \sum_{p,q,\mu} {}_x^{p}(\mu)^{q}_{\pm} = \pm \sum_{\mu} \mathbf{s}_{\mu} \sum_{p,q} \mathbf{m}_{(x)}^{(pq)}. \qquad (6.13)$$

For the Stratonspin arises thus:

$$\boxed{\mathbf{s}_x = \pm \frac{\hbar}{2} \mathbf{s}_0\, m_x} \qquad (6.14)$$

and with shortening $\boldsymbol{\sigma}(x) = \mathbf{s}_0 m_x /2$:

$$\mathbf{s}_x = \pm\, \hbar\, \boldsymbol{\sigma}(x). \qquad (6.15)$$

The Stratonspin sits down together from a portion $\boldsymbol{\sigma}_r$ in $R_3$, and from a portion $\boldsymbol{\sigma}_t$, in $V_3(x_4\ x_5\ x_6)$ participates, $\boldsymbol{\sigma}_r\ (R_3) \perp \boldsymbol{\sigma}_t(V_3)$. $\boldsymbol{\sigma}_r$ marks the **space pin** J the Stratons or Pseudostratons also $J = Q/2$:

$$\mathbf{s}_x = z\, J, \qquad (6.16)$$

how $z$ a direction factor in the area is, also from the river phase $\varphi$ fluktonisch conjugated condensor lens extrema depends:

$$z = \cos(\mathbf{v}, \mathbf{e}_r)\, e^{i(\pi J + \varphi)}. \qquad (6.17)$$

$\boldsymbol{\sigma}_r$ is to be understood as cyclic movement of the inertia measures of the term x. Therefore must itself with each $R_3$- Movement $\mathbf{v} \,||\, \mathbf{e}_r$ adjust, and it becomes $\alpha_P = \cos(\mathbf{v}, \mathbf{e}_r) = \pm 1$. There $\varphi = \pi/2$ is, becomes
out (6.17):

$$z = i\, \alpha_P\, e^{i\pi J} = i\, \alpha_P\, [\cos(\pi J) + i \sin(\pi J)]. \qquad (6.18)$$

For $Q = 2n$ (n = positive whole numbers) is $J = Q/2 = n$, and (6.18) becomes $z = i\,\alpha_P(\pm 1)$.
Is $Q = 2n + 1$ becomes (6.18): $z = -\,\alpha_P$. From this follows $z(J) = i\,\alpha_P\,(-1)^J$. Therein becomes $\alpha_P\,(-1)^J = P_\alpha$ **parity of the** term calls x. With the two components $\sigma_t = i\ s$ and $\sigma_r = i\ J\ P_\alpha$ is the general Stratonspin:

$$\boxed{\boldsymbol{\sigma}(x) = i\,(\mathbf{e}_t\, s + \mathbf{e}_r\, J\, P_\alpha)} \qquad (6.19)$$

with $s = P/2$ , $J = Q/2$ , $P_\alpha = \alpha_P(-1)^J$ , and $s$, $J$, $Q$, $P$ as real numbers. The component $\sigma_t$ counts always imaginary; $\sigma_r$ becomes half-integral against it in the case $J$ really. $J$ becomes as quantum number of the space pin $\hbar\sigma_r$ , i.e. as quantumful angular momentum of the Hermetrieform x, interprets. That
imaginary portion of s of the Stratonspins is an internal characteristic into the stratonische $R_3$ - Konjunktorstruktur, a Konjunktor Isomerie projected structure concerning that $R_3$ - Projection. With same Protosimplexstruktur arise different projected Konjunktorgefüge in the C and D forms. The terms of this konjunktorisomeren combination are subject to an isomorphicism regarding $J$, which is expressed in s. $\sigma_t = i\ s$ becomes because of this
Spin isomorphicism as **isomorphism spin** (isospin) designates.

For the number of spinisomorphic transformable $\lambda_{kl}$ - Terms $I$ arises $I = 2s + 1 = P + 1$ , and for the maximum number of spinisomorphic $\lambda_{kl}$ is $P = P_{max}$ an index, the one
structural class of stratonischer fields $(+7)$ into that $R_3$ shown $(\pm p)$ in the form of $P_{max} + 1$ Multiplets describes.

The number of k contains the konfigurativen characteristics of the condensor lens source systems (Ih, IIh, Ia,
IIa) , then k is one for (-7) characteristic index, and $P_{max} = G(k)$ the number gives that
Subkonstituenten of the Stratons on, how $G$ a positive whole number $G = k + 1$ is. From there must all components of an spinisomorphic multiplet by different Hermetrieformen by the same K-value be marked.

The algebraic character of the space pin $\sigma_r$ hangs of $P_\alpha$ , thus of the Gerad or Ungradzahligkeit of $J = Q/2$ off. With the positive whole number of n follows for $Q = 2n \rightarrow J = n$,
and the space pin is imaginary: $\sigma_r = \pm\, i\, n$. In the case $Q = 2n + 1$ becomes $J$ half-integral and $P_\alpha = \pm\, i$ ,
so that $\sigma_r = \pm\ J$ real and half-integral is. Those $\lambda_{kl}$ - Terms also $J = (2n + 1)/2$ become as **Spinor terms** designates. There $\sigma_r = \pm\ J\ s$ , is such a spinor is real like that with the real $R_3$
it verwoben that in the space volume of this spinor term the existence for every other spinor term is impossible. Therefore no intensity is definable in the sense of tensor terms. But spinor terms justify the *term of the Gegenständlichen.* From there the Nichtgegenständlichkeit is to be differentiated from tensor terms to between the spatial Gegenständlichkeit by spinor terms and.

2.Nach home would result possible anti-structures if in $R_6$ apart from space-time $R_4$ with $x_4 = i\ ct$ also still another anti-space-time $R_4^-$ with $-\ i\ ct$ , those would exist
however to be directly proven could not. Related to that $R_4 \mathrel{\hat{=}} R_4^+$ it would have then
beside the Flukton and Konjunktorspins of the river aggregates and beside the Stratonspin $\mathbf{s}_x^+$
$\mathrel{\hat{=}} \mathbf{s}_x(R_4^+)$ appropriate enantiostereoisomere structures as anti-structures and a anti- Stratonspin $\mathbf{s}_x^- \mathrel{\hat{=}} \mathbf{s}_x(R_4^-)$ give. Their spin structures are mirror-symmetric on that $R_4^+$
oriented and appear in $R_4^-$ as normal structure. The investigation with anti
Konjunktoren $-(\mu^-)$- and anti- Protosimplexen results in that anti-gravitons and anti
Photons of the normal only in the turn of the polarization plane differ. On the other hand the neutral anti-corpuscle differs $c^-$ as enantiostereoisomere
Spin structure of the normal $c^+$ , which decreases/goes back to the mirror-symmetric permutation of all Konjunktorspins and Stratonspins. The same is valid also for the D-Hermetrie. But into this step still the Protosimplex $(\pm 5)$ and the Weltflukton (-6)up. Both cause by the Konjunktive $-(2^\pm)$- the electrical load structure, which a simultaneous electrical
Ladungskonjugation to the consequence has.

In $R_6$ is independent, of $R_4^{\pm}$ - Purchase, always $\lambda_{kl} \perp \mathbf{x}_4$ attainable. Therefore it is possible, that integrals cyclic condensor lens river on a temporal sense of screwing $\mathbf{S} \,||\, \mathbf{x}_4$ so too refer that

$$\varepsilon = \cos(\mathbf{S}, \mathbf{x}_4) \qquad (6.20)$$

as **time heli coil quotation** one defines. Related to $R_4^{\pm}$ is valid:

$$\cos((\mathbf{S}, \mathbf{x}_4) = \pm 1$$

or $\varepsilon(R_4^{\pm}) = \pm 1$. (6.21)

All quantum numbers $C_{\pm}(R_4^{\pm}) = - C_{\mp}$ become also $\varepsilon\, C_{\pm} = C$ of $\mathbf{S}$ and thus of $R_4^{\pm}$ - Purchase independently made.

Those $R_4^{-}$ - Hermetrieformen $a^{-}$ and $b^{-}$ like A and b imponderabel, and the complex are $c^{-}$ and $d^{-}$ are ponderabel like C and D. According to Konjunktor and Stratonspin as well as the electrical load those differ $R_4^{-}$ - Structures of those of the $R_4^{+}$, because this symmetry of all river aggregates, related to those $x_4^{\pm}$ - Direction of the cosmic expansion of all $R_3^{\pm}$ are oriented, into that $R_4^{\pm}$ with antiparallel world speed $\mathbf{Y}^{\pm}$ take place. Spin-und Ladungskonjugation are, related to those $\mathbf{Y}^{\pm}$ - Direction, relative.

3. The kompositiven condensor lens terms $\lambda_{kl}(x)$ are identical to the empirical elementary Matter field quanta $M_q$. The coupling structure, those $\lambda_{kl}(x)$ certainly, becomes by cyclic Condensor lens rivers $N^{\pm}(\ )N^{\mp}$ over internal correlation maxima $N^{-}$ by Konjunktive -($\mu$)- mediated. The coupling structure is overlaid a general integral Stratonspin. Therefore there are two classes of possible correspondences (and/or reciprocal effects seizing outward):

With Raumspin *Korespondenzen* Rk becomes a matter field quantum $M_X$, represented through $\lambda_X$, by another $M_Y$ disturbed. For the correspondences, symbolizes by that *Spinkonjunktiv*

$$-[M_X, M_Y]- \;\hat{=}\; -[J_X, J_Y]-, \qquad (6.22)$$

the approach parallelism of the spin vectors must $\mathbf{s}_X \,||\, \mathbf{s}_Y$, i.e. $\cos(\mathbf{s}_X, \mathbf{s}_Y) = \pm 1$ demanded become. Then the space pin correspondence exists:

$$\lambda_X \; -[M_X, M_Y]- \; \lambda_Y \qquad (6.23)$$

*The structural correspondence* Sk marks the coupling structure one $\lambda$-Term. In cyclic condensor lens river $N^{\pm}(\ )N^{\mp}$ a Fluktons are the correlation minima $N^{+}$ Maxima the fundamental condensor lenses. These maxima are because of the geo data relation (4.1) at the same time centers of maximum accelerations (correspondence maxima). Those $N^{+}$ are with that $\lambda_{kl} \equiv \lambda_{kl}{}^{(\kappa\lambda)}{}_{(\mu\nu)}$ identically. This $\lambda_{kl}$ sit down in $\lambda \equiv \lambda(k,l)$ to metaphorical mosaic samples together.

The elements $n = n(\hat{g}_{(x)})$ define $n^2$ Fundamental condensor lenses, less the n of screen fields thus.

$$Z = n\,(n - 1)$$

For the Hermetrieform A is valid: $n_a = 2$ and $Z(a) = 2$,
for the types $x \hat{=} b, c$ is valid: $n_b = n_c = 6$ with $Z(b) = Z(c) = 30$,
and for $x \hat{=} d$ is: $n_d = 9$ with $Z(d) = 72$.

$\lambda$ are „samples of structural sources of correspondence field ". The number of the sources of correspondence field $Z$ is equal to the number of the condensor lenses, which do not train screen fields. $Z(x)$ must from that $\hat{g}_{(x)}$ are determined. This $Z(x)$ arise not separately, but they form condensor lens maxima too $\lambda_{kl}$ signature isomers of basic rivers of a Fluktons $(-p)$, that by the screen fields $(+p)$ in the Protosimplex $(\pm p)$ one supplements. Such a structure $(\pm p)$ in each case a whole spectrum of sources of correspondence field encloses.

Becomes a matter field quantum $M_X$, which is in the unimpaired dynamic equilibrium, by another structure $M_Y$ and/or. $\lambda_Y$ disturbed, then a general becomes $Sk$ by a *screen field correspondence* by way of introduction, the one superposition of the screen fields $(+p)_X$ and $(+q)_Y$ is. This superposition **Konjunktiv** is symbolized through

$$(+p)_X \;-[\hat{\mu}]-\; (+q)_Y. \tag{6.24}$$

By the disturbance of the correlation condition (5.13) new integrals a structure of both matter field quanta developed by a correspondence **Konjunktiv** $M_X \rightarrow M_Y$:

$$(\pm p)_X \;-\!|\, \mu >-\; (\pm q)_Y, \tag{6.25}$$

if $M_X$ a condensor lens river toward $M_Y$ caused. A stable structure requires that thereupon the reversal of the river takes place:

$$(\pm p)_X \;-<\mu\,|-\; (\pm q)_Y. \tag{6.26}$$

A superordinate aggregate develops, if both Konjunktive to the simultaneous **Konjunktiv** superponieren. In this way becomes from that $Sk$ out $M_X$ and $M_Y$ a correspondence system $\Lambda(M_X\, M_Y)$ produced:

$$(+p)_X \;-[\hat{\mu}]-\; (+q)_Y \rightarrow (\pm p)_X \;-\!|\, \mu >-\; (\pm q)_Y \rightarrow (\pm p)_X \;-<\mu\,|-\; (\pm q)_Y \rightarrow$$
$$(\pm p)_X \;-\!|\, \mu >-\; (\pm q)_Y + (\pm p)_X \;-<\mu\,|-\; (\pm q)_Y \;\hat{=}\; (\pm p)_X \;-(\hat{\mu})-\; (\pm q)_Y. \tag{6.27}$$

Beside that $Rk$ with $(+p)$ and $(+7)$ with $p < 5$ there are still 6 classes of Screen field correspondences, and because of $(-p)$ and $(-6)$ still further classes of 6 river Correspondences.

Out (6.27) with (6.24) home develops a general theory of the correspondence fields, which leads on a uniform spectrum of possible elementary particles and their interior structures.

## 7. Determination of the sum of the Partialmassen in an elementary structure

From the mass spectrum $m(n,q)$out (2.21), which a pseudo continuum represent, must those ponderablen mass terms with one term lector of all at all possible terms $T$ to be separated: $T$; $m(n,q) = M(c,d)$.

With a second selector must from these logically possible mass terms $M(c,d)$ those to be extracted, which have a sufficiently long life span, in order to be at all measurable.

The fluktonische characteristic of each Protosimplex $(\pm p)_x$ the Hermetrieform $x$ causes a condensation condition $\lambda_{kl(\mu\nu)}^{(\kappa\lambda)} \equiv \lambda_{kl}$, after that (4.26) an inertia characteristic, accordingly $\lambda_{kl} \perp \mathbf{Y}$, possesses. Everyone $(\pm p)_x$ becomes from there an inertia effect as measures assigned, if $(\pm p)_x$ by Konjunktive fluktonisch into the internal structure of the mass term is inserted. The different intensity of the inertia one $(\pm p)_x$ refers to those Orthogonalität that $\lambda_{kl}$ to the world speed vector and is an integral multiple $N \equiv N_{(\mu\nu)}^{(\kappa\lambda)}$ a minimum unit condensation $\lambda_{kl(0)}$, a Einheitsprotosimplex corresponds:

$$\lambda_{kl}\,[(\pm p)_x)] \;=\; N\,\lambda_{kl(0)}. \tag{7.1}$$

The whole numbers $N$, those the multiple of the elementary configuration sample $\lambda_{kl(0)}$ describe, *Protosimplexladung* are called. There those $\lambda_{kl}$ metric configuration stages as curvature measure $|\lambda_{kl}|$ represent, define they a radius of curvature $\varepsilon_{kl} = 1/\lambda_{kl}$. For those Radii of the condensation stages is then $\rho_n = n\,\varepsilon_{kl}$. If $k > 0$ the konfigurative index is, which indicates the number of possible basic river processes in the C and D-terms of the unit structure, is $\lambda_{kl(0)} = \lambda_{kl(0)}\,(k)$. The lowest barriers for the Partialstrukturen C and D became in (2.62) to (2.65) as $m_1$, $m_0$ and $m_{(0)}$ indicated. The Protosimplexe $(\pm p)_{c,d}$ must from there for these minimum masses the Protosimplexladung $N = 1$ have.

The deviations of the measured electron mass to the theoretical value (2.63) make a correction within ranges of low Metronenzahlen necessary. The difference $m_1 - m_0 > 0$ is on the characteristics of the two common Protosimplexe $(\pm 4)_{c,d}$ and $(+(1,7))_{c,d}$ to lead back. The characteristic of $m_0$ are $(\pm 1)_c$ and $(+7)_c$. The deviation that Coupling structures $m_1$ and $m_0$ becomes through $(\pm(3,5))_d$, $(+2)_d$ and $(-6)_d$ given. If two Konjunktive in $(\pm p)$ set, is to be written symbolically: $=(\pm p)-$.

In the Hermetrieform D are $(\pm 5)$ and $(-6)$ as load characteristic also $(\pm 4)$ and $(+7)$ by the following Konjunktive connected:

$$-(2) - (\pm 5) - (3) - (+7) - (3) - (\pm 4) - (1) -$$

and

$$=(1,3)= (-6) - (2) - (+2) - (2) - (\pm 5) - (3) -$$

/or.

$$=(1,2)= (-6) - (3) - (+7) - (3) - (\pm 4) - (2) - \;.$$

Because of the Konjunktorspins remains latent a load component from (2.43) and reduces $\varepsilon_{0\pm}$ up $e_R < \varepsilon_{0\pm}$. The lower barrier of the C-spectrum $m_0$ can as accurately accepted become. On the other hand m1 is an only approximated value. The correction can be determined from the inertia contributions of the Protosimplexe of the elementary configuration samples. The elementary configuration sample $N = 1$ for the D-term appearing as electron is

$$(+(1,2,7)),(\pm(3,5)),(-6),(\pm 4).$$

$m_1$ becomes by a factor $u = (m_1 - m_e)/m_1 > 0$ reduced, that of internal structuring is due, because of $\lambda_{kl(0)} \perp \mathbf{Y}$ contribute to the intensity of the entire inertia.

Because of that $R_3$-Cell distribution can do one out $\nu$ Metronen existing surface of the source of the load field $F(\nu)$ between $\nu = z$ and $\nu = z - 1$ Metronen to be defined, those between the internal and outside area for the load field lies. The cyclic Partialkonjunktoren $P_j$, which the Konjunktoren $-(j)-$ (also $j = 1, 2, 3$) correspond, change over $(+(1,2))$ that $R_3$-Structural field $(+7)$ and/or (4.24) within the range $F$ by Potenziale $W_j$ in the sense of $u$. The metronische change takes place within the range of low Metronenzahlen.

So far the Heim theory without the Metronenkalkül was represented. That is now no longer possible, because for the correction calculations into the range relatively small Metronenziffern must be gone.

The Metronendifferenziale is through $\Delta$ marked, how $\Delta$ a variation of the order of magnitude $\sqrt{\tau}$ describes. Then the following beginning lets itself make:

$$\Delta u/u = \Delta F/F + \sum_{j=1}^{3} \Delta F_j / F_j \,. \tag{7.2}$$

$F$ marks the rise of the Metronenziffern within the range of the metaphorical surface of the D-term. For $F$ can be set with (4.24):

$$F \sim 1/\varphi(r) \sim e^{\alpha r(\nu)}. \tag{7.3}$$

For the three cyclic Partialkonjunktoren (Kontaktkonjunktive) is valid:

$$P(1) \;\hat{=}\; (\pm 3) -(1)- (\pm 4) -(1)- (-6) -(1) - (\pm 3) \tag{7.4}$$
$$P(2) \;\hat{=}\; (\pm 3) -(2)- (\pm 5) -(2)- (-6) -(2) - (\pm 3) \tag{7.5}$$
$$P(3) \;\hat{=}\; (\pm 4) -(3)- (\pm 5) -(3)- (-6) -(3) - (\pm 4). \tag{7.6}$$

$P(1)$ and $P(2)$ are related to the imaginary structural units $(1)$ and $(2)$ complementary, and thus is $W_1 = W_2 = W$. With $W_3 = U$ becomes (7.2):

$$\Delta u/u - \Delta F/F = 2\Delta W/W + \Delta U/U. \tag{7.8}$$

During the metronischen integration of (7.4) it is to be noted that $F$ of $\nu = z - 1$ to $\nu = z$, $u$ between $0$ and a fixed value $u_0$ taken place, and $W$ between the potentials $V_{\varepsilon,\varepsilon}$ and $V_{r,r}$ (after (2.52) as well as $U$ between $V_{\varepsilon,\varepsilon}$ and $V_{D,\varepsilon}$ (also $e_D = \varepsilon_{0\pm} - e_r$) one takes.
Then reads the integration of (7.4):

$$\ln(u/u_0) - \ln[F(z)/F(z-1)] = 2 \underset{(\varepsilon\varepsilon)}{\overset{(RR)}{S}} \Delta \ln W + \underset{(\varepsilon\varepsilon)}{\overset{(D\varepsilon)}{S}} \Delta \ln U$$
$$= 2 \ln(V_{RR}/V_{\varepsilon\varepsilon}) + \ln(V_{D\varepsilon}/V_{\varepsilon\varepsilon}) \quad (7.8)$$

That those $m_1$ correcting factor is with (2.52) to (2.54):

$$u = [F(z)/F(z-1)]\, u_0\, \eta^2(1-\eta) \quad (7.9)$$

Therein the function must $F(z)$ metronisch to be determined.[x] For $F(z)/F(z-1)$ can in (7.9) because of (A.5) and (A.11) to be set:

$$u = u_0\, \xi\, \eta^2(1-\eta). \quad (7.10)$$

The constant $u_0$ must as the arithmetic means of the coupling constants $\alpha_j$ are understood, itself on the Partialstrukturen $P_j$ refer in the electron. Because with the correlation of $P_j$ with $P_i$ $(i \neq j)$ the same correlation up $P_j$ back, steps the sum works doubly on also

$$u_0 = 2/3 \sum_{j=1}^{3} \alpha_j \,.$$

Because of $W_1\text{-}W_2 = W$ is also $\alpha_1 = \alpha_2 = a < \alpha$, if $\alpha$ the correct value through (2.60) approximated fine structure constant is. $P_1$ and $P_2$ become by the imaginary structural units $\kappa_{(1)}$ and $\kappa_{(2)}$ caused. They are more weakly together coupled than the b-Hermetrie to the load field. The constant $\alpha_3$ has as the strongest coupling a value of $ß \approx 1$. Thus is

$$u_0 = 2/3\, (ß + 2a) \quad (7.11)$$

[x] In order to give to the reader an impression, what is meant with it, the derivative is to be treated briefly. According to the rules of the Metronenrechnung each cell sequence can $a_n = \varphi(n)$ as metronische function understood
become, which is defined as follows:

From this

$$\varphi(n) = \varphi(n-1) + \varphi(n-2). \quad (A.1)$$

follows:

$$\varphi(n-2) = \varphi(n) - \varphi(n-1) = \Delta\varphi(n) = \Delta\varphi(n)/\Delta n \quad (A.2)$$

and also

$\varphi = \varphi(n)$:
$$\Delta^2 \varphi = \Delta[\varphi - \varphi(n-1)] = \Delta\varphi - \Delta\varphi(n-1) =$$
$$= \Delta\varphi - \varphi(n-1) + \varphi(n-2) \quad (A.3)$$

With the substitution of (A.2) in (A.3) arises

$$\Delta^2 \varphi = 3\, \Delta\varphi - \varphi \quad (A.4)$$

or as *selector equation:* $\Delta^2(\ ) - 3\,\Delta(\ ) + (\ ) = 0$.

For $\varphi(n)/\varphi(n-1) > 1$ exists a limit value $\xi > 1$:

$$\lim_{n\to\infty} \varphi(n)/\varphi(n-1) = \lim_{n\to\infty} \varphi(n-1)/\varphi(n-2) = \xi \quad (A.5)$$

Equation (A.1) divided through $\varphi(n-1)$ leads on the limit value

$$\xi = \lim_{n\to\infty} \varphi(n)/\varphi(n-1) = 1 + \lim_{n\to\infty} \varphi(n-2)/\varphi(n-1) =$$

$$= 1 + [\lim_{n\to\infty} \varphi(n-1)/\varphi(n-2)]^{-1} = 1 + 1/\xi \quad (A.10)$$

and/or. $\xi^2 - \xi = 1$, and with the condition $\xi > 1$ up

$$\boxed{\xi = \tfrac{1}{2}(1 + \sqrt{5})} \quad (A.11)$$

a constant, which describes the Fibonacci series.

and also $a = \alpha/16\pi e$ and shortening

$$f = ß + \alpha/(8\pi e) \tag{7.12}$$

as well as $m_1 - m_e = u_0 m_1$ one results opposite (2.63) **corrected measures of the electron:**

$$m_e = m_1(1 - u_0) \tag{7.13}$$

$$m_0 = \frac{4}{cs_0}\sqrt[4]{\pi}\sqrt[3]{3\pi s_0 \gamma \hbar}\sqrt{\frac{c\hbar}{3\gamma}} \tag{7.14}$$

$$m_e = \frac{m_0}{\eta\sqrt[3]{\eta}}[1 - 2/3(f\xi\eta^2(1-\sqrt{\eta})] \tag{7.15}$$

with (7.10), (7.11) and (7.12), which agrees with the empirical value.

The measures $m_0$ could possibly as measures of a Lepto neutrino $\nu_L$ and $m_{(0)}$ as those of the Bary Neutrino to be interpreted.

For $N = 1$ becomes the Protosimplexkombinationen, which the masses of the unit structures $m_e$, $m_0$ and $m_{(0)}$ form, by the combination of the ponderablen inertia

$$(\pm(1,4))_x\,,\,(+7)_x \;\hat{=}\; \mu_+ = m_{(0)} - m_0 \tag{7.16}$$

and in the case of the D-Hermetrie still by the condensations for the load field given:

$$(\pm(2,3,5))_d\,,\,(-6)_d \;\hat{=}\; \mu_- = m_e - m_0 \tag{7.17}$$

The measures $\mu_S$ the Stratonspins, which is defined by the Konjunktorfeld, reads:

$$\mu_S = m_{(0)} - m_e\,, \tag{7.18}$$

how $m_{(0)} = m_e/\eta$ a neutral complement too $m_e$ is. Thus is the Partialmassen:

$$\left.\boxed{\begin{aligned} \mu_+ &= 4\,\mu\,\alpha_+ \\ \mu_- &= 4\,\mu\,\alpha_- \\ \mu_S &= (1 - \alpha_-/\alpha_+)\,\mu_+ \\ \mu &= m_0/4 \end{aligned}}\right\} \tag{7.19}$$

With (7.19) and (7.14) become the conditional equations for $\alpha_\pm$:

$$\eta^2(1 + \alpha_+) = \eta(1 + \alpha_-) = \frac{1}{\sqrt[3]{\eta}}\{1 - 2/3[\xi\eta^2(1-\sqrt{\eta})]\} \tag{7.20}$$

The elementary masses $M(c,d)$ sits down from the components that $(\pm p)$ and from that Portion of the Konjunktorgefüges $M_S$ as well as - in the case of the D-Hermetrie - from a load portion $M_q$ together:

$$M(c,d) = M_P + M_S + M_q\,. \tag{7.21}$$

In the taper ratio of the Feldgleichungen (6.6) is the stencil spectrum a power density tensor $W_{ik}{}^{(\kappa\lambda)}{}_{(\mu\nu)}$ proportionally, the one matter tensor $M_{ik}{}^{(\kappa\lambda)}{}_{(\mu\nu)}$ corresponds:

$$W_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \sim \Delta V \, M_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} . \tag{7.22}$$

The metronische volume element $\Delta V_s$ of the $R_3$ is not clear, because $0 \leq s \leq 3$ Coordinates metronische constants to be can. It gives from there 4 possible volume elements, $\Delta_V =$

$\Delta/\Delta V_s$ und $\Delta V_s = \beta_s \prod_{k=1}^{3-s} \Delta_k(\;)$ und $\beta_s = \text{const}$.

It is

$$\Delta_V \, M_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \sim \lambda_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \left[{}^{\kappa\lambda}_{\mu\nu}\right]_+ . \tag{7.23}$$

The right side is a tensor of the spatiotemporal effect density and describes the condensation condition as well as because of $\lambda_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \perp \mathbf{Y}$ the inertia condition of a group of couplings $(\pm p)^{(\kappa\lambda)}_{(\mu\nu)}$. The Metronendifferenzial $\Delta_V(\lambda_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \left[{}^{\kappa\lambda}_{\mu\nu}\right]_+) \sim \mu_+ \, P_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)}$ is a change tensor the Protosimplexladungen $P_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)}$ proportionally. The Protosimplexladung can itself in each case change around a constant value. The change tensor and/or - selector, which affects the whole numbers N, consists of an imaginary and a real part:

$$P_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \,;\, N = G_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} + i \, F_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} . \tag{7.24}$$

For the ponderablen terms only that is real part of the selector determining, which depends on the dynamic condition of the internal korrelativen coupling structure. In the condition of the unimpaired dynamic equilibrium that is real part

$$\Re e P^{(\kappa\lambda)}_{jk(\mu\nu)} ; N = A^{(\kappa\lambda)}_{ik(\mu\nu)} = const \, . \, . \tag{7.25}$$

With the basis dynamics of a reciprocal effect or with the decay of a term into deeper energetic levels an imaginary portion places $i \; F_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)}$ the changes. $F_{ik}$ implied an energetic fluctuation margin of all ponderablen terms. These sizes are a measure for the life lasting of the C and D-terms.

That real part of (7.23) is

$$\Delta_V \, M_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \sim \Re e \, \Delta( \lambda_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \left[{}^{\kappa\lambda}_{\mu\nu}\right]_+) \sim \Re e \, \mu_+ \, P_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} = \text{const.} \, . \tag{7.26}$$

the track evaluation supplies:

$$\Delta\Delta_V \, spM_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \sim \mu_+ \, spP_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} . \tag{7.27}$$

For that $R_3$-Volume element $\Delta V_s$ exist because of $0 \leq s \leq 3$ four konfigurative Existence zones of the correlating condensor lens rivers (i.e. Protosimplexe) in the area. Therefore can in each case within a konfigurativen range over the condensor lens signatures defined in it $\varepsilon = \varepsilon(s)$ are summed up. With natural whole numbers $N \geq 0$ becomes from tensors to metaphorical sizes in the zones s changed over, accordingly

$$\sum_{\varepsilon} M_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \; ; N = M_{s+1} \quad \text{und} \quad \sum_{\varepsilon} P_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} \; ; N = P_{s+1} = \text{const} \tag{7.28}$$

Thus becomes

$$\Delta\Delta_V M_{s+1} = (\Delta^2/\Delta V_s) M_{s+1} = B_{s+1}\, \mu_+ , \tag{7.29}$$

or

$$\Delta^2 M_{s+1} = \mu_+ \alpha_{s+1} \prod_{k=1}^{3-s} \Delta_k \nu_k , \tag{7.30}$$

with $\alpha_{s+1} = B_{s+1} ß_s$. The integration supplies:

$$\Delta M_{s+1} = \mu_+ \alpha_{s+1} \prod_{k=1}^{3-s} \nu_k \tag{7.31}$$

(for $s = 3$ is). Becomes a spherical symmetry in $R_3$ provided, then is

$$\prod_{k=1}^{3-s} \nu_k = 1$$

$\nu_k = \nu_{k+1} = \nu$ and thus after metronischer integration

$$\boxed{M_{s+1} = \mu_+ \alpha_{s+1} \, \mathbf{S}\, v^{3-s}} \tag{7.32}$$

According to the rules follows the metronischen integration for

$$s = 0 : \quad M_1 = \mu_+ \alpha_1 \, ¼ \; N_{(1)}{}^2 (N_{(1)} + 1)^2, \tag{7.33}$$

$$s = 1 : \quad M_2 = \mu_+ \alpha_2 \, 1/6 \; N_{(2)} (2N_{(2)}{}^2 + 3N_{(2)} + 1), \tag{7.34}$$

$$s = 2 : \quad M_3 = \mu_+ \alpha_3 \, ½ \; N_{(3)} (N_{(3)} + 1), \tag{7.35}$$

$$s = 3 : \quad M_4 = \mu_+ \alpha_4 \; N_{(4)}. \tag{7.36}$$

The inertia portion of the Protosimplexe $M_P$ out $M$ therefore is:

$$M_P = \sum_{j=1}^{4} M_j \, . \tag{7.37}$$

This quadruple outlining is a fundamental characteristic of all stratonischen elementary structures (i.e. C and D-Hermetrieformen).

The Stratonmassen $M_S(c,d)$ with the calibration factor $\mu_S$ after (7.19) must a function $F_S$ proportionally its and because of (6.19) on the quantum numbers P and Q, on the Kopplungszahl k and on the quantum number q of the load field depend. Thus follows (in continuation of the j Counting):

$$M_S = M_5 = \mu_S \, F_S(k,P,Q,q) \tag{7.38}$$

and after (6.19):

$$M_5 = \mu_+ \left(1 - \frac{\alpha_-}{\alpha_+}\right) F_S \tag{7.39}$$

(Telex is independent of q). The measure portion of the load field is

$$M_q = M_6 = \mu_- q = \mu_+ q \, \frac{\alpha_-}{\alpha_+} . \tag{7.40}$$

thereby exposes itself the total mass together:

$$M(c,d) = \sum_{i=1}^{6} M_i := \mu_+ [\, ¼\, \alpha_1 N_{(1)}^2(N_{(1)} + 1)^2 + 1/6\ \alpha_2 N_{(2)}(2N_{(2)}^2 + 3N_{(2)} + 1) +$$

$$+ ½\, \alpha_3 N_{(3)}(N_{(3)} + 1) + \alpha_4 N_{(4)} + (1 - \frac{\alpha_-}{\alpha_+})\, F_S + q\frac{\alpha_-}{\alpha_+}\,] \qquad (7.41)$$

Therein the sequences of numbers must $N_{(j)}$ , $\alpha_j$ and the spin functions $F_S$ are determined. $N_{(j)}$ are Zeitfunktionen, itself from integral time parameters $n_{(j)}(t)$and constant quantum numbers $Q_j$ build up: $N_j(t) = n_j(t) + Q_j$ . Those $1 \le j \le 4$ Consequences become alternatively with 1, 2, 3, 4 or n, m, p, $\sigma$ symbolized, because with this conditions regarding that Protosimplexbesetzungen into that $R_3$-Outlining to be described can. Is n = m = p = $\sigma$ = 0, t h e n it concerns through $Q_j$ descriptive initial states. There those Protosimplexladungen N with condensation stages $\lambda_{ik}{}^{(\kappa\lambda)}_{(\mu\nu)} = N\ \lambda_0{}^{(\kappa\lambda)}_{(\mu\nu)} \perp \mathbf{Y}$ (also $N \equiv N^{(\kappa\lambda)}_{(\mu\nu)}$, are as before written) identical and $\lambda_{kl}$ always normally to the respective Flukton $(-p)^{(\kappa\lambda)}_{(\mu\nu)}$ and/or to the Fluktonspin $\boldsymbol{\sigma}$ , gives it runs for that $(\pm p)$ - Condition always two Attitude possibilities $(-1)^r = \pm 1$, if r the metric-combinatorial distribution characteristic structural quantum number is.

The number of the condensation stages and/or the basic rivers in a specific $(\pm p)_x$ is $\kappa$. Each basic river L has a river spin $\sigma_L{}^{(\kappa\lambda)}_{(\mu\nu)}$ with $1 \le L \le \kappa$.

For all Fluktonen is valid $\sigma_L{}^{(\kappa\lambda)}_{(\mu\nu)} \,||\, \lambda_0{}^{(\kappa\lambda)}_{(\mu\nu)}$ , i.e. $\cos(\lambda_0, \sigma_L) = (-1)^L$.

The number of the alternating $\sigma_L$ - Attitudes $(-1)^L$ in the case $\lambda_0{}^{(\kappa\lambda)}_{(\mu\nu)}$ is $Z^{(\kappa\lambda)}_{(\mu\nu)\kappa} \equiv Z_\kappa$ . With $N = 1$ would be the Metrondifferenzial of the order $\kappa$ , that of the direction $(-1)^L$ formed will can:

$$Z_\kappa = |\Delta^k(-1)^L| = 2^\kappa\,|(-1)^L| = 2^\kappa. \qquad (7.42)$$

and for the whole of alternating attitudes: $Z = 2\ Z_\kappa$. $Z_\kappa$ one can also as density Distribution $Z_V$ in accordance with $Z_\kappa = \Delta_\kappa Z_V$ or $\Delta Z_V = Z_\kappa\ \Delta\kappa$ are regarded. The metronische Integral is:

$$Z_V = \underset{\kappa}{S}\left|\Delta^\kappa(-1)^L\right|\Delta\kappa = \left|\Delta^{\kappa-1}(-1)^L\right| = ½\, Z_\kappa|(-1)^L|\,. \qquad (7.43)$$

Occupations of the initial states $Q_j$ become with the numbers $\kappa$ : $Z_\kappa = 2^\kappa$, $Z = 2\ Z_\kappa$ and $Z_V = ½\ Z_\kappa$ determined.

Those $R_3$-Outlining the stratonischen term is by occupations with Protosimplexzahlen $N_{(j)}$ in (7.33) to (7.36) given:

$$G_1 = ¼\ N_{(1)}^2(N_{(1)} + 1)^2, \qquad G_2 = 1/6\ N_{(2)}(2N_{(2)}^2 + 3N_{(2)} + 1),$$
$$G_3 = ½\ N_{(3)}(N_{(3)} + 1), \qquad G_4 = N_{(4)}. \qquad (7.44)$$

The Protosimplexbesetzungen rises in $j=1$ cubically, in $j=2$ squarely and in $j=3$ linear on. Thus inertia densities can $\eta_j$ are defined: $\eta_j = G_j/N_j$. It is $\eta_1 \ge \eta_2 \ge \eta_3 \ge \eta_4 = 1$.

Outlining also $j = 4$ as an **external zone** one understands, in which by powers by correspondences reciprocal effects to be mediated can. $j = 1$ becomes as **Central zone of the n-**outline marks. $j = 2$ is the **internal zone of the m-**structure, and $j = 3$ as **Mesozone of the p-**Stuktur one defines.

A ponderable elementary structure exists in this picture of a very close impenetrable core, is surrounded from a field range, whose mosaic structure exhibits different reciprocal effects. The Mesozone is regarded as source outline of the correspondence fields in the external zone.

**The configuration number of** k is the condensor lens number possible elementary Protosimplexe in the same metric Unterraum. It is $r^{(\kappa\lambda)}_{(\mu\nu)}$ a radius of the Fluktons $(-p)_{x}{}^{(\kappa\lambda)}_{(\mu\nu)}$ in $R_3$, that

the curvature measure in $|\lambda_0{}^{(\kappa\lambda)}_{(\mu\nu)}| = k/\varepsilon^{(\kappa\lambda)}_{(\mu\nu)}$ by an integral amount increases. It is also $|\lambda_0{}^{(\kappa\lambda)}_{(\mu\nu)}| = \kappa / r^{(\kappa\lambda)}_{(\mu\nu)}$ , from what $\kappa = r^{(\kappa\lambda)}_{(\mu\nu)}\ k/\varepsilon^{(\kappa\lambda)}_{(\mu\nu)}$ follows and also $r = k\varepsilon$ again $\kappa = k^2$.

That means:

$$Z_\kappa = Z_k = 2^{k^2} . \qquad (7.45)$$

Thus the temporally constant Protosimplexbesetzungen in the **configuration zone** can $j$=n, m, p, $\sigma$ a stratonischen term out $Z_k$ are derived. The difference between $Q_p$ and Z must have the value 2 as amount. From this follows:

$$\begin{aligned} Q_n &= Z - Z_V, \\ Q_m &= Z - 1, \\ Q_p &= Z + 2(-1)^k, \\ Q_\sigma &= Z_k - 1. \end{aligned} \qquad (7.46)$$

The factors still which can be determined $\alpha_j$ , in $\mu_j = \mu_+\ \alpha_j$ occupations that Configuration zones by the inertia measure express, are to the Konjunktorstruktur of the Protosimplexgefüge to be due.

Out (2.61) the following relationship lets itself deduce:

$$\left(\frac{\mu f}{M}\right)^4 = \eta_q^4 = 1 + q^4\left(\frac{a'\varepsilon_{o\pm}R_-}{2\pi h}\right)\sin^2\left(\frac{2Nh}{a' q^2 \varepsilon_{o\pm}^2 R_-}\right) \qquad (7.47)$$

with the

shortening $f = \sqrt[4]{2n} / \sqrt{2n-1}$ , $\mu = \sqrt{\frac{ch}{\gamma}}$ und $a' = (2/3\ \pi^2 a)^2$ .

In it is $\varepsilon_{0\pm}$ out (2.43) set, however around a difference $\Delta\varepsilon_{0\pm} = \varepsilon'_{0\pm} - \varepsilon_{0\pm} > 0$ is smaller as that outward effectively becoming load field $\varepsilon'_{0\pm}$. Because of the 4th power in the mass ratio (7.47) also the load field in the 4th power becomes effective. Thus is $\Delta(\varepsilon_{0\pm}^4) = (\varepsilon_{0\pm}'/\varepsilon_{0\pm})^4 - 1$ to set. Is $L = L(R_3)$ the number of dimensions more condensing Procedures, then the basis quantum number becomes $k = L\ \Delta\varepsilon_{0\pm}^4 = 4\ \Delta\varepsilon_{0\pm}^4$ and with it:

$$\varepsilon_{0\pm}' = \varepsilon_{0\pm}\sqrt[4]{1 + k/4} = \pm\frac{3}{\pi^2}\sqrt{\frac{\hbar}{R_-}}\sqrt[4]{1 + k/4} . \qquad (7.48)$$

This relationship assigned in (7.47) results in the case of the demand for extremal, for those $\sin^2(\ ) = 1$ to set is:

$$\left(\frac{\mu f}{M}\right)^4 = 1 + q^4\left(\frac{a'\varepsilon_{o\pm}^2 R_-}{2\pi h}\sqrt{1+k/4}\right)^2 =$$

$$= 1 + q^4\left(\frac{a^2}{\pi^2}\sqrt[4]{1+k/4}\right)^2 = 1 + \left(\frac{q}{4}\right)^4(4+k), \qquad (7.49)$$

how $a = \sqrt{2}$ one set. For a Protosimplexmasse M within the internal structure a load field arises:

$$M = \mu\,\pi\,f\,[\pi^4 + q^4(4+k)]^{-1/4} \qquad (7.50)$$

and during introduction of the factor $r \backslash$
$kq$

$$\boxed{\eta_{kq} = \sqrt[4]{\frac{\pi^4}{\pi^4 + q^4(4+k)}}} \qquad (7.51)$$

is

$$M = \mu\,f\,\eta_{kq}. \qquad (7.52)$$

For $q=0$ is $\eta_{0k}=1$. $k=0$ goes $\eta_{q0}=\eta_q$ into the factor describing the external load field (2.48) over. $\eta_{kq}$ determines the konfigurativ metric interior structure of the concerned stratonischen Hermetrieform. Similarly to the derivation of (2.59) the internal load field components for the reduced field can be indicated through:

$$e_\rho = \varepsilon_{0\pm}\sqrt{\eta_{kq}}\,, \qquad (7.53)$$

$$\varepsilon_\omega = \tfrac{1}{2}(\varepsilon_{0\pm} + e_\rho) = \tfrac{1}{2}\varepsilon_{0\pm}(1 + \sqrt{\eta_{kq}}), \qquad (7.54)$$

$$\varepsilon_\delta = \varepsilon_{0\pm} - e_\rho = \varepsilon_{0\pm}(1 - \sqrt{\eta_{kq}}). \qquad (7.55)$$

In analogy to the measurable external field $e_\pm$ a field would have eC in the correlation center appear:

$$e_C = \varepsilon_{0\pm}\sqrt{\vartheta_{qk}/8} \qquad (7.56)$$

with

$$\boxed{\vartheta_{qk} = 5\eta_{qk} + 2\sqrt{\eta_{qk}} + 1} \qquad (7.57)$$

## 8. Fine structure constant and the electromagnetic field

So far one examined, how the features of the world come due to the dynamics of metronisierten geometry in principle. Due to the existence of three real coordinates of the $R_6$ develop static fields, which are coupled at particles. Particles are formed from systems by dynamic structural processes, which due to the real and further three imaginary coordinates of the $R_6$ develops, whereby the imaginary periodic exchange processes of maxima and minima of the deformation of the local metronischen lattices in the Unterräumen of the $R_6$ cause and structural rivers form, which can be combined into river systems.

Such exchange processes take place everywhere in the subject-free continuum, since the Metronengröße before some $10^{18}$ Years enough had become small, in order to bring out sufficiently large deviation from the pseudoEuclidean lattice, and correspond with „vacuum fluctuations ". (By the evolution of the Metronenanzahl the cosmological principle injured). With complex systems, with which after different korrelativen exchange procedures always starting situation is stopped, such a structural river system remains at least one time long stable and possesses a spin, which tries to adjust itself orthogonal to the cosmological expansion speed and from there inertia shows. With river systems, which do not take again a defined initial condition, are formed due to the short existence of the Partialflüsse no inertia. This structural dynamics correspond with virtual energies, which observabel are not. Only few river systems (Protosimplexe) exist, which join themselves as coupled structures over Konjunktive to temporally stable things and go observabel into action.

If all of such structural complexes are admit and over their inertia structures also their masses, then also reciprocal effects between them can be understood geometrically. As the simplest case home treats first the hydrogen atom built up from electron and proton and deduces from it the fine structure constant. Also the geometrical causes for the electromagnetic field can be deduced from the Feldgleichungen for the microbe realm, if into the macro range one approximates.

1. D a i n (2.59) was not considered the interior structure of the D-terms in the derivation of the load, arose a deviation for $(e^-)^2 \sim \alpha'$ of the empirical value for $\alpha$.
One assumed the interior structures of the electron and the proton in the hydrogen atom do not change, if the electron $e^-$ as consequence of the elektromagnetichen reciprocal effect and/or correspondence in the K-bowl of the proton field as s-term one binds. The correspondence changes the Protosimplexbesetzungen of the internal zones of $e^-$ and p not. But those $R_3$ - Structuring of these occupations of the respective Stratons of $e^-$ and p obviously change in the way that $\alpha' \neq \alpha$ becomes.

The load $e^-$ becomes up $\varepsilon = +1$ referred. The state of charge of the proton $e^+$ becomes through $\varepsilon =$ -1 interpreted. From there it is accepted that those the loads $e^-$ in the electron and $e^+$ in the proton determining Protosimplexkorrelationen itself to each other how $\varepsilon = +1$ and $\varepsilon = -1$ held back.
The electron and the proton remain by the temporally stable invariant basic patterns $(+(127))(\pm(345))(-6)$ received. The Partialstruktur of the electron becomes through

$$(+(127))_e^+ \, (\pm(34))_e^+ \quad \text{and} \, (\pm(5)_e^+ \, (-6)_e^+$$

described, those of the proton and its load field (an anti-electron load) through

$$(+(127))_p^+ \, (\pm(34))_p^+ \quad \text{and} \, (\pm(5)_e^- \, (-6)_e^-$$

The reciprocal effect takes place over $(\pm 3)$ time-like, because $(\pm 5)$ over $(-6)$ the source structure of $(\pm 3)$ is. Outside of the having COM with the volume $4/3\ \pi r_H^3$ are the structures $(\pm 5)\ (-6)\ (\pm 3)$ irrelevant. Therefore the mutual correspondence is between $e^-$ and p a dynamically stable correspondence structure:

$$[+(127))_e \, (\pm 4))_e] \ -(2)- \ [(\pm 4))_p \, (+(127))_p].$$

The correspondences can from the potentials of internal load field components $\varepsilon_\rho$ , $\varepsilon_\omega$ , $\varepsilon_\delta$ and the not-reduced load field $\varepsilon_{0\pm}$ are understood.

If the index y for $\rho$, $\omega$ and $\delta$ stands, is $V'(y, \varepsilon)$ the internal potential between $e_y$ and $\varepsilon_{0\pm}$ for $k = 1$ mean. $V''(y, \varepsilon)$ is according to the potential of p for $k = 2$. Then those become Portions of the Internpotenziale $\varphi(y)$ opposite the unchanged in the H-system($e^-$, p), if $\Delta V$ the metronische differential of V meant, described through[xi]

$$\varphi(y) = \frac{\Delta V'(y,\varepsilon)}{V'(y,\varepsilon)} + \frac{\Delta V''(y,\varepsilon)}{V''(y,\varepsilon)}, \qquad f\,\varphi(\rho) + \varphi(\omega) = \varphi(\delta) \tag{8.1}$$

The factor f in first addends in (8.1) is justified as follows: By the external reduced load field $e_r = \varepsilon_\pm \sqrt{\eta}$ the proton and the electron in the hydrogen atom the deformation of the metronische cell structure of the area is caused, what by a vectorial function $\boldsymbol{\varphi}(n)$ the Metronenziffer n is described. If $\mathbf{p}$ over $\Delta\boldsymbol{\varphi}$ changed field vector $\mathbf{p} \| \boldsymbol{\varphi}$ is: $\mathbf{p} = \boldsymbol{\varphi} - \Delta\boldsymbol{\varphi}$, then it can be accepted that two further Vector fields $\mathbf{f}$ and $\mathbf{X}$ exist, for those $\mathbf{O}$ $(\mathbf{f}, \boldsymbol{\varphi}) = \gamma$ , $\mathbf{O}$ $(\mathbf{X}, \mathbf{f}) = \pi/2 - \gamma$ and $\mathbf{X} \perp \mathbf{p}$ is valid. $\gamma$ is an elevation angle regarding the Niveauflächen of the field structure of the deformation cell area. Assumed $\mathbf{f}$ and $\boldsymbol{\varphi}$ are regarding $\gamma$ constantly. Then are the metronischen differentials $\Delta_\gamma \mathbf{f}=0$ and $\Delta_\gamma \boldsymbol{\varphi} =0$, however $\Delta_\gamma \mathbf{X}\neq 0$. Then the connection can

$$\mathbf{p} \times \Delta_\gamma \mathbf{X} = \mathbf{f} \times \boldsymbol{\varphi} \tag{8.2}$$

are conceived. On the other hand it must a function $\mathbf{Z}$ give, those with the potential V, that between that to the reduced outside potential $V_{\varepsilon\varepsilon}$ and the potential existing in the distance r $V_{rr}$ (between electron and proton) lies, in the connection $V\Delta Z=Z\Delta V$ stands. Those Integration becomes between the borders $X_0<X<X$, $Z_0<Z<Z_1$ and $V_{\varepsilon\varepsilon}<V<V_{rr}$ made. Out (8.2) the amount results:

$$p\,\Delta_\gamma X = f\,\varphi(n)\sin\gamma, \tag{8.3}$$

or because of $p=\varphi-\Delta\varphi=\varphi(n - 1)$:

$$\Delta_\gamma X = f\,\frac{\varphi(n)}{\varphi(n-1)}\sin\gamma. \tag{8.4}$$

The approximation for large Metronenziffern $n \to \infty$ results in for $\boldsymbol{\varphi}$ the limit value:

$$\lim_{n\to\infty}\frac{\varphi(n)}{\varphi(n-1)} = \xi \tag{8.5}$$

with $\xi = ½(1+\sqrt{5})$ after A5 to A11, follows for (8.4):

$$\lim_{n\to\infty}\Delta_\gamma X = dX/dy = f\xi\sin y. \tag{8.6}$$

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[xi] In the volume 2 (home 1984) the metronische cell structure became by the fields deformation $R_3$ yet does not consider, i.e. the factor f is missing in the product $f\varphi(\rho)$ in (8.1). The representation corrected above becomes in
Appendix of the 2nd edition of volume 1 (home 1989) supplied.

The integration supplies:

$$X_1 = f\xi \int_0^{\pi} \sin\gamma d\gamma = 2f\xi . \tag{8.7}$$

During the border process is valid: $\lim_{n\to\infty} \Delta Z / \Delta V$ =Z/V and after

$$\int_{Z_0}^{Z_1} d\ln Z = \int_{V_{\varepsilon\varepsilon}}^{V_{rr}} d\ln V \tag{8.8}$$

is valid: $Z_1/Z_0 = V_{rr}/V_{\varepsilon\varepsilon}$ .

With the distance y is $V_{\varepsilon\varepsilon} = (1/4\pi\varepsilon_0)(1/y)\,\varepsilon_\pm^2$ and $V_{rr} = (1/4\pi\varepsilon_0)(1/y)\, e_r' e_r''$ with $e_r' = \varepsilon_- \sqrt{\eta}$ for the electron and $e_r'' = \varepsilon_+ \sqrt{\eta}$ for the proton. Because always $Z_0=1$ to be set may, becomes:

$$Z_1/Z_0 = e_r' e_r'' / \varepsilon_\pm^2 = - \eta = Z_1. \tag{8.9}$$

There $Z_1$ the phenomenological effect of $X_1$ is, can $X_1=Z_1$ are set.
Therefore is $2\xi f = - \eta$. Thus the heuristic beginning in the form (8.1) can be written:

$$- f\,\varphi(\rho) = \varphi(\delta) - \varphi(\omega)$$

which supplies with the varying of potential conditions assigned:

$$-f\left(\frac{\partial V'(\varepsilon\rho)}{V'(\varepsilon\rho)} + \frac{\partial V''(\varepsilon\rho)}{V''(\varepsilon\rho)}\right) = \frac{\partial V'(\delta)}{V'(\delta)} - \frac{\partial V''(\omega)}{V''(\omega)} + \frac{\partial V''(\delta)}{V''(\delta)} - \frac{\partial V'(\omega)}{V'(\omega)} . \tag{8.10}$$

That leads after metronischer integration with the integration constant $\ln A = const$ up:

$$- f \ln V'_p - f \ln V''_\rho + 2 \ln V_{\varepsilon\varepsilon} + \ln A = \ln V'_{\varepsilon\delta} - \ln V''_{\varepsilon\omega} + \ln V''_{\varepsilon\varepsilon} - \ln V'_{\varepsilon\omega} \tag{8.12}$$

Begin of $f(r)V_{(\,)(\,)} \sim e_{(\,)}\, e_{(\,)}$ with the internal load field components after (7.35) to (7.55) results in after the exponentiation for k = 1 and/or 2:

$$A = 4 \sqrt{\eta_{11}}^{\,f} \sqrt{\eta_{12}}^{\,f} \left(\frac{1-\sqrt{\eta_{11}}}{1+\sqrt{\eta_{12}}}\right)\left(\frac{1-\sqrt{\eta_{12}}}{1+\sqrt{\eta_{11}}}\right) \tag{8.13}$$

or also $s = f/2$ and $k = 1, 2$:

$$A = 4 A_1 A_2 , \qquad A_k = \left(\frac{1-\sqrt{\eta_{1k}}}{1+\sqrt{\eta_{1k}}}\right)\eta_{1k}^{s} , \qquad s = - ¼\, \eta/\xi \tag{8.14}$$

Through $\eta_{11}$ or $\eta_{12}$ characterized interior structuring of the D-terms loaded with q = 1 is linked with the external field by reciprocal effect:

$$V f(y)\, 4 \pi \varepsilon_0 = e_+ e_- = - e_-^2 \tag{8.15}$$

The kinetic energy of the $(e^-, p)$-System is E, its potenzielle energy Xth ways that Conservation of energy must the change

$$d(E + X) = 0 \tag{8.16}$$

its. The potenzielle energy X must between one by the reciprocal effects of the load fields produced energy W and a maximum V to lie. Becomes for $W \sim A_1A_2V$ or $W = C\ V$ with $C = C(\eta_{11},\eta_{12})$ set, then follows out (8.6):

$$-E_k = \int_W^V dX = V - W = V(1 - C). \tag{8.17}$$

For the distance between $e^-$ and p can $f(y) = y$ are written. With (8.15) is valid:

$$e_-^2(1 - C) = 4\,\pi\,\varepsilon_0\, y\, E_k. \tag{8.18}$$

Those is also not speed which can be neglected itself $v = v_H < c$ on the K-bowl the p-field of moving electron, which is understood as corpuscle, then determines $v_H = c\ \alpha$ the looked for constant of the coupling. Is $s_H = 2\pi\ r_H$ the length of a Schalenmeridians, that by the relativistic movement up $s=2\pi y<s_H$ appears shortened, then is $s=s_H\sqrt{1-\alpha^2}$ and/or. $y=r_H\sqrt{1-\alpha^2}$

With the impulse $mv_H$ the electron is $E_k=m\ v_H\ c = \alpha\ m\ c^2$. Assigned in (8.18) this results in:

$$e_-^2(1 - C) = 4\,\pi\,\varepsilon_0\, r_H\, \alpha\sqrt{1-\alpha^2}\, m\, c^2 \tag{8.19}$$

and also $m\ c^2 = h\nu_H = ch/\lambda_H = ch/(2\pi\ r_H)$ and $R_- = 1/\varepsilon_0\ c$ follows:

$$e_-^2(1 - C) = 4\,\pi\,\alpha\sqrt{1-\alpha^2}\ \hbar\,/\,R_-. \tag{8.20}$$

Substituted with (2.59) arises:

$$\alpha\sqrt{1-\alpha^2} = \frac{9\vartheta}{(2\pi)^5}(1-C) \tag{8.21}$$

Opposite (2.60) C is the correction contribution. Because $A_1A_2 << 1$ the structural deviation that Load fields of $e^-$ and p in the case of the correspondence to the H-atom by internal load field components, may approach describes $C \approx A_1A_2$ are set. Those **Sommerfeld- Fine structure constant** $\alpha^2_\pm$ is with (8.14):

$$\boxed{\begin{aligned} \alpha_\pm^{-2} &= B\,(1\pm\sqrt{1-2/B}) \\ \text{mit}\quad B &= \tfrac{1}{2}\left[\frac{(2\pi)^5}{9\vartheta}\right]^2 (1-A_1A_2)^{-2} \end{aligned}} \tag{8.22}$$

Numerically the reciprocal values result for the positive and for the negative branch:

$$\boxed{\begin{aligned} \alpha_{(+)}^{-1} &= 137{,}0359895 \\ \alpha_{(-)}^{-1} &= 1{,}000026627 \end{aligned}} \tag{8.23}$$

The empirical value for $\alpha_{(+)}^{-1}$ by the Particle DATA Group CERN is indicated 2002 as 137,03599976 (50). The negative branch represents a very strong coupling, which probably the internal correlations between the quasikorpuskulären ranges shows. (Home in its mass formula gives still far corrected formula for the fine structure constant 1989, for which the theoretical development does not have to be indicated and be found still from the documents.)

2. At high density and temperature those can $(p,e^-)$-Correspondence in the hydrogen atom under the radius $r_H$ the K-bowl to be brought, so that $p$ and $e^-$ the exponential proximity effect fields that $(-7)$ (after 4.24) affect, so that the reciprocal effect also over those $(\pm 4)$ runs. It comes to a something more stronger than the electromagnetic reciprocal effect, which appears as *load field correspondence*. Because the enantiostereoisomeren Partialstrukturen $(\pm 5)$ and $(-6)$ the load fields $e_+(p)$ and $e_-(e^-)$ with their $(\pm 3)$ of the electromagnetic exchange of two b-Hermetrieformen come here to the compensation, while the correspondences through $-(\hat{1},\hat{2},\hat{3})-$ one marks. The one which can be spent Amount of energy is E. then the transition from the electromagnetic correspondence to the load field correspondence descriptive through:

$$[(+(127))_p(\pm 4)_p](\pm 5)_e^-(-6)_e^-(\pm 3)-(\hat{2})-(\pm 3)(-6)_e^+(\pm 5)_e^+[(\pm 4)_e(+(127))_e] + E \rightarrow$$
$$\rightarrow [(+(127))_p](\pm 4)_p -(\hat{1},\hat{2},\hat{3})- (\pm 4)_e[(+(127))_e] . \qquad (8.24)$$

This relationship corresponds to the transition to the neutron $(p, e^-) \rightarrow n$. There the quantum numbers
to remain invariant to have still another „field catalyst must be involved ", which places this invariance reliably. The load field correspondence corresponds to the structure of the neutron; the hydrogen atom becomes by the electromagnetic correspondence $(p, e^-)$ held together.

Because of the calibration invariance in correlating river aggregates (- p) and their absence in Screen fields, steps with neutrons and with the H-atom only $(+(127))$ in the outside $R_3$ up. Those electromagnetic correspondence that Z-subject negative electron sheath $Ze^-$ with the load $Ze^+$ from Z the nuclide of any atom structured, only one superposition of subnuklearer screen field triads lets protons in the outside area $(+(127))$ appear. In $R_3$ appropriate $R_6$-Structure becomes of $(+1)$ in $x_5$ and $x_6$, as well as $(+7)$ in $R_3$ and in the time field $x_4$ determined. The projection of $(+1)$ up $(+7)$ appears then in $R_3$_ as gravitational field, that during strong approach into the exponentially rising proximity effect field of $(+7)$ turns into.

Electromagnetic processes are determined of the b-Hermetrie. The electrical field can be only one screen field, i.e. the basis and the retort signature of these condensor lenses are

directly. The screen fields represented through $\left[\overset{\frown}{\begin{smallmatrix} ab \\ ab \end{smallmatrix}}\right] \equiv [ab]$.

For $(+(127))$ are valid correspondences $(+1) \equiv [1]$, $(+2) \equiv [2]$ and $(+7) \equiv [3]$, whereby e.g.

$[1] \equiv \left[\overset{\frown}{\begin{smallmatrix} 11 \\ 11 \end{smallmatrix}}\right]$ meant. The composition law for $(+(127))$ reads: $[\overset{\frown}{\ }] = [1]+[2]+[3]$, because in Case of the screen fields always $Q_{k\,(bb)}^{\,i} = 0$ is.

If the material structure not in a reference system $C_0$ rests, but also $v = const$ relatively too $C_0$ one moves, then can on the new reference system $C_v$ referred this movement

as imaginary turn approximately $x_4$ are understood. It comes into $[\overset{\frown}{\ }]$ to such a turn of the Partialstrukturen $[1]$, $[3]$ against the structure $[2]$, then must in $R_3$ related to $C_0$ one
Pseudo structure $(+\overline{3})$ appear, however not related to the quiescent system that relatively
moved subject. Against it if the subject is accelerated, then must $(+\overline{3}) \rightarrow (+3)$ as material

Arise to field structure also in the accelerated system of the subject. With this screen field $(+3)$ $\equiv$ $[1\ 2]$ it can concern only a type of component of the static field of the b-Hermetrie, which cannot transfer energy. Into the composition field is to supplement on the form:

$$[\ \overset{\frown}{}\ ] = [1] + [2] + [3] + [1\ 2], \tag{8.25}$$

how $[1\ 2] \equiv (+3)$ here as sum of the two possible screen fields to be understood must: $\left[\overset{\frown}{\begin{smallmatrix}12\\12\end{smallmatrix}}\right]_+ + \left[\overset{\frown}{\begin{smallmatrix}21\\21\end{smallmatrix}}\right]_+ \equiv [1\ 2]$ (because of correspondence too $(+3)$).

Around these through $\dot{v} \neq 0$ induced structure $[12]$ to examine, those must Fundamental relationship (3.20) to be used. There for screen fields no correlation tensors $Q_{(\mu\nu)}^{(\kappa\lambda)}$ exist, are simplified (3.20). In addition becomes the indexing, which the two components in $[1\ 2]$ mark, uniformly also $(ab \equiv (12)$ or $(ab) \equiv (21)$ indicated, then is valid in the first range of validity (with small Metronenanzahl n) with (3.20):

$$K_{(ab)}^{(ab)} + D_{(ab)}^{(ab)}; \left[\overset{\frown}{\begin{matrix}ab\\ -+ \\ ab\end{matrix}}\right]_+ = \overline{\lambda}_{(ab)}^{(ab)} \times \left[\overset{\frown}{\begin{matrix}ab\\ -+ \\ ab\end{matrix}}\right]_+ . \tag{8.26}$$

For the components of the condensor lens effects in $(+3)$ the following metronischen functions are introduced:

$$\left[\begin{smallmatrix}i\\km\end{smallmatrix}\right]_{(12)}^{(12)}; n = G_{km}^{i} \quad \text{und} \quad \left[\begin{smallmatrix}i\\km\end{smallmatrix}\right]_{(21)}^{(21)}; n = H_{km}^{i},$$

as well as

$$\overline{\lambda}_{(12)}^{(12)} = \overline{\lambda}^{(1)}, \quad \overline{\lambda}_{(21)}^{(21)} = \overline{\lambda}^{(2)}, \quad D_{(12)}^{(12)} = D^{(1)} \text{ und } D_{(21)}^{(21)} = D^{(2)}. \tag{8.27}$$

Into the 2nd range of validity one changes over and in place of the Metronendifferentiation $\Delta_m$ the usual, also $\partial_m = \partial/\partial x_m$, uses, then becomes the component representation for (8.26):

$$\partial_m G^i_{kp} - \partial_p G^i_{sm} + G^i_{sm} G^s_{kp} - G^i_{sp} G^s_{km} + D_p^{(1)} G^i_{km} = \lambda_p^{(1)} G^i_{km} \tag{8.28}$$

$$\partial_m H^i_{kp} - \partial_p H^i_{sm} + H^i_{sm} H^s_{kp} - H^i_{sp} H^s_{km} + D_p^{(2)} H^i_{km} = \lambda_p^{(2)} H^i_{km}. \tag{8.29}$$

Formation of the stencil trace in $i = k$ and with the vector fields

$$\varphi_m^{(1)} = G^k_{km} \quad \text{und} \quad \varphi_m^{(2)} = H^k_{km} \tag{8.30}$$

supplies because of

$$G^k_{sm} G^s_{kp} - G^k_{sp} G^s_{km} = H^k_{sm} H^s_{kp} - H^k_{sp} H^s_{km} = 0 \tag{8.31}$$

as consequence of the summation process for $b = 1$ and/or. $b = 2$:

$$\partial_m \varphi_p^{(b)} - \partial_p \varphi_m^{(b)} = \lambda_p^{(b)} \varphi_m^{(b)} - D_p^{(b)} \varphi_m^{(b)}. \tag{8.32}$$

The sum $\varphi_m = \varphi_m^{(1)} + \varphi_m^{(2)}$ corresponds to the induced combination $[1\ 2]$, and/or. $(+3)$. That Influence of the triad $(+(127))$, thus $[1]$, $[2]$ and $[3]$ is in the tensors $D_m^{(b)}$ contained. Those Summation of the two differentials for $b = 1$ and $b = 2$ supplies:

$$\partial_m\varphi_p - \partial_p\varphi_m = \lambda_p^{(1)}\varphi_m^{(1)} - \lambda_p^{(2)}\varphi_m^{(2)} - D_p^{(1)}\varphi_m^{(1)} - D_p^{(2)}\varphi_m^{(2)}. \quad (8.33)$$

Because of the demanded temporally stationary characteristics of the regarded system $(+(127))$ and that $(+3)$-Induction as $[1\ 2]$ must $\varphi_m$ a function of the R3 its, so that for all ^p $\geq 4$ is valid: $\partial_m\varphi_p = 0$ , $\varphi_p = \mathrm{const}(R_3)$ and $\partial_k\varphi_p = 0$ for $k \leq 3$. Thus those become $\partial_i\varphi_k - \partial_k\varphi_i$ that $R_3$-Coordinates to that rot-Components of the $R_3$-Field $\boldsymbol{\varphi}$, during

$$D_i^{(1)}\varphi_m^{(1)} + D_i^{(2)}\varphi_m^{(2)} = F_{ik} = -F_{ki} \quad (8.34)$$

to an antisymmetric $R_3$ Tensor becomes. It is valid accordingly:

$$\lambda_i^{(b)}\varphi_k^{(b)} = (\boldsymbol{\lambda}^{(b)} \times \boldsymbol{\varphi}^{(b)}) \quad (8.35)$$

and from it follows:

$$\mathrm{rot}\,\boldsymbol{\varphi} = (\boldsymbol{\lambda}^{(1)} \times \boldsymbol{\varphi}^{(1)}) + (\boldsymbol{\lambda}^{(2)} \times \boldsymbol{\varphi}^{(2)}) - \mathbf{F}. \quad (8.36)$$

In the third range of validity goes $n \rightarrow \infty$ and the discrete stages $\boldsymbol{\lambda}^{(b)}$ of $[12]$ go into this range into a continuous vector field $\boldsymbol{\Lambda}$ over. Becomes for $\mathbf{F}$ the cross product out $\mathbf{f}$ and $\mathbf{w}$ set, also $f_i = \mathbf{e}_i\,\partial/\partial x_i$ and $w_k = A_k$:

$$\boldsymbol{\lambda}^{(1)} \times \boldsymbol{\varphi}^{(1)} + \boldsymbol{\lambda}^{(2)} \times \boldsymbol{\varphi}^{(2)} - \mathbf{F} \rightarrow \boldsymbol{\Lambda} \times \mathbf{u} - \mathbf{f} \times \mathbf{w}, \quad (8.37)$$

thus the correspondence principle becomes the field continuum effectively in the 4th range of validity, where the polar macroscopic vector fields show up as only one:

$$\boldsymbol{\Lambda} \times \mathbf{u} - \mathbf{f} \times \mathbf{w} \rightarrow \mathbf{x} \times \mathbf{y}, \quad (8.38)$$

into only a simplified cross product appears:

$$\mathbf{x} \times \mathbf{y} = \lim_{n\to\infty} rot\,\boldsymbol{\varphi} = \mathrm{rot}\lim_{n\to\infty}\boldsymbol{\varphi}. \quad (8.39)$$

$\boldsymbol{\varphi} = \boldsymbol{\varphi}^{(1)} + \boldsymbol{\varphi}^{(2)}$ can also up $(+2)$ and $(+(17))$ the triad $(+(127))$ are referred, because those $R_3$- Projection of the $(+1)$ into the stratonische proximity effect field $(+7)$ turns into. That means that both limit values in (8.39) vector fields in $R_3$, those are in the forms

$$\lim_{n\to\infty}\boldsymbol{\varphi}^{(1)} = \mathbf{C} \quad \text{und} \quad \lim_{n\to\infty}\boldsymbol{\varphi}^{(2)} = \mathbf{g} \quad (8.40)$$

such components of a and b-Hermetrie are, which cannot transfer energy. Out (8.39) and (8.40) becomes then

$$\mathrm{rot}\,(\mathbf{C} + \mathbf{g}) = \mathbf{x} \times \mathbf{y}. \quad (8.41)$$

From the experience it results that $\mathbf{C}$ the component of the magnetic field strength $\mathbf{H}$ is proportional. Accordingly should $\mathbf{g}$ a Orthogonaltrajektorienfeld that

Gravitational field strength $\mathbf{G}$., of home as *Mesofeld* $\boldsymbol{\mu}$ designation, proportionally its. For the magnetic field the relationship is valid:

$$\text{rot } \mathbf{C} \sim \varepsilon_0 \, \partial/\partial t \, \mathbf{E} + \rho \mathbf{v}, \tag{8.42}$$

where $\varepsilon_0$ the influence constant, $\mathbf{E}$ the electrical field strength, $\mathbf{v}$ the speed of the moved load and $\rho$ the electrical charge density are. On the assumption that $\boldsymbol{\mu}$ and $\mathbf{H}$ in no connection, formally sets home stands an appropriate relationship for $\boldsymbol{\mu}$ on, how $\sigma$ the mass density and $\mathbf{G}$ the gravitational field strength designate:

$$\text{rot } \boldsymbol{\mu} \sim \alpha \; \partial/\partial t \, \mathbf{G} + \sigma \mathbf{v}. \tag{8.43}$$

$\alpha$ is a new natural constant, which must be determined.

In case of the temporal station airty are $\partial/\partial t \; \mathbf{E} = \partial/\partial t \; \mathbf{G} = 0$, during $|\mathbf{v}| = \text{const}$ regarding $t$ only the direction changes. There into (8.41) the vector fields as physical dimension same dimensionings to have must become, from the Proportionalitäten: $\mathbf{C} = \mathbf{H} \sqrt{\mu_0}$ and $\mathbf{g} = \boldsymbol{\mu}\sqrt{ß}$, how ß a natural constant still which can be determined is, which arises in the propagation law for gravitation disturbances:

$$\text{div grad } \mathbf{p} + \alpha ß \; \partial^2/\partial t^{\,2} \; \mathbf{p} = 0 \tag{8.44}$$

Compared to (8.41) is valid:

$$\text{rot } (\mathbf{C} + \mathbf{g}) = \mathbf{v} \; (\rho\sqrt{\mu_0} + \sigma\sqrt{ß}) = \mathbf{x} \times \mathbf{y}. \tag{8.45}$$

$\mathbf{v}$ appears as cross product of two polar vectors, which marks a rotation. If $\mathbf{r}$ the radius vector of this movement and $\boldsymbol{\omega}$‘ their rotating speed is, then is valid $\mathbf{v} = \mathbf{r} \times \boldsymbol{\omega}$‘. It is assumed that it in the mass distribution $\sigma$ no free not
it gives compensated loads and that these are also not adjustable, so that $\rho = 0$, then the simple connection results:

$$\text{rot } (\mathbf{H}\sqrt{\mu_0} + \boldsymbol{\mu}\sqrt{ß}) \; = \; (\mathbf{r} \times \boldsymbol{\omega}‘) \; \sigma\sqrt{ß} \tag{8.46}$$

Of ß is only well-known $ß \neq 0$.

a) Acceptance: <u>$ß < 0$</u>: In this case is the propagation law of gravitativer field disturbances

$$\text{div grad } \mathbf{p} - \alpha ß’ \; \partial^2/\partial t^{\,2} \; \mathbf{p} = 0$$

a transversal wave equation. But because of $\sqrt{ß} = i \; \sqrt{ß’}$ became complex the rotor relationship with the real part $\text{rot } \mathbf{H} = 0$ and the imaginary part $\text{rot } \boldsymbol{\mu} = \sigma \mathbf{r} \times \boldsymbol{\varpi}$, which for $\partial/\partial t \; G = 0$ , $\partial/\partial t \; E = 0$ and $\rho = 0$ corresponds to the electromagnetic law. The temporal coordinate became $x_4 = ict$ read, and that $R_4$ would be the Minkowskiraum.

b) Acceptance: <u>$ß > 0$</u> In this case is (8.44) no wave equation, but one Potential equation with the speed $\omega$ potential propagation. The rotor relationship remains real. One also $\omega’ = \text{const}$ rotary measures of the density $\sigma$ a field would have $\mathbf{H}$ produce, and it would be $x_4 = \omega t$, which would entail again a second relativity principle. Those

Transformation matrix $\hat{A}$'in $R_{+4}$ remains real, contrary to $\hat{A}$ in the electromagnetic

Relativity principle of the $R_{-4}$. In place of the array elements also $\gamma = \sqrt{1 - v^2/c^2}^{-1/2}$ step those Array elements $\gamma' = \sqrt{1 + v^2/\omega^2}^{-1/2}$. The relativity principle of gravitativer field disturbances would have
a regular and orthogonale transformation matrix, over the reelen algebraic
Body is defined. It would be then invariance approximately $G = \hat{A}\ \hat{A}'$ to demand. The superordinate Relativity principle would affect the truck time matrix not substantially, there the array elements $\gamma\gamma'$ in G only by one appear multiplied by 1 deviating factor hardly.
Because itself **H** and **μ** mutually cause sets home:

$$\mathbf{B} = ½\,(\mu_0\mathbf{H} + \sqrt{\mu_0 \beta}\ \boldsymbol{\mu}). \qquad (8.47)$$

For the magnetometrisch relevant force flow density in Tesla and/or Gauss is to be set:

$$\text{rot}\ \mathbf{B} = ½\,(\mathbf{r} \times \boldsymbol{\omega}')\,\sigma\sqrt{\mu_0 \beta} \qquad (8.49)$$

or with w, the number of the revolutions per time unit, then is also $\boldsymbol{\omega}' = 2\pi\mathbf{w}$:

$$\text{rot}\ \mathbf{B} = \pi\sqrt{\mu_0 \beta}\,\sigma\ (\mathbf{r} \times \mathbf{w}). \qquad (8.50)$$

ß is to be determined out (8.44).

c) Acceptance: $\underline{\omega \neq c}$. From home original computation for the density operator those follows Constant one $\alpha = 3/(64\pi\gamma)$, from which the propagation speed of gravitativer field disturbances with $\omega = 4/3\ c$ and the constant $ß = 12\ \pi\gamma/c^2$ follow.

d) Acceptance: $\underline{\omega = c}$, then arises $\alpha' = 1/(4\pi\gamma)$ and $ß' = 4\pi\gamma/c^2$ and/or. $ß' = 2ß/3$.

With c) and d) there are the alternative cases with the natural constants A and/or. A':

$$A = (\pi\sqrt{3\pi\gamma\mu_0})/c^2$$

and $A' = (\pi\sqrt{2\pi\gamma\mu_0})/c^2 \qquad (8.51)$

Thus the integrable version with the constants of A results:

$$\text{rot}\ \mathbf{B} = 2A\sigma\ (\mathbf{r} \times \mathbf{w}) \qquad (8.52)$$

The decision for $\underline{\omega \neq c}$ is by the measurements of the time delay of the arrival of
Radio signals of the quasar JO842+1835with a Jupiter passage on 8 September 2002 not yet decided. In opinion of E.B. Fomalont and Sergej Kopeikin (2003) became $\underline{\omega = c}$ up to the factor $1.06\pm0.21$ confirmed. J.A. Faber (2003) and C.M. wants (2003) pointed however after that $\omega$ not from the determination of the time delay of the arrival of the signals won could. Effects to the propagation speed of the gravitation to attribute leave themselves, take only in higher than the measured terms influence. But in addition the accuracy of the experiment was not sufficient. The interpretation of the measurements Kopeikins were based (2003) on wrong conditions.

Also a decision for a): $ß < 0$ or b): $ß > 0$ is still pending. Case b) is not whole improbably. Because arises out (8.45) in the case of neglect of rot $\mathbf{g}$ as solution for rotary a ball in absence of electric currents for the radial component of the magnetic field $B_r$ on the surface (with the radius $r_0$ and the geographical latitude $\theta$):

$$B_r(r_0,\theta) = 3/10\pi \sqrt{\mu_0 \beta'} /(1+2\mu_0)\ \omega\ m\ \sin\theta/r_0\ , \qquad (8.53)$$

and for the tangential component $B_t$:

$$B_t(r_0,\theta) = 3/20\pi \sqrt{\mu_0 \beta'} /(1+2\mu_0)\ \omega\ m\ \cos\theta/r_0. \qquad (8.54)$$

Equation (8.53) has however exactly the same shape as that, which was already derived from purely empirical observations of the magnetic fields of rotary stars from Blackett (1947) and confirmed from Sirag (1979).

If in place of star masses a cylinder of 5 cm diameters with high permeability with w = 300 rotate revolutions per second (in a vacuum on a helium bath) are left, then only very weak magnetic fields step on (about $10^{-11}$ Tesla). But should Squid magnetometers with a sensitivity of $10^{-13}$ Tesla for one experimental proof sufficiently its, if breakdown effects can be switched off and/or compensated. (Harasim, of Ludwiger, and Auerbach 1985).[xii]

## 9. Initial states of the elementary particles and „quarks "

1. To the estimation of the maximum values of the quantum numbers $q_{max}$ and $k_{max}$ an inequation is deduced:

$$k < u_q = (\pi/q)^4 \{[(1+\sqrt{\eta_q})^2/4\eta\eta_q + (1-\eta_q/\eta)\sqrt{\eta}\,]^4 - 1\} - 4 \qquad (9.1)$$

and numerically evaluated. Therefore is for

| | |
|---|---|
| q = 1 und 2 : | $2 < u_q < 3$ |
| q = 3 : | $1 < u_3 < 2$ |
| q = 4 : | $0 < u_4 < 1$ |
| q > 4 : | $u_q < 0$ |

and k would be compatible only for the values 1 and 2 for q = 1 to 3. Therefore is $k_{max} = 2$ and $q_{max} = 3$.

Over the analysis of the internal Ladungspotenziale $V_{xy}$ can those $\alpha_j$ are determined. Those $\mu_+ \alpha_j = \mu_j$ elementary mass units of the zones are j for $n\ Q_n = m + Q_m = p + Q_P = \sigma + Q_\sigma = 1$ in such a manner that also $\mu_5$ and $\mu_6$ Masseneinheiten of the amounts $F_S = 1$ and q = 1 in

xii This „rotation experiment " was not accomplished from cost reasons yet. The company Daimler Benz Aerospace AG, Ottobrunn, accomplished preparing work in the 80's in addition. The planned experiment was presented 1985 on the conference „to SQUID and their Applications " in Berlin.

Mass spectrum (7.39) represent. For the central site j = 1 is valid similar to as also in Kap.2 deduced, $E_+ = ß_+ w^2$ in that $R_3$-Region the relationship:

$$E_1/E_+ = V_{\varepsilon\omega}/V_\varepsilon = ½ (1 - \sqrt{\eta_{qk}}) \tag{9.2}$$

and

for j = 2: $E_2/E_+ = V_\varepsilon / V_{RR} = 1/\eta_{qk}$ (9.3)

or: $\mu_1 = (1 + \sqrt{\eta_{qk}})(1/2)\mu_+$ (9.4)

$\mu_2 = \mu_+ / \eta_{qk}$ (9.5)

and

because

of $\mu_{1,2} = \alpha_{1,2}\,\mu_+$ In

$$\boxed{\begin{aligned}\alpha_1 &= ½ (1 + \sqrt{\eta_{qk}})\\ \alpha_2 &= 1/\eta_{qk}\end{aligned}} \tag{9.6}$$

the external zone is

$$\boxed{\alpha_4 = 1}$$

$\mu_3$ becomes by a function $\mu_+ f(k)$ determined, those on the konfigurative Protosimplexgerüst decreases/goes back, and from a function $\mu_+ qF(k,q)$, those the load field by deformation of f by F decreases:

$$\mu_3 = \mu_+ (f - q F) \tag{9.7}$$

and because

of $\mu_3 = \mu_+ \alpha_3$ :

$$\alpha_3(k,q) = f(k) - q F(k,q). \tag{9.8}$$

The metronische computation leads on the relations:

$$\boxed{\begin{aligned}\alpha_3 &= 1/k\, e^{k-1} - q F,\\ F &= H + G,\\ H &= \alpha/3\,(1 + \sqrt{\eta_{qk}})(\xi/\eta_{qk}^2)^{2k+1}\,\eta_{qk}^3,\\ G &= \eta_{11}/e\eta_{qk}\,(2\xi\eta_{qk})^k\,[(1 - \sqrt{\eta_{qk}})(1 + \sqrt{\eta_{qk}})]^2 .\end{aligned}} \tag{9.9}$$

$\alpha$ is the fine structure constant. With temporally constant structural conditions also $(j \le 4) \mathrel{\hat{=}} (n,m,p,\sigma)$ is the Protosimplexzahlen $N_{(j)}$ in (7.41):

with

$$N_{(j)}(t) = n_j(t) + Q_j \tag{9.10}$$

$$\begin{aligned}Q_n &= 3\, 2^{s-2}\\ Q_m &= 2^s - 1\\ Q_p &= 2^s + 2(-1)^k\\ Q_\sigma &= 2^{s-1} - 1, \qquad s = k^2 + 1 = \text{const}\end{aligned}$$

Thus a provisional mass formula results:

$$M(c,d) = \mu_+ \left[ \sum_{j=1}^{4} \alpha_j G_j + (1 - \alpha_- / \alpha_+) F_S + q\alpha_- / \alpha_+ \right] \qquad (9.11)$$

It must now a selection rule for occupations of the configuration zones $(n, m, p, \sigma)$ that elementary samples $N = 1$ and the higher levels to be determined.

2. The spectrum of the C and D-Hermetrie becomes into the spectral sections $k = 1$ and $k = 2$ divided. The possible invariant P-values become (because of the demand for interval $0 \le P \le G = k + 1$) by k limits. It therefore gives for $k = 1$ three and for $k = 2$ four multiplets of those everyone out $I = P + 1$ Components exists.

It must give a structural basic pattern, to their zone occupations $(n, m, p, \sigma)$ of Invariance characteristics of the C and D-terms to be determined. The invariance characteristics are expressed in sentences of quantum numbers, how $k$, $P$ and Q spin isomers
After multiplets (6.19) describe and because of $q = 0$ or $q \neq 0$ a separation of the C and D Terms of the spectrum cause. In addition the structural rivers can regarding $R_4^+$ and $R_4^-$ by the time heli coil quotation $\varepsilon$ (after (6.20)) are differentiated. If $\nu$ the components of the load field are, can one the sentence of preservation principles symbolically summarize in $(kPQ)_\varepsilon q_\nu$. These preservation principles do not need for the parameters $n_j$ $(1 \le j \le 4)$ that structural configuration zones $(n, m, p, \sigma)$ to be valid.

In analogy to the space pin isomorphicism also $I_{max} = G + 1 = k + 2$ also a multiplet can integrals the space pin component of the Stratonspions (6.19) regarding the tensor and spinor terms to be defined:

$$I_R = 2J + 1 = Q + 1 \qquad (9.12)$$

Can itself $J$ thus change that tensor and spinor terms alternate, so that $\Delta J' = ½$ is valid, or spinor and a tensor character remain: $\Delta J = 1$. Then is $\Delta Q' = 1$ and $\Delta Q = G - Q = 2$, i.e. $Q(P) = G - 2 = k - 1$. $Q = k - 1$ it is valid to it also places in the P-interval, but gives, $P'$ at those the multiplet $P = P'$ doubles itself, so that itself the spin isomorphicism of the second multiplets up $Q'(P') = 2k - 1$ refers.
The analysis of the layer that $P'$ in the P-interval results in two solutions:

$P'_1 = P_+ = 2k - 1$

and $P'_2 = P_- = 2 - k$.

Both solutions lie in the P-interval and double the appropriate multiplets, also

$$Q(P) = k - 1, \qquad Q'(P_\pm) = 2k - 1, \qquad 0 \le P \le k + 1 \qquad (9.13)$$

different basic pattern multiplets represent. It is also $Q' = Q + k$.

For <u>k=2</u> is valid: , which with Singulettund quartet
$G=3$, $Q=k-1=1$, $Q'=3$ $P_-=2-k=0$ $P_+=2k-1=$
into action goes to 3.
For <u>k=1</u> is: $G=2$, $Q=0$, $Q'=1$ and $P_+=P_-=1$, which to three Doubletts $(kPQ) = (110)_A$ and two Spinordoubletts $(111)_B$ and $(111)_C$ leads. The Skalardoublett A is of the Spinordoubletts B

and C differently, but $B = C$ it contradicts the demand that the basic patterns must be different in their invariants. If the set of the multiplet invariants by one

Characteristic $\kappa$ one extends, then the contradiction disappears. For all $P \neq 1$ is $\kappa = 0$ are valid, and for $P=1$ is $\kappa=1$ its. For $\lambda$ Doubletts in the interval $1 \leq \lambda \leq \lambda_k \equiv 4-k$ those is valid **Doublettziffer:**

$$\kappa(\lambda) = (1 - \delta_{1\lambda})\delta_{1P} \qquad (\delta_{1\lambda} = 1 \text{ for } \lambda = 1, \text{ otherwise } 0). \qquad (9.14)$$

The quantum number sets of the multiplet invariants can be written from there:

$$(kPQ\kappa)_\varepsilon \,. \qquad (9.15)$$

For the Doubletts is valid for $k=1$: $(1110)$ and/or. $(1111)$ the Spinore and $(1101)$ for that Dot product.

It must be examined, how the C and D-structures distribute themselves on the individual components of a multiplet. These can as $R_3$-Projection of $(\pm(35))$ and $(-6)$ understood become. The component x (also $0 \leq x \leq P$) the multiplet appears as characteristic that Illustration and is representable by the imaginary portion of $\boldsymbol{\sigma}$, thus $s_x = P_x/2$ this Component x.

The multiplet components are degenerated isomorphisms of a stratonischen space pin structure $J$ the concerned $R_6$ - Condensation, which are projected by s into the area. They can therefore as different conditions that $R_3$-Projection of the polymetrischen $R_6$ - Structure to be interpreted, so that in this $R_3$-Projection in each case the characteristics $q_x \neq 0$ of the D-structure or $q_x = 0$ appear to the C-structure. In this picture those must Multiplet components into one another transferable its. In the multiplet there is therefore a further invariant characteristic, those than transfer characteristic of the different $R_3$-X the distribution is entitled to that $q_x \neq 0$ and $q_x = 0$ in the multiplet as **Strukturdistributor** causes.

This characteristic is defined because of their Invarinanz as quantum number C. C hangs time heli coil quotation of that $\varepsilon$ in accordance with (6.20) off: $C_\pm(R_4^\pm) = -C_\mp$ . $\varepsilon$ makes possible mirror-symmetric Illustrations of $\boldsymbol{\sigma}$. There $\boldsymbol{\sigma}$ from the components $\sigma_P$ and $\sigma_Q$, gives it is developed also for $\varepsilon$ as generic term the components **ISO** and **space heli coil quotation** $\varepsilon_P$ and $\varepsilon_Q$, out $\varepsilon_P = \varepsilon \cos \alpha_P$ and $\varepsilon_Q = \varepsilon \cos \alpha_Q$ follow (with the Projektionswinkel $\alpha_{P,Q}=\pi\, x_{P,Q}$ ). The x become on Q referred identically to the number $N'$ the two-combinations $s_x = s - x$ for $x \neq 0$, and in the case Q too $N'$ added product $QQ_{min}$, so that is valid:

$$x_{P,Q}/\, Q = N' + (\kappa QQ_{min}) \qquad (9.16)$$

$N'$ becomes in the interval $1 \leq x \leq P$ to the two combinations of the class P, i.e. $N' = \binom{P}{2}$, $Q_{min} = k - 1$ . From this follows for the ISO and space heli coil quotation:

$$\alpha_P = \pi\, Q\, (\kappa + \tbinom{P}{2})$$

and $\alpha_Q = \pi\, Q\, [Q(k\text{-}1) + \binom{P}{2}]$ (9.17)

Conditions of the maximum values of the quantum numbers k and $\kappa$ its minimum becomes by the proportionality factors $V_\kappa$ and $V_k$ expressed:

$$V_\kappa = (\kappa_{max} + \kappa)/\,(Q_{min} + \kappa) \quad , \quad V_k = k_{max}/k.$$

These numbers behave like the sum of the heli coil quotation components of the Stratonspins $P\varepsilon_P + Q\varepsilon_Q$ to the Strukturdistributor C. for $\kappa_{max} = 1$, $k_{max} = 2$ and $Q_{min} = k - 1$ follows for that Strukturdistributor:

$$C = 2\,(P\varepsilon_P + Q\varepsilon_Q)(k - 1 + \kappa)/\,(k + k\kappa) \tag{9.18}$$

The analysis of the load quantum number $q_x$ a relationship supplies, alone on the multiplet invariants $(kPQ\kappa)_\varepsilon$ and C decreases/goes back:

$$q_x = \tfrac{1}{2}\,(P - 2x)[1 - \kappa Q(2 - k)] + \varepsilon[k - 1 - (1 + \kappa)\,Q(2 - k)] + C \tag{9.19}$$

with

$$|q_x| = q_x \quad \text{und} \quad 0 \le x \le P.$$

3. The consequence of the multiplets $(kPQ\kappa)$ become through $(\nu)$ symbolized. The number quasikorpuskulärer internal ranges is $G_k = k + 1$ zw. the upper barrier of the P-interval.
For $\underline{k = 1}$ then the multiplet sequence from the singlet to the triplet follows $G_1 = 2$. Because of $Q = k-$
$1 = 0$ it concerns thereby scalar terms. There $P_+ = P_- = 1$ and $\lambda_1 = 4\text{-}k = 3$ are, it gives beside the Skalardoublett still two Spinordoubletts a l s o . It is valid:
$Q' = 2k - 1 = 1$

Singulett: $(\nu)(kPQ\kappa) =$ (1)(1000),
Spinordoubletts: (2)(1110) und (3)(1111),
Skalardoublett: (4)(1101)
Triplett (P begrenzend): (5)(1201)

For $(\nu) = (4)$ is the Doublettwert $\varepsilon C = +1$; for the remaining is $(k = 1)\,\varepsilon C = 0$.

In the spectral section $\underline{k = 2}$ the P-interval of the quartet is limited, because of $G_2 = k+1 = 3$. Because $P_+ = 2k - 1 = 3$ is, appears apart from this quartet also $P_- = 2 - k = 0$ as singlet doubled. Because of $\lambda_2 = 4 - k = 2$ also the Doublett steps because of $\kappa(1) = 0$ and $\kappa(2) = 1$ doubles up. For the multiplet invariants is valid:

Singuletts: (6)(2019) und (7)(2030),
Doublets: (8)(2110) und (9)(2111),
Triplett: (10)(2210),
Quartetts: (11)(2310) und (12)(2330)

The interval of possible basic pattern multiplets is:

$$\boxed{(\nu)(kPQ\kappa)\ \varepsilon C\ (\varepsilon q_x)_0^P} \tag{9.20}$$

Assigned in it the following list results in the quantum numbers:

(1)(1000)0(0)
(2)(1110)0(0,-1)
(3)(1111)0(-1)
(4)(1101)+1(+1,0)
(5)(1200)0(+1,0,-1)
(6)(2010)-1(0) (9.21)
(7)(2030)-3(-1)
(8)(2110)0(+1,0)

(9)(2111)-2(0,-1)
(10)(2210)-1(+1,0,-1)
(11)(2310)-2(+1,0,-1,-2)
(12)(2330)0(+2,+1,0,-1)

If these theoretical basic patterns are compared with empirically determined quantum numbers by stable or metastable quantum numbers, then it shows up that the well-known initial states of the elementary particle spectrum thereby are seized:

**The baryon number** B is a measure of the configuration number $k = B + 1$.$K = 1$designates Mesonen
and $k = 2$ Baryons.

The number$P = 2s$, which the spin isomorphicism in the multiplets $I = P + 1$marks, is identically to the double empirical **isospin.**

$Q = 2J$ corresponds to the double quantum number of the angular momentum or **spin** (as spin quantum number
J the space pin $J\sigma_r$).

**The Strangeness** S is identical to the Strukturdistributor C.

The interpretation of the isospin multiplets $(\nu)$, which are confirmed by the computation of the masses, supplies the following correspondences with elementary particles:

$$
\begin{array}{llllll}
(1) & \hat{=}\ (\eta)\,, & (2) & \hat{=}\ (e_0, e^-) & (3) & \hat{=}\ (\mu^-) \\
(4) & \hat{=}\ (K^+,K^0) & (5) & \hat{=}\ (\pi^+, \pi^0, \pi^-) = (\pi^\pm, \pi^0) & & \\
(6) & \hat{=}\ (\Lambda) & (7) & \hat{=}\ (\Omega^-) & (8) & \hat{=}\ (p, n) \\
(9) & \hat{=}\ (\Xi^0, \Xi^-) & (10) & \hat{=}\ (\Sigma^+, \Sigma^0, \Sigma^-) & (11) & \hat{=}\ (o^+, o^0, o^-, o^{--}) \\
(12) & \hat{=}\ (\Delta^{++}, \Delta^+, \Delta^0, \Delta^-) & & & k & = B + 1
\end{array}
\qquad (9.22)
$$

$(2)$ and$(3)$give the empirical leptons ($e^-$and $\mu$) again. For it would be $P = 1$to set.
Electrons and $\mu$-Mesonen would have to then exhibit also an internal structure, which is however so weakly trained that only a punctiform compression would be registerable. For the b-Hermetrie P is not defined. But could with the transition$b \rightarrow d + \overline{d}$ (Generation of pairs) because of
the stratonischen characteristics of the D-Hermetrieform also for $e^-$ and $\mu$ a P-value in the way it develops that itself$\varepsilon P$with$\varepsilon = +1$ on D and $\varepsilon = -1$ on the anti-structure $\overline{d}$ refers, so
that the sum disappears. With$P = 1$ for$(2)$and$(3)$ one of the leptons would have as negatively charged pseudo singlet$(3)$and the other one with a complementary neutral component appear common. If it thus such an temporally stable **neutral electron** $e_0$, its measures only few of $e^-$ would deviate, would actually give, then would be to be
Activation cross-section because of$q = 0$ extremely small, so that its proof would be difficult.
$(3)$ becomes with the electron Doublett out $e_0$ and$e^-$ and/or. $\overline{e}_0$ and $\overline{e}^+$ (in case of $\varepsilon = -1$)
identified. Regarding$\varepsilon$ C behave and$q_x$mirror-symmetrically, so that through$\varepsilon C$ and $\varepsilon q_x$ this antisymmetry is compensated. That $\pi$-Triplet is anti-triplet to itself; therefore is the short way of writing$(5)$ $\hat{=}$ $(\pi^\pm, \pi^0) = (\overline{5})$possible. In the case$k = 2$ steps with transition that
Hermetrieformen$b \rightarrow d + \overline{d}$ or $b \rightarrow c + \overline{c}$ because of$B = 1$ $(\nu)$and$(\overline{\nu})$always in pairs up.
Become $q_x$and C reduced to the multiplet invariants (9.15), can be written (9.20) as follows:

$$\boxed{(\nu)\ (\varepsilon)\ (\varepsilon B, \varepsilon P, \varepsilon Q, \varepsilon\kappa)\ C\ (q_x)_0^P} \qquad (9.23)$$

with $(\nu)(\varepsilon = +1) \equiv (\nu)$ and
$(\nu)(\varepsilon = -1) \equiv (\bar{\nu})$

$k$ and $P$ are fundamental quantum numbers (invariants). $Q$, $\kappa$, $C$ and $q_x$ are derived Quantum numbers and $\varepsilon$ a decision is over the time heli coil quotation. Therefore home gives the form to the invariant basic pattern characteristics

$$\boxed{\hat{I} \equiv kP\begin{pmatrix} Q\kappa \\ Cq_x \end{pmatrix}_{\varepsilon}} \tag{9.24}$$

4.$G = k + 1$the number of internal quasikorpuskulärer ranges marks. In the structures that There are Mesonen$G = 2$ and in those of the baryons $G = 3$ such zones.

Into that $1 \le j \le 4$ Configuration zones of a C or D-Hermetrie is $b_\lambda$the amount of that quasikorpuskulären ranges $1 \le \lambda \le G$. For the temporally constant stand structure is $n_j = 0$ and$G_j(Q_j) = \text{const}(t)$. In this case is valid for the Protosimplexbesetzungen after (7.44):

$$\begin{aligned} G_1 &= \tfrac{1}{4}\, Q_1^2(1 + Q_1)^2, \\ G_2 &= 1/6\; Q_2(2Q_2^2 + 3Q_2 + 1), \\ G_3 &= \tfrac{1}{2}\; Q_3(Q_3 + 1), \\ G_4 &= Q_4. \end{aligned} \tag{9.25}$$

For <u>k = 1</u> is $Q_1 = 3$ , $Q_2 = 3$ , $Q_3 = 2$ , $Q_4 = 1$ and with it
$G_1 = 36$, $G_2 = 14$, $G_3 = 3$ $G_4 = 1$

and because of $G = k + 1 = 2$ exist for these Mesonen two quasikorpuskuläre ranges. Designate $Z(n)$, $Z(m)$, $Z(p)$, and$Z(\sigma)$the occupation numbers of the 4 configuration zones, then two mesonische ranges would be in the form $b_1 = Z(n)$and $b_2 = Z(m) + Z(p) + Z(\sigma)$ built up, because only for $G_1$the condition $Z_\lambda(b_\lambda) \ge 16$, those for invariance reasons one demands, is fulfilled.

For<u>k = 2</u> is $Q_1 = 24$ , $Q_2 = 31$, $Q_3 = 33$ , $Q_4 = 15$. Occupations$G_1$, $G_2$, $G_3$ is sufficient that Condition $Z_\lambda(b_\lambda) \ge 16$, with exception of $Q_4$. Because of $G = 3$ are valid from there for baryons those Distributions of the quasikorpuskulären ranges $b_1 = Z(n)$, $b_2 = Z(m)$, and$b_3 = Z(p) + Z(\sigma)$. It it is accepted that because of (2.43) the three partial elementary charges $e_\pm = 3\ C_{e\pm}$ through those$G$-Ranges $b_\lambda$ by the condition$C_{e\pm}$ or $2\ C_{e\pm}$ a D-term also $q = 1$ and/or.$q = 2$ define. Thus the experimental discovery **„of the quarks** experiences **"** another theoretical interpretation. Because the empirical quarks are not in home theory bound Subpartikel, which must be bound by gluons, but ranges of extremely high density, cannot which be separated by scattering experiments.

The temporally constant „stand conditions " $(n_j = 0)$ can for$k = 1$ and$k = 2$ with (7.41) are derived:

$$\boxed{\begin{aligned} m_0(k,q) - \mu_S F_S = \mu_+ [\alpha_1/4\, Q_1^2(1 + Q_1)^2 + \alpha_2/6\, Q_2(2Q_2^2 + 3Q_2 + 1) + \\ + \alpha_3/2\, Q_3(1 + Q_3) + Q_4 + q\,\alpha_- / \alpha_+] = \text{const}(t) \end{aligned}} \tag{9.26}$$

With the quantum numbers (9.20) arise for example for$k = 1$and 2 and for$q = 1$, if the unknown function$F_S \approx 1$one sets, the following mass values:

$m_0(1,1) - \mu_S F_S = 0{,}50562729$ [MeV] and/or.

$m_0(2,1) - \mu_S F_S = 938{,}2497$ [MeV]

There the spin function $F_S$ yet one did not consider, arise the masses for electron $m_e \approx m_0(1,1)$ and proton $m_P \approx m_0(2,1)$ first only approach. For the neutral Electron results the value $m_0(1,0) - \mu_S F_S = 0{,}501507$ [MeV].

## 10. Suggestion borders of resonances and masses of the neutrino conditions

Due to the time-dependant occupation numbers $n_j(t)$ that $j = 4$ Configuration zones is for $n_j = 0$ and $P = 1$ the temporally stable stand structure defines, which for $k = 1$ and/or 2 the stability of the elementary particles $e^-$ and/or. $p$ guaranteed. The time-dependant $n_j(t)$ those would have to lead the certified as selection rules to a uniform relationship, $n_j$ all multiplet components $(\nu)_x$ select from the possible integral Quadrupeln. One Change of the level $N_{(j)}$ in (7.44) over $\Delta_j G_j > G_{j+1}$ $(J = 1 \text{to} 3)$ with $\Delta_j G_j \geq \Delta_{j+1} G_{j+1}$ meant, that an occupation that $j$-Zone with additional Protosimplexelementen by the central zone also $j = 1$ one determines.

Home seizes the multiplet components $(\nu)_x$ as grid points of an abstract six-dimensional lattice $V_6(k,P,Q,\kappa,Cq_x)$ up. Each pattern (9.15) marks one such point. Becomes this pattern on the not existing $\hat{I}(0) = 00\left(\begin{smallmatrix}0 & 0\\0 & 0\end{smallmatrix}\right]_\varepsilon$ with $\varepsilon = \pm 1$

referred, then the transitions should $\hat{I}(0) \rightarrow \hat{I}(\nu x)$ by the function out $(\nu)_x$ representably its, and the transition to the new grid point became occupations of one of the 4 zones relative $n_j$ describe, if as point of reference the tiefstmögliche value of $N_j$ one takes. For those $n_j(t)$ are values $< 0$ possible. There $N_{(j)} = n_j + Q_j \geq 0$ to remain, exists one must lower barrier $(n_j)_{min} = - Q_j$, thus $_{(j)} = 0$ for the empty area. There $\Delta_4 N_{(4)} = 1$ is, that sits down Transition out $\Delta_j M(c,d) + \Delta_4$ together. In the empty $R_3$ is $\Delta_4 = 0$. Thus is valid for the external zone $j = 4$ the process $\mu_+ \exp(-AN_{(4)})$, and for $N_{(4)} = 0$ in $V_6$-Point of reference $\mu_+$. Therefore is:

$$\Delta_4 = \mu_+ \exp(-A\, N_{(4)}) - \mu_+ = \mu_+[\exp(-A\, N_{(4)}) - 1]. \qquad (10{,}1)$$

It must a function $W(\nu x)$ as a function of that $V_6$-Grid points invariantly Basic patterns give, those with the transition $\hat{I}(0) \rightarrow \hat{I}(\nu x)$ those $N_{(j)}(\nu x)$, those supplies that Condition $(\nu)_x$ grid points concerned with the measures $\Delta_j M(c,d) + \Delta_4 \sim W(\nu x)$ determined. Becomes the indexing $(\nu x)$ let go away, is

$$\mu_+ W = \Delta M + \Delta_4, \qquad (10.2)$$

or also $\Delta_j N_{(k)} = \delta_{jk}$ and (7.41) with (7.44):

$$W = \sum_{j=1}^{4} \alpha_j \Delta_j G_j + \Delta[(1 - \alpha_- / \alpha_+) F_S + q\alpha_- / \alpha_+] + \exp(-AN_{(4)}) - 1 \qquad (10.3)$$

The unknown function $F_S$ hangs only of that $(\nu)_x$ off. Therefore is valid:

$$\Delta F_S = \Delta q = 0,$$
$$\Delta_1 G_1 = N^3_{(1)},$$
$$\Delta_2 G_2 = N^2_{(2)}, \qquad (10.4)$$

$$\Delta_3\, G_3 \;=\; N_{(3)}$$
$$\Delta_4\, G_4 \;=\; N_{(4)}\,.$$

That results in also $\alpha_4 = 1$ begun in (10.3)

$$\alpha_1 (n_1 + Q_1) \;+\; \alpha_2 (n_2 + Q_2) + \alpha_3 (n_3 + Q_3) + \exp[-A(n_q + Q_4)] \;=\; W \qquad (10.5)$$

$W \equiv W(\nu x)$ becomes as **Protosimplexgenerator of the** basic pattern $(\nu)_x$ designated. Those Rossi alpha A depends only on k:$A = A(k)$. For these the relationship results (also $Q_4 = 1$):

$$A(k) \;=\; 1/(3Q_4)\,(2k - 1). \qquad (10.6)$$

Out (10.5) becomes thereby:

$$\boxed{W(\nu x) \;=\; \alpha_1 N_{(1)}^{\;3} \;+ \alpha_2 N_{(2)}^{\;2} \;+\; \alpha_3 N_{(3)} \;+\; \exp[-(2k - 1) N_{(4)}/\, 3Q_4]} \qquad (10.7)$$

For both K-values the temporally constant stand structure becomes through $n_j \;=\; 0$ described, that meant:

$$\alpha_1 Q_1^{\;3} \;+\; \alpha_2 Q_2^{\;2} \;+\; \alpha_3 Q_3 \;+\; \exp[-(2k - 1)/\, 3] \;=\; g(k,q) \;= \mathrm{const}(t) \qquad (10.8)$$

$g(k,q)$ is the **basis rise** of $n_j = -\, Q_j$ after $n_j = 0$ in one to $V_6$-Lattice complementary $P_4$- Raster, because of $j = 4$ everyone $V_6$-Point is assigned. The relationship $W/g = w \neq 0$ becomes **Structural power of the** basic pattern concerned $(\nu)_x$ called. For $n_j \;=\; 0$ is $w \;=\; 1$. In this case is identical the basis rise to the Protosimplexgenerator. According to the two K-values sits down $w$ from 2 portions $w_1'$ and $w_2'$ together, so that is valid:

$$w = 1 + (2 - k) w_1' + (k - 1)\, w_2' \qquad (10.9)$$

and/or also $w_1 = w_1' + k - 1$ and $w_2 = w_2' + 2 - k$ rewritten:

$$w \;=\; w_1^{(2\text{-}k)} \;+\; w_2^{(k\text{-}1)} \qquad (10.10)$$

The cubic equation of the Protosimplexgenerators arranges everyone $V_6$-Point a Quadrupel $n_j$ in $P_4$-Raster too, which causes a measure term (7.41), so that there must be a whole spectrum of possible suggestions.

For $N \;=\; 0$ give the 26 points of the $V_6$ the complementary $n_j$ in $P_4$ by one Protosimplexgenerator again. For $N > 0$ is that $V_6$-Lattice still to one $V_7$ to supplement, which itself in $W$ by an additional factor $n_j(N)$ on lines over everyone Grid point $n_j(0)$ the initial state to indicate, that lets to a basic pattern $(\nu)_x$ is complementary. Because of $V_6 \;\rightarrow\; V_7$ with $N \;>\; 0$ there is a factor $F(N) \;\geq\; 1$, that Protosimplexgenerator $W$ extended up $W(\nu x)\; F(N)$, which is to be considered in (10.7).

$F(N)$ becomes by the excitation function $f(N)$ represented: $F(N) \;=\; 1 + f(N)$.$f(N)$ and $w$ are ambiguous and can be made clear by comparison with empirical data (home used the particle data out „Review OF Particle Properties ", CERN, 1974) in their processes.

Bezeichnet $ß_j = \Delta_{j-1}G_{j-1} - G_j$ die mögliche Zahl von Anregungsstufen i n , so kann durch den j

Rise of f the range $ß_j > 0$ up to $ß_j = 1$ are put back. Those
Single suggestions with multiples of the energy $\mu_+c^2$ set first in the external zone $j = 4$
on and reach over $j = 3$ and $j = 2$ the central zone $j = 1$. The range of the suggestion in the external zone is

$$ß_4 = \Delta_3 G_3 - (n_4 Q_4) = \alpha N_{(3)} - N_{(4)} > 0 \qquad (10.11)$$

The transition of $N = 0$ too $N > 0$ taken place in a resonance process. The consequences that $M(N)$ one $V_6$-Grid point in $P_4$-Rasters become as **resonances of the** basic pattern concerned $(\nu)_x$ and the whole numbers $0 \leq N \leq N_{max} < \infty$ **resonance orders** calls.

In (10.10) sits down $w_1$ from a scalar portion $S_C$ and from a spinor portion $S_P$ together:

$$w_1 = (1 - Q)\, S_C + Q\, S_P. \qquad (10.12)$$

For $w_1$ arises for $k = 1$ with $S_C = \sum_{i=1}^{5} X_i$ and $S_P = X_6$ the relationship:

$$w_1 = (1 - Q) \sum_{i=1}^{5} X_i + QX_6\,, \qquad (10.13)$$

with

$$\begin{aligned} X_1 &= F_{11}, \\ X_2 &= -\, p\, F_{12} \\ X_3 &= -\, p\, (\kappa q/\eta_{qx})\, F_{23}, \\ X_4 &= -\binom{P}{2}\frac{\kappa q}{\eta_{qx}}\, F_{14}, \\ X_5 &= \binom{P}{2}\frac{q}{\eta_{qx}}\, F_{15} \\ X_6 &= \kappa\, \eta_{qx}\, F_{16}, \end{aligned} \qquad (10.14)$$

where those $F_{ik}$ metronische functions are, which must be determined. For $k = 2$ it gives neither scalar nor tensor terms, but only the spinor terms $Q = 1$ and $Q = 3$.

In

$$w_2 = \sum_{r=1}^{10} Z_r \qquad (10.15)$$

become the addends $Z_r$ of q, P, κ and $\binom{P}{2}$ as well as $\binom{P}{3}$ determined. The addends of $w_2$ computed home too:

$$\begin{aligned} Z_1 &= -\,(1 - q)\, F_{21} \\ Z_2 &= (1 - P)\, F_{22} \\ Z_3 &= \binom{P}{2} F_{23} \\ Z_4 &= \varepsilon\, q_1\, \eta_{qx} \binom{P}{2} [1 + (1 + \varepsilon q_x)\, F_{24}]^{-1}\, F_{25} \\ Z_5 &= \kappa\, F_{26} \\ Z_6 &= \kappa\, q\, \eta_{11}{}^2\, F_{31} \\ Z_7 &= \binom{Q}{3}\, \eta_{qk}\, F_{32} \\ Z_8 &= \binom{P}{3} q^2 [\varepsilon\, q_x - (-1)^q]\, F_{33} \\ Z_9 &= e(P-Q)\exp[(q \ln\eta)(q-1)/4][1-(q/\eta_{kk})(2-q)\, F_{34}^{(1-\varepsilon q_x)}\, F_{35}]\, \eta_{qk}\eta^{-2}[8 - (q-1)qF]^{-1} \end{aligned} \qquad (10.16)$$

$Z_{10} = - \binom{P}{3} F_{36}.$

The unknown $F_{ik}$ and $F$ converge with rising Metronenziffer against real limit values $A_{ik}$ and $A$. ($A$ becomes $A_{66}$ written). These limit values become for those $F_{ik}$ and $F$ used into (10.12), (10.13) and (10.15), which supplies longer expressions, like it in the chapter E in the equations XVI, XVII and XVIII are indicated.

Those $A_{ik}$ by home by comparison of the empirical mass ratios of the initial states with pay-theoretical possibilities for the parameters were compared and numerically alone on the numbers $\pi$, $e$ and $\xi$ as well as on the coupling constants $\alpha_+$ and $\alpha_-$ out (8.12) led back (they are listed under formula XXIV, chapter E,).

From the analysis of the empirical resonances it results that the unknown function $f(N)$ of two portions consists:

$$f(N) = X_B(N) + X_R(N), \tag{10.17}$$

how $X_B(N)$ itself with the rise of $N$ only insignificantly changes, but $X_R(N)$ one monotonous rise also $N$ corresponds. Are valid for the addends the limit values:

$$\lim_{N \to \infty} X_B = a(\nu x) = \text{const}(N) < \infty \text{ und } \lim_{N \to \infty} X_R = b(\nu x) = \text{const}(N) < \infty,$$

then the curve family is as follows defined:

$$f(N) = [1 - Q(1-\kappa)(2-k)][a\, N/(N+2) + b\sqrt{N(N-2)} - ib\delta_{1N}] \tag{10.18}$$
$$(\delta_{1N} = 0 \text{ für } N \neq 1,\ \delta_{11} = 1)$$

$a(\nu x)$ the function of a **resonance basis** has; $b(\nu x)$ indicates as **resonance raster**, like largely those Distances of theoretical resonance levels from each other are. The resonance basis is permitted to determine:

$$a(\nu x) \equiv a = 1/k\,(1 + a_n\, a_q)\, A_4 \tag{10.19}$$

with $a_n$ and $a_q$ in chapters E, equations XXI and XXII. The resonance rasters $b(\nu x)$ are indicated in chapters E, equation XXIII.

With these relations can for everyone $V_6$-Point$(\nu)_x$ the quantities W, A and b to be numerically determined. With $W = W(1 + f)$ is (9.7)

$$\alpha_1 N_{(1)}^3 + \alpha_2 N_{(2)}^2 + \alpha_3 N_{(3)} + \exp[-(2k-1)\, N_{(4)}/3Q_4] = W_1 \tag{10.20}$$

To the regulation of $N_{(1)}$ to $N_{(3)}$ a Exhaustionsverfahren is used: the positive whole numbers so long increased by 1 up to the maximum value $N_{(1)}$ for that $\alpha_1 N_{(1)}^3 \leq W_1$ and $\alpha_1(N_{(1)}+1)^3 > W_1$ is. Then becomes $W_2 = W_1 - \alpha_1 N_{(1)}^3$ formed and the procedure for $J = 2$, i.e. $\alpha_2 N_{(2)}^2 \leq W_2$, over with this value $W_3 = W_2 - \alpha_2 N_{(2)}^2$ to form. Then becomes also $\alpha_3 N_{(3)} \leq W_3$ the value of $N_{(3)}$ by Exhaustion determines. $W_4$ is then $W_4 = W_3 - \alpha_3 N_{(3)}$.

The contribution $\mu_S F_S$ can first from the empirical measuring data $M_{emp}$ are determined. It is

$$\mu_S F_S = M_{emp} - \mu_+ (\sum_j \alpha_j G_j + q\frac{\alpha_-}{\alpha_+}) \qquad (10.21)$$

with $\mu_S = \mu_+(1 - \alpha_-/\alpha_+)$ and $\mu_+ = 4\,\mu\,\alpha_+$.$F_S$ the shape has:

$$F_S = [A_\nu F_1 F_q F_\kappa/F_2 + B_\nu(P + Q)]\,[4(1 - \alpha_-/\alpha_+)]^{-1} \qquad (10.22)$$

$F_1$ and $F_2$ functions are, of $P$, $Q$ and k are dependant; and $F_k$ and $F_\kappa$ functions are, from q and k and/or of $\kappa$ and k depend. $A_\nu$ and $B_\nu$ constants are, in those $\alpha$, $\alpha_-$ and $\alpha_+$ arise.

In (10.22) the part is summarized, that the standardization with the load term q $\alpha_-/\alpha_+$ made possible, then is valid:

$$F_S = [4(1 - \alpha_-/\alpha_+)]^{-1}\,[\Phi - 4\,q\,\alpha_-/\alpha_+] \qquad (10.23)$$

with

$$\Phi = A_\nu F_1 F_q F_\kappa/F_2 + B_\nu(P + Q) + 4q\alpha_-/\alpha_+. \qquad (10.24)$$

The new factors are introduced:

$$N_1 = \alpha_1,$$
$$N_2 = (2/3)\,\alpha_3, \qquad (10.25)$$
$$N_3 = 2\,\alpha_3,$$

with $G_j$ into the components, in which K is the temporally constant portion of the stand structure, a portion of F divides, only of that $n_j$ depends, and into a mixed portion H:

$$G_j = ¼ \sum_{j=1}^{4} 1/\alpha_J\ [K(Q_j) + H(n_j\,Q_j) + F(n_j)]\,, \qquad (10.26)$$

then a uniform spectral function of all mass terms results:

$$\boxed{M(N) = \mu\alpha_+ ( K + F + H + \Phi )\,,} \qquad (10.27)$$

with $K$, $H$, $\Phi$ and $F \hat{=} \underline{G}$ in the chapter E equation (XI) (also $Q_i = n_i$ ).

The maximally possible mass value $M_{max}$ becomes by the delimitation of the central zone $j=1$ by the rise $\alpha_1(L_1 + Q_1)^3$, also $L_1 = (n_1)_{max}$, fixed, the one multiple S that invariant $M_x$ the point $(\nu)_x$ in $V_6$-Raster $N = 0$ is: $\mu_+\alpha_1(L_1 + Q_1)^3 = SM_x$ . Hereunder applies for $k = 1$: $S = s(1) = 2(P + 1)\,M_x$, and for $k = 2$: $S = s(2) = 3(P + 1)\,M_x$, because $G(1) = 2$ and $G(2) = 3$ is. It knows the relationship

$$S(k,P) = 2/k\ G(P + 1)^{2/k}\,M_x \qquad (10.28)$$

are deduced, which with (7.44) for the numeric rise the relationship

$$\mu_+\alpha_1 = 2/k\ (k + 1)(P + 1)^{2/k}\,M_x \qquad (10,29)$$

results in. For the remaining $J > 1$ maximum occupations are as in the chapter E, equation (XXXIV) (if the equals sign is taken, and those $L_j$ Equation (XXXV) to infer are).

With the resonances $0 \leq N \leq L_N$ becomes $M(N) > M_x$ by energy input over one Suggestion for resonance reaches, so that $M(N) - M_x > 0$ on a rise $n_j$ been based.

The integral pseudo matrix $\hat{S}$ which (9.15) replaces, reads now with the suggestions $N > 0$:

$$\hat{S} = k\,P \left(\begin{smallmatrix} n & m \\ p & \sigma \end{smallmatrix}\middle\| \begin{smallmatrix} Q & \kappa \\ C & q_x \end{smallmatrix}\right]_{\varepsilon}^{N} . \qquad (10.30)$$

It is called **Stratonmatrix**. Meant $X(\nu x)$ the names of the concerned N-Resonance of $(\nu)_x$, then this is set still behind the Stratonmatrix:

$$\boxed{\hat{S} = k\,P \left(\begin{smallmatrix} n & m \\ p & \sigma \end{smallmatrix}\middle\| \begin{smallmatrix} Q & \kappa \\ C & q_x \end{smallmatrix}\right]_{\varepsilon}^{N} X(\nu x)} \qquad (10.31)$$

Examples:

1. Electron:

$$11 \left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\middle\| \begin{smallmatrix} 1 & 0 \\ 0 & -1 \end{smallmatrix}\right]_{+}^{0} e^{-} \qquad (10.32)$$

2. Nukleardoublett p and n:

$$21 \left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\middle\| \begin{smallmatrix} 1 & 0 \\ 0 & 1 \end{smallmatrix}\right]_{+}^{0} p$$

and $21 \left(\begin{smallmatrix} 0 & 0 \\ -2 & 17 \end{smallmatrix}\middle\| \begin{smallmatrix} 1 & 0 \\ 0 & 0 \end{smallmatrix}\right]_{+}^{0} n$ (10.33)

The invariant basic pattern of the term $(\nu)_x$ the measures $M_x$ describes the stationary Condition of the dynamic equilibrium of internal correlations of condensor lens rivers that $(\pm p)$, which construct altogether integral river aggregate of cyclic kind. It must a defined period duration $\Theta_x > 0$ give, during which periodically an initial condition again one adjusts. Is $T$ the duration of this resonance process, during which $M(N)$ develop can, then is $T > \Theta_x$ the condition for such a resonance $\omega_R$, also $h\omega_R > (M(N) - M_x)\,c^2$. $T < \Theta_x$ the amount of energy can $E_x = h\omega_R >> (M_L - M_x)\,c^2$ no more not to be structured. In such a case of the deeply inelastic impact energies are emitted, their structures both by the structure of the lively term and by that the resonance energy $E_r$ depend. These korpuskularen structures are radiated in shape from jets.

If into (10.31) the condition of the empty area also $n_j = -Q_j$ one introduces, remains because of $(\nu)_x$ despite $\begin{vmatrix} -Q1 & -Q2 \\ -Q3 & -Q4 \end{vmatrix} \equiv 0$ in(9.27) $\mu\alpha_{+}\Phi \neq 0$ (with exception of the $\eta$-Condition). Becomes $M_\nu = M(\nu_x) = \mu\alpha_{+}\Phi$ set, proves $M_\nu << M(e_0)$, so that it itself with (7.14) not around one Neutrino measures to act knows, and $q = 0$ is fulfilled.

For ( 0 ] the empty $R_3$ become in (10.27) in the case $n_j = -Q_j$ the portions $K + H + F = 0$, however $\Phi \neq 0$. Despite the empty space condition there are therefore neutrino masses

$$m(\nu_x) = \mu\alpha_{+}\Phi_{q=0} \neq 0 \qquad (10.34)$$

There are only neutrino conditions $\nu_x$ for masses, for which $P + Q$ is even-numbered:

$$\hat{S}\,(\nu)_x \;=\; k\,P\,\left(0\begin{vmatrix} Q & \kappa \\ C & 0 \end{vmatrix}\right]_\varepsilon \nu_x \qquad (10.35)$$

Through $(\ 0\ ]$ characterized protosimplexfreien $R_3$-Conditions can do with that empirical neutrinos to be identified. They are because of $(\ 0\ ]$ neither ponderabel, but because of $\Phi \neq 0$ also not imponderabel.

For $k = 2$ exist no neutrino conditions. After (10.27) there are neutrino places:

$$11\left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\middle\|\begin{smallmatrix} 1 & 0 \\ 0 & 0 \end{smallmatrix}\right]_\varepsilon \nu_e \ , \qquad 11\left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\middle\|\begin{smallmatrix} 1 & 1 \\ 0 & 0 \end{smallmatrix}\right]_\varepsilon \nu_\mu \ , \qquad 12\left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\middle\|\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\right]_\varepsilon \nu_\pi \qquad (10.36)$$

Because of (10.24) it gives for $q = 0$ one of k independent addends $B_\nu\,(P + Q)$, that as empirical ß-Neutrino also

$$\Phi_ß \;=\; B_\nu\,(P + Q) \qquad (10.37)$$

arises. $\nu_ß$ can from there temporally periodically into a component of the **space pin neutrino** $\nu_R$ with $\Phi_R\ = B_\nu\, Q$ and in the **ISO neutrino** $\nu_P$ with $\Phi_P\ =\ B_\nu\, P$ split up and recombine, so that the reversible relationship $\nu_ß \leftrightarrows\ \nu_P + \nu_R$ to oscillations of the field measures $m(\nu_R) = m(\nu_P)$ to the double value leads.

The possible field masses are thus:

$$\begin{aligned}
\Phi_e &= 4\,A_\nu\,(3 - \alpha)\,\sqrt{\eta_{11}}\ + 2\,B_\nu \\
\Phi_\mu &= 4\,A_\nu\,(1 + 2\xi/3\eta^2)(3 - \alpha)\sqrt{\eta_{11}}\ + 2\,B_\nu \\
\Phi_\pi &= 4\,A_\nu\,(3 - \alpha)(1 + 4\xi)^{-1}\sqrt{\eta_{11}}\ + 2\,B_\nu \\
\Phi_R &= \Phi_P = B_\nu
\end{aligned} \qquad (10.38)$$

Neutrinos are not after home metric conditions of the empty metronisierten area, but „Feldkatalyte ", as $\nu_x$ - Radiation Invarinazeigenschaften transferred and reactions of ponderabler matter field quanta make possible, which could not take place otherwise.

## 11. Experimental confirmations of the domestic structural theory

The mass formula (10.27) was printed 1982 of coworkers of the DESY (Schulz and friction gene) programmed (see chapters E) and the masses of the initial states and resonances on several hundred sides. The deviations of the theoretical from the measured values is so small (at least on 4 places exactly, deviation to electron mass about.$10^{-6}$, to proton measures about. $10^{-7}$) that the Heim structural theory
by elementary particle physics one confirms. Since there was still no selection rule for the resonance masses, by the mass formula still too many were shown. The values lie in distances to down too 20 MeVare enough. The theory says the new
Omikron particle $o^{+}$, $o^{0}$ , $o^{-}$ and$o^{--}$before. The measures of the $o^{+}$ is attached1540 MeV/c². One that
Is attached to resonances of this particle2317,4 MeV/c², that is exactly that value, that
Particle$D_{SJ}^{*}(2317)$, that was discovered recently with the experiment barbarian at the SLAC
is (2003). The existence of a neutral electron is not excluded from CERN physicists. The proof becomes however difficult because of the small activation cross-section. (Possibly are the particles from astronomical distances, found in the cosmic cosmic radiation, which are not diverted from interstellar magnetic fields, these neutral electrons). Still another indication concerning the life lasting of these short-lived suggestions must be found, in order to be able to indicate, which resonances are at all measurable.

The neutrino masses were not considered in the program counted with DESY yet. But 1989 a further formula were already supplied with to the company MBB/CDaimler Benz Aerospace AG, using which also the life lasting of the initial states and the neutrino masses can be determined.

After the death of B. Heim in the year 2001 the working group „" began Heim theory to test from the deduction of home individual numeric evaluations. According to renewed programming and calculation those could be already confirmed 1989 by home indicated masses of the neutrinos. They cover themselves with the empirical estimated values. (Ways of the substantial expenditure, which the examination of the formulas for the life lasting prepares, this part of us was not again programmed yet. The values counted by home are presented).

There into the equations except the mathematical constants $\pi$, $e$ and $\xi$ only those physical natural constants $h$, $c$and $G$are received, are the results of the computations of the exact values of this constants, particularly the gravitation constants $G$ (rel. Uncertainty $1.5\cdot10^{-3}$, dependently. The masses for the initial states of the elementary particles
became with the minimum and the maximum value for $G$, how they are indicated in the CODATA/CERN data, counted. In both cases the numeric mass values lie outside of the measuring tolerances. The most probable value determined at present from experiments becomes also$G = 6.67407 \times 10^{-11}$ m³ kg$^{-1}$ s$^{-2}$ assumed. (Gundlach and Merkowitz 2000,
Quit et al. 2002/03). With this value however the majority of the theoretical mass values lies still outside of the measuring tolerances.

Home had$G$ ( $6.6732 \times 10^{-11}$ m³ kg$^{-1}$ s$^{-2}$ )from his mass formula determines, by it that
empirical value of the proton measures used, which already led to more exact mass values for the long-lived particles (diagram compared chapter G). From the computed masses for 16 different elementary particles are appropriate for five within the measured margins of error,

whereby the deviation amounts to remaining however the no more than one order of magnitude. With a slight increase of the value for the gravitation constant, selected by home $G = 6.6733082 \times 10^{-11}$ m³ $kg^{-}1$ $s^{-2}$ already lies eight within the margins of error, whereby minimum relative deviations result in the case of the numerically determined mass values for the electron, proton and neutron.

An advancement of the Heim theory was undertaken by Drö (2003). In the polymetrischen structural theory extended on 8 dimensions the value lets itself deduce among other things the gravitation constant. With this theoretically determined value $G = 6.6733198 \times 10^{-11}$ lie likewise eight the theoretically derived masses within the margins of error.

Of the life lasting counted for 14 particles 12 lies within the empirical margins of error (diagram chapter G) compares. Therefore home structural theory was well confirmed also here.

Since out home equations are derived both the Dirac-Gleichung and the Einstein Feldgleichungen, an elementary particle mass spectrum and the reciprocal effect constants as well as a numeric value for the gravitation constant to deduce leave, this theory compared with others quite well proved.

Home halfclassical structural theory describes excluding free particles. Home wanted to treat reciprocal effects between these as that logically second step.

Home worked up to its illness in the year 1999 on the computation that life lasting of the resonances, in order to come in such a way on a selection rule. At the same time it computed the magnetic moments of the elementary particles. The documents in addition are however not delivered to us.

B. Home and W. made a proposal, which aspects of probability of the quantum theory with the structural theory Drö to combine (Drö and home 1996). How reciprocal effects are to be treated was not suggested, yet. The transformations of the particles those would have to take place in the Heim theory filter lectors also in the geometrisierten theory via production and destruction operators, $S(x)$(after 3.10 to 3,12) represent, and which the individual Hermetrieformen as probability fields affect. They make for example Euclidean with that electron/positron generation of pairs the R3-Komponenten von Elektron and Positron. In the 8-dimensionalen extension of the Heim theory by Drö the filter lectors result from projection from a possible R12. These investigations are not final yet.

As long as no better description of the characteristics of reciprocal effect-free particles is submitted by other side, the Heim theory large attention should be found and examined intensively.

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