Online ISSN : 2249-4626
Print ISSN : 0975-5896
DOI : 10.17406/GJSFR

Global Journal

of Science Frontier Research: A

Physics and Space Science

Earth Quake Model 2.0

Astrononmy Point to Turbulence

Highlights

Correction to General Relativity

Biologic Antenna of Natural Healing

Discovering Thoughts, Inventing Future

VOLUME 19 ISSUE 7 VERSION 1.0

Global Journal of Science Frontier Research: A
Physics & Space Science

Global Journal of Science Frontier Research: A
Physics & Space Science

Volume 19 Issue 7 (Ver. 1.0)

Open Association of Research Society

Incorporation No.: 0423089
License No.: 42125/022010/1186
Registration No.: 430374
Import-Export Code: 1109007027
Employer Identification Number (EIN):
USA Tax ID: 98-0673427

Global Journals Inc.

*(A Delaware USA Incorporation with "Good Standing"; **Reg. Number: 0423089**)*
Sponsors: Open Association of Research Society
Open Scientific Standards

Publisher's Headquarters office

Global Journals® Headquarters
945th Concord Streets,
Framingham Massachusetts Pin: 01701,
United States of America
USA Toll Free: +001-888-839-7392
USA Toll Free Fax: +001-888-839-7392

Offset Typesetting

Global Journals Incorporated
2nd, Lansdowne, Lansdowne Rd., Croydon-Surrey,
Pin: CR9 2ER, United Kingdom

Packaging & Continental Dispatching

Global Journals Pvt Ltd
E-3130 Sudama Nagar, Near Gopur Square,
Indore, M.P., Pin:452009, India

Find a correspondence nodal officer near you

To find nodal officer of your country, please email us at *local@globaljournals.org*

eContacts

Press Inquiries: *press@globaljournals.org*
Investor Inquiries: *investors@globaljournals.org*
Technical Support: *technology@globaljournals.org*
Media & Releases: *media@globaljournals.org*

Pricing (Excluding Air Parcel Charges):

Yearly Subscription (Personal & Institutional)
250 USD (B/W) & 350 USD (Color)

Editorial Board

Global Journal of Science Frontier Research

Contents of the Issue

Global Journal of Science Frontier Research: a
Physics and Space Science
Volume 19 Issue 7 Version 1.0 Year 2019
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

The Necessary Correction to General Relativity of P. Y. Zhou and the Errors of Hawking, Einstein and Yang

By C. Y. Lo

Abstract- Some claimed that after Einstein, Hawking could be the great physicist. However, his only verified prediction, the nonexistence of Higgs Boson, is proven wrong. His space-time singularity theorems have been proven as due to invalid physical assumptions, the unique sign for all coupling constants. Hawking also do not understand Einstein's unification and the existence of repulsive gravitation. Thus, the over-evaluation Hawking is due to out-dated knowledge in physics. In fact, both Hawking and Einstein had mistaken that $E=mc^2$ were valid, and believed in Einstein's covariance principle. In 1983, the first correction to general relativity is given by Zhou Pei-Yuan of Peking University, who points out that Einstein's covariance principle is invalid. This is subsequently verified in 2010 by Lo with explicit examples. Moreover, Einstein's theoretical justification for his covariance principle is found surprisingly due to his invalid applications of special relativity. Zhou suggested that a valid physical gauge would be the harmonic gauge whose linearized approximation has been subsequently proven valid by the Maxwell-Newton Approximation. Thus, Zhou could be right. However, C. N. Yang claimed that Zhou was wrong due to Yang's misunderstanding of the gauge invariance.

Keywords: *anti-gravity coupling; principle of causality, repulsive gravitation, $E = mc^2$.*

GJSFR-A Classification: *FOR Code: 020399*

Strictly as per the compliance and regulations of:

The Necessary Correction to General Relativity of P. Y. Zhou and the Errors of Hawking, Einstein and Yang

C. Y. Lo

Abstract- **Some claimed that after Einstein, Hawking could be the great physicist. However, his only verified prediction, the nonexistence of Higgs Boson, is proven wrong. His space-time singularity theorems have been proven as due to invalid physical assumptions, the unique sign for all coupling constants. Hawking also do not understand Einstein's unification and the existence of repulsive gravitation. Thus, the over-evaluation Hawking is due to out-dated knowledge in physics. In fact, both Hawking and Einstein had mistaken that $E=mc^2$ were valid, and believed in Einstein's covariance principle. In 1983, the first correction to general relativity is given by Zhou Pei-Yuan of Peking University, who points out that Einstein's covariance principle is invalid. This is subsequently verified in 2010 by Lo with explicit examples. Moreover, Einstein's theoretical justification for his covariance principle is found surprisingly due to his invalid applications of special relativity. Zhou suggested that a valid physical gauge would be the harmonic gauge whose linearized approximation has been subsequently proven valid by the Maxwell-Newton Approximation. Thus, Zhou could be right. However, C. N. Yang claimed that Zhou was wrong due to Yang's misunderstanding of the gauge invariance.**

Keywords: anti-gravity coupling; principle of causality, repulsive gravitation, $E = mc^2$.

A foolish faith in authority is the worst enemy of truth, --
A. Einstein.

I. Introduction

Stephen William Hawking CH CBE FRS FRSA (8 Jan. 1942 – 14 Mar. 2018) was known as a theoretical physicist, cosmologist, and author, who was director of research at the University of Cambridge at the time of his death. He was the Lucasian Professor of Mathematics at the University of Cambridge between 1979 and 2009.

Hawking's book *A Brief History of Time* appeared on the British *Sunday Times* best-seller list for a record-breaking 237 weeks. Hawking was a fellow of the Royal Society (FRS), a lifetime member of the Pontifical Academy of Sciences, and a recipient of the *Presidential Medal of Freedom*, the highest civilian award in the United States. In 2002, Hawking was ranked number 25 in the BBC's poll of the 100 Greatest Britons.

However, Hawking, who has been so much admired, actually has no verified predictions. Hawking's predictions have never been verified right, for example the non-existence the Higgs boson. Also, his widely accepted space-time singularity theorems actually have no physical evidence of support. The only support was the mathematical existence of singularities. But, it has been proven as due to invalid physical assumption of unique sign for all coupling constants [1]. Moreover, he does not understand the unification of electromagnetism and gravitation [2]. Thus, he did not know the existence of the repulsive gravitation. He also accepted the invalid covariance principle and the incorrect $E = mc^2$. [1)]

On the other hand, out-standing work of Zhou Pei-Yuan [3] was ignored because he pointed out the invalidity of Einstein's covariance principle. Thus, a reputation alone without supporting evidences, are not reliable because human judgment can be wrong. Therefore, it is necessary to examine the work of Zhou and Einstein rigorously.

II. Invalidity of Einstein's Covariance Principle--the Correction of Zhou Pei-Yuan

General relativity is based on three building blocks [4, 5]. They are: 1) the equivalence principle, 2) the covariance principle, and 3) the Einstein field equation. The equivalence principle is supported by mathematics as well as experiments [6, 7]. (Einstein's Einstein–Minkowski condition has its foundation in the mathematical theorems of Riemannian geometry. Einstein [4] stated that the gravity of the earth is not equivalent to an accelerated frame.) The Einstein equation is supported by its predictions [4, 5]. However, the covariance principle is strangely justified with special relativity [4], although special relativity has been firmly known to have nothing to do with gravitation. Moreover, his covariance principle is clearly in conflict with the equivalence principle that gives definite time dilation and space contractions for a given coordinate system [8]. However, the covariance principle claimed that physical quantities are invariant with respect to gauge. Thus, I also find Einstein's covariance principle is not convincing.

In 1983, Zhou Pei-Yuan [3] criticizes that Einstein's covariance principle as "*Coordinates don't matter*" is incorrect in physics. Zhou pointed out "In the

Author: Applied and Pure Research Institute, 15 Walnut Hill Rd., Amherst, NH 03031. e-mail: c_y_lo@yahoo.com

past thirty years exact solutions of Einstein's field equations have been found by using different mathematical techniques. But their author have admit that 'most of the known exact solutions describe situations which are frankly unphysical [9]'. Zhou [3] therefore suggests that the harmonic condition as an additional condition. to substitute the covariance principle. He comments that "The concept that coordinates don't matter in the interpretation of Einstein's theory ... necessarily leads to mathematical results which can hardly have a physical interpretation and are therefore a mystification of the theory".

However, Zhou thought that his explanation would be sufficient to convince others. Zhou has not shown that Einstein's justification [4], based on special relativity, for his covariance principle is invalid. Since Einstein was the authority in special relativity, few was convinced by Zhou's argument [2] because it would mean Einstein was wrong. Nevertheless Zhou correctly believed he is right although no one really supported him in the academic world.

On the other hand, Einstein's view was supported by the fact that very different coordinate systems lead to the same first order approximation for the bending light [4, 5]. In 2003, it is even proven [10, 11] that the second order approximation also invariant with respect to different coordinates (i.e. different gauges). Nevertheless. upon close examination, it is found that different gauges lead to different relation between the shortest distance r_0 from the sun center with the impact parameter b [12]. For the isotopic gauge and the harmonic gauge the relation is respectively, $b \approx m + r_0$, where $m = GM/c^2$, M is the mass of the sun, and G is the Newtonian constant (1)
or

$$b \approx 2m + r_0. \qquad (2)$$

Accordingly, one has to decide first what the actual gauge is in reality. Thus, through this example, gauge invariance is clearly invalid in physics. In other words, Einstein's claim of gauge invariance is wrong in physics. [3]

III. Einstein's Erroneous Justification of his Covariance Principle

Since the covariance principle is proven invalid [12], Einstein's justification cannot be correct. Now, let us examine Einstein's calculation [4]. Einstein considers a Galilean system of reference K(x, y, z, t) and also a system of co-ordinates K'(x', y', z', t') in uniform rotation relatively to K. Let the origins of both systems as well as their axes of z and z', permanently coincide. Then, he considers a circle and the quotient of the circumference and diameter of this circle.

Einstein argued that with a measuring-rod at rest relatively to the Galilean system K, the quotient would be π. However, with a measuring-rod at rest relatively to K', the quotient would be greater than π. He claimed that "This is readily understood if we envisage the whole process of measuring from the "stationary" system K, and take into consideration that the measuring-rod applied to the periphery undergoes a Lorentzian contraction, while the one applied along the radius does not. Hence Euclidean geometry does not apply to K'."

Einstein further argued "we are unable to introduce a time corresponding to the physical requirements in K', indicated by clocks at rest relatively to K'." He imagined two clocks of identical construction placed, one at the origin of the coordinates, and the other at the circumference of the circle, and both envisaged from the stationary system K. By a familiar result of the special theory of relativity, the clock at the circumference -- judged from K -- goes more slowly than the other, because the former is in motion and the latter is at rest. Einstein continued, "So, he will be obliged to define time in such a way that the rate of the clock depends upon where the clock may be." Einstein therefore reach this result: In the general theory of relativity, space and time cannot be defined in such a way that difference of the spatial co-ordinates can be directly measured by the unit measuring-rod, or differences in the time co-ordinate by a standard clock. So, he jumped into the conclusion that "to regard all the imaginable systems of co-ordinates, on principle, as equally suitable for the description of nature.

Thus, Einstein claims, "*The general laws of nature are to be expressed by equations which hold good for all systems of co-ordinates, that is, are co-variant with respect to any substitutions whatever (generally co-variant).*" Whitehead [13] considered this conclusion to be unacceptable in physics, but he failed to point out that Einstein's covariance principle is invalid.[4] *It will be shown that Einstein's errors in his arguments is due to that he invalidly integrated measurements from different coordinate systems.*

IV. Einstein's Invalid Applications of Special Relativity

It is clear from Einstein that special relativity has nothing to do with gravitation. Nevertheless, Einstein strangely had succeeded in arguing for his covariance principle with special relativity. However, many (including this author) had failed to see that his arguments are actually invalid. To see Einstein's errors, consider a Galilean (inertial) system of reference K(x, y, z, t) and a system K'(x', y', z') in a uniformly rotation (relatively to K). The originals of both systems and their axes of z and z' coincide.

Now, consider a particle *P* resting at K'(r', ϕ', z', ct'). The local space of *P* is *L**(*dR*, *dX*, *dz*', *cdT*) with a Minkowski metric. In *K*, *P* has a position (*r* , ϕ , *z)* and its

local space (dr, $rd\phi$, dz, cdt) has the Minkowski metric. These two local spaces have a relative velocity $r\Omega$ in the ϕ-direction. Here X has the same direction as $rd\phi$.

From this example, we can show further that Einstein's justifications for his theory of measurement[1,2] are invalid. According to special relativity, one has $dz = dz'$ and $dr = dR$, and the Lorentz transformations are as follows:

$$rd\phi = [1 - (r\Omega/c)^2]^{-1/2} [dX + r\Omega dT], \qquad (3a)$$

and

$$cdt = [1 - (r\Omega/c)^2]^{-1/2} [cdT + (r\Omega/c)dX]; . \qquad (3b)$$

or

$$dX = [1 - (r\Omega/c)^2]^{-1/2} [rd\phi - r\Omega dt], \qquad (4a)$$

and

$$dT = [1 - (r\Omega/c)^2]^{-1/2}[dt - (r\Omega/c^2) rd\phi]. \qquad (4b)$$

It follows that if dX is measured simultaneously (i.e., $dt = 0$) from K, then from Eq. (4a) one has

$$dX = [1 - (r\Omega/c)^2]^{-1/2} [rd\phi]. \qquad (5a)$$

This is a space contraction for L* ($dX > r\, d\phi$). For a clock fixed at L* (i.e., $dX = 0$), from Eq. (3b) we have

$$cdT = [1 - (r\Omega/c)]^{1/2} cdt \qquad (5b)$$

if measured from K. This is a time dilation for L*($dt > dT$).

From Eq. (5a), Einstein concluded that $U/D > \pi$, where D is the diameter of a circle and U is its circumference. Since all the measurements in Eq. (5a) are done in K, Einstein mistakenly considered that the integration of Eq. (5a),

$$U = (1/2)[1 - (D\Omega/2c)^2]^{-1/2} \oint Dd\phi = \pi D[1 - (D\Omega/2c)^2]^{-1/2} \qquad (6)$$

is valid. The error is that the distance dX in Eq. (5a) is in a local space L^*, and all L^*s are under different accelerations. Moreover, the space K is in a relative motion with respect to K'. Space contractions and the time dilation are incompatible since the space K' and such a local space L^* are at rest with each other. Thus, Eqs. (5a) and (5b) actually have nothing to do with Einstein's equivalence principle.

In other words, for this case, Einstein's claims for space contractions and the time dilation are supported with invalid arguments [14]. Therefore, to clarify the issue of measurements, one should derive a space-time metric and show that such a metric satisfies Einstein's equivalence principle. For the case of a rotating disk, the transformation to a uniformly rotating reference frame $K'(x', y', z')$ with angular velocity Ω has the form [15]

$$x = x' \cos \Omega t - y' \sin \Omega t,\ y = x' \sin \Omega t + y' \cos \Omega t, \text{ and } z = z', \qquad (7a)$$

or

$$r = r', \qquad z = z', \text{ and } \phi = \phi' + \Omega t \qquad (7b)$$

Then a metric in terms of the coordinates in K'(x', y', z') can be obtained from (7b); and

$$dr = dr' , dz = dz', \text{ and } d\phi = d\phi' + \Omega dt. \qquad (7c)$$

The transformed metric in system K'*(x' y', z', ct) would then have the following form,

$$ds^2 = (c^2 - \Omega^2 r^2)\, dt^2 - 2\Omega r^2\, d\phi' dt - dr^2 - r^2\, d\phi'^2 - dz'^2, \qquad (8)$$

$$g^{ct\,ct} = 1, \quad g^{r'r'} = g^{z'\,z'} = -1, g^{\phi'\phi'} = -(1 - \Omega^2 r'^2/c^2)/r'^2,$$

and $$g^{\phi' ct} = g^{ct\,\phi'} = -\Omega/c \qquad (9)$$

are the non-zero elements of the inverse metric. The force acting on particle P at rest with mass m is then mv^2/r'. Moreover, Eq. (7a) implies that

$$r' = r, \quad x' = r\cos\phi', \quad \text{and} \quad y' = r\sin\phi', \qquad (10)$$

Thus, (10) means that K'(x', y' z') also has a Euclidean-like structure. Therefore, Einstein's claim is incorrect.

The metric (8) could have led to the "light speed" $rd\phi'/dt$ larger than c. To rectify this situation, one must have a metric with the local time t' of K'. Now, consider the local space L^* from Eqs. (4a), (4b), and (7c). We have

$$dX = [1 - (r\Omega/c)^2]^{-1/2} rd\phi' , \qquad (11a)$$

and

$$dT = [1 - (r\Omega/c)^2]^{1/2} \{dt - [1 - (r\Omega/c)^2]^{-1}(r\Omega/c^2) rd\phi'\} \qquad (11b)$$

Then

$$ds^2 = (c^2 - \Omega^2 r^2) \{dt - [1 - (r\Omega/c)^2]^{-1}(r\Omega/c^2) rd\phi'\}^2$$

$$- dr^2 - [1 - (r\Omega/c)^2]^{-1} r^2\, d\phi'^2 - dz'^2. \qquad (11c)$$

Note that the space L* is the local space of the Einstein-Minkowski condition. Consequently, we should have

$$ds^2 = g_{t't'}\, c^2 dt'^2 - dr'^2 - (1 - \Omega^2 r'^2/c^2)^{-1} r'^2\, d\phi'^2 - dz'^2. \qquad (12)$$

Now, (11a) implies that the metric has space contractions. According to Landau & Lifshitz [15], we should have

$$ds^2 = (c^2 - \Omega^2 r'^2)\, dt'^2 - dr'^2 - (1 - \Omega^2 r'^2/c^2)^{-1} r'^2\, d\phi'^2 - dz'^2. \qquad (13)$$

$$cdt' = cdt - (r\Omega/c) rd\phi' [1 - (r\Omega/c)^2]^{-1},$$

and

$$dT = [1 - (r\Omega/c)^2]^{1/2}\, dt' \qquad (14)$$

Eq. (14), which is different from (5b), implies that for a local clock fixed at K' an observer at K would have

$$dt' = dt. \qquad (15a)$$

Thus, Einstein's claim on this time dilation is clearly invalid. Moreover, as Kundig [7] has shown, the time dilation (14) is valid. For a local clock fixed at K, however, an observer at K' would have $dt' = [1 - (r\Omega/c)^2]^{-1}\, dt$.

Moreover, since r = r', (11a) and (5a) imply

$$rd\phi\,[1 - (r\Omega/c)^2]^{-1/2} = dX = r'd\phi'\,[1 - (r\Omega/c)^2]^{-1/2},$$

and

$$rd\phi = r'd\phi' \qquad (15b)$$

Thus, Einstein's claim of U/D > π is also invalid. Note that $[1 - (r\Omega/c)^2]^{-1/2}\, rd\phi'$ is a distance measured in the different system L*. Metric (8) and canonical metric (13) are related to each other by relation (7c). However, in (14), dt' is related to dT of the local systems L*(dR, dX, dz', cdT) at different t, r, and ϕ'; and from (14) we have

$$cdt' = cdt - (r\Omega/c)\, rd\phi'[1 - (r\Omega/c)^2]^{-1}. \qquad (16)$$

Thus Eq. (16) is not integrable. Nevertheless, the Einstein–Minkowski condition is satisfied.

Therefore, the Euclidean-like structure (10) is physically realizable in terms of measurements. Note that without a physical reason, Wald [16] rejected the equivalence principle, but accepted the covariance principle [5)]. Moreover, Wald also claims the existence of second order dynamic solution without providing one. Note that Misner, Thorne & Wheeler [17] also made invalid claims [18].

V. Einstein's Strange Theory of Measurement and the Errors of C. N. Yang

Einstein's invalid application of special relativity exposed a problem, the questionable Einstein's theory of measurement. Based on Riemannian geometry, it is natural to adapt its theory of measurement. However, physics suggested, as pointed out by Whitehead [13] that measurements should be based on "the Euclidean-like structure".

First, based on the equivalence principle, the space contraction and the time dilation is based on the Euclidean-like structure. Second, the calculation of the bending of light is based on the Euclidean-like structure. However, Einstein's theory of measurement actually has not been used in his calculations.

In fact, Einstein stated that the light speed is measured "in the sense of Euclidean geometry [4]," and all of Einstein's predictions are in terms of the Euclidean-like structure. A ray of light, traveling the shortest distance Δ from the center of sun with mass M will be deflected by an amount $M\kappa/2\pi\Delta$.[1,2] The secular rotation of the elliptic orbit of the planet has the same sense as the revolution of the planet, amounting in radians per revolution of $24\pi^3a^2/(1 - e^2)c^2T^2$. Also Δ, e the eccentricity and a the semi-major axis of the planetary orbit in centimeters are defined in terms of the Euclidean-like structure, and T the period of revolution in seconds is defined in terms of the time of a quasi-Minkowskian space [19].

The need of Einstein's theory of measurement actually comes from the desire to show the expansion of the universe. It is well known that the popular space time metric is the following [20]:

$$ds^2 = -d\tau^2 + a^2(\tau)\{dx^2 + dy^2 + dz^2\}, \qquad (17)$$

since

$$S = \frac{\lambda_2 - \lambda_1}{\lambda_1} = \frac{\omega_1}{\omega_2} - 1 = \frac{a(\tau_2)}{a(\tau_1)} - 1 \quad , \qquad (18)$$

where ω_1 is the frequency of a photon emitted at event P_1 at time τ_1, and ω_2 is the frequency of the photon observed at P_2 at time τ_2 [16]. Furthermore, for nearby galaxies, one has

$$a(\tau_2) \approx a(\tau_1) + (\tau_2 - \tau_1)\dot{a} \qquad (19)$$

If

$$(\tau_2 - \tau_1) = L = \int_1^2 \sqrt{dx^2 + dy^2 + dz^2} \qquad (20)$$

then

$$S = \frac{\dot{a}}{a}L = H\,L, \text{ and } H = \frac{\dot{a}}{a}. \qquad (21)$$

Formula (20) is compatible with the calculation in the bending of light. Please note that Hubble's Law need not be related to the Doppler redshifts. Understandably, Hubble rejected such an interpretation himself [21]. In fact, there is actually no receding velocity since L is fixed (i.e., $dL/d\tau = 0$).

On the other hand, if one chooses to define the distance between two points as

$$R = \int_1^2 a(\tau)\sqrt{dx^2 + dy^2 + dz^2} = a(\tau)L, \qquad (22)$$

This is the distance of a Riemannian space. Then

$$v = \frac{dR}{d\tau} = \frac{da}{d\tau}L + \frac{dL}{d\tau}a = \frac{da}{d\tau}\frac{R}{a} = HR, \text{ if } \frac{dL}{d\tau} = 0. \qquad (23)$$

Note that according to (20), (22) would have to change into $(\tau_2 - \tau_1) = R$, and (21) into S = H R. Thus,

$$v = S. \tag{24}$$

This means that the redshifts could be superficially considered as a Doppler effect. Thus, whether Hubble's Law represents the effects of an expanding universe is a matter of the interpretation of the local distance. From the above analysis, the crucial point is what is a valid physical velocity in a physical space.

It should be noted that $dL/d\tau = 0$ means that the space coordinates are independent of the metric. In other words, the physical space has a Euclidean-like structure [22], which is independent of time. However, since L between any two space-points is fixed, the notion of an expanding universe, if it means anything, is just an illusion. Moreover, the validity of (22) as the physical distance has no known experimental supports. Moreover, a problem is that the notion of velocity in (23) would be incompatible with the light speeds in the calculation of light bending experiment.

In mathematics the Riemannian space is often embedded in a higher dimensional flat space [23]. Then the coordinates dx^{μ} are determined by the metric through the metric,

$$ds^2 = g_{\mu\nu}\, dx^{\mu}dx^{\nu}, \qquad \text{or } -g_{tt}dt^2 + g_{ij}dx^i dx^j \tag{25}$$

such as the surface of a sphere in a three dimensional Euclidean space. For a physical space, however, it is impossible to determine the coordinates with the metric since the metric is a variable function, In view of this, the coordinates must be physically independent of the metric. Moreover, it has been proven [22] that a frame of reference with the Euclidean-like structure must exist for a physical space.[6)]

For a spherical mass distribution with the center at the origin, the metric with the isotropic gauge is,

$$ds^2 = -[(1 - M\kappa/2r)^2/(1 + M\kappa/2r)^2]\, c^2dt^2 + (1 + M\kappa/2r)^4(dx^2 + dy^2 + dz^2) \tag{26}$$

where $\kappa = G/c^2$ ($G = 6.67 \times 10^{-8}$ erg cm/gm^2), M is the total mass, and $r = \sqrt{x^2 + y^2 + z^2}$. Then, if the equivalence principle is satisfied, the light speeds are determined by $ds^2 = 0$ [4, 5], i.e.,

$$\frac{\sqrt{dx^2 + dy^2 + dz^2}}{dt} = c\frac{1 - M\kappa/2r}{(1 + M\kappa/2r)^3} \tag{27}$$

However, such a definition of light speeds is incompatible with the definition of velocity (23) although compatible with (20). Since this light speed is supported by observations, (23) is invalid in physics.

Nevertheless, Liu [24] has defined light speeds, which is more compatible with (8), as

$$\frac{\sqrt{g_{ij}dx^i dx^j}}{dt} = c\frac{1 - M\kappa/2r}{1 + M\kappa/2r} \tag{28}$$

for metric (26). However, (28) implies only half of the deflection implied by (27) [4, 5].

The above analysis also explains why many current theorists insist on that the light speeds are not defined even though Einstein defined them clearly in his 1916 paper as well as in his book, "The Meaning of Relativity". They might argued that the light speeds are not well defined since diffeomorphic metrics give different sets of light speeds for the same frame of reference. However, they should note that Einstein defines light speeds after the assumption that his equivalence principle is satisfied [4, 5]. Different metric for the same frame of reference means only that at most only one of such metrics is physically valid [22], and thus the definition of light speeds are well-defined.

However, since a valid physical metric has not been solved, whether a light speed is valid remains a question. Nevertheless, it has been proven that the Maxwell-Newton Approximation gives the valid first order approximation of the physical metric, the first order of the physically valid light speeds are solved [22]. Since metric (26) is compatible with the Maxwell-Newton approximation, the first order of light speed (27) is valid in physics. Thus, the speculation that local light speeds are not well-defined is proven incorrect.

In conclusion, the velocity definition (23), which leads to the notion of the Doppler redshifts, has been rejected by experiments. The claim of expanding universe is based on the belief that the universe started from a space-time singularity. However, since the singularity theorems are based on invalid assumptions [1] and the popular interpretation of Hubble's Law is invalid, the notion of an expanding universe needs to be rejustified.

Another problem is that C. N. Yang claimed Zhou's view was invalid. It is well-known that the Yang-Mills-Shaw [25, 26] theory is based on the notion of gauge invariance. However, if gauge invariance were correct, Einstein's covariance principle should be valid [27], but it is not. It should be noted that the Yang-Mills-Shaw theory has not produced anything meaningful in physics until the notion of spontaneous broken symmetry was discovered. Weinberg [27] showed that all the physical non-Abelian gauge theories are not gauge invariant.

In fact, a physical Yang–Mills theory is not gauge invariant because masses must be generated, as Salam [28] pointed out "one could not obtain a mass without wantonly destroying the gauge symmetry one had started with." Now, it is clear that Hawking actually has zero proven achievement in Physics. However, the mistakes of C. N. Yang on general relativity still have not been recognized because he is a Nobel Laureate. This shows that many Chinese physicists have a blind faith

toward foreign authorities. Moreover, I hope that C. N Yang would the responsibility to rectify his mistakes..

VI. Conclusion and Discussions

Fundamental concepts in a great theory are often difficult to grasp. To mention a few, this happened to Newton, Maxwell, Planck, Schrödinger, and Yang [29]. Some even claimed that the light speed was not well-defined. Einstein is simply not an exception. Unlike Newton, Einstein did not have an adequate background in mathematics to deal new physics, and this affects the logical structure of his theory (see also Section 4). He believed that the solutions with different gauges were equally valid [4] and did not understand that his covariance principle is inconsistent with his notion of weak gravity [30]. P. Y. Zhou [3] of Peking University was probably the first who correctly rejected Einstein's invalid covariance principle but accepted Einstein's equivalence principle [31].[7)]

A basic misunderstanding is that general relativity deals only with phenomena on a macroscopic scale. This is related to the inadequate assumption of Einstein that photons consist of only electromagnetic energy. However, it has been shown that photons must include non-electromagnetic energy, which turns out to be the gravitational energy [32-34]. Electromagnetism and gravitation should be unified since a charged particle is always massive.

Since the covariance principle is not valid, it is necessary to find the physical gauge of reality. However, Wald's invalid theory is still popular in China. To this end, it has been found that the Maxwell-Newton Approximation (MNA) is a valid first order approximation if the sources are massive matter [28]. Since the MNA of 1995 is a direct result of his equivalence principle [35] Einstein's equation with the harmonic gauge has been confirmed for the static case.

The Einstein equation has been proven invalid for a dynamic case [28],[8)] but the Hulse and Taylor binary pulsar experiments confirm that the Einstein equation is rectifiable with an additional source term of the gravitational energy-momentum tensor [28, 36] whose exact form is still unknown. Thus, it is necessary to find out this. However, the Schwarzschild solution, which is incompatible with MNA, is actually invalid in physics.

Einstein's justification for his theory of measurement is discovered as based on invalid applications of special relativity [3, 4]. Nevertheless, spatial measurements are provided by the necessary existence of the Euclidean-like structure for a physical space [22]. Such a justification misled many into believing that his theory of measurement was a natural extension of special relativity. Therefore, many tried to defend Einstein's covariance principle with highly imaginative but invalid arguments [37]. This shows that logical maturity in physics is in short supply.[9)]

Currently, many mistook such logical maturity of some famous people such as Wald and Einstein for granted. Moreover, many failed to see that the notion of a photon should include gravitational energy [33, 38], and the space-time singularity theorems are irrelevant to physics. Hawking not only has no verified predictions, but also as the American Physical Society, does not understand Einstein's unification and related repulsive gravitation [2]. Unfor-tunately, the Chinese just like other physicists in the world also does not understand the necessity and importance of Zhou's correction to general relativity because their blind faith toward Einstein's theory.

Weinberg [39] pointed out, "Our work in science is cumulative. We really do know more than our predecessors, and we can learn about the things that were not understood in their times by looking at the mistakes they made." He remarked, "Perhaps most important, by showing that we are aware of mistakes made by even the greatest scientists, we set a good example to those who follow other supposed paths to truth. We recognize that our most important scientific forerunners were not prophets whose writings must be studied as infallible guides -they were simply great men and women who prepared the ground for the better understandings we have now achieved."

Great physicists are made by their contributions, but progress is often made by discovering their errors. And logical maturity in physics often plays a crucial role. However, to cover up ignorance, as Richter [40] pointed out, some protect themselves by treating theoretical physics as if it were a kind of religion. Such an attitude makes for added difficulties for those that follow. Modern physics has been developed to such a stage that frontier theorists can no longer afford to ignore physical principles and/or to leave all pure mathematics to mathematicians [41]. It is interesting to note that the Reissner–Nordstrom metric, on which unification is based, was derived as early as in 1916. This illustrates how conceptual and mathematical errors can hinder progress in physics.

Einstein's errors started with his interpretation of distances in a Riemannian space and the assumption that photons consist of only electromagnetic energy. These errors make a systematic analysis necessary. Implications of the static case of general relativity lead to the discovery of the mass-charge interaction [42, 43], the conditional validity of $E = mc^2$ demonstrated experimentally [44-48], and the need for a unified theory [42. 49]. Zhou's work is important since it has been found that even invalid theory can produce correct answer for the bending of light [50].

Unfortunately, the 1985 paper of Zhou and Liu [51] on the exact gravitation wave solutions was erroneous [52]. In the abstract, this paper claimed the existence of bounded plane wave solutions, but its content shows that there is no bounded wave solution.

At his old age, Zhou probably simply trusted this paper because it was approved by almost all the Chinese theorists in general relativity. I wrote a paper pointing out this unpleasant fact, but the Chinese Physics failed to find a referee for it. Finally it was published in the Astrophys. Space Sciences in 2006 [52].

Had Zhou been more careful, he would have discovered that the Einstein equation actually has no bounded dynamic solution [28]. Then Zhou could have obtained a Nobel Prize for this. Nevertheless, Zhou's work on the rectification of general relativity was not generally accepted in China. This reflexes that many Chinese especially in theoretical physics are still at the stage of accepting foreign authority without adequate careful thinking [53].

In short, we have already learned that the so-called "authorities" are not reliable and Einstein's unification is important and valid in physics. Moreover, the crucial interaction of repulsive gravitation is discovered [2]. Now it is time to reexamine the errors in physics, and based on experiments and rigorous logic to rectify existing theories.

Acknowledgments

This paper is dedicated to P. Morrison who taught us that physics must be based on experiments. This work is supported, in part, by the Chan Foundation and Szecheon Co. Hong Kong, Special Administrative Region of China.

Endnotes

1) Recently, $E = mc^2$ has been proven not generally valid theoretically as well as experimentally [54]. Thus, Hawking was over evaluated because of out-dated theories.
2) I agree with Zhou's argument. But, I was already convinced that the covariance principle was incorrect in my own way because it is in conflict with the equivalence principle. Zhou's work was not well-recognized in China because some Chinese Professors even had blind faiths on R. M. Wald [16] and J. A. Wheeler [18], who do not understand even the basics of general relativity [18]. It is interesting that the notion of black holes was proposed by Wheeler.
3) In Einstein's arguments for his principle, he emphasized that a physical theory is about the coincidences of the space-time points, but the meaning of measurements is crucially omitted [4]. However, to describe events, one must be able to relate events of different locations in a definite manner [12]. Eddington [55] commented, "space is not a lot of points close together; it is a lot of distances interlocked." Moreover, as pointed out by Morrison, the "covariance principle" is invalid because it disrupts the necessary physical continuity from special relativity to general relativity [56]. In fact, Einstein's "principle of covariance" has no theoretical basis in physics [4].
4) Thus, it is clear that Zhou is a first class theoretician who can stand out alone and being correct. Some scientists seemed had the similar idea, but none of them can stand out alone and claimed being correct. Zhou deserve our highest respect even he did not get a Nobel Prize due to the shortcomings of the Committee.
5) If Einstein's invalid application of special relativity for general relativity has not been discovered, it is unclear how much faith one should have in the so-called "experts" of general relativity such as Wald [15]. Feynman [57] commented that many relativists are not competent, but this seems to be just an over simplified evaluation.
6) The metric of a Riemannian space can actually be compatible with the space coordinates with the Euclidean-like structure. For example, the Schwarzschild solution in quasi-Minkowskian coordinates is,

$$ds^2 = -(1 - 2M\kappa/r)c^2dt^2 + (1 - 2M\kappa/r)^{-1}dr^2 + r^2(d\theta^2 + \sin\theta^2 d\varphi^2), \quad (A)$$

where

$$x = r\sin\theta\cos\varphi,\ y = r\sin\theta\sin\varphi, \quad \text{and} \quad z = r\cos\theta. \quad (B)$$

Coordinate transformation (B) tells that the space coordinates satisfy the Pythagorean theorem. The Euclidean-like structure represents this fact, but avoids confusion with the notion of a Euclidean subspace, determined by the metric. Metric (A) and the Euclidean-like structure (B) are complementary to each other in the Riemannian space. These space-time coordinates forms not just a mathematical coordinate system since a light speed ($ds^2 = 0$) is defined in terms of dx/dt, dy/dt, and dz/dt.
7) As Mao pointed out, many Chinese have blind faith toward foreign authorities. So they simply do not believe Zhou Pei-Yuan [3] without even checking.
8) However, currently many theorists still incorrectly believed that the Einstein equation had dynamic solutions although they have never seen one [58]. One of the problem of Einstein is that he believed in his intuition without going through the experimental or mathematical verifications [54]. In fact, Einstein has not solved the perihelion of Mercury [28]. As Gullstrand [59] suspected that the Einstein equation has no bounded dynamic solutions [28]. Mao [53] pointed out that many Chinese have a blind faith toward foreign authorities. So, they simply do not believe Zhou Pei-Yuan [3] eveen without checking. Moreover, some physicists even absurdly claimed that the Einstein equation has bounded dynamic solutions [58] although they get only unbounded solutions.

9) Many believed that the Einstein equation had bounded dynamic solutions because Einstein claimed so and also the linearized equation has. However, for the dynamic case, the Einstein equation and the linearized equation are not compatible [58].

References Références Referencias

1. C. Y. Lo, The Question of Space-Time Singularities in General Relativity and Einstein's Errors, GJSFR Vol.15-A, Issue 4, Version 1.0 (2015).
2. C. Y. Lo, Gravitation, Physics, and Technology, Physics Essays, **25** (4), 553-560 (Dec. 2012).
3. Zhou Pei-Yuan (P. Y. Chou), *Proceedings of the Third Marcel Grossmann Meetings on General Relativity*, edited by H. Ning (Science Press/North Holland, Amsterdam, 1983), pp. 1–20.
4. A. Einstein, H. A. Lorentz, H. Minkowski, and H. Weyl, *The Principle of Relativity* (Dover, New York, 1952).
5. A. Einstein, *The Meaning of Relativity (1922)* (Princeton University Press, Princeton, NJ, 1974).
6. J. L. Synge, *Relativity; The General Theory* (North-Holland, Amsterdam,1971).
7. W. Kundig, Phys. Review, 129, 2371 (1963).
8. Einstein's Equivalence Principle, its Justifications, and Misinterpretations, XIII Moscow International Conference on Physical Interpretations of Relativity Theory, Monday 2 July – Thursday 5 July 2007.
9. Kramer, D., Stephani, H., Herit, E. & Mac Callum, M., Exact Solutions of Einstein's Field Equation, Cambridge University Press, 1980, 19
10. J. Bodenner and C. M. Will, Am. J. Phys. **71**, 770 (2003).
11. J. M. Gérard and S. Piereaux, e-print arXiv:gr-qc/9907034, v1, July 8, 1999.
12. C. Y. Lo, On Gauge Invariance in Physics & Einstein's Covariance Principle, Phys. Essays, **23** (3), 491 (2010).
13. A. N. Whitehead, *The Principle of Relativity* (Cambridge University Press, Cambridge, 1922).
14. C. Y. Lo, Einstein's Principle of Equivalence, and the Einstein-Minkowski Condition, Bulletin of Pure and Applied Sciences, 26D (2), 73-88 (2007).
15. L. D. Landau and E. M. Lifshitz, *The Classical Theory of Fields* (Pergamon, New York, 1975).
16. R. M. Wald, *General Relativity* (University of Chicago Press, Chicago, 1984).17, 18
17. C.. W. Misner, K. S. Thorne, & J. A. Wheeler, Gravitation (Freeman, San Francisco, 1973).
18. C. Y. Lo, Errors of the Wheeler School, the Distortions to General Relativity and the Damage to Education in MIT Open courses in Physics, GJSFR vol. 13 Issue 7, Ver. 1.0 (2013).
19. S. Weinberg, *Gravitation and Cosmology* (Wiley, New York, 1972), p. 3.
20. H. C. Ohanian & R. Ruffini, *Gravitation & Spacetime* (Norton, New York, 1994).
21. G. J. Whitrow, " Edwin Powell Hubble," Dictionary of Scientific Biography, New York, Charles Scribner's Sons, Vol 5, 1972, p. 532
22. C. Y. Lo, Chinese J. of Phys., 41 (4), 332 (2003).
23. P. A. M. Dirac, *General Theory of Relativity* (John Wiley, New York, 1975).
24. Liu Liao, General Relativity (High Education Press, Shanghai, 1987), pp 26-30.
25. C. N. Yang & R. L. Mills, Phys. Rev. 96, 191 (1954).
26. Ron Shaw, Ph. D. thesis, Cambridge University (1955).
27. S. Weinberg, The Quantum Theory of Fields, Vol. II (Cambridge University Press, 1996).
28. A. Salam, Nobel Lecture, 8 December 1979.
29. C. N. Yang, Phys. Rev. Lett. 33, 445 (1974).
30. C. Y. Lo, Astrophys. J. 455, 421 (1995); S. Chandrasekhar, a Nobel Laureate, suggested and approved the Appendix: The gravitational energy - stress tensor for the necessity of modifying Einstein equation.
31. P. Y. Zhou, *International Symposium on Experimental Gravitational Physics*, Guangzhou, 3–8 August 1987, edited by P. F. Michelson (World Science, Singapore), pp. 110–116.
32. C. Y. Lo, Proceedings of the Ninth International Scientific Conference on Space, Time, Gravitation, Saint-Petersburg, Russia, 7–11 August 2006.
33. C. Y. Lo, Prog. Phys. 1, 46 (2006).
34. C. Y. Lo, Chin. Phys. 16, 635 (2007).
35. C. Y. Lo, Phys. Essays 12, 508 (1999).
36. C. Y. Lo, Phys. Essays 13, 527 (2000).
37. C. Y. Lo, Bull. Pure Appl. Sci. Sec. D 27D, 1 (2008).
38. C. Y. Lo, Prog. Phys. 4, 14 (2006).
39. S. Weinberg, Phys. Today 58 (November), 31 (2005).
40. B. Richter, Phys. Today 59 (October), 8 (2006).
41. C. Y. Lo, Bull. Pure Appl. Sci. Sec. D 26D, 149 (2008); At the request of 't Hooft, his article on gravitational waves is attached as the Appendix B.
42. C. Y. Lo, Phys. Essays 22, 543 (2009); with the Appendix: "How to become a good theoretical physicist" by Gerard 't Hooft, which shows that his background in pure mathematics is inadequate.
43. C. Y. Lo, Phys. Essays 21, 44 (2008).
44. C. Y. Lo and C. Wong, Bull. Pure Appl. Sci. Sec. D 25D, 109 (2006)'
45. W. Q. Liu, private communication.
46. D. R. Buehler, J. of Space Mixing 2, 1 (2004) (living@doyle buehler.com.).

47. T. Musha and T. Kanamoto, Proceedings of the 38th Space Science and Technology Conference, JSASS, 1994, pp. 31–32_J.
48. T. Musha, Proceedings of the 37th Conference on Aerospace Propulsion, JSASS, 1997, pp. 342–349_J.
49. C. Y. Lo, *Physical Interpretation of Relativity Theory: Proceedings of the International Meeting*, Moscow, 2–5 July 2007, edited by M. C. Duffy, V. O. Gladyshev, and P. Rowlands (BMSTU, Moscow, 2007), p. 82.
50. C. Y. Lo, The Bending of Light Ray and Unphysical Solutions in General Relativity, Chin. Phys. (Beijing), 13 (20), 159-167 (February 2004).
51. H. Y. Liu & P. Y. Zhou, Scientia Sincia (Series A) XXVIII (6) 628-637 (1985).
52. C. Y. Lo, The Gravitational "Plane Waves" of Liu and Zhou and the Nonexistence of Dynamic Solutions for Einstein's Equation, Astrophys. Space Sci., 306: 205-215 (2006).
53. Mao Zedong. *Reform our Study* (Foreign Language Press, Peking, 1965).
54. C. Y. Lo & Richard C. Y. Hui, Comments on the Invalid Proof of Einstein on $L = mc^2$ & $E = mc^2$, Phys. Essays, Vol. 31 No. 1 (March 2018).
55. A. S. Eddington, *The Mathematical Theory of Relativity* (Chelsea, New York, 1975), p. 10.
56. C. Y. Lo, Phys. Essays 18, 547 (2005).
57. R. P. Feynman, *The Feynman Lectures on Gravitation* (Addison-Wesley, New York, 1995).
58. C. Y. Lo, The Non-linear Einstein Equation and Conditionally Validity of its Linearization, Intern. J. of Theo. and Math. Phys., Vol. 3, No.6 (2013).
59. A. Gullstrand, Ark. Mat. Astr. Fys. 16, No. 8 (1921); A. Gullstrand, Ark. Mat. Astr. Fys. 17, No. 3 (1922).

This page is intentionally left blank

Global Journal of Science Frontier Research: a
Physics and Space Science
Volume 19 Issue 7 Version 1.0 Year 2019
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

Earth Quake Model 2.0: Attract Force Equation Release Earthquake Mechanism with Explaining Related Phenomena

By Yan Ji
Henan Normal University

Abstract- Earth quake was nature phenomena, which has huge destroyed power, and make huge economic loss and human injuries and deaths. The reason of Earth quake has caused lots of researches. And predicting Earthquake has been the very important work on every day. While the mechanism of Earth quake was still unclearly, and the Earthquake predictions were still at initial stage. This paper use attract force mathematic physics model to build Earthquake mechanism model by finite element method, and try to explain the reason of Earthquake formation. At same time it was used to explain the related phenomena about Earthquake. The aims were to help for accurate predict Earthquake, and try to redeem the economic loss and save more people. This model was named Earth Quake Model 2.0, which was different and distinguished from the models before, and it was wish to help for seismic researches.

Keywords: earth quake, mathematic model, attract force equation, seismic mechanism, explain phenomena.

GJSFR-A Classification: FOR Code: 040499

Strictly as per the compliance and regulations of:

Earth Quake Model 2.0: Attract Force Equation Release Earthquake Mechanism with Explaining Related Phenomena

Yan Ji

Abstract- Earth quake was nature phenomena, which has huge destroyed power, and make huge economic loss and human injuries and deaths. The reason of Earth quake has caused lots of researches. And predicting Earthquake has been the very important work on every day. While the mechanism of Earth quake was still unclearly, and the Earthquake predictions were still at initial stage. This paper use attract force mathematic physics model to build Earthquake mechanism model by finite element method, and try to explain the reason of Earthquake formation. At same time it was used to explain the related phenomena about Earthquake. The aims were to help for accurate predict Earthquake, and try to redeem the economic loss and save more people. This model was named Earth Quake Model 2.0, which was different and distinguished from the models before, and it was wish to help for seismic researches.

Keywords: earth quake, mathematic model, attract force equation, seismic mechanism, explain phenomena.

I. Introduction

Earth quake was an antiquity nature phenomenon, which was companied with the development of Earth. Earth quake took place more than ten-thousand times on Earth every year [1]. The Earth quake have huge destroy, and make people death and more damages, with more afraid of it, which caused the scientist to research on predict Earthquake and reduce the losing.

The consensus of Earth quake before was about that the plate crash [2] on fault areas to produce shake to Earth surface to be Earth quake. This plate crash theory cannot explain many Earth quake related phenomena. The Earth voice might be easy for understand, while some other earth quake phenomena, such as Earth light, Earth electric resistance reduce, Earth rotation sudden slow, and buildings rotated collapse, which were very difficult to be explained by the "plate crash theory". So it was necessary to build a new theory system to explain Earth quake reason and seismic related phenomena.

II. Results and Discussion

a) Theory equation

The paper introduced a new model to explain Earth quake mechanism, which was named as Earth Quake Model 2.0. This model was deduced from the Newton force principle attract force equation: F=G(m1*m2)/(R^2) [Eq.1] [3]. The Einstein mass-energy equation $E=mc^2$ [4] to replace mass in Eq.1 by m=E/(c^2), then it was got that energy attract force deduction F(c^4)/G=E1*E2/R^2 [Eq.2] [5]. This equation means that the energy bodies or fields have attract-force between each other. Celestial positions can change the potential energy, which produce energy attract -force on quantum group, photon, heat flow, and other energy fields. Another deduction was that point a (mx) with b and c points (m1, and m2). The point a have received two points attract force from b and c. The a point received attract force was the vector addition from point b and c. then it can be got that the vector addition attract force deduction: F/G= m1*mx/(r1^2)-mx*m2/(r2^2). [Eq.3] [6]. The G was attract force constant, m was mass, which also can be replaced by E energy; r was distance between two mass bodies or energy bodies.

III. Energy Source

Firstly, It was to consider the energy source of Earth quake. The plate crash energy might be from Earth rotation [7]. Some scholar thought solid tide [8] caused Earth quake. It was well known that sea tides were caused by Sun and Moon movement positions' changing to produce different attract force on sea water. So it can be bold assumption that cause Earth quake energy was from cosmic celestial movements. Based on Eq. 2, energy changing can produce force actions. It means that the nearby Sun or Moon movement can effect on Earth quake, especially the solar eclipse and lunar eclipse, and with some other cosmic action, such as planets opposite the Sun, planet lined, even far distance supernova explosion. These were celestial movements that not produced the mass attract force, which produced energy attract-force, which was made by celestial movements and change related position. So it can be concluded that support Earth quake energy were from cosmic celestial energy events. These cosmic celestial movements produced attract force that acted on Earth, and then support the Earth quake energy.

Power source was from the celestial energy events. Celestial movements were normal and calm. And the mass of Sun or Moon was near to constant, and

Author: School of Chemistry and Chemical Engineering, Henan Normal University, Xinxiang, 453007, China. e-mail: jiyan98@163.com

the distance between the Sun or Moon and Earth changed to produce energy attract force. From the Newton attract force equation (Eq. 1), it was difficult to find the attract force changing on Earth by Sun or Moon. While from the deduction of Newton attract force equation (Eq. 2), energy field also caused attract force changing. The solar eclipses or lunar eclipse gave seldom mass changing, which have huge potential energy field changing. The position related huge potential energy changing transformed to change the attract force that act on Earth, and which was the Earth quake energy source. It can be deduced that the cosmic celestial movements lead to huge energy field changing to change the attract force that acted on Earth, and then supported the energy of Earth quake. The movement of celestials was not increased mass attract-force; while which could can increase energy attract force. The Earth surface, mantle, and core of Earth layers all received energy attract force from celestial energy events. The celestial energy attract force can not only act on surface but also act on Earth deep layers matter or energy bodies.

IV. Earth Model

Using finite element method was to build Earth attract force model. It set rigid balls array, every ball was 1 meter diameter and 1 Kg mass. The array set 11 X 11 balls with uniform distribution (Figure 1). Then using Newton attract force deduced equation (Eq.3) to calculate the every ball received attract force vector addition. And it was marked the attract force vector addition on every balls. Then the situation of Earth attract force distribution was shown in Figure 1.

Figure 1 gave the calculation results of the attract force distribution situation. It can be seen that the internal balls received outwards direction attract force. From center to surface, the outward attract force intensity was increased, which took on accelerated increasing and outward earth situation. While on the surface layers, the attract force take on inward attract force direction. It can be concluded that Earth internal attract force situation that the surface layer received inward attract force, the internal parts received outward attract force, and from center to surface, the attract force strength was show accelerated increasing outward earth. At the sub surface Earth layer, the internal parts received outward attract force, and surface layers received inward attract force, then the subsurface layers formed the in/out interface. There were attract force inward or outward interact in these complex interface layers.

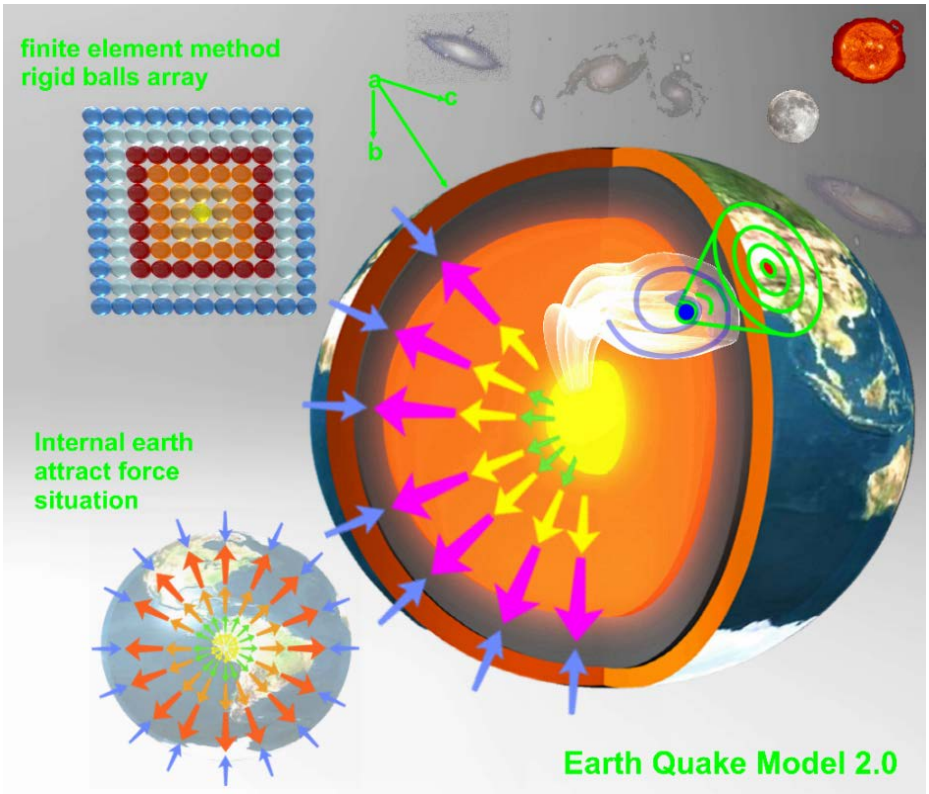


Figure 1: Attract force finite element model: Finite element method was used to consider the complex situations to give out approximated results. Base on equation F/G= m1*mx/(r1^2)-mx*m2/(r2^2)[Eq.3], it was to build Earth model. The arrows direction was attract force direction; arrows length was attract force relative strength. The finite element method gave the Earth attract force situations

Attract Force actions by cosmic celestial movements produced energy attract force. The energy fields changed energy attract-force strength, which acted on Earth core to surface. The celestial attract force vibrated the atom layer quantum to be moveable quantum clusters, and which was accelerated to be quantum flow by attract force. The Earth layers attract force gave variable acceleration on quantum flow from core to crash the in/out interface. The crash at in/out interface produced machine quake wave, and with the residue quantum flow spin and rotated to Earth surface. After celestial energy events, there was an accelerated period and an accelerated distance, through vary accelerated movements. The Earth radius was about 6000Km from center to surface, means it was about 6000Km progressive increased acceleration distance. The celestial energy attract-force leaded main quantum flow from Earth center core through mantle reach sub crust layer. The quantum flow was formed from atom layers quantum, heat quantum, light quantum, and other free quantum. Outward wave was quantum flow that formed real body wave, which moved with rotation and spin outwards. Based on Earth model, the internal quantum flow received outward attract force, and variable accelerated to fly out, the high speed real body wave was quantum flow rotated and spin. Based on the Earth finite element model, the surface Earth layers received inwards attract force, so there formed in/out interacted layer, which was higher density and hard stone solid layer. The in/out interface layer was nearby the surface of Earth, at sub layers of crust with high density that was different from mantle liquid. The internal outwards quantum flow was accelerated to fly out, when it reach in/out interface layer, and then which formed collision. The collided point was Earth quake source dot, then collision produce quake wave. And the residue quantum flow flied out the Earth surface, with rotation and spinning under Magnus effect [9] and Earth rotation effect. When quantum flow reach surface through buildings to spin twist and taper conical release, which formed respondent force to quake and destroyed buildings. There were two type waves, one was from collided source dot that give machine quake wave, the second was quantum flow that spin and rotated. Quantum flow was real body wave. The quantum flow energy equivalent load was dependent on cosmic celestial energy field that acted on Earth, which greatly exceed the plate collide point energy in plate crash theory.

Quantum flow was real body wave. Quantum flow was due to the Earth center free heat quantum and light free quantum, and some atom layer dissociated quantum. These quantum was vibrated by the celestial cosmic energy attract force events, to be related quantum group, and was accelerated from Earth core to surface. These quantum groups were accelerated outward by inner Earth layer energy/mass attract force, which based on Newton attract force deduction (Eq. 3) and finite elements model, and was accelerated to form high speed quantum flow, then formed the real body wave. The quantum flow moved with spin and rotation under Magnus effect. When the quantum flow moved at high speed crashed on the in/out surface layer at one point in crust and to produce “quake source”. The quake wave produced, companied with residue quantum flow together propagated to Earth ground, reached to “quake center” and spread to quake areas. The quake wave produced mechanical vibration, while the quantum flow produced spin and rotated real body wave, to produce rotary torque. The north hemisphere, the quantum flow produced right rotate direction. The south hemisphere, the quantum flow produced left rotated direction. The Earth quake areas were determined by the quantum flow volume or diameter.

And collide dot on in/out surface was “quake source”, the quantum flow entrance angle was about northwest 45 degree. Based on Magnus effect, the quantum flow flied outward way line that may be bending the track. On the north hemisphere, the quantum flow can collide at the in/out layer from northwest to southeast directions. At the collide dot, the attract force vector direction with longitude or latitude included angle was nearby 45 degree. Rotation and spin directions were right (left) on north (south) hemisphere of Earth. The wave types have two, one was machine quake wave and the other was quantum flow real body wave. The rotation and spin phenomena were based on Earth self-rotation and north (south) hemisphere Magnus effects. The Figure 2 show the illuminate of Earth quake model 2.0

V. Explain Phenomena

The Earth quake had related phenomena: Earth light, voices, electron, electric resistance, and sudden slow of Earth self-rotation, buildings rotated collapse in remains. These could be explained by Earth Quake Model 2.0.

Quake layer produced voices [10] was easy to understand. The quantum flow crashed at the in/out interface in the sub-crust layer, the in/out interface was always was hard solid crust. So when crashed to produce quake wave by quantum flow, it was easy to produce Earth voices.

The quantum flow was accelerated by Earth layer attract force, and which reach too high speed that nearby light speed to fly out from Earth surface, that was Earth quake light [11].

The quantum flow real body wave was accelerated from Earth core to surface; the quantum flow blanked the atom gaps of Earth quake layer. The blanked quantum between atom and molecules changed the Earth electronic properties. The quantum flow increased the electronic conducted of Earth layer,

means while that reduced the Earth electric resistance. These were the Earth electron phenomena of Earth quake [12].

Sudden slow of Earth self-rotation: the quantum flow sudden crashed on in/out interface of sub crust layer. The crash power looked like as "brake" action on crust and slow the self-rotation, and then the Earth quake gave sudden slow on the Earth self-rotation and this have been observed [13].

By using Magnus effect and Earth self-rotation, the quantum flow flied out surface with keeping high speed, spin and rotated through buildings on Earth surface, to produce spin rotated collapse, which was to explain the right rotated collapsed in buildings on north hemisphere. These spin related collapse have been observed in many Earth quake remains [14, 15].

These earth quake phenomena could be explained by Earth quake Model 2.0, which show it was better theory for Earth quake mechanisms explain, that was superior to "Plate Crash Theory" or other theory before.

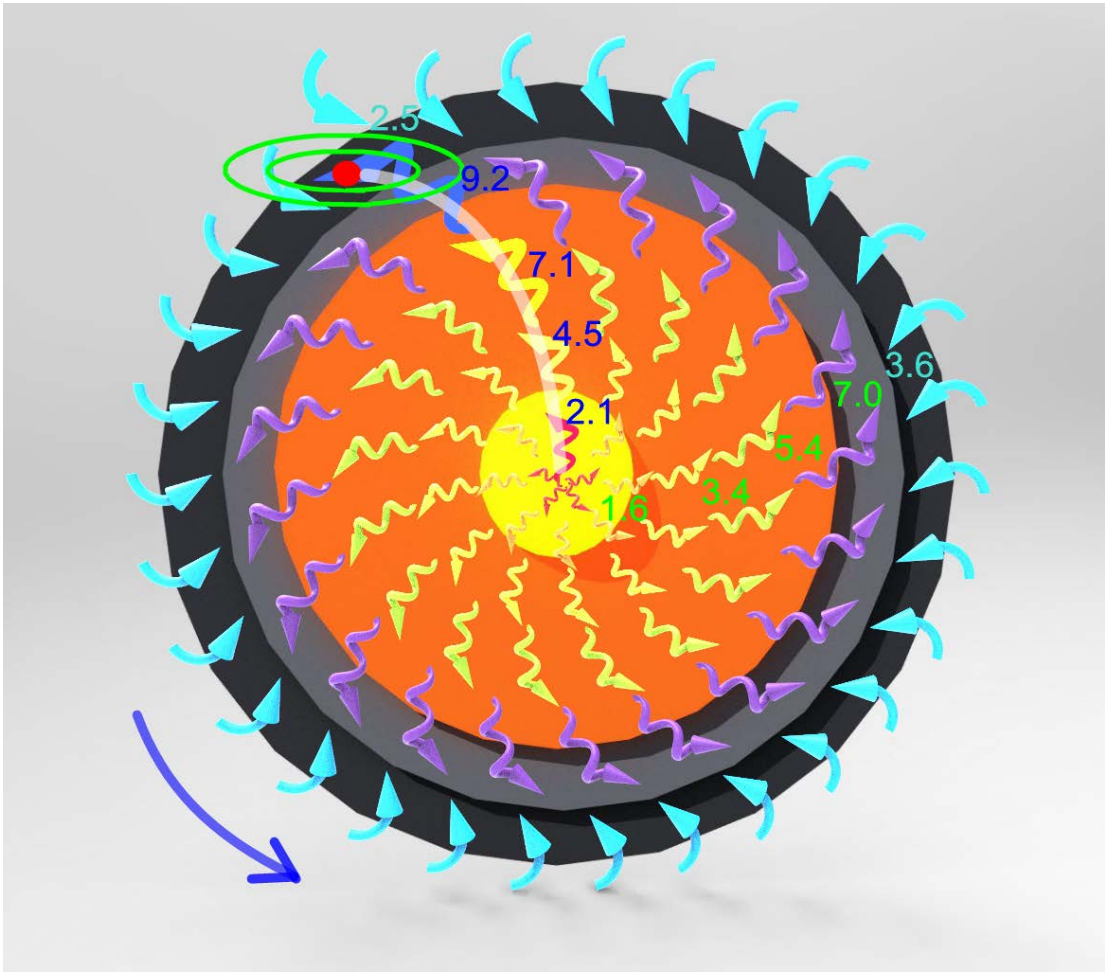


Figure 2: Earth internal models with core, mantle, and crust to explain Earth quake 2.0 model. The arrows regarded as quantum flow, at same time gave attract force directions. Right spin arrow was as quantum flow movements at earth rotated effect. Bending ways was show Magnus effect. The arrow length gave relative strength of attract force. The green numbers were attract-force relative situation at common earth states, which balanced not give earth quake. The blue numbers were attract force strength that acted by celestial events to improve the relative strength, which give earth quake at red point. The numbers were not absolute values, which were only relative values from finite elements model.

VI. Processes Summary

The whole processes of Earth quake can be described as follow: The cosmic celestial movements changed the related positions, to produce energy attract force. The energy attract force acted on Earth surface and even deep layers of Earth, to vibrate the quantum in atom layer. The quantum groups formed flow by gathering the atom layer quantum, the heat quantum, the light quantum, and other free quantum. The inner quantum flow was accelerated by internal Earth layers. The Earth layers variable accelerated the quantum flow to fly out from center core to surface. Under Magnus effect and Earth self-rotation effect, the accelerated

quantum flow flied out to keep spin and rotated. The quantum flow was accelerated through about Earth radius distance and crashed on in/out interface layer, which were the sub layers in crust. The collided point was "quake source" and form machine quake wave, and companied with the residue quantum flow spin and rotated flied out to surface of Earth. The two waves firstly reached "quake center" and spread. The two waves, one was machine quake wave to produce quake, the other was quantum flow real body wave to fly out the Earth surface to produce spin and rotated to twist collapse force. The two waves fly out Earth surface and through buildings, to produce quake and spin rotated collapses. This was the Earth Quake Model 2.0.

VII. Conclusions

The Newton attract-force equation and its deductions have been used to build up Earth finite element model. The cosmic celestial movement that produce energy attract force was to vibrate the inner quantum flow of Earth. The inner quantum flow was accelerated fly out to Earth surface with spin and rotated state, which was based on Earth finite elements model and Magnus effect. When quantum flow crashed on in/out interface to be "Earth quake source", and that produced quake wave, with residue quantum flow spin and rotated through Earth surface buildings, and which produced twist destroyed phenomena. The Earth quake processes were rewrote as Earth Quake Model 2.0, which was different from the models before. This 2.0 model could explain many Earth quake related phenomena, such as Earth voices, Earth light, sudden slow Earth self-rotation, and spin rotated to twist collapse of buildings. It was believed that the Earth Quake Model 2.0 will help people to re-recognize Earth quake. And it can help to predict Earth quake more accurate, and it was further to reduce destroy and damage, and wish to save more people life. This Earth Quake Model 2.0 was donor to seismic research enterprise.

References Références Referencias

1. Nishimura, Takeshi. Interaction Between Moderate Earthquakes and Volcanic Eruptions: Analyses of Global Data Catalog. Geophysical Research Letters. 2018, 45(16), 8199-8204. DOI: 10.1029/2018GL079-0602.
2. Shapoval, A. Prediction problem for target events based on the inter-event waiting time. Physica A-Statistical Mechanics and Its Applications. 2010, 389(22), 5145-5154. DOI: 10.1016/j.physa.2010.07.033
3. Isaac Newton: "In [experimental] philosophy particular propositions are inferred from the phenomena and afterwards rendered general by induction": "Principia", Book 3, General Scholium, at p.392 in Volume 2 of Andrew Motte's English translation published 1729.
4. Einstein, A. Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?, Annalen der Physik, 1905,18 (13): 639–643.
5. Yan Ji. The attract force equation of energy. American Journal of Modern Physics. 2014, 3 (6), 224-226. DOI: 10.11648/j.ajmp.20140306.13
6. Yan Ji. Sun structure mathematic physics models release solar lights emission, proton event, jets, and cool atmosphere. Global Journal of Science Frontier Research: A, 2016, 16 (4), 1-3.
7. Sahoo, Jagdish. Prasad; Ganesh, R. Seismic uplift resistance of circular plate anchors in sand. Proceedings of the Institution of Civil Engineers-Geotechnical Engineering, 2019, 172(1), 55-66. DOI: 10.1680/jgeen.17.00124.
8. Varga, Peter; Grafarend, Erik. Influence of Tidal Forces on the Triggering of Seismic Events, Pure and Applied Geophysics, 2018, 175(5), 1649-1657, DOI: 10.1007/s00024-017-1563-5.
9. Kumar, Sonu; Dhiman, Manish; Reddy, K. Anki, Magnus effect in granular media, Physical Review E, 2019, 99(1), DOI: 10.1103/PhysRevE.99.012902
10. McComas, Katherine. A.; Lu, Hang; Keranen, Katie. M.; Furtney, Maria. A.; Song, Hwansuck. Public perceptions and acceptance of induced earthquakes related to energy development, Energy Policy, 2016, 99, 27-32. DOI: 10.1016/j.enpol.2016.09.026
11. Whitehead, Neil; Ulusoy, Ulku. Blue sky at midnight - earthquake lightning, Turkish Journal of Earth Sciences. 2019, 28(1), 171-+, DOI: 10.3906/yer-1712-24
12. Harrison, R. G.; Aplin, K. L.; Rycroft, M. J. Atmospheric electricity coupling between earthquake regions and the ionosphere, Journal of Atmospheric and Solar-Terrestrial Physics, 2010, 72(5-6), 376-381, DOI: 10.1016/j.jastp.2009.12.004
13. Levin, B. W. ; Sasorova, E. V.; Zakupin, A. S.; Kamenev, P. A., Local Occurrence of the Relationship between Variations in the Earth's Rotation Rate and the Dynamics of Seismicity: Case Study of Sakhalin, Doklady Earth Sciences, 2018, 483(2), 1575-1578, DOI: 10.1134/S1028334X18120188
14. Giannopoulos, Dimitrios; Vamvatsikos, Dimitrios. Ground motion records for seismic performance assessment: To rotate or not to rotate? Earth Quake Engineering & Structural Dynamics, 2018, 47(12), 2410-2425, DOI: 10.1002/eqe.3090
15. Dabaghi, Mayssa; Saad, George; Allhassania, Naser. Seismic Collapse Fragility Analysis of Reinforced Concrete Shear Wall Buildings, Earth Quake Spectra, 2019, 35(1), 383-404, DOI: 10.1193/121717EQS259M

This page is intentionally left blank

Global Journal of Science Frontier Research: a
Physics and Space Science
Volume 19 Issue 7 Version 1.0 Year 2019
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

Neotheory of Continuous Mediums Thermomechanics

By Morgunov G.M.

National Research University

Abstract- The essential antinomies and limitations of the traditional model of the motion of continual media in certain aggregative states are formulated.

The physical bases, partly on the phenomenological concepts, and the mathematical formalism of the innovative concept of describing the thermomechanics of such media are outlined.

The required field functions are reduced fundamental substances: mass, amount of movement, increment of internal energy, moment of the local momentum - all for absolute of motion in inertial systems of counting.

The practical significance of the theory under development is underlined.

Some easy accesses examples of calculations in simplified formulation are given.

The theme and content of the work are such that it should be considered in the discussion plan.

Keywords: medium, continuous, solid, fluid, thermomechanics, models, traditional, antinomies, limitations, alternative, systems of counting, concerted action, the fields of deformations, memory, collapse passage.

GJSFR-A Classification: FOR Code: 020304

Strictly as per the compliance and regulations of:

Neotheory of Continuous Mediums Thermomechanics

Morgunov G.M.

Abstract- The essential antinomies and limitations of the traditional model of the motion of continual media in certain aggregative states are formulated.

The physical bases, partly on the phenomenological concepts, and the mathematical formalism of the innovative concept of describing the thermomechanics of such media are outlined.

The required field functions are reduced fundamental substances: mass, amount of movement, increment of internal energy, moment of the local momentum - all for absolute of motion in inertial systems of counting.

The practical significance of the theory under development is underlined.

Some easy accesses examples of calculations in simplified formulation are given.

The theme and content of the work are such that it should be considered in the discussion plan.

Keywords: medium, continuous, solid, fluid, thermomechanics, models, traditional, antinomies, limitations, alternative, systems of counting, concerted action, the fields of deformations, memory, collapse passage.

I. Introduction

Multifunctional servers, impressive levels of speed and RAM of modern computer equipment, as well as prospects for their further development, along with the continuous improvement of methods, tools and technologies for precision physical experiments, contributing to the formation of moderate but sustained optimism with the statement of the possibilities in the not too distant future, to solve scientific and technical problems of almost any degree of complexity.

This class of tasks includes, in particular, creative design solutions and in-depth studies of thermomechanical processes in different artifact and natural systems in all their diversity. The expected initial measures, including both ensuring the highest qualities with dynamic stability of their creation, and the achievement of guaranteed extreme thermomechanical indicators of the executive bodies of power devices corresponding to objects in a wide range of deviations from the nominal condition.

A rational way of possible satisfaction of the marked majorant estimates of the effective qualities of the research is to attract the most perfect spatial-temporal, i.e. four-dimensional *3Dt* (or *4D*), statements in the description of movements and transformations of working fluids that are in different aggregative states.

We believe that the 3Dt physical and mathematical model of non-equilibrium thermomechanics of solid, liquid and gaseous continuous media presented below and developed from unified installations will prove to be directly demanded over time in a phased advance to the previously noted objectives.

An additional application of the following concept, which is quite significant *at the current time*, consists of the following. The desired, most competitive results in the subject area of research considered here can, to a certain extent and, of course, at the level of predictions, be achieved by attracting / borrowing ready-made software products of simulation computer reproduction of the discussed phenomena based on traditional physical and mathematical models of their description. This approach, widely used today, implies the ability of the user to *competently* form preferences when comparing different versions of such computer services. In this regard, one of the determining reasons, which led the author to this publication, was also a reinforced opinion that familiarization with the foundations of the proposed alternative theory would help the developer of innovative objects and systems of various applications, which is a consumer of existing thermomechanical calculation programs, find it easier to navigate in the ever-increasing list relevant proposals and implement the most favorable of them.

An extended understanding of the essence of the developed scientific product and the details of individual transformations, including designations, are presented in the author's previous works on this topic (see references). We hope that the interested specialist, taking into account the singular complexity of the subject of study, will condescendingly refer to individual points of our previous works, which subsequently required a certain clarifying correction and a demanded generalization of the initially obtained relations.

The undertaken research, the main results of which in a compact form are set forth below, seems to be consistent, but at the same time it essentially goes beyond the framework of well-established ideas about the physical and mathematical description of continuous dynamics, including fluids, media (C-mediums and F-

Author: Doctor of Engineering Sci., Professor., National Research University, Moscow Power Engineering Institute (MPEI), Russia, Moscow, 111250, Krasnokazarmennaya str., 14. e-mail: ggm@mpei.ru

mediums enumeration). Further concretization of the present unified, abstractly independent of the type of aggregative state of the environment, the formalism requires large-scale and, as a rule, precision field experiments to verify the group of additional *physical* coefficients included in the proposed paradigm.

The statements of the corresponding initial-boundary-value problems turn out to be fundamentally incorrect, especially for F-mediums under turbulent flow regimes, and involving the introduction of certain agreements in the concept of a generalized solution of such problems using, inter alia, and possibly the *ergodic hypothesis* of statistical physics [1, 4].

Note that thermomechanical processes are considered primarily in the framework of the installations adopted in [1], which is assumed *to be known*.

Direct numerical implementation of the developed model, without truncations, filtering and subgrid approximations, even for the simplest canonical areas of medium movement, will be possible only with the help of hyper computer engineering.

These difficulties are significant, but the intellectual and material costs required to overcome them are justified by the undeniable imperative to further improve the methods of analysis and synthesis of the super-complex, but ubiquitous systems considered here.

Let us dwell on the following preliminary, but fundamentally significant circumstances.

- The prevailing part of the limitations specified in the main section of the article, or the complementarity violations in the usual models of C- mediums dynamics, for many years seemed to the author as an unnatural reality. Almost three centuries of invaluable scientific and practical experience in the study of C- mediums thermomechanics predetermined the manifestation of a kind of "*inhibition syndrome*" in the final decision to popularize the concept presented below.
- The outlined paradigm, eliminating (to put it mildly - in many ways) existing antinomies, in relation to modeling the functions of external surface action (see the left parts of equations (I) - (IV) in the second column of the table) remains fundamentally phenomenological. Therefore, its further and thorough theoretical and experimental approbation is required.
- The text should strictly distinguish between the subtle designations of the coordinates $x_k(t), k = \overline{1,3}$ and the *only* absolute argument, namely, time *t*, the motion of the *labeled* elementary medium particle (*e.m.p.*) for the tracking / trajectory / Lagrangian frame of reference: *L-systems*, in the *right-hand* sides of equations (I) - (IV) and denoted in the *left-hand* parts of these equations (see lower) by *thickened* font of the notation for the coordinates $\mathbf{x}_k$ and time $\boldsymbol{t}$ of the rigid / Eulerian reference system, then the *E-system*, for establishing *3Dt* distributions of action functions with *four* independent arguments. Thus, in the *L-system* $\vec{x}(t)$ there is the current position of the point belonging to the labeled particle of the medium, and in the *E-system* the radius vector $\vec{\mathbf{x}}$– is the point marker of the timeless *3D* space. Prototypes of labeled *e.m.p.* are passing relatively of such points discretely distributed on the regular net of *E-system* of space.It is clear that at each *fixed* point in time these vectors coincide $\vec{x}\big|_t = \vec{\mathbf{x}}$.
- Coordinate systems $(t, \vec{x}(t))$ and $(\boldsymbol{t}, \vec{\mathbf{x}})$ are considered as absolute, inertial and with the united chiefly fixed origin of the counting.
- It is easy to see that the classical foundations of the C-mediums science sections "Continuous kinematics" and "Basic equations of the dynamics of an ideal incompressible fluid" (Euler, Bernoulli) are naturally preserved if for the first section the corresponding distributions of field functions are considered in the *E-system*$\vec{\mathbf{x}}$ each “frozen” time point $\boldsymbol{t}$, or at each *abstract* point $\vec{\mathbf{x}}$– with variable $\boldsymbol{t}$, and for the second section - in $L\Lambda E$ - reference systems.
- The desired functions of the substance-field are substances $\rho, \vec{v}, \varepsilon, \dot{\vec{\Lambda}}$ (see explanations below).

II. Main Part

For a clearer justification of the dependencies described below, in Fig.1a,b the topological properties of the $L \wedge E$ - *systems* are shown conditionally and separately, and in Fig.1c, when they are combined.

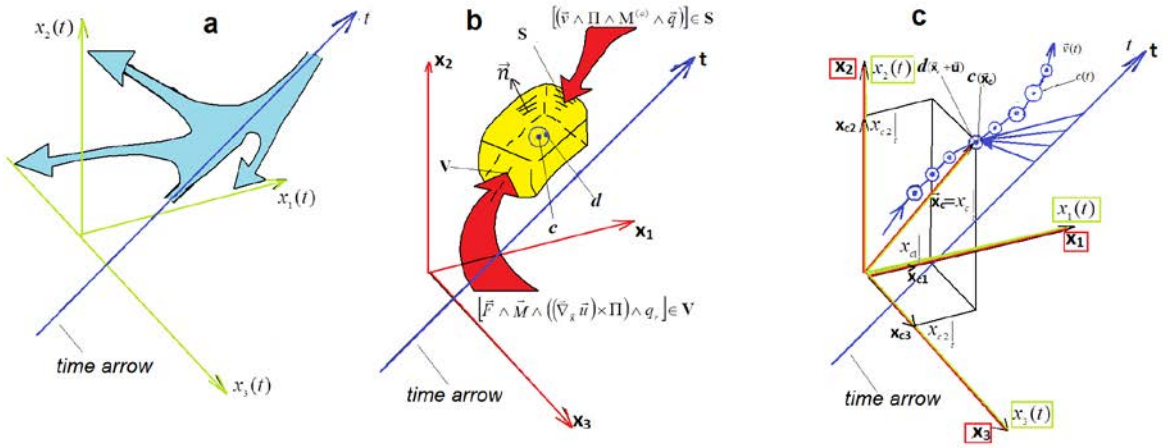


Fig. 1: Schematic representations of $L \wedge E$ - *systems*: a, b– separate; c - combined

The shaded arrows in Fig.1a, departing from the arrow of time *t* and ending on the axes of the tracking / Lagrangian frame of reference, emphasize figuratively the dependence of the Cartesian coordinates of each physical point (PP, see below) of the medium on this absolute argument. As before [1], PP means the smallest material formation, for which the *continuity* hypotheses and *non-equilibrium* thermodynamics processes is still valid.

Externally similar coordinate system in Fig.1b is timeless in space with four, as previously indicated, independent arguments. It also shows a simply connected, otherwise *arbitrary*, but fixed in *3D* small macrovolume $\bar{\mathbf{v}}$ with boundary $\mathbf{s}$ and orth of the external normal to it $\vec{n}$, filled with a single-phase moving medium. At the same time $\bar{\mathbf{v}} \in \overline{\mathbf{V}}$, with the norm $\|\bar{\mathbf{v}}\| << \|\overline{\mathbf{V}}\|$, where $\overline{\mathbf{V}}$ - is the closed calculated macro-region of studying the motion of the C-medium. Inside $\mathbf{v}$ for a given time instant t, the instantaneous position of a labeled elementary particle with a focus $\boldsymbol{c}$ and a some virtual point in it $\boldsymbol{b} \in \bar{\mathbf{v}}$is highlighted. Two darkened silhouette arrows show and identify external volumetric and surface actions on $\bar{\mathbf{v}} = \mathbf{v} \cup \mathbf{s}$ of different physical nature.

In Fig.1c additionally depicts a fragment of the trajectory of the focus $\boldsymbol{c}$ of the *pre-images* of the past (the upper part of the trajectory) and the future (lower part of the trajectory) of the labeled particle. Strictly speaking, the point $\boldsymbol{b}$ introduced here are possible / virtual PP of the selected medium particle and in the final dynamic equations, with the exception of the right side of equation (IV) (see below), their specific positions are *leveled*. We shall indicate also that under consideration systems of counting *are inertial, homogeneous and isotropy* by space and time and, as it follows from Fig. 1, with *common and fixed* the origin of coordinates. In addition studied C-mediums in general are *dissipated* and *inhomogeneous* as well *as non-isotropy* by space and time.

Now, giving preference to the compressed style of presentation of the material, we proceed as follows. We introduce a table consisting of two columns. In the left column we place the well-known and characteristic closed system of equations of the dynamics of the C-medium (It) - (IVt), (1t) - (3t), which, in particular, for F-mediums is described in [5]. At the bottom of this column we list the undeniable antinomies and limitations of this system.

In the second - right column we place the innovative system of fundamental equations of C – mediums (I) - (IV) with extremely concise detail (1) - (6), (A), (B), (C) of separate fragments of the fundamental equations indicated by Roman in numbers. Next will follow the necessary explanations, comments and conclusions from the range of issues under consideration. The descriptions of random / pseudo-random exposures and, in general, aspects of setting initial-boundary conditions are omitted here. Variants of the formalization of these factors are described in our works [3, 7], mainly in the aspect of pro-domains.

So, taking into account the presence in the future text of an explanation of the notation (see also the list of notation in the forerunner work [1]), we have the following.

Table: Fundamental and private laws/equations of the continuous mediums of thermomechanics (without regard of random perturbations and boundary conditions on the whole).

Traditional	Alternative
←*E-system*→	*E- system* ←|→*L- system* : $[\begin{smallmatrix}\text{cause}\\ \text{action}\end{smallmatrix}] \xrightarrow[<\,-\,-]{} [\begin{smallmatrix}\text{effect}\\ \text{consequencce}\end{smallmatrix}]$
$-\rho\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\vec{v}=\frac{d\rho}{d\,\boldsymbol{t}}$ (It)	$-\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\vec{v}=\frac{d\ln\rho}{d\,t}$ (I)
$\rho\vec{F}+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{P}=\rho\frac{d\vec{v}}{d\,\boldsymbol{t}}$ (IIt)	$\rho\vec{F}+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{\Pi}=\frac{d\rho\vec{v}}{d\,t},$ (II) *ubi* $\mathbf{\Pi}=\mathbf{P}^{(s)}+\mathbf{P}^{(a)}, \mathbf{P}^{(s)}=\mathbf{P}_s+\mathbf{P}_d$ *et* $\mathbf{\Pi}_d=\mathbf{P}_d+\mathbf{P}^{(a)}$
$\mathbf{P}\cdot\cdot\dot{\mathbf{S}}+\rho q_{cd}=\rho\frac{d\varepsilon}{d\,\boldsymbol{t}}$ (IIIt)	$\Pi\cdot\cdot\left(\vec{\nabla}_{\vec{\mathbf{x}}}\vec{v}\right)+\mathfrak{M}_p+\rho q_{cd}+\rho q_r=\frac{d\rho\varepsilon}{dt}$ (III) $\mathfrak{M}_p=\left(\left(\vec{\nabla}_{\vec{\mathbf{x}}}\vec{u}_d\right)^*\times\Pi\right)\cdot\vec{\Lambda}+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\left(\mathrm{M}^{(a)}\cdot\vec{\Lambda}\right)$
$\mathbf{P}=\mathbf{P}^*=-p\mathbf{I}+$ $+(2\mu\dot{\mathbf{S}}_d\vee 2G\mathbf{S}_d)$ (IVt)	$(\vec{\nabla}_{\vec{\mathbf{x}}}\vec{u}_d)^*\times\mathbf{\Pi}+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{M}^{(a)}=\frac{d\boldsymbol{J}\dot{\vec{\Lambda}}}{dt}$,(IV) $\boldsymbol{J}=c_J$ æ$_J^{-2}\rho, c_J$ *and* æ$_J$*see below notations .*
Joule: $\varepsilon=\varepsilon_0+\int_{T_0}^{T}c_V(T)dT$ (1t)	Inversions (1 t) (see also [2]): $T=T_0+\int_{\varepsilon_0}^{\varepsilon}\beta_\rho(\rho,\varepsilon;\mu_\beta)d\varepsilon,\ \ T_0\geq T_{\inf},\ \beta_\rho=c_V^{-1}$ (1) $\mu_\beta:\frac{\partial}{\partial\rho}\left(\mu_\beta\frac{\partial\beta_\rho\big\vert_e}{\partial\varepsilon}\right)=\frac{\partial}{\partial\varepsilon}\left(\mu_\beta\frac{\partial\beta_\rho\big\vert_e}{\partial\rho}\right),$ $\big\vert_e$ – obtained under *e-conditions*
Clapeyron…: $\mathbf{F}(\rho,p,T)=0$ (2t)	Strong form of Generalization (2 t) (see also [2]): $\mathbf{P}_s=-\left\{p_0+\int_{\overset{\iota}{L}\rho_0,\overset{\iota}{L}\varepsilon_0}^{\overset{\iota}{L}\rho,\overset{\iota}{L}\varepsilon}\mu_b\left[\overline{\boldsymbol{\kappa}(\boldsymbol{t})B\big\vert_\varepsilon}\,d\overset{\iota}{L}\rho+\overline{\boldsymbol{\kappa}(\boldsymbol{t})B\big\vert_\rho}\,d\overset{\iota}{L}\varepsilon\right]\right\}\mathbf{I}$, (2) $L=\ln,\ \dot{L}=\partial\ln/\partial\,\boldsymbol{t}.\ \ddot{L}=\partial^2\ln/\partial\,\boldsymbol{t}^2\ \ni\ \iota=\varnothing,\bullet,\bullet\bullet$
Fourier: $\rho q_{cd}=-\rho\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\vec{q}_{cd},$ $\vec{q}_{cd}=-\lambda\vec{\nabla}_{\vec{\mathbf{x}}}T$ (3t)	Stress deviator $\mathbf{P}_d$ approximation $\mathbf{P}_d=\mathbf{P}_{d0}+2\overset{\iota}{G}(\rho,\varepsilon)\int_{\overset{\iota}{\mathbf{S}}_{d0}}^{\overset{\iota}{\mathbf{S}}_d}\overline{\mathbf{K}(t)\cdot d\mathbf{S}}_d$, (3) $\overset{\iota}{G}=\overset{\iota}{G}_0+\int_{\overset{\iota}{D}\rho_0,\overset{\iota}{D}\varepsilon_0}^{\overset{\iota}{D}\rho,\overset{\iota}{D}\varepsilon}\overset{\iota}{\mu}_g\left[\overline{\frac{\partial G}{\partial D\rho}dD\rho+\frac{\partial G}{\partial D\varepsilon}dD\varepsilon}\right],$ $D=1,\dot{D}=\partial/\partial\,\boldsymbol{t},\ddot{D}=\partial^2/\partial\,\boldsymbol{t}^2$,see also [2]

ANTINOMIES AND LIMITATIONS

A.1. Reduction (I t – IV t) to one *E-system* of counting with non-conformity *action* of operators

$$\frac{d}{dt} \not\Leftrightarrow \frac{d}{d\,\boldsymbol{t}} = \frac{\partial}{\partial\,\boldsymbol{t}} + (\vec{v}\cdot\vec{\nabla}_{\vec{\mathbf{x}}}),$$

in the second operator are *thickened designation of the arguments*.

A.2. When establishing (It - IVt) unlawfully introducing directly the operator $d/d\,t$ under the sign of the integral over the volume V(*t*) (with a *fixed number* of particles of C-medium), as V is changes in the time.

A.3. Relationships of Cause-and-Effect in the (It) - (IVt) - are considered on item A.1. and under the *symmetric mechanics* of C-mediums with truncated quantity of kinematic tensors in the functions of actions.

A.4. Not figured functions of *action* the forces, moments and energies of *vortex fields* by virtue of presentation of *e.p.m.* turn as quasi-solid bodies or on basis of the hypothesis "plane section", etc. for corresponding C-mediums.

A.5. Here been used global equilibrium thermodynamics (*utlex*).

A.6. Secondary / measured (*utlex* for F-mediums) variables $p \wedge T$ *given the status* of basic functions of state along with fundamental substances $\rho, \vec{v}, \varepsilon, \dot{\vec{\Lambda}}$.

A.7. There is no *direct* taking into account of the thermal factor in the fundamental substance $\vec{v}$.

A.8. No *physical* aspect of appearance of sporadic turbulent monofurcation in F-mediums.

A.9. Not revealed the *memory*of before the actual states of fields deformation and its velocity.

COLLAPSE-FUNCTIONS (see lower also (C))

$$I < I^*: \overset{\iota}{\boldsymbol{\kappa}} = 1, \overset{\iota}{\mathbf{K}} = \mathbf{I},$$

$$I \geq I^*: \begin{cases} \overset{\iota}{\boldsymbol{\kappa}} = \overset{\iota}{\kappa}\mathbf{1}(\boldsymbol{t} - \boldsymbol{t}^*), 0 \leq \overset{\iota}{\kappa} \leq 1, \ldots, \\ \overset{\iota}{\mathbf{K}} = \mathbf{I}\,\overset{\iota}{K}\,\mathbf{1}(\boldsymbol{t} - \boldsymbol{t}^*), 0 \leq \overset{\iota}{K} < 1, \ldots,. \end{cases} \quad (4)$$

$I \wedge I^*$ *are functions from* $\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a}_d$

$I^*\left(\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a}_d\right)$ - *solidus media / liber turbulences*,

$I^*\left(\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a}_d; Ix, \xi\right)$ - *iunetus turbulences,*

$$\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a}_d = \vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a}$$

DIRECT ACCOUNTING OF THERMAL FACTOR IN MOMENTUM

$$\vec{v} = \vec{v}_f + \vec{v}_q, \quad \vec{v}_q = A\ \vec{\nabla}_{\vec{\mathbf{x}}} T(\rho, \varepsilon) \quad (5)$$

KINEMATIC TENSORS WITH MEMORY

Short memory

$$\dot{S}_{ij} \vee \dot{A}_{ij} = \frac{1}{2}\dot{Y}_i(a_{d.j}) + \vee - \frac{1}{2}\dot{Y}_j(a_{d.i}),$$

Long memory (6)

$$S_{ij} \vee A_{ij} = \frac{1}{2}Y_i(a_{d.j}) + \vee - \frac{1}{2}Y_j(a_{d.i}),$$

$$\dot{Y}_i(\_) = \int_0^{\boldsymbol{t}} \frac{\partial \_}{\partial \mathbf{x}_i} d\boldsymbol{\tau}, \quad Y_i(\_) = \int_0^{\boldsymbol{t}} \left(\int_0^{\leftarrow \boldsymbol{t}} \frac{\partial \_}{\partial \mathbf{x}_i} d\boldsymbol{\tau} \right) d\boldsymbol{\tau},$$

$$ad\,\vec{u}_{d.0} = \vec{v}_{d.0} = \vec{a}_{d.0} = 0, \quad \vec{a}_d = \vec{a} - \vec{a}_c = {\partial \vec{v}_d}\big/{\partial \boldsymbol{t}}$$

ACTS WITH ANTISYMMETRICS TENSORS

$$2\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \overset{\iota}{\mathbf{A}} = \vec{\nabla}_{\vec{\mathbf{x}}} \times \overset{\iota}{\vec{\boldsymbol{\Omega}}}; \quad \overset{\iota}{\Omega}_i = \overset{\iota}{\mathrm{A}}_{jk} \begin{pmatrix} i \to j \to k \to i \to \ldots \\ 3 \to 2 \to 1 \to 3 \to \ldots \end{pmatrix};$$

$$\overset{\iota}{\vec{\boldsymbol{\Omega}}} = \vec{\nabla}_{\vec{\mathbf{x}}} \times \overset{\iota}{\vec{w}}, \vec{w} = \vec{u}, \quad \dot{\vec{w}} = \vec{v}, \quad \ddot{\vec{w}} = \vec{a}, \text{(A)}$$

$$\mathbf{P}^{(a)} = \mathbf{P}_0^{(a)} + \Delta\mathbf{P}^{(a)},$$

$$\Delta\mathbf{P}^{(a)} = 2\overset{\iota}{R}(\rho, \varepsilon) \int_{\overset{\iota}{\mathbf{A}_0}}^{\overset{\iota}{\mathbf{A}}} \overline{\mathbf{K}(\boldsymbol{t}) \cdot d\mathbf{A}} + \overset{\iota}{R}_{\boldsymbol{\Lambda}}(\rho, \varepsilon; \boldsymbol{J}^0) \int_{\overset{\iota}{\boldsymbol{\Lambda}_0}}^{\overset{\iota}{\boldsymbol{\Lambda}}} \overline{\mathbf{K}(\boldsymbol{t}) \cdot d\boldsymbol{\Lambda}}$$

$$\mathbf{M}^{(a)} = \mathbf{M}_0^{(a)} + \Delta\mathbf{M}^{(a)},$$

$$\Delta\mathbf{M}^{(a)} = 2\overset{\iota}{N}(\rho, \varepsilon) \int_{\overset{\iota}{\mathbf{A}_0}}^{\overset{\iota}{\mathbf{A}}} \overline{\mathbf{K}(\boldsymbol{t}) \cdot d\mathbf{A}} + \overset{\iota}{N}_{\boldsymbol{\Lambda}}(\rho, \varepsilon; \boldsymbol{J}^0) \int_{\overset{\iota}{\boldsymbol{\Lambda}_0}}^{\overset{\iota}{\boldsymbol{\Lambda}}} \overline{\mathbf{K}(\boldsymbol{t}) \cdot d\boldsymbol{\Lambda}}$$

CONNECTIONS BETWEEN DYADS

$$\left(\vec{\nabla}_{\vec{\mathbf{x}}} \overset{\iota}{\vec{w}}_d\right) = \left(\vec{\nabla}_{\vec{\mathbf{x}}} \overset{\iota}{\vec{w}}\right), \ edo \left(\vec{\nabla}_{\vec{\mathbf{x}}} \overset{\iota}{\vec{\boldsymbol{w}}}_c\right) = 0 \quad \text{(B)}$$

$$\vec{w}_d = \vec{u}_d, \quad \dot{\vec{w}}_d = \vec{v}_d, \quad \ddot{\vec{w}}_d = \vec{a}_d \ \ni \left(\vec{\nabla}_{\vec{\mathbf{x}}} \vec{a}_d\right) = \left(\vec{\nabla}_{\vec{\mathbf{x}}} \vec{a}\right)$$

	CRITERION OF THE COLLAPSE-PASSAGE
	$\vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{U}_d = \vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{U} = \int_0^t (\int_0^{\leftarrow t} \vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{a} \partial\tau) \partial\tau$ (C)
	$I = \bar{u}_d^{\bullet} = \left\vert \vec{\nabla}_{\vec{\mathbf{x}}} \cdot \mathbf{U} \right\vert$
	$I^* = (\left\vert \vec{u}_d^{\bullet} \right\vert \text{æ}_{s.sup})^*$, э $si\ I > I^*\ eo\ \overset{t}{\mathbf{K}}{}^2 < 3,\ \overset{t}{\kappa} < 1$

For integrated expressions in formulas (2), (3), (A) the upper central index is summarized $\iota = \varnothing, \bullet, \bullet\bullet$.

Here are some comments to the information in these two columns of the table.

In the upper part of the left column of the table, the balance equations are written for specific mass ρ (**I**t), momentum $\vec{\nu}$ (II**t**), increments of internal energy ε (III**t**). The balance equation of the moment of momentum (IV**t**) in the accepted here representation of the *radius vector* of the action of the moments of external forces and inertia forces in the *E-system*, namely in the form $\vec{\mathbf{x}}$[5] (and not in the *L-system*, that is, in the form as $\vec{x}(t)$, since these moments are actually applied to the particle of the medium, and not to the abstract point of a rigid 3D space), it reduces to the condition of symmetry of the stress tensor **P** (see the first equality in the graph (IV**m**); the upper asterisk is a transposition sign).

The closure of the system (**I**t) - (IV**t**) is carried out by invoking generalizations to the 3D case of Hooke's law for solid media and the Newton hypothesis for fluids given by Navier (see the last equality in (IV**t**)), as well as the private Joule thermodynamic laws (1**t**), Fourier (3**t**) and Clapeyron equations (or its known generalizations) (2**t**), but related to the conditions of globally equilibrium thermal processes.

The system (**I**t) - (IV**t**), (1**t**) - (3**t**) of the formalization of the fundamental and specific laws of thermomechanics includes, in aggregate, the entire list of inconsistencies and truncations formulated in the lower part of the left column: (A.1 - A.9).

We now turn to the content of the right-hand column of the table, focusing primarily on the successively considered (from A.1 to A.9) aspects of the *full* or possible phenomenological approach, eliminating the shortcomings expressed in relation to the already agreed model in the proposed concept.

A.1 The fundamental equations (I) - (IV) individual/substantial, i.e. for labeled PP, derivative in *t*, therefore in the *L-system* on quantum time $\partial\tau = \Delta t$ from the scalar function **f** or **f** as k-th component of the vector field function is determined by the limit

$$\frac{d\mathbf{f}}{dt} = \lim_{\substack{\Delta t \to 0 \\ \Theta \in [t, t+\Delta t]}} \frac{\mathbf{f}(t+\Delta t, \vec{x}(t) + \vec{v}(\Theta)\Delta t) - \mathbf{f}(t, \vec{x}(t))}{\Delta t}, \quad (7)$$

where in the linear positing

$$\vec{v}(\Theta) = 0{,}5(\vec{v}(t+\Delta t) + \vec{v}(t)), \quad \vec{v}(t) = \vec{v}(t, \mathbf{x}), \quad \vec{x}(t) = \vec{\mathbf{x}}$$

(see too further indications (11), (12)).

It is important to keep in mind that dependence of the limit (7) from $\vec{x}$(t) and evidently from *t* is not additionally as in *L-system* does not defined as separate item partial derivation $\frac{\partial \mathbf{f}}{\partial t}$ in its classical meaning as far as to $\vec{x}$ fixation simultaneouslymeans and fixation *t* with the exception a special cases of the fool braking of separate PP *of medium*.

For scalar functions **f** limit transitions are carried out directly, and for vector - for each of their components. In steady-state conditions the limit (7) adopts the repeating meanings. When the particles moves with constant field functions along a rectilinear coordinates of the inertial system of counting that

$$\frac{d\mathbf{f}}{dt} \equiv 0 .$$

Expression (7) is established changing **f** on time at motion of the marked *e.p.m.* along *their trajectory* on the specified step $\partial\tau$ and is differed on principle from the total derivative by **f** to **t** in the *E-system* of counting, which is written in the form

$$\frac{d\,\mathbf{f}}{dt} = \lim_{\Delta t\to 0,\bar{\mathbf{x}}} \frac{\mathbf{f}(t+\Delta t,\vec{\mathbf{x}}) - \mathbf{f}(t-\Delta t,\vec{\mathbf{x}})}{2\Delta t} + v_i \lim_{t,\Delta\bar{\mathbf{x}}\to 0} \frac{\mathbf{f}(t,\mathbf{x}_i+\Delta\mathbf{x}_i) - \mathbf{f}(t,\mathbf{x}_i-\Delta\mathbf{x}_i)}{2\Delta\mathbf{x}_i} \tag{8}$$

Here the summation to $i=\overline{1,3}$, $d\vec{\mathbf{x}} \neq \vec{v}(t)dt$ (*t*- thin).

Strictly speaking, its not exists a derivative concept of the same independent argument by other, for example, $d\mathbf{x}_i/dt$ without explanation of its differentials ratio meaning, namely and according to subject of consideration by way of *establishment* for current of time quantum *unknown in advance* of direction of PP trajectory fragment, e.i. really of the marked/labelled *e.p.m.* element of motion. Consequently, differentials dt and $d\vec{x}$ does not arbitrarily disappearing quantities but its ration must be equal to the *desired* velocity $\vec{v}$.

Differences between the limits (7) and (8) are obvious.

We would notice that in preparing on perspective of algorithm for computer realization of the present conception differential / scale on time $\partial\tau = \partial\boldsymbol{\tau}$ is fixed over ability to be solved of the proper / actual discrete of a frequency spectrum. Further, by each rated$\boldsymbol{\tau}$ moment of time $t+\partial\boldsymbol{\tau}$ the *left* parts of the fundamental equations (I)-(IV) are determined on the *regular* net of *E-system* of counting for *preceding* rated moment t including, naturally, *given* initial distributions of action functions at $t=0^+$ (see too before explanations for formalism (7)).

Effects of a operator $\frac{d}{dt}$ *(L-system)* application to functions **f** and its future transformation is considered in staging plan of concluding subjection of present work, noted by single asterisk * from the left.

A.2. In the original integral form of recording balance laws, an *arbitrarily* chosen macrovolume $\bar{\mathbf{v}} = \mathbf{v}\cup\mathbf{s}$ is assumed to be fixed in the *E-frame* with a *certain* possibility of introducing a time differentiation operation under the sign of the integral over this volume for the corresponding field substance. As a result, we arrive at differential forms of laws (I) - (IV) with left and right sides that have a clear physical interpretation, but do not coincide with the similarly located terms in equations (It) - (IVt). Note that in equation (III), the expressions for the second arrival in the medium particle of conductive q_{cd} and radiant q_r types of energy are stored according to the traditional model of their description (see for example [1, 3, 6]).

AA.3-4. The extension of the model to the class of *asymmetric* mechanics of C-media is associated with two circumstances.

a) A natural idea that rotations / torsions — *rotations* of elementary (up to the PP scale) *particles of the medium occur, as well as shear deformations*, according to the laws of deformable / changing volume and shape, as well as heat-conducting bodies is taken.
b) Following the logic of the analysis, the moments from inertial and external forces (bulk, surface) are considered on the radius-vector $\vec{x}_b(t)$ of some virtual point $\boldsymbol{b}$ of the current e.m.p. (Fig. 2; see also Fig. 1 b, c). In fig. 2: indexes $c \wedge b$ in designations are related to center of mass / focus$\boldsymbol{c}$ and a virtual point of this particle $\boldsymbol{b}$ with a distance vector between them $\delta\vec{x}_{cb}$, which includes the component of *complete* deformation with velocity $\vec{v}_d(t,\vec{x}_b(t))$, i.e. from torsion and shear in absolute *L-system* coordinates.

Vector $\dot{\vec{\Lambda}}(t)$ of inertial second rotation *e.m.p.* (see equation IV in the Table, and Fig.2) belongs to the class of vortices of the total strain rate, i.e. $\dot{\vec{\Lambda}}(t) \in \{\dot{\vec{\boldsymbol{\Omega}}}\}$ (accordingly, $\boldsymbol{\iota}=\bullet$), but with axis passing through center of inertia$\boldsymbol{c}$.

Unit direction of the being used further vectors $\vec{\Lambda} \parallel \dot{\vec{\Lambda}}$ is precisely coincides with ort $i_{\Lambda.1}$ of the momentary *local* (trajectory) three-orthogonal (Cartesian) *bench-mark* $i_{\Lambda.k}, k=\overline{1,3}$ of the labeled *e.p.m.*torsionaly curl in absolute motion.

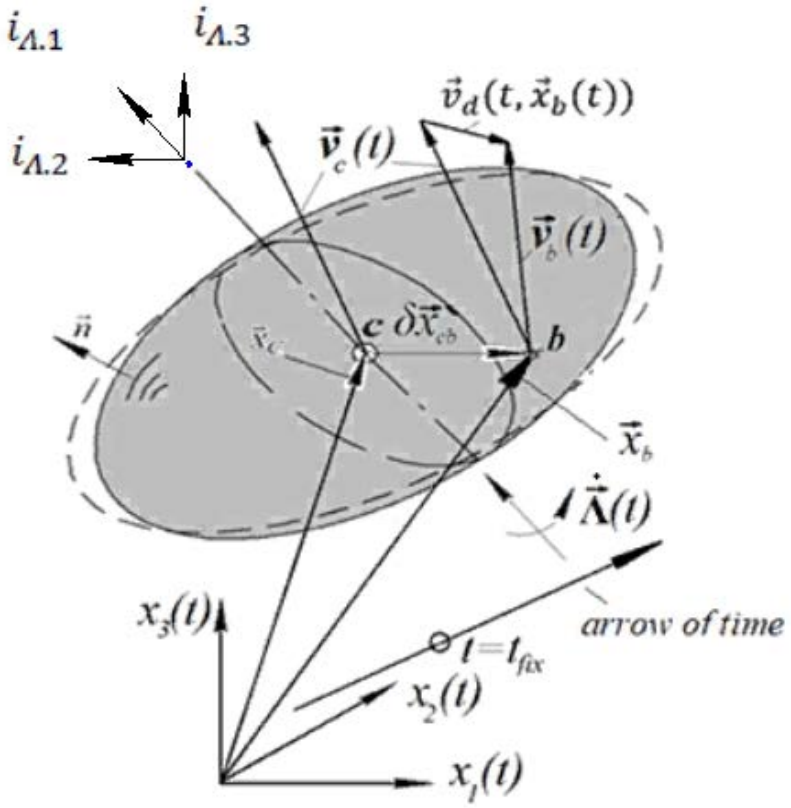


Fig. 2: The instantaneous position of the labeled/marked particles of the medium. Actual particle - darkened volume; distortions: shear - bar loop, torsion - bar-dotted momentary axis to the vector of the torsion velocity $\dot{\vec{\Lambda}}$ of inertial turning of marked e.p.m. for the unit of time, in one radian and point c is center of inertia / mass. Designations $i_{\Lambda.k}, k = \overline{1,3}$ are the trajectory three-orthogonal *bench-mark* for the given *e.p.m,* moreover $i_{\Lambda 1}\dot{\Lambda} = \dot{\vec{\Lambda}}$.

These factors have resulted in the introduction of the *complete* stress tensor $\mathbf{\Pi}$ and it deviator $\mathbf{\Pi_d}$ representation $\mathbf{\Pi}$ as the sum of symmetric $\mathbf{P}^{(s)}$ and antisymmetric $\mathbf{P}^{(a)}$ parts, followed by decomposition $\mathbf{P}^{(s)}$ into spherical $\mathbf{P}_s$ and deviator $\mathbf{P}_d$ terms. Tensors $\mathbf{P}_s$, $\mathbf{P}_d$ and $\mathbf{P}^{(a)}$, in turn, based on the phenomenological assumptions linearly expressed in terms of the unit tensor $\mathbf{I}$, as well as *symmetric* $\overset{\iota}{\mathbf{S}}/\overset{\iota}{\mathbf{S}}_d$ and antisymmetric $\overset{\iota}{\mathbf{A}}$ tensors of proper deformations and turns, as well as the speed and "acceleration" of data movements (see (2), (3), (A)). Besides in equations (II) – (IV) it was required to introduce additionally antisymmetric tensors $\overset{\iota}{\mathbf{\Lambda}}$ of turn *e.p.c.* as single, but *deformable,* whole.

Recall still that the upper index *iota* identifies the top signs $\iota = \text{Ø}, \bullet, \bullet\bullet = \ , \bullet, \bullet\bullet$.

For C-mediums with heterogeneous and non-isotropy of the intrinsic physical properties modules $\overset{\iota}{B}, \overset{\iota}{G}, \overset{\iota}{R}, \overset{\iota}{N}, \overset{\iota}{R}_{\Lambda}, \overset{\iota}{N}_{\Lambda}$ are suggested in the form of tensors scalar/tensor multiplied on proper kinematic tensors $\mathbf{I}$, $\overset{\iota}{\mathbf{S}}_d, \overset{\iota}{\mathbf{A}} \wedge \overset{\iota}{\mathbf{\Lambda}}$.

Let us remark absence in the equality (2), as consequence of notations simplification, of the terms

$$(2\overset{\iota}{G}\grave{} \int_{\overset{\iota}{I}_{s.1.0}}^{\overset{\iota}{I}_{s.1}} \overline{\overline{\boldsymbol{\kappa}}}\grave{}^{\iota}\overline{\overline{dI_{s.1}}})\,\mathbf{I}\ ,\ \text{summing up}\ \iota\ ,$$

where $\overset{\iota}{I}_{s.1}$ are first invariant of tensors $\overset{\iota}{\mathbf{S}}$; $\overset{\iota}{G}\grave{}$ and $\overset{\iota}{\boldsymbol{\kappa}}\grave{}$ are modules of viscosity and collapse-functions. These terms are taken into account a viscous resistance to high-speed change of particle medium volume.

It proved also necessary to add the C-mediums in the capacity of additional function of the *action* of the components of the antisymmetric tensor moments $\mathbf{M}^{(a)}\left[\frac{\text{N m}}{\text{m}^2}\right]$ from volume action of the surface of couple forces, applied to these particles from the *outside* to the formalism of *asymmetrical* mechanics. This tensor is expressed linearly in terms of tensors $\overset{\iota}{\mathbf{A}} \wedge \overset{\iota}{\mathbf{\Lambda}}$ and consequently - the vortex vectors $\overset{\iota}{\vec{\mathbf{\Omega}}}$ and torsions $\dot{\vec{\Lambda}}$ of *e.p.m.* as a single but *deformable* whole, of its speedand «acceleration» in *E-system* of counting.

Noted in two previous item vector and tensor functions are, of course, in the right column of the table

and figured in left part of the fundamental equations (II) - (IV). Operations with tensors $\overset{\iota}{\mathbf{A}} \wedge \overset{\iota}{\mathbf{\Lambda}}$ and vectors $\overset{\iota}{\vec{\Omega}} \wedge \overset{\iota}{\vec{\Lambda}}$ are provided here in the form of (A) with the additional conditions (B). Modules $\overset{\iota}{R} \wedge \overset{\iota}{R}_{\Lambda}$ and $\overset{\iota}{N} \wedge \overset{\iota}{N}_{\Lambda}$ requires initial verification. Recall that a colon in the first term of the equation (III) to the left means the corresponding double scalar multiplication of tensor on dyad. This additive/member is action of power of the inner (by volume) forces on velocity of energy ε by change per unit time. The first term in the left side of the moment balance equation (IV), written as a vector multiplication of the transposed dyad in the form of derivative of the vector deformation $\vec{u}_d$ on the radius-vector $\vec{\mathbf{x}}$, i. e. $\frac{d\vec{u}_d}{d\vec{\mathbf{x}}}$, on a full stress tensor $\mathbf{\Pi}$, there is arises in torsional deformation moment of imbalance on the external surface forces $(\vec{n} \cdot \mathbf{\Pi})$ (cf. [5, p.p. 62 -. 63]).

A. 5 - 6. As in earlier publications [1, 3] in this paradigm is used a hypothesis only about *local* thermodynamic quasi-equilibrium (LTD QE, see e.g. [6]), i.e. on the 3D scale PP. Under this approach a functions of pressure *p* and temperature *T*, viewed in this concept as a manifestation, a kind indicators of status and changes in the fundamental substance ρ, ε, are deterministic (except for random fluctuations) measured (at least - for the F-mediums) givens. Therefore, experimentally determined physical coefficients / parameters / modules are usually dependent on *p* and *T*, but in conditions of generally *global* equilibrium thermomechanical processes. Expressed the situation in [2] called *e-conditions*. In connection with this there is realized in study [2] procedure *inversion*, i.e. the transfer of the indicated coefficients, established in *e-conditions* the performance of the experiments, and the themselves functions *p* and *T* to *current* dynamic conditions of their expression through ρ, ε in LTD QR. The starting point of this transition are: representation about the direct dependence of these parameters and functions only on the current values of ρ (especially for gas) and ε, as well as the concept of *full* differentials and *curvilinear* integrals with introduction of the integrator factors (see (1) – (3) and also [2]).

Note that in present work functions *p* and *T* essentially are considered as of *indicators* of the substances ρ and ε condition and change.

The main results of the made transformations are presented in the table relations (1) - (3), in which $\beta_{\rho}(\rho,\varepsilon)$ - the treatment function, and $\overset{\iota}{B}(\rho,\varepsilon) \wedge \overset{\iota}{G}(\rho,\varepsilon)$ - volume and shear-modules of elasticity, their velocities and "accelerations" with convert from *e-conditions* of own experimental identification in conditions of the LTD QR according [2]. By similar inversions are subjects to modules $\overset{\iota}{R} \wedge \overset{\iota}{R}_{\Lambda}$ and $\overset{\iota}{N} \wedge \overset{\iota}{N}_{\Lambda}$ in operations (A). Detail of the further actions with indicated modules is considered also in article [2]. It is clear, that possibly furthers amplification of ideas for physical coefficients by the inlet of its dependence in addition from substance $|\vec{v}|$ Some more in the capacity of insight-hypothesis we point out that if it is granted physically in many possible judgement about equality of the modules $\overset{\iota}{G} = \overset{\iota}{R}$ (see table of the right),then formalism of the law (II) will be, as clearly, contain the sum of kinematic tensors of full deformations $\overset{\iota}{\mathbf{T}} = \frac{d\,\vec{w}_d}{d\vec{\mathbf{x}}} = \overset{\iota}{\mathbf{S}} + \overset{\iota}{\mathbf{A}}$.

A. 7. *Direct* account rate of thermal deformation of the medium particles $\vec{v}_q$ as additive addition to the velocity $\vec{v}_f$ from the force fields, so that $\vec{v} = \vec{v}_f + \vec{v}_q$, is realized by the formula (5) where A - is coefficient velocity of thermal deformations (see also [1]) in the form of a product coefficients of conductivity of the temperature and linear thermal deformations.

A. 8. The author, as before, adheres to the opinion that for F-media, when critical parameters of a freely disturbed flow are reached, i.e. far from solid boundaries, a sporadic manifestation of a steep / abrupt / practically abrupt phenomenon occurs (one of the options due to the lack of experimental data) changes in the moduli of deformation $\overset{\iota}{B}, \overset{\iota}{G}, \overset{\iota}{R}, \overset{\iota}{N}, \overset{\iota}{R}_{\Lambda}, \overset{\iota}{N}_{\Lambda}$, expressed in the form of turbulent *fluctuation*. In connection with the above, the postulate on the *dominant similarity* of the specified effect to the phenomenon of plastic deformation or brittle fracture in solid continuous media was advanced in [1] (see also further the paragraph following relations (10a) and marked with a dot ● on the left). However, unlike the mechanism for describing a turbulent transition, considered as a possible option, in [1] with respect to the critical level of the main values of the deviator of the transposed strain velocity gradient tensor $\dot{\mathbf{S}}_d$, at this current stage of research, with permanent refinement and development of the present theory, it seems natural to propose a different, generalized criterion for *collapse transitions* in C-mediums, based on the property of *memory* about the pre-actual values of *e.m.p.* and written in the form of the following equality (10), obtained on the basis of the installations described in A.9.

The indicated development of the theory assumes: the nomination of the epistemological causal property of *reciprocity* of the left and right sides of the fundamental equations (I) - (IV) (see below), the establishment of an integral memory about the prehistory of particle deformation of the medium, the introduction of a absolute *binary* ($L \wedge E$) *totality system of the counting* and *viscous torsion* of the continuum moles in relation to its absolute system as well as at to *momentarylocal* trajectory *bench-mark* for given *e.p.m.*

with force elongation / shortening and rotation of their fibers / current tubes [7], consideration of the problems of *near-wall interaction* [3], *semi-analytically* established action factors [7, 14], etc.

A. 9. First of all we would bring in necessary clarifications for separate dependences in the relations (6), (A), (B), (C) written down in *E-system* of counting of the right column table.

For fixed time moment $t+\partial\tau$ we would consider dyad $\vec{\nabla}_{\vec{\mathbf{x}}}\vec{a}_d = \left(\partial a_{dj} \big/ \partial \mathbf{x}_i\right)$ on *4D* scales of time and space $\vec{\mathbf{x}} \in \overline{\mathbf{v}}$ *e.p.m.* Vector $\vec{a}_d$ is equal to difference $\vec{a}_d = \vec{a} - \vec{a}_c$, where vectors $\vec{a}, \vec{a}_c, \vec{a}_d$ are *pseudo*-accelerations $\partial\vec{v}/\partial t$, $\partial\vec{v}_c/\partial t$, $\partial\vec{v}_d/\partial t$ of the full velocity $\vec{v}$, forward motion $\vec{v}_c$ and *full distortion* $\vec{v}_d$ prototypes of the marked *e.p.m.* respectively. We think that focuses of these particles $\boldsymbol{c}_{L-s.p}$ for data interval/quantum of time $\partial\tau$ "passed" over some fixed points $\boldsymbol{c}_{E-s.}$ elementary volume $\mathbf{v}_E$ by *E-system*, accepted, in turn, in the capacity of centers (also focuses) $\boldsymbol{c}_{L-s.m}$ of the marked *e.p.m.* (particles)but in previous, on quantum smaller, moment of time, that is t (see Fig. 3).

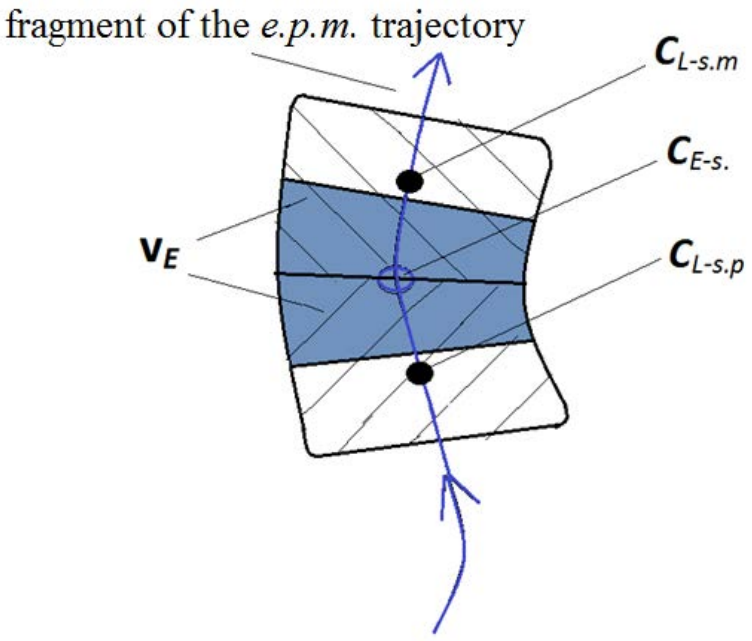


Fig. 3: Conditional "image" of the *e.p.m.* passage across registration elementary volume $\mathbf{v}_E$ of the *E-space*. On the time interval $[t, t+\partial\tau]$ the marked *e.m.p.* with center $\mathbf{c}_{L\text{-}s.m}$ is substituted by its nearest prototype of future with center $\mathbf{c}_{L\text{-}s.p}$ in time $t \in [t, t+\partial\tau]$.

The first part of the word *pseudo*-acceleration underlines fundamental difference of a classical notion about acceleration, as referred to unit mass measure of isolated body force of a inertia at action thereupon of the outside loading from appears above relations of differential proper velocities for two nearest *e.p.m.,* i.e. prototypes ← types, on vanishingly small distance from point $\mathbf{c}$ at to temporal equivalent $\partial t = \partial\tau$ of this deviation. Later on distinctive abbreviation *pseudo-* for foregoing vectors in *E-system* analysisis omitted, and word acceleration is put in quotes like before, and for all partial differentials to make use symbol ∂.

For furthest it is important following circumstances.

1. At each fixed moment of time and for any point $\vec{\mathbf{x}} \in \overline{\mathbf{v}}$ of the volume of individually *e.p.m.* velocities of it transit transfer $\vec{v}_c$ have *equal* meaning, but in general depending from time and, consequently, from *current* coordinate of it focus $\boldsymbol{c}$ in space.
2. Later under terms "distortion/deformation" we imply deformations in the value, form and elastic/viscid turning of some element of the medium, in absolute system of the couting $(L \vee E)$

As a result for stated above dyad we deduce (see also (B))

$$\vec{\nabla}_{\vec{\mathbf{x}}}\vec{a}_d = \vec{\nabla}_{\vec{\mathbf{x}}}\vec{a} - \vec{\nabla}_{\vec{\mathbf{x}}}\vec{a}_c = \vec{\nabla}_{\vec{\mathbf{x}}}\vec{a}\,. \qquad (9a)$$

Present factor will be inserted and into vector/tensor operations. Thus, appearing further tensors of the convection carry $\mathbf{U}_c, \mathbf{U}_c, \mathbf{a}_c$ for every fixed

of the time moment and on *e.p.m.* scales are regarded as *tensor constants*.

Now we shall propose and discuss the criterion of the collapse-passage based on function of long memory accumulation about deformations of *e.p.m.*, it follows representative itself *a priori* considerable degree of probability.

Memory about before the actual states velocity $\vec{v}_d$ and proper deformation $\vec{u}_d$ in rigid 3*D* space may be established by following integrals (in particular case of the start from *state of rest*, see also (6) and (B))

$$\vec{v}_d = \int_0^t \vec{a}_d \partial \boldsymbol{\tau}, \qquad \vec{u}_d = \int_0^t (\int_0^{\leftarrow t} \vec{a}_d \partial \boldsymbol{\tau}) \partial \boldsymbol{\tau} \qquad (9b)$$

where arrow between symbols of the integrals in brackets means simultaneity of the their both increments of inner and outer integrals.

On Fig. 4 is exemplified simplest, but visual example of the "memory effects" at discretely-linear change of the "acceleration" $\vec{a}_d$.

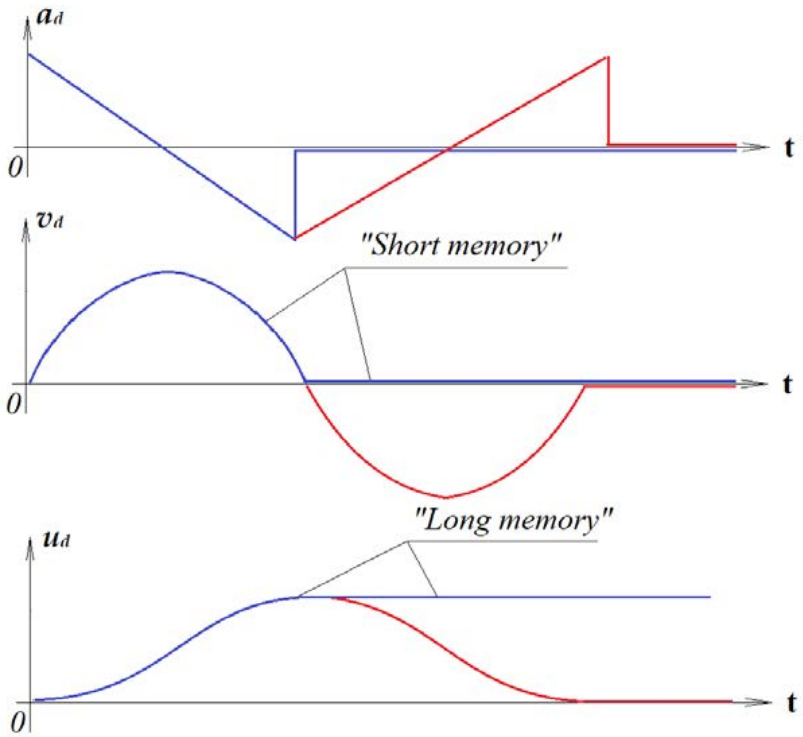


Fig. 4: Didactic instance of the "memory effects" forming about *e.p.m.* deformation.

However expressions (9b) don't permit, without appearance "superfluous" unknowns subject objectively to elimination, to express change of deformations $\vec{u}_d$ during time across vector $\vec{a} = \partial \vec{v} / \partial \boldsymbol{t}$ escaping "acceleration" $\vec{a}_c$ of the transit transfer *prototype* by marked *e.p.m.* over fixed point **c**.

Thus we shall put forward following lower modification of the field of deformation $\vec{a}_d^{\bullet}, \vec{v}_d^{\bullet}, \vec{u}_d^{\bullet}$ (and with distinctive from previous notation as a point by the capacity of a superliner index).

Stated modification permits for rather dense 4D set of grid points to formulate criterion of the collapse passage, i.e. metamorphosis, qualitatively changing character of a medium motion when accumulated during time deformation in some *3D E-space* point or into its totality of proper limiting level.

The stated implies that at corresponding stage of calculation dynamics is considered within the resolvent particularization of development of physical processes in the field of certain *k*-th increment of *FWS*, set by specific algorithm of numerical implementation of corresponding initial boundary value.

We shall represent in the a.m. system modification of the "acceleration" deformations $\vec{a}_d^{\bullet}$ as it middling integral meaning by surface **s** of volume **v**, conceding in each fixing moment of time with volume of the actual *e.p.m.* at additional referring of the present functions to typical linear scale *l*. Then using known relations of the tensor analysis we obtain following the set of equality

$$\vec{\bar{a}}_d^{\bullet} = \frac{1}{ks}\int_s (\vec{a}_d)_n \partial \mathbf{s} = \frac{1}{ks}\int_s (\vec{n}\cdot\mathbf{a}_d)\partial \mathbf{s} = \frac{1}{ks}\int_v \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a}_d \partial \mathbf{v} \ э$$

$$\vec{\bar{a}}_d^{\bullet} = \frac{1}{ks}\int_v \left(\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a} - \underline{\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a}_c}\right)\partial \mathbf{v} = \frac{1}{ks}\int_v \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a}\partial \mathbf{v}, \quad \vec{\bar{a}}_d^{\bullet} = \vec{a}_d^{\bullet}/1\ . \tag{9c}$$

Here underlined item fall out.

In view of supposed continuity of functions, trifle spatial scales of *e.p.m.* and at convenient choice $1 = \mathbf{v/s}$ (symbolical division in multitude theory) with admissible error, but with preference in simplicity, we shall find (on condition of use sign of the strong equality)

$$\vec{\bar{a}}_d^{\bullet} = Div\,\mathbf{a} = \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a},\ Dim\,\vec{\bar{a}}_d^{\bullet} = \mathrm{c}^{-2}. \tag{9d}$$

where $Div \wedge Dim$ is short for "divergence" and "dimension" respectively.

In (9c, 9d) $\vec{n}$ is singleness exterior normal to surface $\mathbf{s}$; $\mathbf{a} = (a_{ij}), \mathbf{a}_c = (a_{c.ij}), \mathbf{a}_d = (a_{d.ij})$ – *tensors* of the "accelerations" of velocities $\vec{v}, \vec{v}_c, \vec{v}_d$ *e.p.m.* and their full deformations; Similarly over divergence of the tensors of velocities $\mathbf{\upsilon}$ and transferences $\mathbf{U}$ is written vectors $\vec{\bar{v}}_d^{\bullet}, \vec{\bar{u}}_d^{\bullet}$.

By integrating (9d) by t single (short memory) and twice (long memory) in view of expressed previously consideration with respect to expressions (9b) we shall establish

$$\vec{\bar{u}}_d^{\bullet} = \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{U}_d = \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{U} = \int_0^t \left(\int_0^{\leftarrow t} \vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{a}\partial\tau\right)\partial\tau$$

Second integral in (9e) can be interpreted in the capacity of modification of relative and averaged to $\mathbf{s}$ deformation of volume, form and turning of *e.p.m.* with centers are passing through point $\mathbf{c}$ at preservation memory about before the actual strained states of its particles of medium. Function of $\vec{\bar{u}}_d^{\bullet}$ depends to time only from components of tensor "accelerations" of surface distribution the desired vectors of velocity, i.e. specific momentum $(\vec{v})_n \in \mathbf{s} \Leftrightarrow \vec{n}\cdot(v_{ij})$.

In terms of adjusting supposition contained in following item marked from the left by points •, ••, •••, we shall accept that there is such limiting meaning $\left|\vec{\bar{u}}_d^{\bullet}\right| = \bar{u}_d^{\bullet}$ at which appears collapse passage with sharp the drop of modules resistance by the motion of the *e.p.m.*. Therefore, we shall propose following dimensionless criterion

$$I^* = \bar{u}_d^{\bullet}\Big|^* = \left|\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{U}\right|^*, \quad Dim\,I^* = \varnothing, \quad \mathbf{U} = (u_{ij}), \quad i \wedge j = \overline{1,3}\,. \tag{10}$$

To bring more clarity to the subject under process underlined, that criterion (10), appearing also in relations (C) of the table, reduced to generally dimensionless form and defines critical level of resulting deformation of prototypes of marled e.p.m. passing through certain node (focus) pointc of rigid *3D* space. The proper vector of the deformation is defined by scalar product of Hamilton operator $\vec{\nabla}_{\vec{\mathbf{x}}}$ (in *E-system*) and sum of tensors $\mathbf{U} = \mathbf{U}_c + \mathbf{U}_d$ by forward motion of noted *e.p.m.*, each *as unit* $\mathbf{U}_c$ and *full* deformations by its of the particles $\mathbf{U}_d$. Moreover by the preceding remark relatively of the equalities (9a) vector $\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{U}_c = 0$.

We shall indicate still yet, that in principle it is not inconceivable: alternative forming of the criterion passage on base first equality in expressions (9e) independently or in combination with criterion (10) in dimensionless form with referring the vector $\vec{v}_d^{\bullet}$ to spectral velocity $v_{s.}$, established by limiting *FWN* certain *k*-th increment of *FWS*, as per the mesh of numerical solution. Namely

$$\vec{\bar{v}}_d^{\bullet} = \omega_{s.}^{-1}(\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{U}), \quad \mathbf{U} = (v_{ij}), \quad \omega_{s.} = æ_{s.}\,v_{s.} = I^{-1}v_{s.}, \quad i \wedge j = \overline{1,3}\ ,$$

$$I^* = (b_u\bar{u}_d^{\bullet} + b_v\bar{v}_d^{\bullet})^*, \tag{10a}$$

where b_u, b_v are weight coefficients, $b_u + b_v = 1$.

It should be noted following. The process return to until critical conditions are reversible for fluid mediums but as a rule irreversible for solid.

We shall adduce some quality proofs / positive evidences in behalf of the present criterions.

- Reason from basics representations about material unity natural structure every concrete medium,

satisfaction by it to fundamental laws of a thermomechanics, together with total character *direction* electromagnetic molecular and atomic interaction in present medium independently, however, from actual the kind of it *state of aggregation* of matter, represents permissible advancement postulate about *the dominant similarity* of phenomena of critical transition of modes of its movement disregarding the categories of these states [1].

•• Numerous, long since, dubbed experiments for solids, by example, on one-axis tension prismatic samples either from constructive materials or brittle bodies, show that at deformation $\vec{u}_d$ proper to conditional limits of fluidity or of the extreme principal of the shear strain is taking place jump decrease of the modulus of volume elasticity and shear but in the latter case we have fragile destruction. Present fact can be treated as breakdown of increase intensity of the attraction property for intermolecular connections on its mediums. Then with this in mind contents of the previous item we assume *a priori* and in fact heuristically opinion about certain *correspondence* of the collapse-passage in C-mediums situated in various state of aggregation.

••• We shall omit enough laborious for concise description details of metamorphosis accompanying condition of the development of transitional processes in considered mediums we restrict only ascertaining of following.

Structure relations (9e) and criterion (10) in its application to F-mediums permits qualitative, at least, explain face established also in distant years, but by careful the experiments, influence to origin of turbulence (in F-medium) heterogeneity by the enter stream at smooth solid boundaries but also apparently and view of a transitional process at a steady state. By consequence of the present circumstances is change of the critical Reynolds number in highly wide range of meaning $Re_{cr} \in [2 \cdot 10^3 \div 5 \cdot 10^4]$ and possibly more (see, for example [4, 8 – 13] and etc.).

We shall indicate also, that relations (9c) – (9e), (10), (10a) involves *full* tensors displacement $\mathbf{U}$, their velocity $\mathbf{U}$ and "acceleration" $\mathbf{a}$, but not their deviators, i.e. is taken into consideration and "spherical" part of *e.p.m.* volume deformation. Clearly, that only specifically posed physical experiments will be able to bring clarity in present dilemma.

Besides, it remains open question, particularly important for *solid*, about equivalence (without take of sign) processes of a *tension* and *pressing* of medium filaments as approach it's to critical meaning.

At last the following investigation will bring out the need and way of the collapse-functions entering into heat physical coefficients of the expressions for T, q_{cd}, q_r etc.

It is obvious to the possibility or the need, at properly proof, entering into the compositions functions (the left parts of equations (II), (IV)) the terms of additional force and moment effects of actions to *e.p.m.* containing components of the vectors of local torsion turn $\vec{\Lambda}$, its velocity $\dot{\vec{\Lambda}}$ and "accelerations" $\ddot{\vec{\Lambda}}$ *e.p.m.* as a single but *deformable* whole, expressed in forms of antisymmetric tensors $\overset{\iota}{\mathbf{\Lambda}} = (\overset{\iota}{\Lambda}_{ij})$ similarly by members with components $\overset{\iota}{\mathrm{A}}_{ij}$ (see in table relations (6), (A)).Let us remark that parameters c_j and æ$_j$ entering into expression for moment of inertia $\boldsymbol{J} = c_j \boldsymbol{J}^0$, need special analysis. So the greatest meaning of the parameters æ$_j$ is defined by established of PP linear scale in accordance to the greatest admissible of Knudsen's number Kn_{sup}. That statement maybe apparently the most important for the solid C-mediums.

Thus it function $\dot{\vec{\Lambda}}$ in law (IV) should be consider as fourth (by enumeration) fundamental substance with possibility close the system of basic equations of C- mediums'thermomechanics.

The subsequent development concerned above the question as and problem of the realization of algorithm for irregular distribution of the unknowns substances *ℒℰ–conversions* into fixed regular net of *E-space*(see later operation (12)) is assumed to state in one of the following publications of author.

In conclusion, we believe we need to extract and explain two stated below and radically necessary important circumstances missing in work [14].

*Property of a *concerted action* of the left and right parts of equations (I)-(IV) imply the following.

Suppose, as before, designation $\mathbf{f}$is identifier one from the desired substances of a matter –field, so that $\mathbf{f} = \left\{ \rho \vee \varepsilon \vee v_i \vee \dot{\Lambda}_i, i = \overline{1,3} \right\}$ of everywhere dense set of points of some closed 3D *Eulerian* space $\bar{\mathrm{V}}$. In this domain $\bar{\mathrm{V}}$ we shall give a *regular, bounded and countable* set of the points $\vec{\mathbf{x}}_{rg}$. In each fixed moment of the time $t = \boldsymbol{t}$ we have the same set of *labeled point* $\vec{x}(t)$, (coinciding with $\vec{\mathbf{x}}_{rg}$, i.e. $\vec{x}(t) = \vec{\mathbf{x}}_{rg}$) and values in them of all causal factors of the *action* to $\mathbf{f}$ in accordance to the left parts of the equations (I) – (IV).

At change time in stated above scale for PP on quantum $\partial\tau$ we will have

$$\vec{x}(t + \partial\tau) = \vec{\mathrm{x}}_{rg} + \vec{v}(\tau)\partial\tau = \vec{\mathrm{x}}_{ir}\big|_{t+\partial\tau\boldsymbol{\tau}}, \quad t \le \tau \le (t + \partial\tau) \tag{11}$$

where $\vec{\mathbf{x}}_{ir}$ – are the coordinates trajectory *irregular* points of their preceding regular set $\vec{\mathbf{x}}_{rg}$ but with functions $\mathbf{f}$ meanings

$$\mathbf{f} = \mathbf{f}(\vec{x}(t+\partial\tau), t+\partial\tau) = \mathbf{f}(\vec{\mathbf{x}}_{ir})\big|_{t+\partial\tau} .$$

Now let us call by symbol $\mathcal{LE}$ operator/algorithm of return with renovation of a topological transfer, with inevitable and stipulated previously of physically objective *defect*, of functions $\mathbf{f}$ defined on set $\vec{\mathbf{x}}_{ir}$ as according to (11), from this set to set of formers fixed points $\vec{\mathbf{x}}_{rg}$. In this way is go return to regular net $\vec{\mathbf{x}}_{rg}$ with renewal $\mathbf{f}$ in common case. As a result the new (non-stationary state of the medium) values of this functions $\mathbf{f}$are determined on regular *Eulerian* 3D grid $\vec{\mathbf{x}}_{rg}$ at time $t+\delta\tau$ by equality

$$\mathcal{LE}\left\{\mathbf{f}(\vec{x}(t+\partial\tau), t+\partial\tau)\right\} = \mathbf{f}\left(\vec{\mathbf{x}}_{rg}\right)\big|_{t+\partial\tau} \qquad (12)$$

Operator $\mathcal{LE}$ must including the effective procedures of the inter – and extrapolation.

It is clear too that on basis of the conversional (12) are revived too *corresponding* functions of the *action* in left parts of the equations (I) – (IV) apart from its components which are not dependent directly from indicated earlier functions $\mathbf{f}$ (e.g. $\vec{q}_r$, possible $\vec{F}$).

When reaching, beginning with$t = t^0 = t^0$, of steady movement in volume$\bar{V}$ we will evidently get

$$\mathcal{LE}\left\{\mathbf{f}(\vec{x}_{ir}, t^0)\right\} = \mathcal{LE}\left\{\mathbf{f}\left(\vec{x}_{ir}, t^0 + m\,\partial\tau\right)\right\} = \mathbf{f}(\vec{\mathbf{x}}_{rg})\big|_{t^0}\ ,\ \text{m=1,2,...}$$

where $\vec{x}_{ir}(t^0) = \vec{x}(t^0 + m\partial\tau) = \vec{\mathbf{x}}_{ir}\big|_{t^0 + m\,\partial\tau}$.

Special case of$\mathcal{LE}$ transformation is elated to movements of continuous medium in the static closed range calculation volume filled with it $\bar{\mathrm{V}} = \mathrm{V} \cup \mathrm{S}$ with fixed boundary S when in each consequent time unit labeled e.p.m. crossingtransparent sections of the boundary S entering or exiting region $\bar{\mathrm{V}}$ are allowed for.

Stated the operating sequence is conceptual represented model of the numerical discretization of a mathematically strict limiting condition of the *consistency* of equations (I)-(IV) left and right sides which are expressed by equation

$$\lim_{\substack{\Delta t\to 0\\ \Delta\vec{\mathbf{x}}\to 0}} A\,ct_k(t-\Delta t, \vec{\mathbf{x}}-\Delta\vec{\mathbf{x}}) = \lim_{\Delta t\to 0} \frac{Mon_k(t+\Delta t, \vec{x}(t+\Delta t)) - Mon_k(t, \vec{x}(t))}{\Delta t},\ k=\overline{1,4}\ , \qquad (12a)$$

where $A\,ct_k$ - are totalities of the equations (I)-(IV) left sides as casual factors, and Mon_k are proper monads: $ln\rho$, $\rho\vec{v}$, $\rho\varepsilon$, $J\dot{\Lambda}$, - as effect factors in right parts of its equations. Let us remark that structure of the equality (12a) in a certain relation is similar to the first left (ascending) and right (descending) differences in differential calculus theory and finite differences methods.

Didactic scheme of the base substances Mon_k renovated return in knots of 3D regular net $\vec{\mathbf{x}}_{rg}$ from irregular net $\vec{x}(t_{v+1}) = \vec{\mathbf{x}}_{ir}\big|_{t_{v+1}}$ for time quantum in from of a plane cut to volume $\mathbf{V}$ fragment is illustrated by Fig.5. In explanations to Fig.5 and further in text are employed indicators t_v, t_{v+1}, $\partial\tau = t_{v+1} - t_v$ for *L*-system (and the same but by fat print for *E*-system). Here as and before $\partial\tau$ is quantum of time; index v is marked moment of time for beginning of quantum with number v *and* $(v+1)$ is marked termination of it quantum and beginning for quantum with number $(v+1)$, $v = 1, 2...$; meaning $t_{v=1} = 0^+$ is initial time moment.

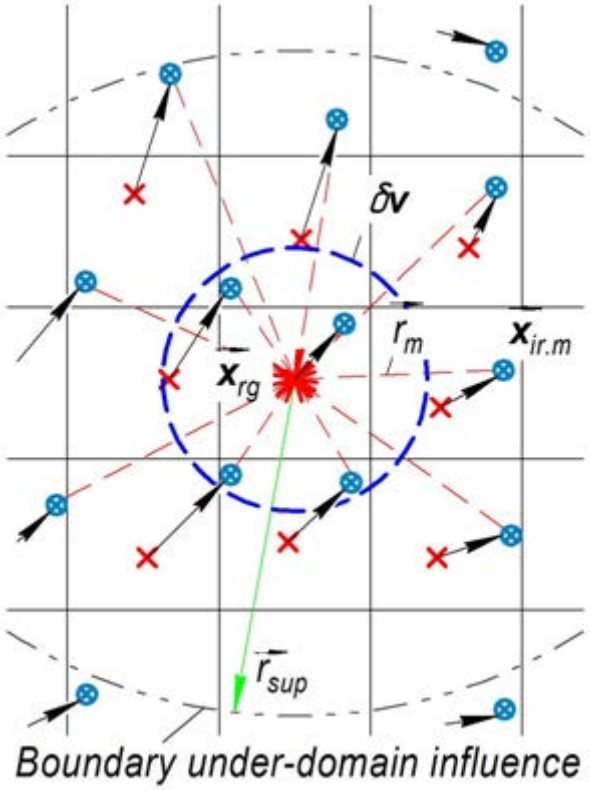


Fig. 5: Scheme of the base substances renovative return on regular net in a plane cut. Here sign × are knots of the regular net; $\vec{\mathbf{x}}_{rg}$ is one from its knots; sign ⊗ are positions of the marked *e.p.m.*(particles); $\vec{x}_m(t_{\nu+1}) = \vec{\mathbf{x}}_{ir.m}\big|_{t_{\nu+1}}$ at the end $t_{\nu+1}$ of current ν-th time quantum $[t_\nu,\ t_{\nu+1}]$as counting set of trajectory points $m \in \{m_s\}$in under-domain of *influence* $\vec{r}_{\sup}$ on meaning of Mon_k in knot $\vec{\mathbf{x}}_{rg}$.

At numerical solutions of the equations (I)-(IV) return with renovation transfer (12) under evident *discrepancy* connected with continuity hypothesis *defect* and with *discretesation* of the assumed continuous dependences maybe realized by various ways requiring of the following analysis and experimental investigation.

The variants of $\mathcal{LE}$ computing transformation over the whole visibility will be different by formalism of weight functions W_m. Here index*m* marks the numbers of irregular /belonging to trajectory medium points, i.e. e.p.m. focuses from its regular set net knots $\vec{\mathbf{x}}_{rg.m}$ at $t = t_\nu$ (beginning of data time quantum). Data particles for quantum $\partial\tau$ moved to own distances $(\vec{\mathbf{x}}_{ir.m}\big|_{t_{\nu+1}} - \vec{\mathbf{x}}_{rg.m}\big|_{t_\nu})$ and in moment $t_{\nu+1}$ with meaning of the monads $Mon_k(t_{\nu+1}, \vec{x}_m(t_{\nu+1}))$ proved to be fixed in under-domain of its influence (by norm $r_{\sup}$) upon values of the its monads at $t = t_{\nu+1}$ in separately chosen and deveined $r_{\sup}$ knots $\vec{\mathbf{x}}_{rg}$ as forerunner indicated earlier under-domain.

Of course above influence is absolute function from distribution of distances r_m between $\vec{x}_m(t_{\nu+1}) = \vec{\mathbf{x}}_{ir.m}\big|_{t_{\nu+1}}$ and data knot $\vec{\mathbf{x}}_{rg}$.

In sight may also statement of much more *perfect* but, highly *laborious* algorithm with attraction of the action functions Act_k not only at the *beginning* of a current the time quantum $\partial\tau$ but also (we shall say) in it *end*.

It`s expedient put in the two alternative of the transformation function $\mathbf{f}_{ir}$ (some from Mon_k) to $\mathbf{f}_{rg}$, i.e. on regular net.

We have the following

$$\begin{cases} \mathbf{f}_{rg}=\sum_{m=1}^{m_s}\mathbf{f}_{ir.m}W_m,\ \sum_{m}^{m_s}W_m=1,\ W_m\geq 0,\ t{=}t_{\nu+1}\ \ \text{э}\ \mathcal{L}\varepsilon\{\_\}=\sum_{m=1}^{m_s}\_\ _{ir.m}W_m; \\ \text{first variant:} \\ W_m=\dfrac{(1-\overline{r}_m^{\,\alpha})}{\sum_{m=1}^{m_s}(1-\overline{r}_m^{\,\alpha})}\ ; \\ \text{second variant:} \\ W_m=\dfrac{\overline{r}_m^{\,-\beta}}{\sum_{m=1}^{m_s}\overline{r}_m^{\,-\beta}} \\ (\mathrm{v}_{pp}{}^{1/3}/r_{\sup}=\overline{r}_{\inf})<(\overline{r}_m=r_m/r_{\sup}=\left|\vec{\mathbf{x}}_{rg}-\vec{\mathbf{x}}_{ir.m}\right|/r_{\sup})<1; \\ \textit{if}\ r_j\leq \mathrm{v}_{pp}{}^{1/3}\ \text{and}\ j\in\{m_s\},\ \text{that}\ \ \mathbf{f}_{rg}=\sum_{j=1}^{j_s}\mathbf{f}_{ir.j}/j_s,\ j=1,2,\ldots j_s, \end{cases} \tag{12b}$$

where r_{sup} and m_s is linear norm and common number of points $\vec{\mathbf{x}}_{ir.m}\big|_{t_{\nu+1}}$ in defined (by consensus) under-domain of influence $\mathbf{f}_{ir.m}(t_{\nu+1},\vec{\mathbf{x}}_{ir.m})$ on $\mathbf{f}_{rg}\big|_{t_{\nu+1}}$; j_s is amount distances of r_j; v_{pp} - numerically stipulated volume of physical/material point PP. Parameters α and β can to depend from $\overline{r}_m\in[\overline{r}_{\inf},1]$ as well as in strict sense from the kind of unknown substances M *on* $_k$ and required the additional analysis.

In special case of the meaning β=2 it takes place correspondence with proper laws Newton and Coulomb.

By essential lack of the noted variants (12b) is uncertainty in meaning of parameters α∧β.Leaving at yet aside of a classical methods of the parabolic, harmonic and some other approximations ofit difficult may be reduced as follows.

The small neighborhood of central knot $\vec{\mathbf{x}}_{rg}$ we shall envelop by not large 3D domain $\delta\mathbf{v}$(see Fig. 5) and for it domain at $t{=}t_{\nu+1}$ we claim that

$$\mathcal{L}\varepsilon\{\mathbf{f}_{ir.m},\overline{r}_m(\vec{\mathbf{x}})\}-\mathbf{f}(\vec{\mathbf{x}})=0,\ m\in\{m_s\},\ \vec{\mathbf{x}}\in\delta\mathbf{v}. \tag{12c}$$

For reasons of $\delta\mathbf{v}$ trifle we should accept parameter α (or β) depending from $\vec{r}_m(\vec{\mathbf{x}})$ linearly. Necessary registration points of it index we select from positively approbatory diapason of it variation in volume $\delta\mathbf{v}$. Then for realization of (12c) relation and therefore establishment of $\mathbf{f}_{rg}(\vec{\mathbf{x}}=\vec{\mathbf{x}}_{rg})$ the numerical values maybe used one from the most productive for data problem *weighted discrepancy methods*. In addition is assumed attraction of suitable sampling and examination functions with $\mathbf{W}_m$ rate setting at integration on $\delta\mathbf{v}$ in relation to knot $\vec{\mathbf{x}}_{rg}$.

Letting now degree α ∨ β varying in depending from $\overline{r}_m(\vec{\mathbf{x}})$ for example to linear law and with choice of it law degree necessary meaning from range [1/2, 2] to fulfil of the dependence (12c)we shall apply one in suitably (by selection of sampling and examination functions) of *weighted discrepancy methods* with final act $\vec{\mathbf{x}}=\vec{\mathbf{x}}_{rg}$.In addition most likely with rate setting of $W_m\big|_{\vec{\mathbf{x}}=\vec{\mathbf{x}}_{rg}}$ at integration on $\delta\mathbf{v}$by it knot, e.i. $\vec{\mathbf{x}}=\vec{\mathbf{x}}_{rg}$.

As a whole evidently that purpose of parameter α ∨ β must largely to show the best correlation with well the known precise experimental results.

** Please note the following. Equation of a internal energy (increment) ε (III) completely coincides which differential form of writing of the more total law about balance of full energy (per unit time) of particles of moving continuous medium in the labeled volume of *Eulerian* space

$$\rho(\vec{F}\cdot\vec{v})+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot(\mathbf{\Pi}\cdot\vec{v})+((\vec{\nabla}_{\vec{\mathbf{x}}}\vec{u}_d)^*\times\mathbf{\Pi})\cdot\dot{\Lambda}+\vec{\nabla}_{\vec{\mathbf{x}}}\cdot(\mathbf{M}^{(a)}\cdot\dot{\Lambda})+\rho q_{cd}+\rho q_r=\frac{d}{dt}\rho\left(\frac{v^2}{2}+\varepsilon\right) \tag{III'}$$

if velocity of change of a kinetic energy of a medium *macromotion* satisfies the equation

$$\rho\vec{F}\cdot\vec{v}+(\vec{\nabla}_{\vec{\mathbf{x}}}\cdot\mathbf{\Pi})\cdot\vec{v}=\frac{d}{dt}\rho\frac{v^2}{2}, \qquad \text{(III")}$$

in which the left and right parts of this equation are written, as stated previously, in various systems of counting:

The last demands additional analysis which is tied with question: whether the second term in expression (III") at left describes the second volume work of an exterior surface forces in *E-system*, i.e. at coordinates$(\vec{\mathbf{x}},t)$?

The term $\vec{\nabla}_{\vec{\mathbf{x}}}\cdot(\mathbf{\Pi}\cdot\vec{v})$ in (III') describes volume action of a work per unit time of exterior surface forces, one part of which goes into change of a kinetic energy of macroscopic motion $v^2/_2$ of partices media. It motion is expressed of *phenomenological* by second term to left in equation (III"), and the other part defined in equation (III) of the first term at left is spent on increment (in algebraic sense) of internal energy.

Let us remark, that by analogue of expression (III") in traditional model of thermomechanics C-mediums is equation which succeeds from relation (II_T) by means of the scalar product of it *both* parts on vector velocity $\vec{v}$, it is inderstood, only in *E-system* of counting [5].

Anyhow it's beyond question possibility of the inclusion in fundamental system (I)-(IV) equation (III') instead of (III).

III. Supplements

Let us consider some particular simple models used for description of the fluid dynamics as examples of application of the proposed formalism with regarded that given conception contains group of the additional physical coefficients requiring of its determination. In considered examples *LΛE-systems* of counting in essence fully are agreed upon.

a) *Main Balance Relations of the Dynamics of Ideal Gas for Barotropic Processes with Moderately Inhomogeneous Flow*

In addition we accepts that thermomechanics is symmetrical and steady mass, processes are stationaries and to be considered along of the flow lines. Conditions stipulated in the title of this subsection and followings imply that operator $\frac{d}{dt}=\vec{v}\cdot\vec{\nabla}_{\vec{\mathbf{x}}}\ni d\vec{\mathbf{x}}=d\vec{\mathrm{x}}$, tensor

$\mathbf{\Pi}=\mathbf{P}_s=p\cdot\mathbf{I},\overset{\iota}{G}=0,\dot{B}\approx\ddot{B}\approx 0$ and in fact we proceed to the notions of quasi-equilibrium thermodynamics.

Further subscript at operator $\vec{\nabla}$ is lowered.

As known, the equation of energy balance per unit time for a continuous medium in full writing and for a given case (see too (III')) is as follows:

$$\rho\frac{d}{dt}\left(\varepsilon+\frac{v^2}{2}\right)=\rho\vec{F}\cdot\vec{v}+\vec{\nabla}\cdot\left(\mathbf{P}_s\cdot\vec{v}\right)+\rho q,q=q_{cd}+q_r \qquad (13)$$

This equation reduces to balance relation (III) upon subtraction of an equation of energy balance for macroscopic motion, which is obtained by scalar multiplication of both parts of relation (II) by velocity $\vec{v}$.

Setting $\rho=\rho(p)$ and using Eqs. (III),(2) (see Table)at $\boldsymbol{\kappa}$=1 and (13) in the theoretical model under consideration and taking into account that the initial pressure is equal to the algebraic sum of lower limits of integration in expression (2), we obtain the following equations for the class of barotropic flows.

$$\frac{d}{dt}(\varepsilon+\frac{v^2}{2})=-\vec{v}\cdot\vec{\nabla}\Pi-\frac{1}{\rho}\vec{\nabla}\cdot(p\vec{v})+\mathrm{q},\quad \frac{1}{\rho}\vec{\nabla}\cdot(p\vec{v})=\vec{v}\cdot\frac{\vec{\nabla}p}{\rho}+\frac{p}{\rho}\vec{\nabla}\cdot\vec{v} \qquad (14)$$

$$\vec{v}\cdot\frac{\vec{\nabla}p}{\rho}=\vec{v}\cdot\vec{\nabla}\,\mathcal{P}(p(\rho,T(\rho)),\quad \frac{p}{\rho}\vec{\nabla}\cdot\vec{v}=-\frac{p}{\rho^2}\frac{d\rho}{dt} \qquad (14a)$$

$$\frac{d}{dt}\varepsilon=\frac{1}{\rho}\mathbf{P}_s\cdot\dot{\mathbf{S}}+q=-\frac{p}{\rho}\vec{\nabla}\cdot\vec{v}+q\ \ \ni\ \ \frac{d}{dt}\frac{v^2}{2}=-\vec{v}\cdot\vec{\nabla}\Pi-\vec{v}\cdot\vec{\nabla}\mathcal{P} \qquad (14b)$$

which naturally yield the well-known generalization of the Bernoulli equation for steady-state regime of motion along the flow lines:

$$\frac{v^2}{2}+\mathcal{P}+\Pi=const_{\mathrm{P}},\quad \mathcal{P}=\int\frac{dp}{\rho}, \qquad (15)$$

where Π is the potential of mass forces,$\mathcal{P}$is the pressure function that is assumed to depends on $\rho$and$T$, and$T$is assumed to be a function ofρ.

For the ideal gas we obtain the following relations (here and below, subscripts T and ρat partial derivatives are omitted):

$$dp = \frac{\partial p}{\partial \rho} d\rho + \frac{\partial p}{\partial T} dT = \frac{B}{\rho} d\rho + \frac{B_\rho}{T} dT. \quad (16)$$

The latter sum is actually a complete differential of pressure, provided that $B/\rho = RT$ and $B_\rho/T = R\rho$, where $R = const$. Therefore, $B_\rho = B$ and, if these moduli are equal to pressure p (i.e., to isothermal value of the bulk elastic modulus), we arrive at a formula that coincides with the Clapeyron equation, while the differential of pressure p can be expressed as

$$dp = R\, d(\rho T). \quad (17)$$

In application to polytrophic processes, which constitute a broad subclass of barotropic processes, the relation $dp = n(p/\rho)d\rho$ is valid provided that $T = (T_0/\rho_0^{n-1})\rho^{n-1}$ in relation (16). In this case, $B_n = np$ is a bulk elastic modulus in the given dynamic process.

In the case of adiabatic flows, i.e., for $q = 0$, it follows from Eqs. (14) – (14b) and (16) that

$$d\varepsilon = RT\rho^{-1}d\rho = d\hat{i} - d\frac{p}{\rho} = d\hat{i} - \frac{dp}{\rho} + \frac{p}{\rho}\rho^{-1}d\rho = d\hat{i} - d\mathcal{P} + RT\rho^{-1}d\rho$$

where $\hat{i}$ is enthalpy. Therefore, $d\hat{i} = d\mathcal{P}$ and Eq.(15) can be written in the following quasi-equivalent form.

$$\frac{v^2}{2} + \hat{i} + \Pi = const_{\hat{i}}, \quad (18)$$

so that energy balance trinomial (18) differs from (15) by a constant. Then, using Mayer's formula $R = c_p - c_v$, we obtain

$$d\varepsilon = c_v dT = RT\rho^{-1}d\rho \quad \Rightarrow \quad d\ln T = (k-1)d\ln\rho \quad \Rightarrow \quad \frac{T}{T_0} = \left(\frac{\rho}{\rho_0}\right)^{k-1}, k = c_p/c_v.$$

Using these relations and the Clapeyron equation, we eventually arrive at the classical Poisson's adiabatic equation, $p/\rho^k = const$. In the presence of external heat supply, $dq = Td\hat{e}$, where $d\hat{e}$ is increment of an entropy, we readily obtain the well-known formula

$$d\hat{e} = c_v d\ln p/\rho^k, \quad (19)$$

which shows that for $d\ln(p/\rho^k) = 0$ in Eq. (19) (i.e., for $dq = 0$), the adiabatic flows of ideal gases are isentropic.

Thus, the formalism developed in this work, when applied to a particular case of gas flow (which is widely used in solving many practical problems) isfully consistent with the corresponding field of gasdynamics.

b) Steady-State Laminar Flow of a Fluid in a Cylindrical Round Tube with Smooth Walls at T = const

Conditions stipulated in the title of this subsection imply that we can set

$$v_z = v_z(z,r), v_\varphi = 0, \dot{B} \approx \ddot{B} \approx G \approx \ddot{G} \approx 0, B = B(z), \rho^{-1}\dot{G} = \rho^{-1}\mu = \upsilon = const.$$

Besides, restriction accepted in example S.1 also are maintained but at $\dot{G} \neq 0$.

In this case, it is natural to use a cylindrical coordinate system (r, φ, z), where z is measured along the tube axis as indicated on Fig.6a. Assuming in addition that the radial component v_r of velocity $\vec{v}$ is negligibly small, the pressure and density will depend only on the axial coordinate: $z \ni p = p(z), \rho = \rho(z)$. This assumption poses rather strict limitations on the algorithm of solution of this problem.

In the given particular case, the equations of continuity (I) and momentum balance (II) reduce to the following relations

$$M(r) = \rho(z)v_z(r,z) \Rightarrow v_z = \frac{\rho_0}{\rho(z)}v(r), \quad (20)$$

$$\mu\left(\frac{\partial^2 v_z}{\partial r^2} + \frac{1}{r}\frac{\partial v_z}{\partial r} + \frac{\partial^2 v_z}{\partial z^2}\right) - \rho v_z \frac{\partial v_z}{\partial z} = B\frac{1}{\rho}\frac{d\rho}{dz}, \quad (21)$$

Where M is the mass flow rate [kg/(m^2 s)] that depends

only on r, $\rho_0$is the density in the input cross section where the fluid flow enters the tube. It follows from Eq.(20) that v_z is described by an expression with separable variables.

Analysis shows that, for the low-gradient (layered) flow under consideration, the last term in parentheses on the left-hand side of Eq. (21)can be ignored and, for the existence of a single solution, it is necessary to set the values of pressure p_0, p_1 in cross sections *0–0*and *1–1* (fluid in- and outflow, respectively) and function $\rho(z)$ and to transform relation (21) into an ordinary differential equation with constant coefficients for the unknown function $v(r)$.

Omitting the description of simple transformations and passing to dimensionless variables, we eventually obtain from Eqs. (20) and (21) (see also Fig. 6a) the following relations:

$$\frac{d^2\bar{v}}{d\bar{r}^2}+\frac{1}{\bar{r}}\frac{d\bar{v}}{d\bar{r}}+R_1(\bar{z})\bar{v}^2=R_2(\bar{z}),\ R_1=\frac{r_0^2v_0}{l\upsilon}\frac{1}{\bar{\rho}^2}\frac{d\bar{\rho}}{d\bar{z}},\ R_2=-\frac{4}{\ln\bar{\rho}_1}\frac{1}{\bar{\rho}}\frac{d\bar{\rho}}{d\bar{z}},$$

$$\bar{v}=\frac{v}{v_0},\ v_0=-\frac{r_0^2}{4\rho_0\upsilon}\frac{\Delta p}{l},\ \Delta p=p_1-p_0, \tag{22}$$

$$\bar{r}=\frac{r}{r_0},\ \bar{z}=\frac{z}{l},\ \bar{\rho}=\frac{\rho}{\rho_0},\ \rho_1=\exp(\Delta p/B),$$

where the characteristic velocity v_0 corresponds to the maximum value on the paraboloid profile of velocity according to the model of incompressible fluid.

Restricting the consideration to a linear approximation for the fluid density $\bar{\rho}=1+\Delta\bar{\rho}\,\bar{z},\Delta\bar{\rho}=\bar{\rho}_1-1,$multiplying both parts of Eq. (22) by *dz,* and integrating over $\bar{z}\in[0,1],$we eventually obtain the following ordinary nonlinear differential equation:

$$\frac{d^2\bar{v}}{d\bar{r}^2}+\frac{1}{\bar{r}}\frac{d\bar{v}}{d\bar{r}}+\bar{R}\bar{v}^2=-4,\ \bar{R}=-\frac{r_0^4}{4\upsilon^2\rho_0l^2}\frac{\Delta p}{\bar{\rho}}\frac{\Delta\bar{\rho}_1}{\bar{\rho}},\ \bar{v}_z=\bar{\rho}^{-1}\bar{v}. \tag{23}$$

Evidently, in the model of incompressible fluid $\bar{\rho}_1=1\wedge\Delta\bar{\rho}_1=0\ \Im\ \bar{R}=0$ and a solution of Eq.(23) corresponds to the classical *Poiseuille* velocity profile $\bar{v}_z=\bar{v}=1-\bar{r}^2$,representing a paraboloid of rotation.

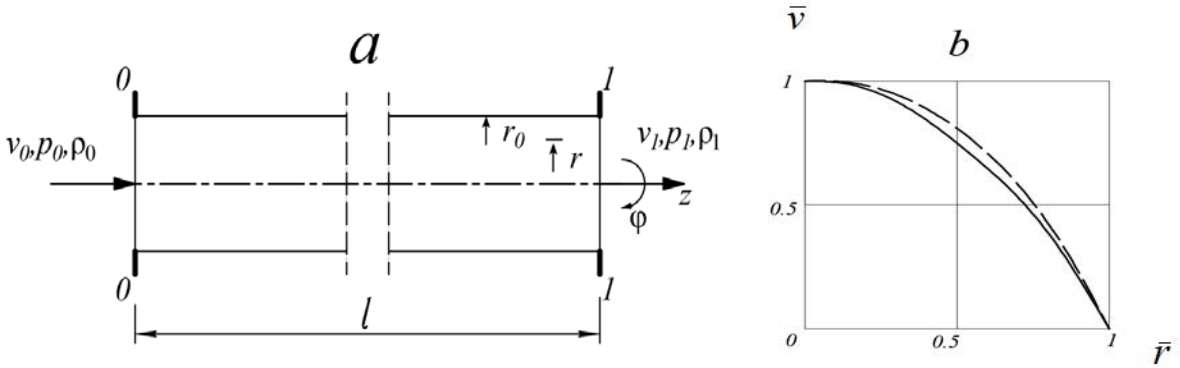


Fig. 6: Fragment of the tube and dimensionless of velocity $\bar{v}(\bar{r})$ epures

Numerical solutions of Eq. (23) for liquids showed that, in the interval of pressure changesΔp corresponding to Re values in the field of laminar flow regimes, the effect of compressibility described by the term $\bar{R}\,\bar{v}^2$ is negligibly small. An analogous conclusion is valid for isothermal layered flows under conditions of normal and rarefied gases. As it was expected, the effect of compressibility, manifested by a significant difference of the velocity $\bar{v}_z$ from its *Poiseuille* profile, is observed only for strongly rarefied gases. Fig.6b (solid curve) shows of the dimensionless *Poiseuille* velocity profile. Dashed curve shows the results of calculation using Eq. (23) for the following parameters: r_0 = 5·10^{-3}m, l = 1 m, B = 60550 Pa, ρ_0 = 0.8 kg/m^3, υ = 1.5·10^{-5}m^2/s, Δp=230 Pa, Re = 4·10^4 and $\bar{R}=-0.76$.In this case $\bar{z}=1$ and velocity is displayed to it meaning on the

tube axis. As can be seen, differences between the two velocity $\bar{v}$ distributions are relatively small, although the Re value adopted in calculations corresponds in fact to a turbulent flow regime.

c) One-Dimensional Stationary Isothermal Efflux of the Ideal Liquid via a Nondivergent Nozzle

With a view to obtaining only a qualitative picture, let us consider a simple model with modulus *B* set to be constant (in particular, let fluid to be water with $B = 2.25 \cdot 10^3$ MPa). Fig. 7a shows a model scheme used in calculations. Spacer *1* separates two reservoirs (the left-hand one being of large volume), so that liquid can flow from left to right only via a hole with hermetically mounted nozzle *2*, provided that $\rho_1 < \rho_0$. The density ρ_0 and pressure p_0 in some inlet cross section *0-0* (sufficiently far from the left input edge of the nozzle) represent the "retardation" parameters ($v_0 = 0$). Cross sections *i-i* and *1-1* correspond to the right-hand boundary of the initial region with constant steady-state flow velocity *v* and the nozzle output section, respectively.

With neglect of mass forces, assuming small radial dimensions of the nozzle, Eq. (15) yields

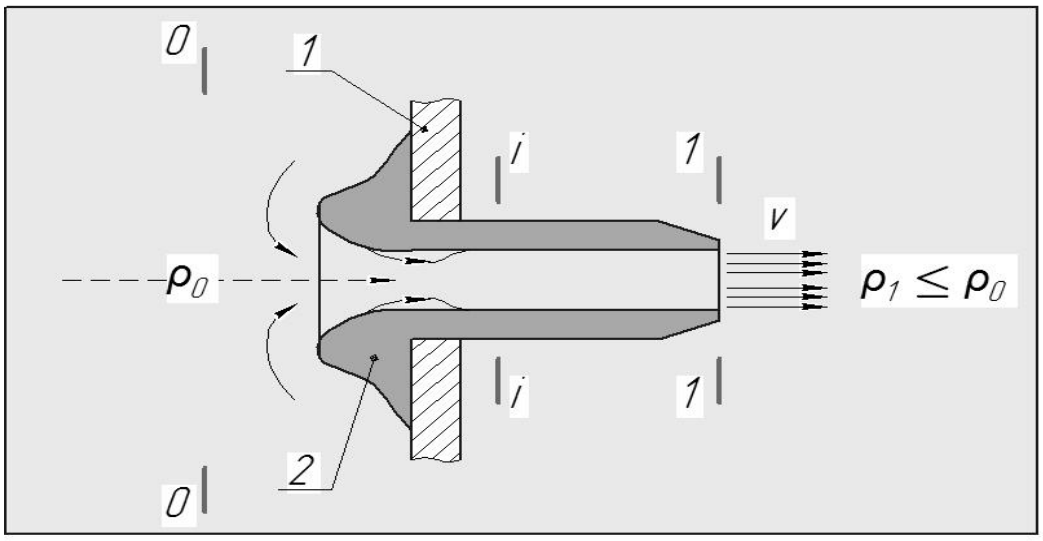
$$\mathrm{P} = B\int \frac{d\ln\rho}{\rho} \quad \Rightarrow \quad \frac{v^2}{2} - \frac{B}{\rho_1} = -\frac{B}{\rho_0} \quad \Rightarrow \quad v = \sqrt{2B(\rho_1^{-1} - \rho_0^{-1})}. \tag{24a}$$

or with allowance for a physical result

$$v^2 - \frac{2B}{M}v + \frac{2B}{\rho_0} = 0 \quad \Rightarrow \quad v = \frac{B}{M} - \sqrt{\frac{B^2}{M^2} - \frac{2B}{\rho_0}}, \tag{24b}$$

Where M is the mass flow rate. For $\rho_0 = const$ and decreasing density ρ_1 (and, hence, pressure p_1, since $p_1 - p_0 = B\ln\frac{\rho_1}{\rho_0}$) from ρ_0 to $\rho_1^* = \frac{\rho_0}{2}$, the flow velocity in the right-hand reservoir reaches a critical value of $v^* = \sqrt{\frac{2B}{\rho_0}} = \sqrt{\frac{B}{\rho_1^*}}$ with the well-known phenomenon of efflux blocking. For water under conditions close to normal with $\rho_1^* = 10^3$kg/m^3 and $p_1^* = 10^5$Pa, the flow considered from the abstract point of view (i.e., without a change in the physical state of medium and its flowability properties) will proceed purely theoretically for $\rho_0 = 2 \cdot 10^3$kg/m^3 and $p_0 \approx 1560$ MPa at the efflux with a sound velocity of $v^* = 1500$ m/s.

a



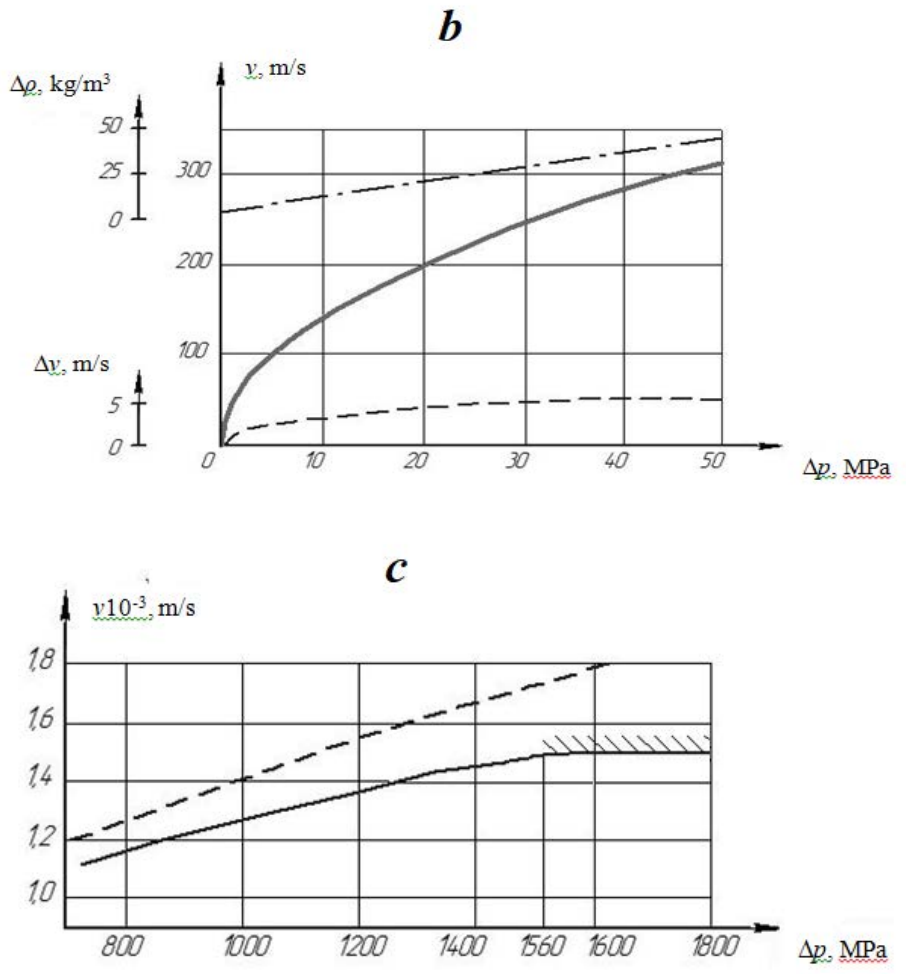


Fig. 7: Qualitative estimation of compressibility effect on velocity of fluid outflow from hydraulic nozzle

Fig. 7b shows the plot of flow velocity *v* versus $\Delta p = p_0 - p_1$ (in the interval of practically significant variation of this parameter) in steady-state regimes in cross section *1-1,* calculated using the proposed model with allowance for compressibility (solid curve), which almost coincides with the velocity profile according to the model of incompressible liquid. The dashed curve shows the excess velocity Δvaccording to the latter model (plotted on a greater scale), while the dash-dot curve represents the corresponding excess density $\Delta\rho = \rho_0 - \rho_1$.

Fig. 7c shows the analogous plots of velocity *v* for the models of compressible (solid curve) and incompressible (dashed curve) liquids in the vicinity of a hypothetical zone of efflux blocking. As can be seen, a significant difference of velocity *v* for the two theoretical models under comparison is only observed at very large pressure differences Δ*p*, which are difficult or even impossible to achieve in practice. These results exhibit positive correlation with a conclusion made in the preceding subsection S.2 concerning a negligibly small influence of the compressibility of fluids on the dynamic process in steady-state layered flows. However, it is hardly possible that this conclusion can also be expanded to turbulent flows, which are principally three-dimensional and non-stationary and (according to both theoretical and experimental data [5]) have derivatives with respect to $(\vec{x}, t)$ that exceed by many orders of magnitude the values taking place in laminar regimes of fluid motion.

IV. Conclusion

1. The foundations of the non sacramental theory of continuous mediums thermomechanics have been developed.
2. We obtained new phenomenological closed system of equations with unknown functions are the fundamental substances of the matter-field: the specific mass ρ, the momentum $\vec{v}$, the increase of internal energy ε, the velocity $\dot{\vec{\Lambda}}$ of the torsion motion direct turn of the marked *e.p.m.* for unit of time, determining the inertial moment at it appearance in the course of viscous turnings of the real C-mediums elementary particles.

3. A large group of physical coefficients / parameters / indicators with qualitatively different weighting contributions to balance equations for yielding deformation C-mediums and being in various of aggregate conditions requires its experienced pre-definition, and essentially - the initial establishment.

Therefore, it can be assumed that the article is oriented *on the future* and at professionals, theoreticians and experimentalists which are working creatively in the field of research strongly perturbed dynamics of continuous media in nature and artifact of various purposes.

Notations *

$\vec{F}$ - vector by volume forces;

$\overset{\iota}{\mathbf{S}}_d$ - deviators of the symmetric transposed tensors for gradients: deformations $\mathbf{S}\left(\frac{d\vec{u}_d}{d\vec{\mathbf{x}}}\right)^*$, their velocities $\dot{\mathbf{S}}\left(\frac{d\vec{v}_d}{d\vec{\mathbf{x}}}\right)^*$ and *pseudo*-accelerations (or simple "accelerations") $\ddot{\mathbf{S}}\left(\frac{d\vec{a}_d}{d\vec{\mathbf{x}}}\right)^*$;

$\overset{\iota}{B}, \overset{\iota}{G}, \overset{\iota}{R}$ and $\overset{\iota}{N}$ – modules of deformations of volume and shears ($\iota = \emptyset$), its velocity ($\iota = \bullet$), "acceleration" ($\iota = \bullet\bullet$) from strain tensors $\mathbf{P}_s, \mathbf{P}_d, \mathbf{P}^{(a)}$ and moment of strain $\mathbf{M}^{(a)}$ accordingly;

I, **1** - the unit tensor and the Heaviside step function;

ξ – for F-mediums is distance by strong interaction with wall, or with boundary surface of two-phases jets mixing;

l_x– index of a binary interacting (see also [8]);

c_v - specific heat at constant volume;

J, c_J , $æ_J$ – moment of inertia; coefficient of correction and the weighted mean wave number characterizing the local spatial topology of the marked *e.p.m.* by normal to direction of $\vec{\Lambda}$;

$\dot{\vec{\Lambda}}$ –vector of turn of the marked *e.p.m.* for unit of time and related to one radian;

$\overset{\iota}{\mathbf{\Lambda}}, \overset{\iota}{N}_\Lambda, \overset{\iota}{R}_\Lambda, J^0$ -antisymmetric tensors of the turn **Λ***e.p.m.* as a single but deformable whole, its velocity $\dot{\mathbf{\Lambda}}$ and "acceleration" $\ddot{\mathbf{\Lambda}}$; further: physical coefficients of these acts influence and the *distinctive* moment of inertia accordingly;

$\vec{q}_{cd}, \vec{q}_r$ - vectors of conductive and radiation heat transfer;

$\vec{u}_d$, $\vec{v}_d$, $\vec{a}_d$ - vectors of deformation, it velocity and "acceleration" from removal and rotation shears in *E-system* counting; second word-to-word index 0 marks the initial conditions;

$\overset{\iota}{\vec{w}}, \overset{\iota}{\vec{w}}_d$ - additional vectors that simplify the formulas; $\overset{\iota}{\vec{w}}_c$ – the proper referring to forward motion of *e.p.m.*;

λ - heat conductivity coefficient; μ - dynamic viscosity coefficient;

$\mu_\beta, \overset{\iota}{\mu}_b, \overset{\iota}{\mu}_g$ – integrator factors;

$\overset{*}{I}$ - criterion in relations (C) meets to increment of wave specters with modulus of the wave number $æ_s$;

$\vec{u}_d^{\bullet}, \vec{u}_d^{\bullet}$ - modifications of the vector of deformation and its modulus related to linear scale $l = æ_s^{-1}$;

$\mathbf{U} = [u_{ij}], \mathbf{U} = [v_{ij}], \mathbf{a} = [a_{ij}], \; i \wedge j = \overline{1,3}$ - *tensors* of the removal, in quantum of time, it velocity, "acceleration";

si, eo, et., ubi, ad, edo, utlex, vel, solid media, liber/iunetus turbulences–from Lat. designations: "if", "then", "and", "where", "when", "since", "usually", "or", "solid medium", "free/constrained turbulence respectively";

•, ••, × – scalar, biscalar, vector products;

$\vec{\nabla}_{\vec{\mathbf{x}}}$ – operator of Hamilton in *E-system* of counting;

$\wedge, \vee, \cup, \ni, \in$, $\emptyset$ – logical "and", "or", "union", "so","belongs", "empty set".

e.p.m., *FWS*, *FWN* – elementary particle of medium, frequency-wave spectrums / numbers of its *e.p.m.*.

* - mainly not explained into text.

References Références Referencias

1. Morgunov G.M. 2015. Neoformalism approach to the dynamics of continuous media // World intellectual property organization. Publ. date 05.02.2015: 44 p. [In Russian]. http://patentscope.wipo.int/search/en/detail.jst?docId=WO2015016736.
2. Morgunov G.M. 2015. Rational phenomenological models of external fields effect in conditions of non-equilibrium thermomechanics of continuous media // Materials of the VII international scientific and practical conference «Fundamental science and technology – promising developments VII», vol. 1, 1-2 Dec. 2015 – North Charleston, SC, USA, pp. 154 - 166. – ISBN:978-1-51973-544-7.
3. Morgunov G. M. 2016. Compendium near-wall interaction problem and boundary conditions on smooth solid boundaries in dynamics problems of continuous fluid media // Materials of the VIII ISPC "Science in the modern information society VIII" v.1, 28-29 March, 2016. – North Charleston, USA. pp. 117-131. ISBN: 978 – 1530830374.
4. Monin A.S. and Yaglom A.M. 1965, Statistical Hydromechanics. Nauka, Moscow, Parts 1, pp. 172-175; 639 p. [in Russian].
5. Loitsyanskii L.G. 1978. Mechanics of Liquids and Gases, Nauka, Moscow, pp. 60-65, 634-639; 736 p. [in Russian].
6. Ozisik M.N. 1973, Radiative Transfer and Interactions with Conduction and Convection, Wiley, New York [Russ.ed.:Ozisik M.N. Compound heat exchange. Moscow, Peace Publ. – pp.34-39; p. 616].
7. Morgunov G. M. 2017. Semi-analytical established factors in modern theory of fluid mediums thermomechanics/Materials of the XIV ISP "Academic science-problems and achievements" v. 1. 5 – 6 dec. 2017. North Charleston, USA, pp. 69 – 85. ISBN: 978 – 1981574483.
8. Nikuradse J. 1933. Stromungsgesetze in rauhenRohren. VDI – Forschungsheft. Nr. 361.
9. Layfer J. 1951. Investigation of turbulent flow in a two-dimensional channel / Nat. Advis. Com. Aeronaut. Rep. № 1033.
10. Layfer J. 1954. The structure of turbulence in fully developed pipe flow / / Nat. Advis. Com. Aeronaut., Rep. № 1174.
11. Dryden H.L. 1959. Transition from laminar to turbulent flow / Turbulent flow and heat transfer (ed. By C.C.Lin), Princeton Univ Press, 74 p.
12. Barnes H.T., Coker E.G. 1905. Experiments on streamline motion and the measurements of critical velocity / Proc. Roy. Soc. London, 74, № 503, pp. 341-356.
13. Ekman V.W. 1911. On the change from steady to turbulent motion of liquid.Arc. Mat. Asteon.Fys., 6, № 12.
14. Morgunov G. M. 2017. To the modern theory of continuous mediums thermomechanics and it basic significance for creation of highly effective energy objects // Materials of the ISPC "Academic science-problems and achievements XII". v. 1, 15 – 17, May 2017. – North Charleston, USA pp. 162 – 175. ISBN: 572-1546863953

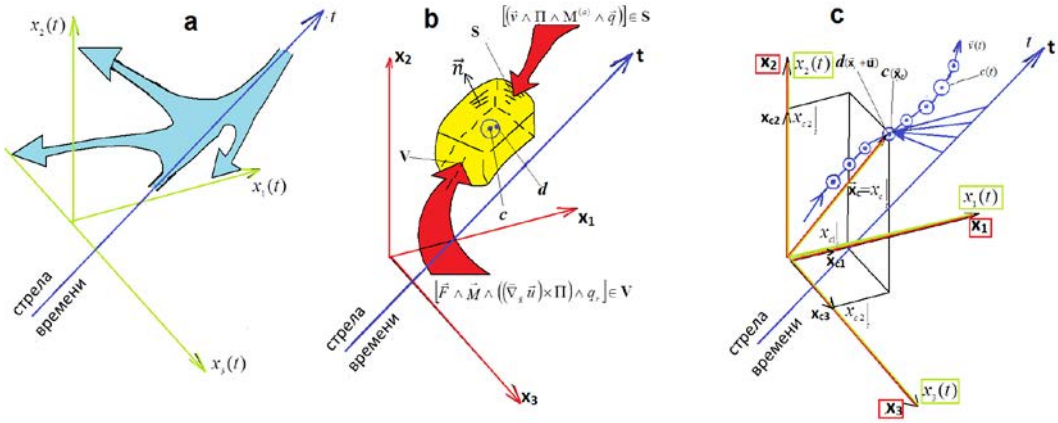


Fig. 1: Schematic representations of $L \wedge E$ - *systems*: a, b– separate; c - combined

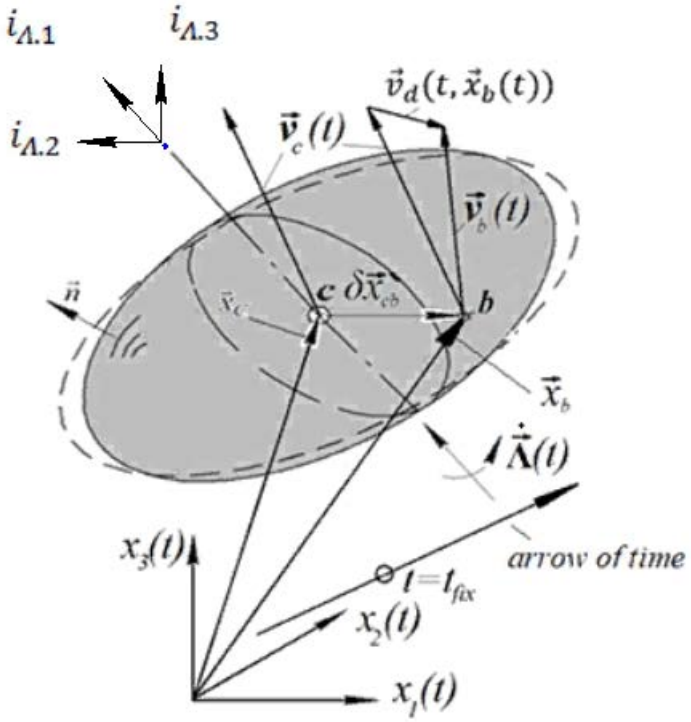


Fig. 2: The instantaneous position of the labeled/marked particles of the medium. Actual particle - darkened volume; distortions: shear - bar loop, torsion - bar-dotted momentary axis to the vector of the torsion velocity $\dot{\vec{\Lambda}}$ of inertial turning of marked e.p.m. for the unit of time, in one radian and point $\boldsymbol{c}$ is center of inertia / mass. Designations $i_{\Lambda.k}$, $k = \overline{1,3}$ are the trajectory three-orthogonal *bench-mark* for the given *e.p.m*

Global Journal of Science Frontier Research: a
Physics and Space Science
Volume 19 Issue 7 Version 1.0 Year 2019
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

The Great Cosmic Sea of Reality Predicts Water Acts as a Biologic Antenna of Natural Healing through Regenerative Biomorphic and Bio-Cognitive Fields

By Timothy Fulton Johns DDS

Abstract- The Cosmic Dark Matter Fractal Field Theory (CDMFFT) predicts that there is a database of archetype information stored in the Dark Matter/Dark Energy zone of our Cosmos. (*1) This unexplored part of our reality represents the unseen 96% of our visible universe conceivably not only responsible for the underlying form but possibly acting as a repository of stored information involved in evolutionary influence of form and function within many types of morphogenetic and bio-cognitive fields. This previously unrecognized and unseen process could explain many mysterious enigmas in our study of the biosphere on our planet as well as others, such as total regeneration of severed anatomical parts of certain life forms. The spontaneous healing of otherwise fatal pathology in our own and other species of the animal kingdom, even the long search for how a human fertilized cell knows its blueprint of form and function that takes it from a zygote, to a blastula and finally to a developing living embryo! It is even conceivable that this biologic water antenna even is responsible for receiving the signal of life from the DM/DE zone to start ortrigger the first heart beat of life. (*2)As well as, the delusional effects of dehydration on the cognitive function of our brain in arid environments or water deficient circumstances.

GJSFR-A Classification: *FOR Code: 020106*

THEGREATCOSMICSEAOFREALITYPREDICTSWATERACTSASABIOLOGICANTENNAOFNATURALHEALINGTHROUGHREGENERATIVEBIOMORPHICANDBIOCOGNITIVEFIELDS

Strictly as per the compliance and regulations of:

The Great Cosmic Sea of Reality Predicts Water Acts as a Biologic Antenna of Natural Healing through Regenerative Biomorphic and Bio-Cognitive Fields

Timothy Fulton Johns DDS

Abstract- The Cosmic Dark Matter Fractal Field Theory (CDMFFT) predicts that there is a database of archetype information stored in the Dark Matter/Dark Energy zone of our Cosmos. (*1) This unexplored part of our reality represents the unseen 96% of our visible universe conceivably not only responsible for the underlying form but possibly acting as a repository of stored information involved in evolutionary influence of form and function within many types of morphogenetic and bio-cognitive fields. This previously unrecognized and unseen process could explain many mysterious enigmas in our study of the biosphere on our planet as well as others, such as total regeneration of severed anatomical parts of certain life forms. The spontaneous healing of otherwise fatal pathology in our own and other species of the animal kingdom, even the long search for how a human fertilized cell knows its blueprint of form and function that takes it from a zygote, to a blastula and finally to a developing living embryo! It is even conceivable that this biologic water antenna even is responsible for receiving the signal of life from the DM/DE zone to start or trigger the first heart beat of life. (*2)As well as, the delusional effects of dehydration on the cognitive function of our brain in arid environments or water deficient circumstances.

I. Introduction

There is much research that has been done on the use of conscious intention to influence the action, as well as, the form and function of biologic molecular tissues especially DNA.(*4) While this may sound like "pie in the sky" science there are many works of well-done science when put together like a puzzle begin to show the high probability of understanding these theoretical leaps of biologic possibility with much different and greater potential as a medical technology. Much of this understanding, which is new to western mainstream science and our medical community has been used in parts of the far east Asian medical practice for centuries. It is still in use in many parts of the world and now being applied as a healing technology in western medicine but without a logical scientific model to give an explanation of the underlying physiological mechanisms and quantum scalar action that make it possible. This paper will attempt to do that.

Author: *e-mail: tfjohns@gmail.com*

II. Water the Miracle Molecule

The very special properties of water (H2O) have long been a source of interest and research in many advanced scientific laboratories. Water is a very simple molecule with very special qualities so let's talk about emergent properties first. The water molecule consists of two atoms of hydrogen and one atom of oxygen both are gases you can't see or feel, ingested individually they are necessary and support life. Yet when combined the water molecule has an emergent property and forms a liquid you can both see, feel and drink. Water is a universal solvent. Water is required for life as we know it to exist; your body is over 75% water which must be replaced constantly to maintain molecular functional homeostasis.

Another example of emergence within our reality is salt. Salt is made of one sodium atom a solid and one chloride atom a gas. If you ingest either one of these by themselves they are toxic and can kill you, yet when combined in a sodium chloride molecule you get tasteful life-sustaining salt with an emergent property which also is essential for carbon based lifeforms. Water as a molecule is known to exist in three different phases based on pressure and temperature; a solid as ice, a liquid as water and gas sometimes visible as steam or fog. The same molecule is always present in every case just in a different phase or form but always water. An interesting fact of this emergent characteristic of our reality; when salt is added to water as it is in your body chemistry it changes the physical properties of the freezing point of water which improves the resistance to freezing of biologic life. Therefore, this combination of salt with water improves the survival parameters of life during frigid environmental conditions, however, too much salt content in the body can create dehydration and mental disorientation and confusion possibly because of interference of signal reception from the Field or ph imbalance, no one really knows for sure but this new theory of signal distortion due to alteration of the water antenna is an interesting causative consideration.

Now let's consider the geometric structure of the water molecule. As you can see in (Fig 1) the water molecules fit together with hydrogen bonds that can have a number of different shapes when combined in large numbers in many different volumes, contained within a variety of spaces and places. The illustration below is of course not three dimensional as it would exist in our natural state.

However, it can give you an understanding about how the shape and lattice work configuration can change and depicts a framework which is antenna-like and very ubiquitous throughout biologic life forms. Water is the most prevalent molecule in all life forms even plants and necessary to sustain life of many different kinds as we know them on this planet. So as we search for life on other planets and moons of planets, looking for the atmospheric signature for the presence of water is always a goal of exoplanet exploration. Water has been found in small quantities on Mars and our own moon, also very likely on two other moons in our solar system, Europa that orbits Jupiter and Enceladus that orbits Saturn.

So it is probable life may exist elsewhere in our own solar system in some carbon based or other molecular life forms.

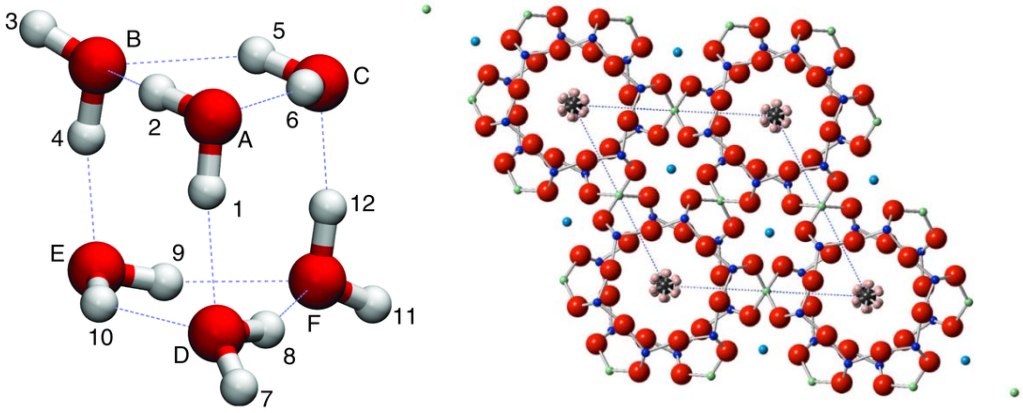


Fig. 1: Water Molecules

The three dimensional view of the lattice model, as you can imagine, would be quite complex but let's take it a step further. Let us think of it in proper scale with all the scalar inner space within a human body. The scale you are currently looking at is around 1x10^-15 meters below our scale. The Planck Scale level is where the interface of the baryonic matter/ dark matter zone is thought to exist on the order of a million, billion times smaller to 1x10^-35 meters. So by comparison to outer space this water antenna which makes up 75% of the molecular content of a human body would be quite affective at receiving informational morphogenetic signals from electromagnetic (EMG) as well as Dark Matter Fractal Field(DMFF) signals from inner space, at much lower scale levels that are predicted to emanate from the Planck Zone. Much like antenna at our scale level on our satellites and deep space probes focused on outer space exploration receive information from signals sent from these advanced instruments to the many NASA Space Mission control points on Earth.

III. Signals Sent from Inner Space

So what kind of signals might we expect to be coming from the Planck Zone? Well it is important to remember that all occupied space including you have a Planck Zone. Our health and wellbeing is dependent on several factors but one of the most critical is that every old cell must be replaced with a new one through a cellular process known as mitosis that continues cell presence that carries on the over 100,000 critical cell functions every second! This highly complex and dynamic regenerative life sustaining ubiquitous cellular function is occurring within over fifty trillion cells that make up your body. Each and every one is replaced with a new healthy replicate cell. Our body is extremely dynamic and ever changing due to this high turnover rate of your cells, 90% of which are replaced every 90 days. It is believed that the remaining 10% is replaced every year or so. That is a lot of cell division and duplication and that's when errors can occur such as cancer cells that are cells that know how to divide and replicate but do not know how to undergo the next step called apoptosis, planned cell death, they just continue to live as seemingly immortal cells and produce an uncontrolled growth that usually kills the organism. So new reliable and accurate duplication of form and function is very important to maintain which requires some kind of removal of sick cells or redundancy to catch and correct errors in duplication of form and function. There are ways in which your immune system catches these renegade cells and takes them out of the body but a new theory of how self-regenerating redundancy may occur has now emerged as a result of a larger understanding of how our entire reality may work in resonate health regenerating harmony.

The Cosmic Dark Matter Fractal Field Theory predicts that there are Morphogenetic scalar fields as described in the work of Rupert Sheldrake, and my book "The Great Cosmic Sea of Reality" that retain within them a memory of the prior proper form and function of every cell of every organ in your body that projects a signal that contains these healthy corrective patterns that are followed by these new cells. The new cells move into proper position as directed by this CDMFF blueprint which provides a guiding scaffolding that these cells follow to provide an accurate redundancy to maintain healthy form and function throughout a huge number of repetitive cycles year after year. These fields exist and are stored like a database in the DM/DE zone of our reality on the other side of what is described in the theory as the Baryonic Matter/Cosmic Dark Matter Fractal Field/ Interface(*1). Therefore, we must identify the methods that are involved in this form of regenerative health sustaining natural activity and apply this natural healing process as a medical technology reducing suffering, saving lives and drastically cutting escalating healthcare cost. There are currently proven methods to activate these natural regenerative life sustaining fields to maintain even restore health. Other studies have also shown that the antiaging telomerase enzyme can be activated using this new Heart Brain Coherence technology to extend life span by actively protecting the telomeres of chromosomes therefore increasing the Hayflick limit of cell division.

IV. Quantum Tunneling and Information Transfer

Tunneling of elemental particles such as electrons, quarks and even protons have been theorized and tested with repeatable results for decades with the new understanding of Quantum Mechanics but now it has even been found that tunneling of the water molecule can occur.(*3) So what is tunneling? Basically it means where a barrier exists between the path of a particle/energy trying to get passed the barrier the particle/energy finds a way in at least a small amount. Elementary particles, electrons and apparently some molecules are said to tunnel through the barrier theoretically as a result of quantum particle/wave duality. The CDMFFT predicts that this is the result of Virtual Black Hole/Wormhole dynamics created by Black holes tunneling into White holes at the Planck scale and occurs through entanglement with Dark Matter Fractal Fields which can traverse the BM/DM barrier zone with relativeease.(*8)

If this concept of water acting as an antenna is occurring, then tunneling can possibly be amplified by changing the conformation of the water molecule. (*5) See page 39 of my last paper https://globaljournals.org/GJSFR_Volume18/4-Quantum-Scalar-Gravity-General.pdf

Said another way the physical molecular form and shape of the water is possibly acting as an antenna which collects resonant signals from the "Planck Flow-motion" that emanates from the BM/CDMFF/I attracting the proper morphogenetic fields that are continuously being renewed through mitotic cell regeneration. This action is directed by the water antenna at the molecular scalar level but is responsible for the attraction of resonant coherent focus and flow of the CDMFF's at all scales below the molecular scale. This produces the three types of coherence that McCraty and Tomasino describe in their great work. (*6)

"The Coherent Heart, Heart–Brain Interactions, Psychophysiological Coherence, and the Emergence of System-Wide Order

Page 17 The Concept of Coherence

In this article we describe the relationship between different patterns of psychophysiological activity and physiological, emotional and cognitive functions by drawing on three distinct but related concepts of coherence used in physics; global coherence, cross coherence and auto-coherence. The most common definition of coherence is 'the quality of being logically integrated, consistent and intelligible,' as in a coherent argument. A related meaning is 'a logical, orderly and aesthetically consistent relationship of parts" (McCraty &Tomasino et. al. 2006, p. 4). (*4)

V. Antenna's Transmit as well as Receive Information

If the CDMFFT has any hint of credibility we must go to the next logical step. If there is reception of signals on an antenna of most any type, then there is also the possibility of transmission of signals containing information from this antenna to be received by another receptive source. Symmetry is a foundation of our reality, as well as, most mathematical analysis, the language of science. We must include it as a fractal law that leads us to theoretical paths of inference.

This possibility of propagation of information of similar signals is a suggestion of influence of one organism on another with or without direct contact. Therefore, there is the possibility of intentional or even unintentional influence by the reception of information from one organism on another. This opens the door to a cascade of connectedness that can occur to other organisms.

Consider the findings of this study:

"F. A. Popp's demonstration of quantum coherence in biological systems along with the authors' demonstration that quantum fields can influence neurological and immunological functions, support the possibility of a coherent endogenous electro-magnetic field within the body.(*9) This hypothesis is also supported by two recent findings from the Institute of Heart Math. These studies demonstrated a) coherence

in the ECG frequency spectra of individuals whose attention was focused in the heart area while generating deep feelings of love, care or appreciation and b) a correlation between the ECG coherent patterns and those also occurring in the brain and other parts of the body. These results support the Institute's theory that the heart acts as a master electrical oscillator capable of radiating coherent frequencies which promote the health and vitality of the entire human system.(*7) The theory also proposes that physiological benefits of coherent heart frequencies are mediated through DNA. The theory is supported by Popp's demonstration that DNA emits quantum coherent photons. One of the first steps in testing this hypothesis would be the demonstration that DNA is modulated by individuals producing coherence in the ECG frequency spectra." Glen Rein*+, Ph.D. and Rollin McCraty+, M.A (*4)

This implies influence of the receiver of the information to others that are open to receiving the information. This is possibly propagation of information that is of evolutionary significance to these systems open to epigenetic physiologic and evolutionary change for improved survival!

VI. Conclusions

It seems logically possible that the water content in different organ systems of many biological forms would have different conformational shapes. This action which, like tuning antennas to receive different radio frequencies, could receive different coherent signals of morphogenetic fields that would attract the correct blueprint of that particular organ to direct regenerative replacement growth to return form and function to normalcy, therefore, healthy form and function. This would be under the category of what McCraty calls auto-coherence. This then could create a consistency of system coherence that would lead to both cross coherence as well as total global body autonomous coherence.

"It is important to note that all systems, to produce any function or action, must have the property of global coherence. The efficiency and effectiveness of the function or action can vary widely, however, and therefore does not necessarily result in a coherent flow of behavior. Global coherence does not mean that everybody or all the parts are doing the same thing at the same time. Think of a jazz band for example, where the individual players are each doing his or her own thing, yet keeping in tune and step with the whole band. Coherence in this sense maximizes local freedom and global cohesion and resonance with the musical theme (Ho, 1998)." McCraty et al(* 4,)

Therefore, the action of continuous life sustaining healthy cellular regeneration not only is "singing off the same sheet of music" (Morphogenetic Fields) but is in proper tempo and under the direction of the "conductor" (Dark Matter Fractal Fields)! I speak metaphorically out of necessity because this is the best language that now exist to help us understand the true world now being revealed. As we attempt to understand this new paradigm we lack the accurate language that will come as science finally awakens to the true new reality of Dark Matter/Dark Energy Fractal Fields which dominate our local environment. Indeed, the very room we are in and the very air that we breath and move through "The Great Cosmic Sea of Reality"is our Sea of Existence that we must now acknowledge is very poorly understood because we have only been studying 4% of the now known sample size.

Previous Foundational Works

Footnotes

1. "Mind fields Consciousness and Biocognitive Morphogenetic Fields as Described by the Great Cosmic Sea and Dark Matter Fractal Field Theory". By T Fulton Johns DDShttps://globaljournals.org/GJSFR_Volume18/4-Mind-Fields-Consciousness.pdf
2. "Quantum Scalar Gravity General Relativity, Quantum Mechanics, the Life Force and Multi-Dimensional Motioin of Objects within a Cosmic Scalar Flow". By T. Fulton Johns DDS https://globaljournals.org/GJSFR_Volume18/4-Quantum-Scalar-Gravity-General.pdf
3. ORNL Researchers Discover Tunneling State of Water Molecules – AZoM https://usanews.co/ornl-researchers-discover-tunneling-state-of-water-molecules-azom/
4. Modulation of DNA Confirmation BY Heart-Focused Intention, by Rollin McCraty, Ph.D. Mike Atkinson and Dana Tomasino, B.A.www.aipro.info/drive/File/224.pdf
5. https://www.heartmath.org/research/research-library/energetics/structural-changes-in-water-and-dna-associated-with-new-physiologically-measurable-states/
6. MODULATION OF DNA BY COHERENT HEART FREQUENCIES, Glen Rein*+, Ph.D. and Rollin McCraty+, M.A Institute of HeartMath, Boulder Creek, CA
7. "Missing Links" Documentary by Gregg BradenEp7
8. Black hole fireworks: quantum-gravity effects outside the horizon spark black to white hole tunneling by Hal M. Haggard, Carlo Rovelli
9. Biophoton emission. New evidence for coherence and DNA as source. Popp FA, Nagl W, Li KH, Scholz W, Weingärtner O, Wolf R.

https://globaljournals.org/GJSFR_Volume18/4-Quantum-Scalar-Gravity-General.pdf

https://www.youtube.com/watch?v=R-DLHuiGgy8

Global Journal of Science Frontier Research: a
Physics and Space Science
Volume 19 Issue 7 Version 1.0 Year 2019
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

Recent Finding in Astrononmy Point to Turbulence and Strong Magnetic Fields (Correct Prediction of Black-Hole Shape)

By Maria Kuman

Holistic Research Institute

Abstract- The author predicted that the Black Holes must have hyperboloid shape and shortly after the prediction a Black Hole was observed with high resolution and photographed – it had hyperboloid shape. How these kinds of predictions are done is subject to another published article. The author further explained that two galaxies (or two Black Holes) would merge only if they have opposite magnetic polarity, which means they spin in opposite directions. Indeed, old stars were found in the Milky Way, which span in opposite direction, remnants of an old galaxy swallowed 10 billion years ago. This means that the Black Holes and galaxies at the first half of their lifespan (during their active period) spin counterclockwise (like anti-vortices) and produce matter (new stars, which move away from the Black Hole). In the second half of their lifespan, they must spin clockwise (like vortices) to attract and swallow the old stars, thus recycling them. The old stars need to be recycled so that new stars can be created in perfect order. This means that the Universe cannot expand forever - the process of expansion must be followed by a process of contraction. This article explains that all observed merging of Black Holes, galaxies, and galaxy clusters requires opposite magnetic polarities of the mergers. Since the younger ones spin counterclockwise and expand, while the older ones spin clockwise and contacts, the merging is a process of recycling of the old.

Keywords: turbulence in cosmos, merging of Black Holes, merging of galaxies, merging of galaxy clusters, magnetic origin of the merging, opposite spinning of the mergers.

GJSFR-A Classification: FOR Code: 020199

Strictly as per the compliance and regulations of:

Recent Finding in Astrononmy Point to Turbulence and Strong Magnetic Fields (Correct Prediction of Black-Hole Shape)

Maria Kuman

Abstract- The author predicted that the Black Holes must have hyperboloid shape and shortly after the prediction a Black Hole was observed with high resolution and photographed – it had hyperboloid shape. How these kinds of predictions are done is subject to another published article. The author further explained that two galaxies (or two Black Holes) would merge only if they have opposite magnetic polarity, which means they spin in opposite directions. Indeed, old stars were found in the Milky Way, which span in opposite direction, remnants of an old galaxy swallowed 10 billion years ago. This means that the Black Holes and galaxies at the first half of their lifespan (during their active period) spin counterclockwise (like anti-vortices) and produce matter (new stars, which move away from the Black Hole). In the second half of their lifespan, they must spin clockwise (like vortices) to attract and swallow the old stars, thus recycling them. The old stars need to be recycled so that new stars can be created in perfect order. This means that the Universe cannot expand forever - the process of expansion must be followed by a process of contraction. This article explains that all observed merging of Black Holes, galaxies, and galaxy clusters requires opposite magnetic polarities of the mergers. Since the younger ones spin counterclockwise and expand, while the older ones spin clockwise and contacts, the merging is a process of recycling of the old.

Keywords: turbulence in cosmos, merging of Black Holes, merging of galaxies, merging of galaxy clusters, magnetic origin of the merging, opposite spinning of the mergers.

I. Introduction

Let us introduce some concepts of nonlinear physics, which we would need. The flux of running river-water would be linear, if the bottom of the river is smooth. However, if there is a big stone on the bottom of the river, the water needs to flow around the stone and the water flux becomes nonlinear. Behind the stone, turbulence would be observed manifested with a couple of: vortex spinning clockwise and anti-vortex spinning counterclockwise.

Following the law of the folded fingers of the right hand in physics, when the folded fingers show the direction of the currents (or direction of spinning of plasma), the vertical thumb show the direction of the induced magnetic field. Following this law, the vortices (which spin clockwise) would induce magnetic field toward the surface. This would make the vortices to suck energy in. Following the same law, the anti-vortices (which spin counterclockwise) would induce magnetic field off the surface, which would make the anti-vortices to emit energy.

II. The Author Predicted Hyperboloid Shape of the Black Holes and Shortly after the Prediction such Was Observed and Photographed

In 2019, I published an article in Open Access Journal of Mathematical and Theoretical Physics – "How Was the Material World Created? Origin of Its Nonlinear Electromagnetic Field (NEMF)" [1]. The article was submitted on February 22 and Posted on March 18, 2019. Fig. 1 presents the picture of the Black Hole, which I have in article [1].

Author: PhD, Holistic Research Institute, 1414 Barcelona Dr., Knoxville, TN 37923. e-mail: holisticare1@gmail.com

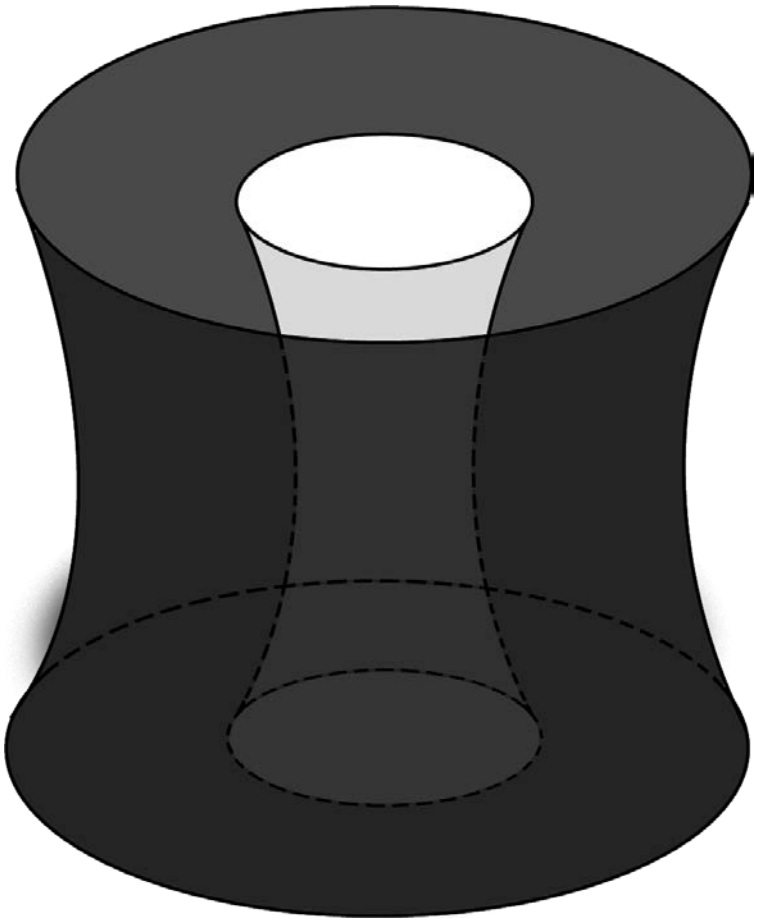


Fig. 1: Anatomy of a Black Hole

On April 10, 2019 (less than a month after the posting of my article) the first photo of a Black Hole was published (see Fig. 2).

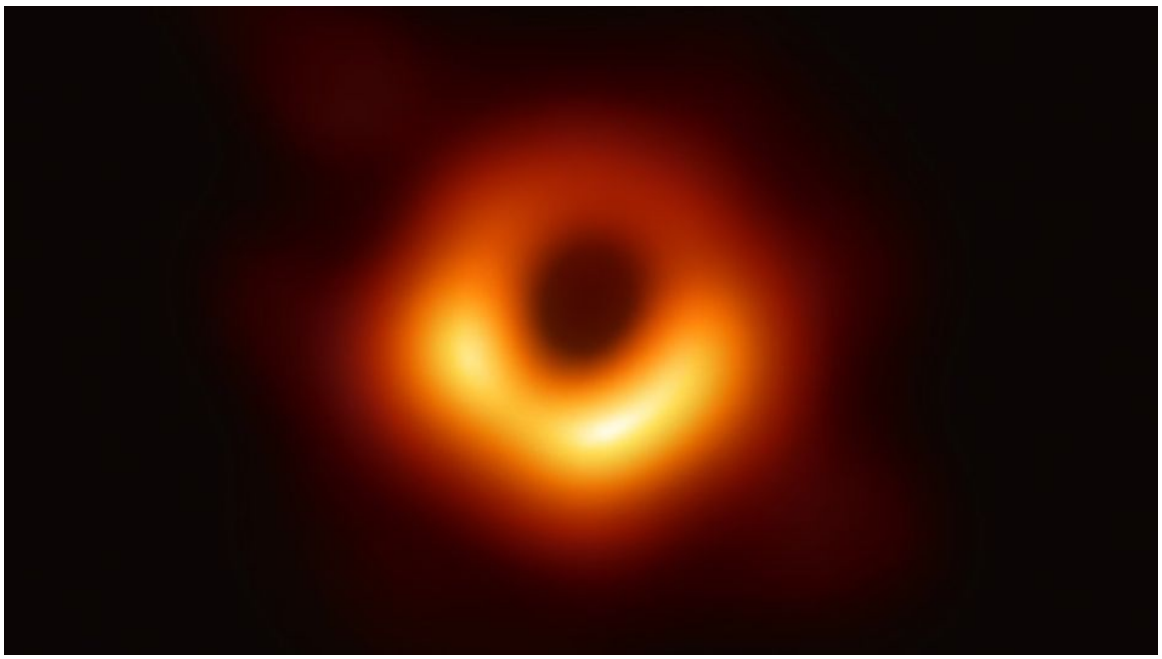


Fig. 2: Photo of a Black hole first published on April 10, 2019 [2]. One can see the same hyperboloid curvature as the Black Hole, which my mind has seen (Fig.1) (for how the mind see, see [3])

However, as it was explained in [1], the dark-inside Black Hole like the one on the photo on Fig. 2, is a Black Hole in the second half of its lifetime when it is in a retrieving state. It spins clockwise (like a vortex) and retrieves (sucks back) the already old dying stars. The Black Hole on Fig. 1, which is not totally dark inside, is a Black Hole in the first half of its lifetime when it is in a creative cycle. It spins counterclockwise (like an anti-vortex) and gives birth to new stars (for details see [1]). I hope in the future we will also have photos of Black Holes in their active cycle when giving birth to stars and looking like the picture on Fig. 1.

III. The Nature of the Black Holes

As explained in [1], since the new stars move away from the Black Hole in open trajectories, the Black Hole must be anti-matter creating anti-gravitational field pushing the stars away from the Black Hole. To create stars, the Black Hole must spin counterclockwise like an anti-vortex because only anti-vortices spinning counterclockwise create outward magnetic field, which can give birth to matter. As explained in [1], the Black Hole at the center of each galaxy squirts out powerful jets of anti-matter perpendicular to the plane of the galaxy. This is another proof that the Black Hole is anti-matter, which must be spinning fast counterclockwise to emit such outward powerful jets, reaching distances of trillions of kilometers. The magnetic field, which the Black Hole generated by this fast spinning, is also very powerful.

IV. Merging of Black Holes

Since the Black Holes in the first half of their lifetimes spin counterclockwise and in the second half of their lifetimes spin clockwise, they will create magnetic fields with opposite polarity and they will attract each other as two magnets with opposite polarities do. Therefore, the recently observed merging of two Black Holes with LEGO [4] must be Black Holes with opposite magnetic polarity, i.e. Black Holes spinning in opposite direction. This means that one of the Black Holes was in the first half of its lifetime and the other one in the second half of her lifetime. Therefore, merging means a younger Black Hole engulfs an old Black Hole.

When the magnetic fields of two Black Holes merge, expect electromagnetic waves to be emitted. Therefore, the wave LEGO detects are not gravitational waves, they are electromagnetic waves. These electromagnetic waves must be nonlinear to be able to travel trillions of kilometers without dissipation and there should be a media for them to propagate [1]. Electromagnetic waves must be also observed when galaxies merge and even when galaxy clusters merge.

V. Merging of Galaxies and Clusters of Galaxies

In [1] it was explained that two galaxies could merge only and only if they have opposite magnetic polarity because they would attract each other as two magnets with opposite polarity do. For this to happen, they must spin in opposite direction. It was also explained that the younger galaxies, which still create stars spin counterclockwise and crank outward magnetic field. The older galaxies spin clockwise and crank inward magnetic field, which retrieve (suck in) the old stars to recycle them [1]. If so, younger galaxies will be engulfing older galaxies. Indeed, our galaxy has engulfed the older Sagittarius Dwarf Galaxy in the past and we can still see its Black Hole with the leftover stars orbiting around the center of our galaxy.

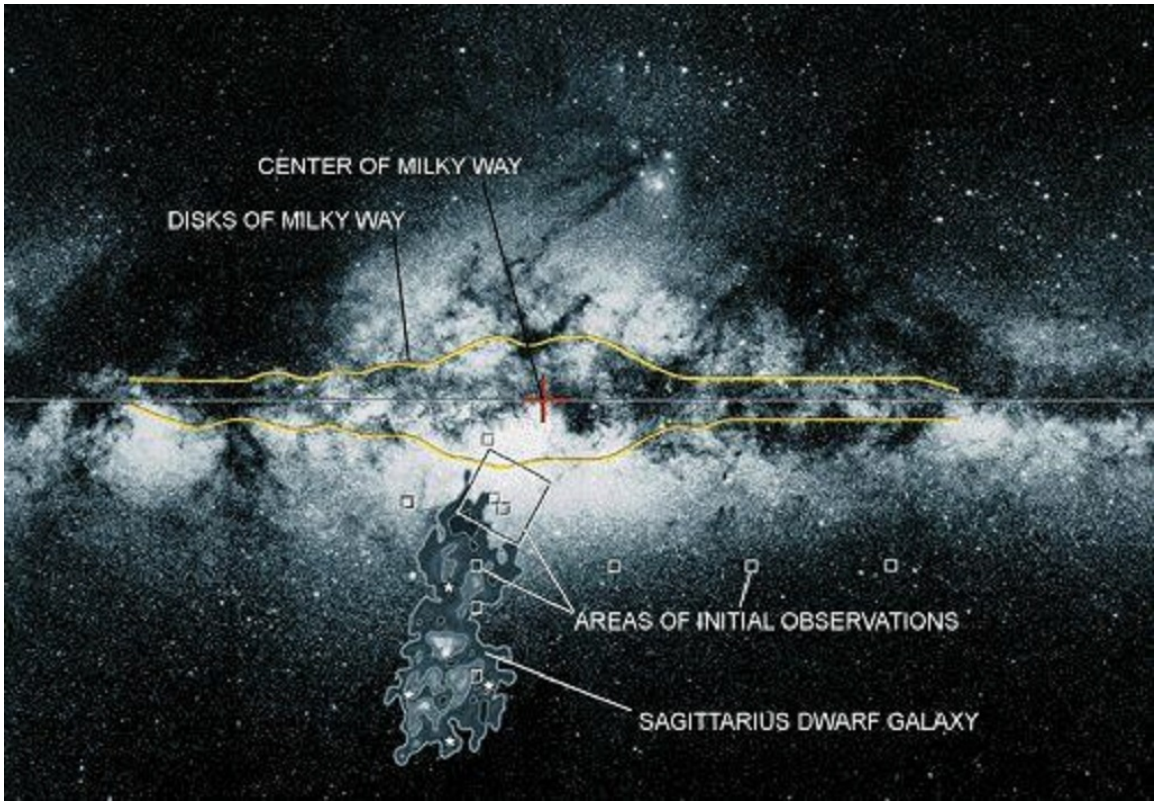


Fig. 3: The Black Hole and the leftover stars of the older Sagittarius Dwarf Galaxy, which our galaxy engulfed in the past, is still orbiting around the center of our galaxy. Also, remnants of another older galaxy were found in the Milky Way and its stars were orbiting in opposite direction of ours [5]

The same rule of merging applies to galaxy clusters. Recently, the Low Frequency Array Telescope, which operates in Nederland, detected unobserved radio synchrotron radiation and X-ray emission between two merging galaxy clusters in the filament that connects Abell 0399 and Abell 0401 [6]. Frederica Govoni of the National Institute for Astrophysics in Italy [7] interpreted this synchrotron emission as generated by powerful magnetic fields that extend to very large distances (more than it was thought possible). Govoni said that "they don't know if the observed phenomenon is common in the cosmic web or not". I can assure her that, yes, it is a common phenomenon in the cosmic web.

What generates the powerful magnetic fields is fast spinning plasma. Just like in the case of merging Black Holes or galaxies, two galaxy clusters merge only when they create magnetic fields with opposite polarities. This means that a younger galaxy cluster engulfs an older galaxy cluster spinning in opposite direction. Therefore, the merging of Black Holes, galaxies, and galaxy clusters is a process of recycling of the old Black Holes, galaxies, and galaxy clusters. If so, the whole Universe cannot expand indefinitely, contraction should follow the expansion.

VI. Conclusion

The author reported at the APS Conference in Los Angeles, California, in 2018: "Physics Must Emphasize Stronger the Role of Magnetic Fields in the Universe and Man" [8]. This article emphasizes again the important role magnetic fields play in the cosmos and points out to the source of these powerful magnetic fields. The source of these powerful magnetic fields, which play such important role in cosmos, is turbulence – fast spinning plasma.

All interactions in the cosmos: between BH, galaxies, and galaxy clusters are magnetic in origin. They are based on the fact that they spin in opposite directions when they are young and when they are old. The magnetic attraction between the young and old cosmic object is a way to get rid of the old, i.e. it is a recycling process. If so, the Universe cannot expand forever. The process of expansion of the young Universe must be followed by a process of contraction.

Presently, 60% of the galaxies in our Universe are warped. What will happen when 100% of the galaxies are warped? Obviously, the old disordered Universe needs to be recycled, so that a new Universe with perfect order can be created. For this to happen, the Universe needs to start spinning in opposite direction and contracting, thus retrieving back or sucking in everything that was created. The frequent

hurricanes and tornados observed in North America are also turbulence and their fast swirling plasma (the air is electrically charged) cranks magnetic moments.

The author published an article: "What Causes the Multiple Hurricanes and Tornados Influences Our Brain and Health" [9]. America has the highest production and consumption of electrical energy on planet earth. This creates a powerful electromagnetic field (EMF) over the continent. The EMF gradient at the border continent – ocean creates turbulence, which is an array of spinning hurricanes and tornados over the ocean. The fast spinning hurricanes (spinning rings) and tornados (spinning columns) have powerful magnetic dipole moments. The created strong EMF over the land attracts the dipole moments of the hurricanes and tornados created over the ocean, which is like an invitation to the hurricanes and tornados to come to the land.

References Références Referencias

1. M. Kuman, How the Material World Was Created? Origin of its Nonlinear Electromagnetic Field (NEMF), *Open Access Journal of Mathematical and Theoretical Physics*, 2 (2) 2019.
2. American Physical Society News, May, 2019.
3. M. Kuman, The Power of Mind to See the Invisible, *Advances in Complimentary and Alternative Medicine*, 4 (5) 2019.
4. B.P. Abbott et al, Observation of Gravitational Waves from a Binary Black Holes Merger, *Phys. Rev. Letters*, 116 (6) 2016.
5. G. Iorio, V. Belorukov The Shape of the Galactic Halowith Gaia DR2 RR Lyrae. Anatomy of an Ancient Major Merger, *Mon.Not R. Astron Soc* 482 (3): 3868-3879, 2019.
6. R.J. van Weeren et al, *Astrophysical Journal, Suppl. Series*, 223, 2 (2016).
7. F. Govoni et al., *Science*, 364, 981 (2019).
8. M. Kuman, Physics Must Emphasize Stronger the Role of Magnetic Fields in the Universe and Man, *APS Conference, Los Angeles, California, March 5 – 9, 2018.*
9. M. Kuman, What Causes the Multiple Hurricanes and Tornados Influences Our Brain and Health, *Advances in Complementary and Alternative Medicine,* v. 4 (4) 2019.

Global Journals Guidelines Handbook 2019

www.GlobalJournals.org

FELLOWS

FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN SCIENCE (FARSS)

Global Journals Incorporate (USA) is accredited by Open Association of Research Society (OARS), U.S.A and in turn, awards "FARSS" title to individuals. The 'FARSS' title is accorded to a selected professional after the approval of the Editor-in-Chief/Editorial Board Members/Dean.

- The "FARSS" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., FARSS or William Walldroff, M.S., FARSS.

FARSS accrediting is an honor. It authenticates your research activities. After recognition as FARSB, you can add 'FARSS' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, and Visiting Card etc.

The following benefits can be availed by you only for next three years from the date of certification:

FARSS designated members are entitled to avail a 40% discount while publishing their research papers (of a single author) with Global Journals Incorporation (USA), if the same is accepted by Editorial Board/Peer Reviewers. If you are a main author or co-author in case of multiple authors, you will be entitled to avail discount of 10%.

Once FARSB title is accorded, the Fellow is authorized to organize a symposium/seminar/conference on behalf of Global Journal Incorporation (USA). The Fellow can also participate in conference/seminar/symposium organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent.

You may join as member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. In addition, it is also desirable that you should organize seminar/symposium/conference at least once.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The FARSS can go through standards of OARS. You can also play vital role if you have any suggestions so that proper amendment can take place to improve the same for the benefit of entire research community.

As FARSS, you will be given a renowned, secure and free professional email address with 100 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.

The FARSS will be eligible for a free application of standardization of their researches. Standardization of research will be subject to acceptability within stipulated norms as the next step after publishing in a journal. We shall depute a team of specialized research professionals who will render their services for elevating your researches to next higher level, which is worldwide open standardization.

The FARSS member can apply for grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A.
Once you are designated as FARSS, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria. After certification of all your credentials by OARS, they will be published on your Fellow Profile link on website https://associationofresearch.org which will be helpful to upgrade the dignity.

The FARSS members can avail the benefits of free research podcasting in Global Research Radio with their research documents. After publishing the work, (including published elsewhere worldwide with proper authorization) you can upload your research paper with your recorded voice or you can utilize chargeable services of our professional RJs to record your paper in their voice on request.

The FARSS member also entitled to get the benefits of free research podcasting of their research documents through video clips. We can also streamline your conference videos and display your slides/ online slides and online research video clips at reasonable charges, on request.

The FARSS is eligible to earn from sales proceeds of his/her researches/reference/review Books or literature, while publishing with Global Journals. The FARSS can decide whether he/she would like to publish his/her research in a closed manner. In this case, whenever readers purchase that individual research paper for reading, maximum 60% of its profit earned as royalty by Global Journals, will be credited to his/her bank account. The entire entitled amount will be credited to his/her bank account exceeding limit of minimum fixed balance. There is no minimum time limit for collection. The FARSS member can decide its price and we can help in making the right decision.

The FARSS member is eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get remuneration of 15% of author fees, taken from the author of a respective paper. After reviewing 5 or more papers you can request to transfer the amount to your bank account.

MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN SCIENCE (MARSS)

The ' MARSS ' title is accorded to a selected professional after the approval of the Editor-in-Chief / Editorial Board Members/Dean.

The "MARSS" is a dignified ornament which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., MARSS or William Walldroff, M.S., MARSS.

MARSS accrediting is an honor. It authenticates your research activities. After becoming MARSS, you can add 'MARSS' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, Visiting Card and Name Plate etc.

The following benefitscan be availed by you only for next three years from the date of certification.

MARSS designated members are entitled to avail a 25% discount while publishing their research papers (of a single author) in Global Journals Inc., if the same is accepted by our Editorial Board and Peer Reviewers. If you are a main author or co-author of a group of authors, you will get discount of 10%.

As MARSS, you will be given a renowned, secure and free professional email address with 30 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The MARSS member can apply for approval, grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A.

Once you are designated as MARSS, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria.

It is mandatory to read all terms and conditions carefully.

AUXILIARY MEMBERSHIPS

Institutional Fellow of Global Journals Incorporation (USA)-OARS (USA)

Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as "Institutional Fellow of Open Association of Research Society" (IFOARS).

The "FARSC" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., FARSC or William Walldroff, M.S., FARSC.

The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as "Institutional Board of Open Association of Research Society"-(IBOARS).

The Institute will be entitled to following benefits:

The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA) The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.

The author fees of such paper may be waived off up to 40%.

The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.

The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.

The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of "Open Association of Research Society, U.S.A (OARS)" so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.

The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

After nomination of your institution as "Institutional Fellow" and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.
The board can also take up the additional allied activities for betterment after our consultation.

The following entitlements are applicable to individual Fellows:

Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.

Open Association of Research Society (US)/ Global Journals Incorporation (USA), as described in Corporate Statements, are educational, research publishing and professional membership organizations. Achieving our individual Fellow or Associate status is based mainly on meeting stated educational research requirements.

Disbursement of 40% Royalty earned through Global Journals : Researcher = 50%, Peer Reviewer = 37.50%, Institution = 12.50% E.g. Out of 40%, the 20% benefit should be passed on to researcher, 15 % benefit towards remuneration should be given to a reviewer and remaining 5% is to be retained by the institution.

We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth $ 2376 USD.

Other:

The individual Fellow and Associate designations accredited by Open Association of Research Society (US) credentials signify guarantees following achievements:

- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.

- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10%discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
- The Fellow can earn 60% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.
- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

Note :

"

- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone.

"

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for Writing a Good Quality Science Frontier Research Paper

Techniques for writing a good quality Science Frontier Research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of science frontier then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

Global Journal of Science Frontier Research

Visit us on the Web at www.GlobalJournals.org | www.JournalofScience.org
or email us at helpdesk@globaljournals.org

ISSN 9755896