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Nano-Domains of Nuclear Magnetic Moments for Gravitational Stimulation of Biological Processes

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***Abstract* — The recent theory of divergent integrations and divergent differentiations of superluminous spaces for new calculus of the objects for applications for new theory for the mechanics of gravity and the coupling of gravity to electromagnetic fields is applied here to recent data for the zero-gravity altering the biological processes of polymerase proteins replicating DNA for inducing misreadings and mistakes during reproduction for gravity affecting life and cancer. This paper presents new mode for coupling classical to quantum mechanics by gravity. The gravitational stimulating nuclei, hadrons and leptons for hidden drive of dynamics in matter for causing life is outlined. Alterations of gravity and relative motions for altering these dynamics for disease are shortly reviewed. The irrational, fractional superluminous nature of gravity is shown to manifest its nature and action; the distinct coupling of null NMMs relative to nonzero NMMs is given and moreover the different couplings of positive and negative NMMs and combinations thereof are given. The ^{1}H, ^{14}N, and ^{31}P stable isotopes and the almost 100% relative abundances of their positive NMMs are noted to play roles in the origin and development of life and the manifestation of life by the action of gravity on these nano-domains of nonzero NMMs for manifesting ferromagnetism for all positive or all negative NMMs and/or antiferromagnetic and ferrimagnetism of mixed positive and negative NMMs. The uniquenesses of the second-row elements for life and hydrogen are considered. New phenomena by radio waves and the NMMs in elements of heaters and radio wave sources are considered and possibility of life creating radio waves. Some use of this theory for gravity upon nano-domains of NMMs for modeling many systems are noted.**

***Keywords* — classical mechanics, DNA, Gravity, lightning genesis, Nano-size, Nuclear magnetic moments, quantum mechanics, relativity, replication.**

I. INTRODUCTION

Gravity is force from matter acting on matter. Of the four forces, gravity is weaker force. In this theory [1], it is proposed gravity divergently differentiates from stronger electric, magnetic, quantum, weak and strong fields. See equation (1). And vice versa gravity divergently integrates to these stronger fields. See equation (2). Such divergently differentiations of gravity from these fields and their quanta are by this theory reasoned the source of gravity and such divergently integrations of such source fields into target quanta are the proposed action of gravity by this theory for overall mechanism of gravity. Gravity is (as origin of universe) matter forming from space (as target absorbs gravity) and matter decomposing to space (as source release gravity). By such relation of gravity to the 3 stronger fields, the theory here determines the gravity affects the dynamics produced by these three stronger fields and vice versa these fields alter the gravitational dynamics. Gravity and thermal spaces are seats of spaces hence they seed other forces and can alter other forces (disturb and bend other forces). Other forces can affect gravity so net charge motions in nuclei can fiss to alter gravity. From atomic to nano scales, the altered spaces reach criticality for uniquenesses of nanodomains of NMMs. Nanodomains of NMMs alter source and target phenomena in dramatic way. Multiple domains can have mutual countering effects on gravity, but for single domains the effects are more intense. External fields can polarize many single domains (for ferromagnetism as by NMMs {by all positive or all negative NMMs} and/or antiferromagnetism and ferrimagnetism {as by mix of positive and negative NMMs}) for nonlocal effects of the many domains.

$$\frac{dF(\mathrm{x,y,z,t})}{d\mathrm{x}\ \mathrm{dy}\ \mathrm{dz}\ \mathrm{dt}} = f(\mathrm{x,y,z,t});\ where\ d\mathrm{x,dy,dz,dt}\ \rightarrow \infty \tag{1}$$

$$\iiint_a^b f(x,y,z,t)\ dx\ dy\ dz\ dt = F\ (x,y,z,t)\,; where\ d\mathrm{x,dy,dz,dt} \rightarrow \infty; and\ f\ (x,y,z,t) \rightarrow 0 \tag{2}$$

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The magnetic field may be reasoned denser gravitational fields with internal and external collisions frustrating gravitational character for magnetic character. And the quantum field may be reasoned by the theory as denser magnetic and electric fields with internal and external collisions frustrating the magnetic natures for quantum natures.

Such gravitational origins from sources and gravitational actions upon targets are computed in new ways by divergent calculus of the author. The prior Newtonian and Leibnitzian differential calculus and integral calculus are different from the divergent calculus introduced [1] and applied here as the divergent calculus uses infinities in the limits unlike Newtonian and Leibitzian calculus. The $\{dxdy, dz, dt\}$ are taken in the limit of infinity for differentiations and integrations by divergent calculus of Little and by such better calculate gravitations between sources and targets in limit of infinite distances and speeds approaching infinity. Such calculations by Newtonian and Lebnitzian calculus are not accounted. The divergent differentiations and integrations also involve infinitesimals but in different ways relative to prior Newtonian and Leibitzian calculus as the divergent differentiations have infinitesimals in the arguments of the integrals and the outcomes or results of the differentiations. For instance, the gravity is infinitesimal spaces and times arising from the divergent differentiations of hugely dense, irrational strong fields and dense irrational L continua. Thermal spaces are even rarefied, irrational spaces and times by divergent differentiations of gravity. And vice versa, the infinitesimal arguments of gravity and thermal spaces are integrated as the arguments of divergent integrations in the limit of infinity of spaces and times for manifesting electric and magnetic fields and waves and the further divergent integrations of gravity, magnetic and electric fields over infinite spaces and times by divergent integrations manifesting the quantum fields. The computations of the author by discovering divergent integrations and differentiations use infinities for coupling quantum mechanics to classical mechanics rather than throwing away the infinities of empirical origins as did Feynman, Tomanago and Schwinger [2]. The math is simplified by including infinities and infinitesimals of hidden natures in imagination! *But by such imagination of the author the arguments f(x,y,z,t) of Newtonian and Leibnitzian integrals have hidden divergence approaching infinite speeds in rareness so that the integrals involve infinite positions outside the limits of integrations and are thereby counted as entangling with spaces and times at approaching infinite distances outside the limits of the integrations A and B. Also the imagination of the author has the arguments of the Newtonian and Leibnitzian derivatives F (x,y,z,t) having hidden divergences to curls approaching infinite speeds in approaching infinite densenesses so that the derivatives involve infinite positions dividing into approaching infinite arguments for infinitesimal results. By the theory the superluminous motions cause divergences to transmute to curls*.

The computed relations of various phenonena of various densities by divergent calculus determine Four Laws of Ferrochemistry. Four Laws of Ferrochemistry have been developed for accounting for possible systems of different momentum and energy densities in 2014 [1]. The Woodward Hoffmann Rule [3] is associated with Law 1 of Ferrochemistry as it determines for a process the conservation of angular momentum between initial and final states. The Little Rule 1 is associated with Law 2 of Ferrochemistry as it determines the minimum needed energy of activation for coupling to dynamics within a system for altering the internal momentum between initial and final states. The Little Rule 2 is associated with Law 3 of Ferrochemistry as it determines for a system of low particle density and high energy density the increase in angular momentum in the initial to the final state of system in the limit of low momentum of activating conditions by surroundings for violating Second Law of Thermodynamics for integer fissing and fusing. The Little Rule 3 is associated with Law 4 of Ferrochemistry as Law 4 determines for a system of high particle density and low energy density the decrease in the angular momentum in the initial state to the final state of a system in the limit of low momentum of activating conditions for obeying Second Law of Thermodynamics for fractional fissing and fusing. So that by the hidden, irrational infinities in superluminosity, the Second Law of Thermodynamics is violated as by Little Effect of spatial motions with infinite speeds with coupling classical mechanics to quantum mechanics. The author introduces new invariance in linear motions and curvilinear motions of superluminosity being equivalent to many motions in opposite directions linearly of curvilinearity. So by divergent integrations of space in its superluminosity, the infinite speed transmutes to finite speed of many rationals with opposite directions (positive [+] and negative [-]) . And for the curvilinear motions, the infinite clockwise motions transmutes to finite rotations of many rationals with clockwise (Br) and counterclockwise (Dk) motions. *The varying speeds of thermal spaces and gravity with denseness from superluminosity in rareness to luminosity in larger denseness leads to fissing of Third Law of Ferrochemistry to Fourth Law of Ferrochemistry. And vice versa with increase denseness the Fourth Law of Ferrochemistry with slower motion fuses to the Third Law of Ferrochemistry*. *The superluminosity and variable speed of gravity are new aspects introduced here.*

II. Gravitational Mechanism

The mechanism of gravity is here presented by such fissing and fusing of space into and out of quanta by Ferrochemistry between source and target matters [1], [4], [5]. Gravity is reasoned superluminous, fractional, irrational fields of integrated, irrational thermal spaces, fissing from sources by divergent differentiations (equation (1)) and fusing to targets by divergent integrations (equation (2)) with slowing to luminosity into targets. Nanodomains of sources and targets are distinct from atomic and macroscales objects; and nonzero NMMs of nanodomains have unique properties, states and dynamics (relative to nano-domains of null NMMs) as considered here. *Dense charges and magnetic poles can alter gravity, but dense charges of huge volts are rare and one example is lightning. Ball lightning is transient seed for lightning discharge. Ball lightning is an unexplained phenomenon [6]. The author notes ball lightning is example of lightning seeding of huge charge denseness that can manifest dark gravity. Nuclei have dense charges but of one type as positive polarity and is in concert with bright gravity. But dense nuclei of negative charges are missing and may manifest Dk gravity. But the negative NMMs are here asserted novel origins of Dk gravity as the positive NMMs are associated with Br gravity.* The current science involves more static ideas, but this theory introduces more dynamical origins of gravity by internal perpetual collisions (of charges and/or poles) as agitated by external irrational thermal spaces and gravity spaces. The gravity originates from sources by collisions of sub-particles and sub-quanta composing composite particles for matter by (1). The fissed field motions from such internal collisions increase from atom to nano with distinct fields and motions at nano-size. Larger sizes involve changes in motions from gravity to thermal spaces due to extra-domain sizes and needed superluminosities for synchrony of macro motions with internal atomic and leptonic and hadronic motions with consequent shift to classical dynamics. The vibrations and rotations of sub-quanta are luminous (having tiny radii in critical limits); so the released rational fields rarefy, uncoil and expand by (1) and cannot keep up luminously with inner most sources; so they fragment and accelerate superluminously and escape in trying to refuse to inner sources with further frustrations by collisions. From atomic systems to nano-domains, the inabilities of the released electric and magnetic fields to keep up with internal dynamics of the nuclei, hadrons and electrons increase and reach critical limits where the gravity cannot be reabsorbed.

III. Nanoparticle Collisional Alterations of Gravity

Collisions of nanoparticles, molecules and atoms upon gravitational sources may heighten this effect of incoherent motions and coupling to released fields for gravitational production. The author introduces multi-scaled agitations for novel effects. Collisions of macromolecules cause gravity and gravitational release that are new as pointed out here as collisions disrupt the reabsorptions of released fields to internal nuclei and leptons and can charge the pieces. This is awesome as heat, phonons and radio waves can drive the systems to collide on subnanoscales so that the macromolecules alter their masses; so that gravitational interactions develop so the thermal energy is diminished. The collisions do not dissipate but instead the energy is accumulated for novel dynamics as introduced here. The collisions within the macromolecules and nanoparticles cause them to release gravity and the reverse causes then to absorb and be affected by gravity. But RBL introduces a totally new effect here as the macromolecules collide with each other and the nanoparticle collisions disrupt their internal nuclei, hadrons and leptons for altering individual nanoparticle gravitational effects. So that the gravity absorbed from earth and altering the paths of the individual nanoparticles is not allowed to be released or is more released as the collisions with surrounding macroparticles, nanoparticles, molecules and atoms disrupt the absorbance and release, but instead polarizes the macroparticles and charging the macroparticles and nanoparticles even further disrupting the gravitational absorbing and releasing mechanism and the alteration of the path of the macroparticles and nanoparticles and macromolecules. This leads to colliding particles transforming the gravity to electric, magnetic and quantum energies as the dynamics involve simultaneous divergent integrations (2) and divergent differentiations (1) with different boundary conditions. Colliding macromolecules internalize gravitational energy rather than undergo accelerations. But if the particles become too many, then the internalizations are not continued but the composite motions of the macroparticle changes.

IV. Gravitational Energizing Nanoparticles

Such gravitational energizing of nanoparticles and macromolecules could explain the formations of clouds and charging in clouds as the nano-ice particles collide and the surrounding molecules of N_2 and H_2O having positive NMMs collide and they also collide with the nano-ice particles and their nanodomains of positive NMMs and the collisions disrupt gravitational accelerations of the nano-ice particles and atoms and molecules to the ground or earth. There is a current unknown mechanism for the creation of potential

differences of billions of volts in cumulonimbus clouds [7]. The theory here gives a basis for such accumulations of huge electrical potential by imagined quantum entanglement over miles from such collisions within the clouds. Collisions occur at greater distances as the nano-ice particles are charged. So gravity acting on many, many charged nano-ice particles, whereby the motions of the nano-ice particles affect each other magnetically leading to internal motions of pocket of nano-ice particles for disrupting the gravity of individual ice particles with earth so that the gravitational field and energy of earth are momentarily internalized within the nanoice particles or the thermal energy and relative motions of nano-ice are transformed to gravitational energies to raise the pockets of nano-ice in the atmosphere against the force of gravity.

There is currently an unknown mechanism for recent effects of gravity on DNA replications [8]. The model here explains such gravitational effect on DNA replication by similar phenonema as the gravitational effects on charging nano-ice particles in thunderstorms. Likewise, the proteins in cells collide and the gravity is transformed to internal relative motions of the proteins and within the proteins in the cells to affect cell dynamics as by RBL's model given here. The changes in gravity affect the internal and external collisional induced fractional, reversible fissing and fusing of null NMMs and nonzero NMMs to alter the fissing of nuclear fields into electronic lattices. These alterations of nuclear fields into electronic lattices are stronger for nonzero NMMs, so as to more strongly polarize the electronic lattices for greater polarizations by positive and negative NMMs. The proteins and nucleic acids in general have many atoms of positive NMMs such as ^{1}H, ^{14}N and ^{31}P and isotopic replacements can clump stable isotopes of negative NMMs such as ^{15}N and ^{17}O for novel effects by this theory. *For atomic to molecular objects, the divergent integrations of gravity by equation (2) are superluminous and divergent differentiations of the gravitational excited state by equation (1) are superluminous for difficult luminous effects of surrounding quantas (by Newtonian-Leibnitzian Calculus). But with increase in sizes, the divergent integrations of the surrounding gravity of the earth slows due to so much gravity and the sizes of the nanoparticles for divergent calculus merging to Newtonian-Leibnitzian calculus; so that the integrations of collisions and magnetic and electric interactions of surrounding molecules and nanoparticles and motions by Newtonian-Leibnitzian calculus can alter the release of the gravity. But for macroparticles, the divergent integrations of the surrounding gravity are also slowed to luminosity, but the many nanodomains counter each other in affecting a given domain luminously for loss of effects on macro-objects. Thereby gravity acting on nano-objects is unique.*

V. Hydrogen's Unique NMM and Strong Verses Nuclear Fields upon Electronic Lattice

The hydrogen shows a greater effect as the hydrogen is the only element having only one nucleon (other than bare neutrons); so the nucleons of bare protons and neutrons act directly on electronic lattices for hydrogen and neutron for stronger binding interactions of $e^- e^-$ pair to proton of hydrogen and stronger repulsive interactions of $e^- e^-$ with bare neutron. This explains the neutron instability in electronic lattice as the neutrons have negative NMMs with pushing $e^- e^-$ and the electrons --- electrons orbital momenta of Br push the neutron orbitals as they are of Dk natures to destabilize the neutron as the corresponding hydrogen with $e^- e^-$ of instability. The proton has Br orbital momenta and interacts favorably attracting the electron --- electron orbital momenta for binding and explaining the hydrogen bond. Inside the nucleus, the proton neutron interactions stabilize the neutron as by neutron Br and proton Dk interactions in the nucleus for stabilizing in nucleus. From nuclei (with between hadron interactions) to inside hadrons, the up-down quarks attract but up --- up repel and down --- down repel. Thereby the p^+ of Br and $e^- e^-$ of Br, positive charge of p^+ and negative charge of electron explain the hydrogen bonding for explaining the strong force. *The author here introduces the notion of unusual hydrogen bonding between nonpolar compounds like hydrocarbons and compounds having ^{15}N and ^{17}O stable isotopes due to effects of negative NMMs of the ^{15}N and ^{17}O pushing $e^- e^-$ into the hydrogen of the nonpolar compound. Thereby the author notes nonpolar regions in proteins and biomolecules may induce enrichments and novel interactions with ^{15}N, ^{17}O and other isotopes of negative NMMs; for instance the anesthetic effects of noble gases like Xe and Kr can be reasoned by their isotopes of negative NMMs interacting with nonpolar regions of biomolecules for novel hydrogen bonding and dynamics*. The strong force is a combination of gravity and thermal spaces with electromagnetic forces as gravity of like binding and electric of unlike binding. And the neutron instability is explained by Dk orbital of neutron and Br orbital of $e^- e^-$ orbital for explaining neutron conversion to p^+ and e^- and beta process for weak interaction. For the proton --- $e^- e^-$ interactions, the Br gravity has not been properly included and this explains why it has been difficult to couple electroweak to strong force. The prior scientists did not involve gravity with electroweak force. Therefore, the hydrogen in water and other covalent compounds experience hydrogen bonding.

VI. Gravitational Alterations of Hydrogen Bonding

Gravity affects the hydrogen bonding in these molecules as gravity stimulates fissing and fusing to alter nuclear magnetic moments for altering hydrogen bonding. In nano-ice particles, the hydrogen bonding is altered so as to alter the bond lengths; so the core H_2O molecules are compressed and the core of nano-ice molecules are compressed. And changing gravity alters interactions for causing charge separations. Gravitational changes as nano-ice particle travel in clouds and electrons can fiss clusters and particles in the air. This occurs as many fiss fields in the nano-domains falling in gravity experience fissings from protons and then stretch and uncoil into L Frames where the quanta and L continua interact with the gravity to fuse by irrational-irrational interactions. The weak force is a combination of Dk gravity and Br gravity and magnetics of electron spin and proton spin. For the neutron --- e^- interactions, the Dk is not observed and this allows weak force to have been coupled to electromagnetic field prior to this theory. The reduced gravity polarizes many hydrogens in H_2O nanodomain. The polarized protons induce electron transfer across protein membranes. These inner sources of critical radii move and refuse before all gravity can refuse to the source so some gravity escapes to affect surrounding target quanta as matter and fields.

VII. Grativitational Effects on Targets

Targets likewise experience external gravity fields as superluminous, fractional fields and spaces that can fuse individually to the inner sub-particles of less massive targets as there are fewer pieces, less mass and less denseness (relative to source particles of the fields) and the fusing to targets is more feasible (as targets can visit past, present and future times for manifesting temporal ensembles) relative to fusing to denser more massive source sub-particles (as sources can visit more spatial distributed quanta at given time, spatial ensembles). The gravity fisses in space by irrational --- irrational spatial interactions and the pieces individually fuse superluminously to each atom by irrational --- rational spatial temporal interactions in the targets and subatomic particles in the atoms, and vice versa during collisions within sources the gravity fisses from each particle due to irrational --- irrational interactions and the fissed fields fuse to stretched fields due to irrational (G) --- rational (E, B) interactions and then manifest net field from the whole source as emerging from E and B fields at the limit of source. The gravity is a superluminous exchange of space between sources and targets due to internal motions of sources unable to pull in all they release and the targets of less quanta more able to pull in the released spaces of sources. The fused gravity into the targets have field or wave and particle natures so the particles of gravity fuse irrationally to disrupt the quanta of the targets (for consistency of the theory here to prior incompatible gravity (or relativity) and quanta) and the fields then bend the paths of the resulting pieces of the fissed targets with simultaneous divergent integrations and divergent differentiations. Little's Rules 1 and 3 denser quanta of sources pull tiniest gravity and thermal spaces with agitatations and releases. But the Little's Rules 1 and 2 less dense quanta of targets pull in tiniest and fiss less but fuse more of surrounding spaces. Vice versa, the gravity fisses irrationally from sources and the dense irrational stretches and unwinds to larger fields and combines (fuses via E and B seeds) with other stretched unwound fields from other quanta to form larger net gravity fields from the whole sources. This mechanism for irrational gravity is also proposed for electric, magnetic and even quantum (rational) fields by the author on the basis of these fields being more intense rational fields. This paper proposes that not only does the gravity mechanism affect the motions of the targets but also the internal transformations and transmutations of the targets and their inner quanta.

VIII. Nonzero NMMs and Nanodomains alter gravitational mechanism

Atoms with nuclei having null (0) nuclear magnetic moments (NMMs) have more balanced charges in motions with subjection to external agitations by rational and irrational fields with more massive atoms more easily agitated by Little's Rule 1. The agitations disrupt the internal balance of charges and poles (motions of charges). *Such agitations in imbalance generate momentary monopoles. The author notes by his theory magnetism forms from fusing of Br and Dk gravity fields in balance. In C Frame, there is excess of Br in our sector of Universe so the excess Br causes fractional magnetic monopoles in C Frame which is Br gravity. But the author notes integer monopoles of gravity can manifest in L Frames by internal absorbance of Dk gravity by some nuclei for integer excess of Br and Br gravity for integer magnetic monopoles in L Frames and vice versa for absorbance of Br gravity by some nuclei for integer excess of Dk gravity in L Frames and Dk magnetic monopoles.* The atoms are intrinsically imbalanced as all positive charges of protons are crammed in nuclei and electrons are delocalized about nuclei dispersed in space. A system of ideal balanced charges and poles would release opposing gravities equally of Br and Dk natures. Imbalance charges and poles release imbalanced gravities. Thereby surrounding thermal spaces easily and perpetually disrupt the charge and pole balances and motions of nuclei and electrons by perpetual collisions.

The nuclei with nonzero NMMs of positive and negative polarities collide less randomly and thermal

fields more orderly collide with nonzero NMMs as by more thermal spaces within nonzero NMMs relative to null NMMs; but nonzero NMMs can be more driven by external rational fields and gravity fields. The nonzero NMMs can more intensely agitate to produce momentary monopoles. The momentary monopoles are unstable and fragment to gravity fields or fuse to nuclear fields. Gravity is fractional magnetic monopoles. The nonzero NMMs provide nanodomains that more intensely self-activate in surrounding thermal spaces and gravity spaces. Nano-domains of null NMMs less self-activate in surrounding thermal spaces and gravity spaces of activations. The author here identifies novel systems of nanoclumped nonzero NMMs for more intense irrational perturbations to collective, temporal crystalline patterns and motions including life. Changing gravity and thermal spaces more intensely affect nano-domains of nonzero NMMs relative to nano-domains of null NMMs. NMMs order irrational thermal spaces and gravity spaces. This aspect of the theory is developed more here. The author stresses that nanodomains of nonzero NMMs have important and distinct properties relative to smaller atomic/molecular regimes and larger macroscopic sizes.

IX. Positive NMMs Release BR Gravity field and Negative NMMs Release DK Gravity Fields for Different Types of Gravity Nano-baths

The gravity field is denser, integrated thermal fields and the denser gravity fields more strongly perturbs the quanta of targets that they affect and the agitations fractionally fiss fields from the target atoms. *The gravity is reasoned denser thermal fields with internal and external collisions frustrating random nature of rarer thermal fields.* The targets fractional fissings are as sources and the gravity fiss fields are more intense and closer to targets (sources) but rarefy and stretch to divergently differentiate to superluminous faster thermal spaces. The nonzero NMMs release gravity fields of greater intensities than null NMMs; the positive NMMs release Br gravity fields and the negative NMMs release Dk gravity fields. The Br fields drive dynamics into the future. The Dk fields drive dynamics backward into past. The nanodomains of all positive NMMs (first type) or all negative NMMs (second type) release denser Br or Dk gravity fields, respectively, to affect surrounding atoms and nuclei in the nanodomains for Ohm's like dissipative effects modulated by external gravity for the all positive NMMs and strange metal type quantum optimum dissipations for all negative NMMs by Little Rules 1 and 3. Strange metals are substances, which dissipate thermal energy at the quantum limit [9]. The third type nanodomains have mix of positive and negative NMMs and the mixed Br and Dk gravities as stimulated and induced by surrounding gravity sources, whereby the energy is accumulated within the nanodomains rather than dissipated by Little Rules 1 and 2. The Dk and Br gravity fields are more intense than the fields released from nano-domains having null NMMs.

A surrounding mass like the earth can gravitationally stimulate the nanodomains to cause release of internal gravity fields for nuclear pressures for internal self-gravitational effects within the systems as stimulated by external terrestrial fields (or other objects). The surrounding agitating gravity of say earth is much weaker than the stimulated released internal nuclear pressures and fiss NMMs relative to surrounding weaker earth gravity. *Indeed, by such basis surrounding thermal spaces are reasoned to agitate internal nucleons (of null, or all positive or all negative NMMs) to produce wavefunctions about nuclei and wavefunctions fragment to surrounding macro spaces of electric, magnetic and gravitational fields and greater fragmenting to thermal spaces by Little Rules 1 and 3 as by divergently differentiating the excess quantum fields to electric fields, magnetic fields, gravitational fields and/or thermal fields by equation (1). Such thermal agitations of mix positive and negative NMMs produce wavefunctions about nuclei that tend to accumulate surrounding thermal fields by Little Rules 1 and 2 as by divergently integrating the thermal fields to quantum fields by Eqn (2). On such basis the author predicts new state of matter whereby very high temperatures acting on systems of all negative NMMs produce magnetic monopoles in excess Br gravity.* Other examples of this include: biomolecules and life [10], lightning by nanoice particles (H_2O) [7], unconventional nuclear reactions (^1H and Ni and Pd) [11], interstellar dust formations of stars (H atoms and interstellar dust) [12], [13]; CVD diamond formation via C atoms in (p^+) plasma clouds [14]; isotopic fractionations [15]; isotopic violations of second law of thermodynamics via NMMs on subnanosizes [16]; internal gravitational heating earth's core and mantle [17]; motional induced error during DNA replication [8]; enzymatics [10], catalysis [18], superconductivity [19]; strange metals [9]; anomalous muon magnetic moment on earth [20] and more...

X. Different Quanta and Organizations of Quanta in Nano-domains of Gravitational Baths

In considering interactions of spaces with the nanodomains and the interactions of nanodomains with surrounding spaces it is important to consider that irrationals act on quanta to fuse and rationals act on quanta to fiss; and the resulting larger spaces can be fused from smaller denser fissed quantities and the resulting smaller spaces can be fissed from larger denser fused quantities, by Laws of Ferrochemistry. *And*

with changing denseness, the irrationals go to rationals and the rationals go to irrationals, so the fissing and fusing change as v becomes greater than c as disorder orders and order disorders. So the math changes as the computations occur and the answer depends on the order of calculations. Does the rapidity determine the order of calculations or does the denseness and power determine the order of calculations? How does disorder determines sequence of calculations relative to order determining sequence of calculations? In hidden ways, many worlds (nouema) arise as all possible calculations occur but the denser goes to luminous and order and manifest our phenomena. Infinite quantities and infinitesimals perpetually compute infinities and infinitesimals that are not expressible or observable. But occasionally some order and slowing arise and such are quantum fluctuations from nothingness. Depending on the system's composition of denseness and less speed, these quantum fluctuations become more probable. But in limit of zero denseness and infinite speeds then the probability of the many calculations materializing goes to zero by the divergent calculus. In various systems of various speeds and densities, the following possibilities become phenomena. 1) The irrationals tend to fuse rationals and vice versa. Irrational thermal space tends to fuse rational quanta fields. Magnetic fields tend to fuse strong fields. 2) The rationals tend to fiss rationals as quanta fiss quanta to irrational gravity and the gravity spreads and fuse gravity waves; irrationals interact with surrounding thermal irrationals. Magnetic fields tend to ⇹ weak fields. 3) The irrationals tend to ⇹ fiss irrationals.

Thereby in general unlikes rationals and irrationals fuse to quantities by divergent integrations and like rationals or like irrationals fiss to quantities by divergent differentiations. But the excessiveness can cause rational --- rational interactions for fissing to explode so intensely for v>c so fusing occurs and such manifest as fractionals interact to produce integers and integer fractionals and integer irrationals. Also irrational --- rational interactions for fusing can become excessive so the fusing transmutes to fissing as the denseness can cause irrational to become rational for rational --- rational interactions rather than irrational --- rational interactions. Thereby gravity tends to ⇹ fiss irrational L continua and strong fields with fusing of some of the resulting fields to less dense rational quantum, electric and magnetic fields. Nuclear fields tend to ⇹ fiss strong fields with fusing of some of the resulting strong fields to quantum fields. These 3 types of systems are on basis of irrational superluminous and fractional perturbative fields and this is new. Prior systems have focused on basis of rational luminous and integer and real perturbative fields acting on and within systems or baths. The nano-domains are transitory in size, whereby v becomes greater than c and the number of quanta limit the possibilities and the excessive motions (v>c) transmute the fissing to fusing and fusing to fissing. The nucleus is likewise a transitory domain between smaller leptons of electrons and quarks and the electronic lattices of atoms. This transitory nature of nano-domain causes the differing gravitational effects. The nanodomains of different solids of crystalline and amorphous solids interact differently with gravity. The nano-domains of different physical states of solid, liquid, plasma and gas natures interact differently with gravity. The nano-domains of chemical states of element, compound and mixture characters interact differently with gravity. The nano-domains of atoms, ions and molecules types interact differently. The gravity fisses and fuses into different types of nano-domains of gravitational baths differently to alter motions in different ways and to induce internal chemical and physical changes in different ways. These nanodomains can interact with surrounding thermal spaces. These nanodomains can interact with surrounding gravity for different phenomena.

XI. Irrational Statistical Mechanics, Directionality and Superluminosity of the Quanta of Gravitational Baths

The gravity and thermal spaces induce the nanodomains to visit different permutations for the quanta and ensemble of such quanta of many domains in space or one quanta visits many states in past, present and future for nano-domains in time for finding the optimum state and dynamics for minimizing energy. *Thereby in many worlds all the calculations occur but the noema form phenomena, whereby the energy is minimized and the disorders find optimum order.* This explains lightning and the many streamers acting initially and then the past, present and future motions of streamers allow the ensemble to find the lowest energy path with tunneling. Also there is example of gravity interacting with proteins. It is important to consider the gravity in C Frame is two way street and gravity in L Frame is one way street. *The intervening nano-domains are transitory from the two ways to one way motions and vice versa.* So the quanta in the nanodomains can be stimulated externally or internally by Br and Dk gravities and the whole domain exchanges the gravities from internal nuclear pressures or external gravities from spaces surrounding the systems *with intervening electronic quanta being one way streets and motions. Quantum mechanics of electrons of atoms are one way dynamics sandwiched between internal two way dynamics of smaller nuclei and bigger two way dynamics of macro-materials. Two ways of macro can transform to one way of quantum if the opposing motions intensify so v>c. Also one way of quantum electronic lattices can transmute to two way of nuclear fields if the v>c causes transmuting of one way to two ways for nuclear symmetries. In this work, novel dynamics are introduced for nano-domains having NMMs for nuclear symmetries to catalyze*

transmuting dynamics between quantum of atomic systems and classical mechanics of macro-matter. Quanta in the nanodomains facilitate dynamics as they can have Br and Dk gravities and positive and negative NMMs for absorbing and releasing 2 way streets to C Frame or transmuting the 2 Ways of internal NS and RS Frames (via nonzero NMMs) to 1 way of L Frames internally within the nano-domains. But prior science has focused on null NMMs of quanta in nanodomains and atoms and difficult transmuting 2 way streets of C Frame to null quanta in nanodomains and individual atoms, luminously, and coupling the atoms internally to 2 way momenta of nuclei with null NMMs. *Therefore novel physics and chemistry of nanodomains of atoms having nonzero NMMs are introduced and disclosed in this work!*

XII. 2-WAY DIRECTIONALITY OF SPACE AND TIME FROM NUCLEI TO ONE WAY QUANTUM TO 2-WAY CLASSICAL

The author introduces novel systems of nonzero NMMs for novel effects and explanations and novel coupling the internal 2 Ways Streets of quanta within quanta to Macro 2 Way Streets of C Frame. The author notes the superluminous nature of gravity allows reversal of directions so 2 way streets (ungerade) for transmuting one way streets (Gerade) from 2 way streets (unGerade) and vice versa. The internal dynamics are disclosed for transferring from L Frames to NS Frames as by the one way natures of L Frames quanta transforming to 2 ways by CW and CCW of NS and RS Frames sub-quanta *via superluminosity of stimulating gravity and L continua spaces and/or strong fields and nuclear fields. The author has previously noted this as finer orbitals or revolutions within the orbitals whereby the revolutions can be of opposite parity (Dk) to the orbital (Br).* The author introduces the superpositions of such Dk (CCW) and Br (CW) gravitational perturbations of space and motions of spaces. A novel superposition of spiral dynamics is introduced here beyond the superposition of planar dynamics. Antisymmetry results from one way nature of L Frame. NS Frames have CW and CCW for loss of antisymmetry of Pauli inside nuclei and hadrons due to superluminosity and contrary motions. (*Thereby the nuclei by more powerful internal spins and magnetic moments can couple to weaker electronic spins or orbitals via negative NMMs released from nuclei to reverse spin or orbital to create magnetic monopoles.*) These quanta and nano systems can interact with rational or irrational surroundings for non-state behavior and irreversibility; or these quanta and nano-domains can interact with both rational and irrational surroundings for state behavior and reversibility. By Little Rules 1, the L Frames are more subject to rational C Frame and rational L Frame perturbations but the NS and RS Frames subquanta within nuclei are more subject to less intense superluminous irrational thermal spaces of C Frame and L continua. The nuclei can interact rationally and irrationally for state behavior by the dense nuclei, but the L Frames can interact only via rationals for nonstate behavior by less dense electronic lattices. The L continua allow rational and irrational L continua state behavior, but it is hidden. Gravity via the nuclei within nano-domains of nonzero NMMs can cycle nanodomains. The gravity from outer C Frame can polarize NMMs for ferromagnetism and antiferromagnetism of nuclear moments.

XIII. GRAVITATIONAL BATHS HAVING DIFFERENT NANO-DOMAINS

The nanosystems may manifest 4 general possibilities by various combinations of + and – NMMs in a general positive NMM background as in our sector of the Universe. 1) The nanodomains in gravitational baths may be composed of positive (+) NMM targets with nearby source of all + NMMs with surrounding + NMMs in outer environment. 2) The baths may be composed of all + NMMs targets with nearby source of all negative (-) NMMs with surrounding + NMMs in outer environment. 3) The baths may be composed of - NMM targets with nearby source of all + NMMs with surrounding + NMMs in outer environment. 4) The baths may be composed of - NMM targets with nearby source of all - NMMs with surrounding + NMMs in outer environment. These four possibilities increase to 8 possibilities if the outer surroundings are allowed negative (-) NMMs as in other sectors of the broader universe. In this way the 8 - way possibilities of the nano-domains become as a system as a single hadron giving the 8-fold ways of Murray Gel-Mann [21].

XIV. DIFFERENCE BETWEEN GRAVITATIONAL BATH AND THERMAL BATH; ORDER VS CHAOTIC PERTURBATION AND TUNNELLING

Unlike thermal baths, the gravity baths act more intensely to disrupt the NMMs more thoroughly in the nano-domains for more extensive fractional fissing and fusing and stronger alterations of the interactions between the quanta centers of the ensembles in the baths and interactions of the baths with the surrounding environments by RB Little's Rules 1, 2 and 3. The gravitational irrational spaces are more confinable but superluminous and curvatious. The gravity activations unlike thermal activations give nonrandom paths in

space from 3D to 2D to linear dimension to zero dimension for lowering barriers for the charge tunnelings. The thermal irrational spaces are not confinable; infinitesimal in intensities; infinite in sizes and internal speeds; and chaotic. Thermal irrationalities give 3D activations of targets in space, but the infinitesimal intensities cannot disrupt the targets thoroughly. Gravity is more intense and agitate the targets more thoroughly for fragmenting targets to alter paths by the gravity fields. *It is important to note although thermal alone cannot agitate as intensely as gravity, the thermal spaces can induce gravity, L Continua and even strong interactions if the systems have nonzero NMMs. This is so as the NMMs in nano-systems are coupling to thermal spaces by Little Rule 1 and the thermal spaces agitate the dense strong fields to L continua to gravity fields for thermally-inspired, denser, agitating fields of gravity, L continua and even strong fields in complex ways.* But in general thermal to mechanical fields cause pressure effects of 2D random and 1D pressure. And the 1D pressure is linear and electrical. The further activations of gravity cause curvatious electrical activations. The gravity to magnetic fields cause spiral activations within the linear spaces. And the magnetic to quantum fields give the spiraling of the lines with spirals about lines for quantum fields and ball lightning.

Ball lightning is macroscopic quantum fields with internal charge spiralings. Here the author explains ball lightning by the water (H_2O), N-N and O-O having sufficient ^{17}O and ^{15}N with the ^{1}H and ^{14}N so as to accumulate the gravitational activations to magnetic activations to QF activations! This explains ball lightning. The densest quanta of quarks slow and confine thermal spaces; hadrons slow and confine gravity spaces; wavefunctions slow and confine L continua by Little Rule 1. Such more intense interactions of gravity can more greatly affect phenomena of tunnelling within the bath and from bath to surroundings. Here the author determines fractional fissing and fusing as important for tunneling of quanta. During fractional fissing and fusing of quanta centers, the particles go to waves for more altering the intensities of tunneling waves for even whole atom tunnelling and even tunneling across Coulomb barriers for unconventional fusion. The author discloses tunneling a basis for fractionations of stable isotopes of nonzero NMMs. The idea here notes the fissing of not only of the tunneling particles, but also the barrier within the nano-domains and the centers of nonzero NMMs as within the domains all the centers can collectively in delocalized ways frustrate a barrier in an orderly way for affecting local tunneling! The gravity in the baths thereby assists tunneling in new ways by ordered agitations. The domain and bath sizes are limited by the fissing and fusing, the increase denseness and slowing of the dynamics in the allotted time of gravity stimulation. The energy per order by Planck's constant and energy per disorder by Boltzmann constant determines different dissipative and accumulative dynamics for the 8 different ways. External fields in surroundings can polarize many domains for enlarging domain sizes.

XV. Agitative Strong, L Continua, Gravity and Thermal Fields

Just as gravity can agitate quanta for fissing and fusing so can L-continua and nuclear fields and strong fields. Such agitations of quanta by strong fields and nuclear fields are what the author determines as the origin of fractional fissing and fusing of nucleons and nuclei into surround electronic lattices of L Frames. The electrons of L Frames can agitate nucleons and nuclei to alter strong fields and nuclear fields for altering the fractional fissing and fusing and tunneling into and out of nuclei. Prior science has thought the strong fields and nuclear fields are static, but the author notes the dynamical nature of strong fields and nuclear fields for fluctuations in the fissing and fusing. It is on this basis that the author proposes low temperature for NMMs to cause superconductivity but at high temperatures the pressure has to be increased for continued superconductivity. But the author notes that at the very, very high temperatures the NMMs can again cause superconductivity if the pressure is reduced. Recent observations of higher temperature superconductivity in stretched MgB_2 is consistent with such prediction of the author of higher temperature superconductivity in superconductors on positive and negative NMMs under reduced pressures. The author notes the positive and negative NMMs may cause superconductivity at very, very high temperatures and low pressures but at temperatures well above room temperature where the current scientists have not been observing! As the author notes temperature converts to electric and magnetic fields, then the high temperatures for superconductivity may be relaxed by multiple electric and/or magnetic fields. The author notes that the very, very high temperatures have an equivalent self pressures from the NMMs and nuclear pressures for manifesting mechanical pressures from internal forces and pressures for causing the superconductivity without external compressions! So, room temperature may involve multiple electric and magnetic fields on baths having positive and negative NMMs.

XVI. Communication between Various Systems in Cells and Living Organisms as Example and Application

Biomolecules can manifest in such nanodomains and the ^{1}H, ^{14}N, and ^{31}P in such biomolecular nano-

domains can cause communications between the many domains. For instance, surrounding gravity can polarize the NMMs in these biomolecules for novel states, interactions and dynamics for life. Alterations of the gravity would thereby alter the interactions of the biomolecules and alter the metabolism and life. The NMMs and potential charging and magnetizing cause even stronger gravitational induced dynamics of the biomolecules in the gravitational nano-baths. Such gravitational fields in hidden ways stimulate novel chemistry, optics, thermodynamics, transport, and transmutations within the nanobaths and of the nanobaths. In these effects of gravity on life, the author discloses that gravity is a force that caused the organization of life on earth by self-activation of clustering of organic molecules forming biomolecules having elements with stable isotopes of nonzero NMMs like: ^{1}H, ^{2}D, ^{13}C, ^{14}N, ^{15}N, ^{17}O, ^{25}Mg, ^{31}P and ^{33}S and other elements in essential minerals having nonzero NMMs. This notion is not proven but follows from the author's theory.

XVII. Other Important Systems of Applications of Novel Phenomena by the Gravitational Nano-baths

The living organisms are systems better explained by this model. The time travel is another important phenomenon explained here. The normal life to cancer transformations are other examples [6]. The rethinking of gas, liquid, solid and plasma physical states is another possibility. The rethinking of element, compound and mixture chemical states is another possibility. The rethinking of atoms, molecules and ions is another possibility. The relation of ferro liquid crystals and superconductivity [5] [10] are explained. Diamond formation by CVD is explained [22]. New way of interpreting 1st order and 2nd order phase transitions [23] follow from this theory. The hydrogen in transition metal nanodomains is explained by this as by polycations [24]. The sea of electrons and metallic bonds are better reasoned. New way of using fractional fissing and fusing with LeChatelier Principle is given by the author. ^{14}N can compensate for ^{15}N. There is no stable isotope of negative NMM for C to compensate for ^{13}C incorporation. Although recently scientists observed the ability of unstable ^{11}C (with negative NMM) in $^{11}CO_2$ to directly insert into carbonates unlike ^{12}C (with null NMM) and ^{13}C (with positive NMM) [25]. There is no stable isotope of positive NMM of O to counter by LeChatelier Principle the negative NMMs as ^{17}O is deposited within systems. New mechanism for aging is reasoned [4], [10]. The nature of elements of life and their lack of core 2p and course 1s orbitals is reasoned. New effects of radio waves upon life are reasoned here. They have noted, proposed and given examples of how gravity couples to change motion, change chemistry and change transmutations and energetics [1], [4], [5]. But the prior data did not explicitly note how changes in gravity would change these so this is the premiere theory of such gravitational effects on life. By coupling there is effect, but what is the effect? How would reducing gravity alter the DNA replication, enzymatics, catalysis, superconductivity, nuclear reaction?

XVIII. Conclusion

The forces in the Universe are unified with thermal spaces of random, infinitesimal, superluminous, fractional, irrationals being the foundation. Gravity is denser than thermal spaces with integer, irrational, fractionals with superluminosity. Gravity (G) and thermal spaces divergently integrate to rational, luminous forces of electric (E), magnetic (B) and composite electromagnetic fields and waves denser quantities of quantum fields and waves. Quantum fields fuse with divergent integrations to form leptons of electrons of homo-parities and quarks of hetero-parities. The leptons and quarks quantum mechanically interact to form atoms. The quantum fields and quantum mechanics of atoms are perpetually fused by divergent integrations from external macroscopic E, B, G, and thermal fields and waves and fissing internal quarks, hadrons, and nuclear fields by divergent differentiations. The increasing nuclear denseness and e^- rapidity manifest imbalances, more imbalances occur in atoms having net nuclear spins and nuclear magnetic moments for ease of agitations and perpetual, fractional fissing and fusing for new basis for quantum criticality. The gravity acts between sources and targets by internal collisions releasing source gravity and thermal fields superluminously and targets fiss by colliding with source fields for motions of the fissed by divergent differentiations of targets in source fields with refusing by divergent integrations of targets. The macrotargets respond to gravity luminously due to number of atoms and particles limiting the dynamics of the superluminous gravity. Nanostructures and sub-nanosize objects respond to gravity superluminously due to fewer particles for slowing the gravity. Just as light travels slower inside matter, gravity travels slower in multiple nanosystems and faster in isolated subnano-systems. Phenomena of quantum mechanics (superposition, entanglement, action at a distance, uncertainty of position & momentum or energy & time, exchange, correlation, wave-particle duality and tunneling) may be reasoned by this theory. On the basis of external and internal fields manifesting the quantum mechanics, a new theory of gravitational agitations of biomolecules for quantum dynamics by self-activations are reasoned. Gravity acts on nano-domains having

nonzero NMMs for manifesting ferromagnetism and possible antiferromagnetism. Many other manifestations and explanations are possible.

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