

Relativistic Chiral Inversion of Non-Zero Nuclear Magnetic Moments During Centrifugal Industrial Fermentative Processes

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ABSTRACT

Fermentative productions of amino acids are thought to retain homochirality. This work can propose rotational motions for accelerations by centrifugations during fermentative processes enrich heavier, stable isotopes of differing nuclear magnetic moments (NMMs) with the consequent possibility of altered chirality and magnitude of rotating polarized light for altering chemical, physical, and biological phenomena of such enantiomers. The author discovered gravity seeding homochirality. Thereby in this work, the author determined that altered gravity can change the magnitude and direction of chirality. In this work, the changes in isotopes alter gravitational effects on the metabolism of enantiomers in hosts eating fermentative produced amino acids. Cancer was determined from eating heavier isotopes from fermentative processes and cancer cells were reasoned in this work to be more affected as the earth's gravitational field is reduced by travel away from the earth's surface. Similarly accelerated motional and gravitational effects on isotopes in planetary atmospheres of Earth, Saturn, Jupiter, and Uranus by ^{14}N , ^{15}N , ^1H , ^3He , ^{13}C and ^{17}O were reasoned in this work to cause lightning. Such solvents of positive NMMs were reasoned by collisional exchange to accumulate and exchange charges in clouds and collisional exchange solute negative NMMs were reasoned to alter charge for the production of leaders and streamers to induce lightning strikes. Lack of sufficient ^{13}C and ^{17}O in the CO_2 of Venus' atmosphere is explained in this work to mediate the lack of charge accumulation and discharge for explaining lack of lightning on Venus. The lower temperature ($-214\text{ }^\circ\text{C}$) and raining N_2 (boiling temperature of $-210\text{ }^\circ\text{C}$) in Neptune were reasoned in this work to strips ^{15}N from the atmosphere of Neptune for explaining its lack of lightning despite its similar atmospheric composition but warmer climate ($-193\text{ }^\circ\text{C}$) of Uranus. The charged ^1H atmosphere of Neptune is thereby the basis for charging Neptune's atmosphere and the author thereby explains the disappearance and reappearance of Neptune's clouds by magnetic coupling of the charged atmosphere of Neptune to Sun's magnetic field.


Keywords: Chirality, Gravito-chemistry, Gravito-entanglement, Nuclear magnetic moments.

1. INTRODUCTION

The mechanism of interactions between biomolecules (in a different world of nuclei and atoms from our world on the size of the human body) for manifesting life has confounded scientists for over 200 years. This work further considers and draws analogy to the mechanism of charge interactions between atoms, ions, and molecules (in another world of planets and stars the size of the solar system) for manifesting the life of the cloud and charge activity and energy production within storms. In this work, the author introduces and further develops his theory of the nuclear magnetic moments (NMMs) of nuclei of atoms composing these systems in our world on size of meters and sizes of different worlds of atoms and nuclei and intervening mixed worlds of nanostructures and the vast sizes of other worlds of

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planets and many planets in the solar system. The author demonstrates the NMMs provide phenomena for coupling gravity (based on its proposed superluminosity in this work) and the bigger, vast other worlds of planets and stars to the different, tiny worlds of atoms and nuclei on relativistic bases.

On such basis of nuclear magnetic moments (NMMs), the author determines that the organisms and cells (liquid, solid, and gas) may be appreciated in some sense as compress clouds (gas and transient plasma) with the nuclear magnetic moments of such complex structures manifesting interactions discovered by the author and used to explain complex dynamics of life and on same basis complex dynamics of charge organizations and lightning mechanism of thunderstorms and coupled interactions of electric storms on planets with solar storms and magnetic phases of the Sun. The author in this work makes such analogy on basis of elemental make up of cells of organisms on earth and varying elemental make ups of atmospheres of the 8 planets and the Sun (star) at the center. The author determines a stronger coupling between gas giants and the Sun than Earth and the Sun due to similar NMMs of ^1H of gas giants and Sun verses less similarity of ^{14}N in earth and ^1H in the Sun.

The biomolecules are further presented as composed of mostly elements of H, C, N, O, Mg, P, S, Cl, Na, Ca, K, Fe, and Zn, and in particular H, C, N, O, Mg, S and P. The author further develops his notion that the key to the mystery of life is the positive NMMs of ^1H , ^{14}N , and ^{31}P each having over 99% relative abundances for their elements on earth. The author develops further his prior theory of the gravitational and thermal spaces interacting with these NMMs under conditions of temperature, pressure, and volume for the life for stimulating fractional, reversible fission and fusion of nuclear and strong fields and NMMs from these elements to activate dissipative phenomena of proteins, DNA, RNA, carbohydrates, lipids, and other biomolecules for driving activated states in the hidden way of biochemical reactions and various metabolic processes. The author includes new conditions of acceleration and gravity for inducing such activations. By such fractional fission and fusion of these stable isotopes and dominating ^1H , ^{14}N , and ^{31}P , the author proposed that homochirality is induced in the thermal and gravitational fields of the Earth for explaining homochirality gravitationally.

The author strengthens his theory of NMMs of ^1H , ^{14}N , and ^{31}P organizing replication, transcription and translation by comparing his theory to the recently observed alteration of protein translation by some protists by disclosing in this work the protists' inclination to enrich their carbohydrates, proteins and DNA and RNA with ^{13}C , ^{15}N , ^{17}O and ^{18}O for ^{18}O induced alteration of DNA and RNA to ^{18}O enriched G* and T* having induced +NMM of ^{18}O for G* behaving as A and T* behaving as A for explaining the misreading of aspartic acid and glutamine STOPs and lysine and glutamic acid and the altered genetic expressions of some protists. On such basis, the author proposes alterations of normal biochemical reactions for causing disease, aging, and eventual death by clumpings and accumulations of trace, uncommon stable isotopes of ^2D (smaller + 0.857 NMM), ^{13}C (+ 0.702 NMM), ^{15}N (− 0.283 NMM), ^{17}O (− 1.894 NMM), ^{18}O (induced + NMM), ^{25}Mg (− 0.855 NMM), ^{26}Mg (induced + NMM), ^{33}S (+ 0.644 NMM), ^{40}K (− 1.298 NMM), ^{41}K (induced − NMM), and/or ^{43}Ca (− 1.317 NMM) relative to more commonly [primordial amounts found in normal, healthy cells], stable isotopes of ^1H (induced negative NMM), ^{12}C (+NMM), ^{14}N (+ 0.404 NMM), ^{16}O (zero NMM), ^{24}Mg (0 NMM), ^{32}S (0 NMM), ^{39}K (+ 0.391 NMM), and/or ^{40}Ca (0 NMM). The author demonstrates in this work the altered gravity by displacements in space and even accelerated motions (centrifugation) on earth for inducing replacement of common stable isotopes of these elements by their corresponding less common nonprimordial stable isotopes with consequent different biochemistry for changes in metabolism for explain diseases like cancer, diabetes, Alzheimer's disease and more.

The author, by the same consideration of nuclear magnetic moments (NMMs) and the compositions of atmospheres of the different planets, gives more details concerning his theory of cloud formations and lightning generation. The earth's atmosphere is composed mostly of N_2 (for less compatibility to the Sun than gas giants) and O_2 with cloud formation from H_2O vapor. The author draws analog to common atomic compositions of the earth's atmosphere and the proteins, carbohydrates and nucleic acids composing living organisms for his theory of NMMs of N in N_2 and H in H_2O also by fractional fission and fusion in the thermal, accelerative, gravitational, electric and magnetic conditions of the gas organizing atoms, ions and molecules for driving cloud formations and charge accumulations and species recognitions lightning mechanism by trace ^{15}N and ^{17}O of negative NMMs. Venus is different, having the atmosphere of over 99% CO_2 , and the lack of NMMs of sufficient relative abundance in Venusian atmosphere is described for explaining the lack of lightning in Venus. The gas giants (Jupiter, Saturn, Uranus and Neptune) have atmospheric compositions of mostly H and He (for more compatibility to the Sun relative to Earth) with trace amounts of H_2O , NH_3 and CH_4 .

The author describes how the fractional fission and fusion of ^1H and its positive NMMs (in analog to ^{14}N on earth) gives mechanism for charging and cloud formation and atomic and ionic recognitions in these gas giants with lightning by trace amounts of ^{15}N and ^{17}O in these gas giants. But the author introduce even greater credence to his theory as he reveals Neptune's great distance from Sun and cooler temperatures stripping N_2 and NH_3 by rain and sleet from Neptunian atmosphere for clouds

of CH₄ and H and He at higher heights for lack of negative NMMs in CH₄ clouds of Neptune for less dissipating its charged clouds as ¹⁷O and ¹⁵N of negative NMMs on Earth and in the other gas giants perturb the positive NMMs of ¹H and ¹⁴N for producing electric leaders for causing charge dissipation and lightning on earth and in the other gas giants with exception of Neptune! The author further discloses a new theory for disappearance and reappearance of Neptunian clouds by the gravito-magnetic coupling the charged high voltage Neptunian clouds to the magnetic cycle of the Sun.

1.1. General Method of Amino Acid Productions

The isolation of amino acids from plants and animals involves isolations from natural plant, animal and human sources; chemical formations; and fermentative productions from microbes. The isolations from humans, animals, and plants are more expensive on industrial scales. The productions by isolations from organic sources as humans, plants, and animals better preserve the isotopic distributions of ²D, ¹³C, ¹⁵N, ¹⁷O, ²⁵Mg and ³³S and other isotopes of trace minerals, as organic sources preserve the intrinsic homochirality of biomolecules in living organisms. However, the chemical syntheses on industrial scales more often lead to formations of racemic (50%–50%) mixtures of the 2 isomers (D and L enantiomers) of these biomolecules for explaining why ultra-processed foods are not healthy. The microbial fermentative processes are thought to preserve homochirality during industrial productions. In this work, the author proposes some processes during these industrial productions can alter chirality of biomolecules in novel ways.

1.2. Isomers, Chirality and Different Properties

These stereoisomers of D and L types (for dextrorotatory and levorotatory by their differing clockwise and counterclockwise rotations of polarized light) manifest different properties in chiral environments. The biomolecules in living matter on earth manifest L isomers of proteins and carbohydrates and D isomers of nucleic acids (DNA and RNA). For instance, the D isomers of proteins, amino acids, carbohydrates, and other biomolecules in some cases may manifest different biological activities relative to the natural L isomers for therapeutic effects in some cases, but toxic and ill effects in other cases [1]. The L isomers of nucleotides likewise may manifest therapeutic effects or ill effects. For instance, some evidence points to D isomers of amino acids and proteins and L isomers of nucleotides for causing cancer [2]. Thereby in this work, the author introduces centrifugations in fermentative processes that alter chirality of some amino acids and other biomolecules and cause mutations in genes of the microbes during centrifugations. The eating of such altered chiral amino acids and biomolecules from such processes can cause illness in humans and animals due to the change in chirality by the centrifugations of the microbes producing the amino acids.

1.3. Gravity and Homochirality

The author [3]–[5] recently proposed that gravity may have been a source for seeding homochirality in life on earth for life possesses for L isomers of amino acids, proteins and carbohydrates and for D isomers of nucleotides and DNA and RNA. The author proposed gravity's ability to seed such homochirality on the basis of his application reasoning superluminous changes in general relativistic theory for determining that matter being space and space being a matter for space to undergo relativistic alterations of quantum particles by fractional, irrational, superluminous, reversible, fissioning and fusing of quanta particles for forming surrounding fields and space time (thermal space in rarefaction of matter). Vice versa the author gave a theory of space time (thermal space) undergoing hidden integer, rational, reversible fusing to quanta (for spatial temporal in denseness).

1.4. Fractional Reversible Fissioning/Fusing Nuclei Explains Phenomena

By such fractional, luminous, reversible fissioning and fusing of quanta and integer, rational reversible fusing of space, and fractional, irrational fissioning of quantum, the quantum fluctuations and entanglements are explained here by the author's theory [4]. Such fractional, reversible fusing of space and fractional, irrational fissioning of quanta also explains electromagnetic waves and their quantum nature. Furthermore, the author's theory gives basis for understanding transportations, transformations, transmutations, and thermodynamics of quanta by undergoing intermediates by quantum fluctuations by fractional, reversible fissioning to space for motions, chemical reactions, nuclear reactions, and energetics! Such operations predict, discover and account for altered chirality. The author notes the superluminous irrationality of gravity and thermal space for coupling to rational, luminous quantum particles like electrons, quarks, nucleons, and nuclei to induce fractional, reversible fissioning and fusing of the quanta and the integer, reversible fusing of the thermal space to gravity and gravity to L continua, strong and nuclear fields. By such RBL notes gravity and altered gravity can couple to NMMs and alter chirality. And also even in strong gravitational fields, atoms, ions and molecules can by their NMMs fission and fuse to release quantum gravities for detecting targets and sourcing fields for recognitions and communications between molecules.

2. HYPOTHESIS

2.1. *Changing Gravity and Changing Acceleration Changes Chirality*

The hypothesis in this paper is given here. Based on the author's theory biomolecules during industrial production by microbial fermentative processes may undergo some change in chirality due to altered gravity. Just as the gravity seeded the chirality of the biomolecules during the formations and evolution of life on earth, the author proposes in this work that changing the gravity on organisms and their biomolecules can cause changes in chirality of the biomolecules causing various effects of space travel. The author's theory notes the thermal space and gravity space interact with quanta to frustrate the integer quanta to induce fractional fission of the quanta for inducing and activating transportations, transformations, transmutations, and thermodynamics of the quanta and recognitions between quanta. Vice versa, quanta can alter surrounding space time for the production of gravity and thermal spaces in hidden ways and momentarily QFs, electric fields, magnetic fields, and mechanical fields. Thereby by the author's theory, the altered gravity on the quanta of a system alters the frustrations of the quanta and fractional fission and fusing of the quanta to alter the transports, transformations, transmutations, and thermodynamics of the quanta of such systems for among many things altering the chiralities and recognitions in and between the systems.

Thereby biomolecules in changing gravity can change the motions, chemical reactions, nuclear reactions, and energetics of such biomolecules and their recognitions. The changing chemistry may include altered stereochemistry in the changing gravity by the hypothesis here in this article. Furthermore, the author notes the presence of quanta having nonzero nuclear magnetic moments (NMMs) heightens these effects and induces such effects under milder less energetic conditions. On such basis, the author noted astronauts in space away from earth fit this model as their transportations to outer space changes the gravity on them and the recycling of their waste of urine (enriched with ^{15}N) for water and CO_2 (enriched with ^{13}C and ^{17}O) conversions to sugars provide diets enriched in ^{13}C , ^{15}N and ^{17}O under severely altered gravity for altering the motions and isotopic enrichments in their bodies and consequent altered molecular recognitions [3]–[5]. Such changes in motion and gravity on the body of the astronauts change the biochemical reactions in their bodies and possibly induce nuclear reactions in their bodies under cosmic ray interactions. On such basis, the author has given prior considerations and explanations in his original theory of space travel as causing diseases.

2.2. *Simulated Gravity by Accelerating and Changing Accelerating Alters Chirality by NMMs*

The author further hypothesizes that simulated altered gravity during the centrifugations in biophysical technologies employing centrifugations of bacterial and fungal cultures having ingredients of sugar and urine of known high ^{13}C , ^{15}N and ^{17}O enrichments leads to altered stereochemistry and inversions about chiral centers of amino acids and sugars and nucleic acids. Sugar and urine used in many industrial fermentative processes are known to be enriched in ^{13}C , ^{15}N , and ^{17}O as these come from C4 plants [6] and from human and animal wastes. The accelerations by the centrifugations are hypothesized here to cause altered gravity to simulate either stronger gravity on different planets, say Jupiter or Saturn, and/or to simulate reduction in gravity as displacing the organisms from the surface of earth to satellite orbiting earth in free fall for such altered gravity to alter chirality and alter metabolisms.

The NMMs and nuclei are sensitive to changes in acceleration and such changes in gravity. The NMMs by releasing and absorbing Br and Dk gravities also recognize each other. On such basis, the author introduces the concept of positive and/or negative NMMs also detecting Dk gravity. The author hypothesizes here in this work that such rapid rotations to separate the bacteria, fungi and algae from the products produced in industrial fermentative processes are typically vigorous and involve many g (s) and can manifest simulated gravitational changes for changing chiralities and changing isotopic enrichments. Thereby the induced gravity in the mixture having chiral centers, unreacted nucleophiles of nonzero NMMs, and leaving groups of nonzero NMMs and solvent (water) enriched with ^{17}O and ^{18}O can due to the centrifugations induce chemical attacks by the nucleophiles on the chiral centers of amino acids, sugars, fats, and nucleotides formed by the process to alter the chirality.

2.3. *Scale-Up and Stronger Centrifugal Acceleration*

It could be that prior to this work of the author, the small-scale lab preparations by the biophysical and enzymatic processes involved simple separations. But industrial scale and human applications may involve stronger motions and certainly more massive tanks and contents to separate the microbes for sanitation purposes. The more rapid centrifugal motions of more massive samples cause greater mechanical pressures on the organic molecules above the aqueous phase for stronger simulated gravity + mechanical pressures to more strongly alter the nucleophilic attacks to change chirality. The scale-up of test tubes of materials to tanks of materials having nonzero NMMs may involve new effects due to

gravitational perturbations. The electromagnetic fields of motors for such stirring also can augment mechanical and simulated gravity forces for altering nucleophilicity and stereochemistry of the product molecules in larger-scale, heavier centrifugal industrial processes. The altered chirality of some of the product molecules (like aspartic acid and phenylalanine in forming aspartame) may explain ill health effects of (products like aspartame) as these biomolecules are often in fermentative processes produced in nonchiral environments and involve S_N1 reactions racemizations and inversions occur by the theory here. In living organisms, such reactions may occur enzymatically in the chiral environments of the biomolecules. The author has noted steric effects of proteins, nucleic acids, and complex carbohydrates steer the stereochemistry and prevent inversions even for S_N1 reactions. But in industrial processes (where single amino acids, nucleotides, lipids and/or simple sugars are produced or involved), the steric blocking in living cells is missing (and the chiral environment in living cells is also missing) as the peptides and dipeptides (like aspartic acid and phenylalanine) have more space about them for nucleophilic attacks from both sides for more possible inversions of chirality and partial or complete racemizations. So, some inversions and partial racemizations can occur more readily for peptides, dipeptides, nucleotides, and oligonucleotides produced industrially due to less crowding about reaction centers relative to macromolecular chiral environments with more crowding by folded macromolecules inside living cells.

3. PROCEDURE

RBL theory is applied to aspartame production and to thunder cloud dynamics for explaining isotopic enrichment of aspartame and ^{15}N and ^{14}N generating lightning. The application of the nuclear magnetic moments (NMMs) theory of RBL involved considering the stable isotopes of each element of the substances composing the carbohydrates, proteins, and nucleic acids and their NMMs with signs (chiralities or parities) for recognitions and enzymatics of metabolic processes. Likewise, the NMMs of the atoms, ions and molecules composing the atmospheres of Venus, Earth, Jupiter, Saturn, Uranus, and Neptune are considered by the parities (chiralities) of the NMMs for the alterations of the physical and chemical phenomena and coupling phenomena between and within planets and between Sun and planets are reasoned for possible: 1) vapor-liquid transformations and cloud formation; 2) liquid-solid transformation with cracking of ice and charging for electrification of the clouds; 3) entanglement and recognitions of charges of atoms, ions, molecules and nanoparticles of ice in the cloud; and 4) sparking or leader transients for induction of lightning strikes. The effects of chiralities (parities) of uncommon isotopes relative to the molecules of common isotopes are considered for altering the chemical, physical, and biological phenomena in both biomolecules in cells and in clouds in atmospheric cells of planets. For instance, - NMMs of ^{15}N , ^{43}Ca , ^{17}O , ^{41}K and ^{25}Mg may alter charging phenomena by biomolecules in living organisms for disease and possible death.

4. RESULTS

4.1. *New Results Here Missed by Prior Science*

Prior science has missed these effects as given here by the author (as results) on enzymatic productions of amino acid and lightning production by ^{14}N and ^{15}N and other positive and negative NMMs in Sun and planets of Earth, Jupiter, Saturn, Uranus, and Neptune. Prior science has considered nuclei immutable under these conditions. Prior science has considered the nuclei only emitting positive electric charges and possible magnetic fields from nuclear spin magnetic moments. But RBL's theory introduces the fractional fissioning and fusing of nuclei for nuclei releasing various electric, magnetic, gravitational, and quantum fields for novel dynamics and excessive amounts for nonzero NMMs.

4.2. *Quantum Matter Fisses and Incomplete Recovery*

The results are the gravitational accelerations and changing accelerations of nuclei induce fractional fissioning and fusing of nuclei as during such dynamic the nuclei cannot completely recover. As in such motions and changing motions of nuclei, the matter is going to space and space is going to matter and the rapidity may not allow complete reversibility for released fields or released matter by RBL theory. Why should nucleons with 3 interior dynamical quarks not pull in surrounding fields reversibly with release of fields to alter e^- dynamics in new ways? The fissioning quanta cannot fully recover during transportations, transformations, and transmutations. The residual fields produce results noted here. Motions in motions in motions cannot fully recover quanta during dynamics so nuclear quanta fractional seepings. The seeps of nuclei are powerful on L Frame electrons. But after RBL proposed fractional, reversible fissioning and fusing of nuclei in 2000–03, other scientists [7] realized nuclei like p^+ are

dynamical. Recently scientists determined protons undergoing dramatic changes even pulling in mass-energy equivalence of a charm particle [7]. Neutrons are known to be dynamical as they spontaneously disintegrate to e^- and p^+ outside nuclei by weak interactions. RBL proposed that neutrons inside nuclei also fission and fuse to $e^- + p^+$ and the surrounding p^+ rapidly refuse the electron [3]–[5]. RBL here notes further p^+ and n^0 undergo dynamical strong and weak forces as agitated by even tiny, macro-space (C Frame) thermal agitations. The author notes further that the magnitude of such strong and weak induced dynamics increases with the intensity of agitation for greater seeping of fields into surrounding e^- lattices about nuclei. Such fractional fission and fusion is more easily activated and stronger fields are released by nonzero NMMs. Based on such dynamics of p^+ and n^0 , RBL's fractional, reversible fission, and fusion of nucleons and nuclei are valid. In this work, it is stressed that the huge internal rotations inside quarks, nucleons, and nuclei are very sensitive to tiny, surrounding bulk rotations in C Frames by Little's Rules. Prior science has not realized nuclei are sensitive to induce internal changes by such tiny macro space motions as discovered in RBL's theory.

4.3. Details of Aspartame Production

Aspartame is made from two amino acids forming methyl ester of one of the amino acids of the dipeptide. During the current industrial processes for synthesizing aspartame, aspartic acid and phenylalanine are produced by bacterial fermentative processes. Applying excess gravity and centrifugal force is determined to alter the produced amino acids and resulting aspartame. Prior methods for forming these amino acids involved: 1) isolation from plant and/or animal sources or 2) chemical synthesis of the amino acids. The theory of RBL is applied by the irrationality of gravity acting on quanta of aspartame process with alterations of chirality by excess gravity as introduced nonzero NMMs.

Then by the RBL theory, the isotopic enriched molecules are placed in earth's gravity for different biochemistry to induce cancer. Then the altered chiral biomolecules have been placed in lesser gravity by stopping the acceleration and rotations during centrifugations. The $+/-$ NMMs are affected more by reduced gravity than the isotopes of zero NMMs in the biomolecules before centrifugations. The centrifugations may enrich and clump heavier isotopes and consequent heavier isotopes in rotations may alter chiralities. There are 20 natural amino acids. Amino acids are composed of three groups: amino group, carboxyl group, and side chain group. The 20 amino acids differ by having different side chains. Amino Acids are composed of proteins in biomolecules and different patterns of the amino acids for different patterns of the side chains manifest different molecular configurations (isomers). Isomers of peptides and proteins are chiral of two types designated L and D. The L isomers of aspartic acid and L isomers of phenylalanine when combined and the phenylalanine is modified to methyl ester the resulting modified dipeptide has sweet taste. The method of applying excess gravity and acceleration by the author's theory can change these isomers $D \leftrightarrow L$ and/or $L \leftrightarrow D$. Aspartic acid has a polar side chain and phenylalanine has a nonpolar side chain.

4.4. Glatumicum and B. Flavum Produce Phenylalanine and Aspartic Acid

The fermentative synthesis of aspartame involves forming phenylalanine in a bioreactor having C Glatumicum and aspartic acid in a bioreactor having B. Flavum. (In such bio-industrial fermentative processes, changes in quantum fields occur due to motional changes for changes in nuclear fields in motions and seeping of fields from nuclei by Little Rule. The seeped fields involve quantum gravitational interactions between atoms, ions, and molecules by hidden twisting and bending irrational fields within the species and of species even in bigger background gravities and macromotions. The seep induced dynamics and hidden activation states alter the biochemistry, ionic, atomic and molecular recognitions and chiralities.)

The bacterial cultures in these reactors are established by growing the bacteria in nutrients for initial inoculation for multiplication of the bacterial population. The results here of applying the excessive gravity (G) and accelerations during centrifugations and/or decelerations on earth or taking such systems to outer space for even lesser gravity and effective decelerations alter the bacteria metabolisms to produce altered isomers of the $L \leftrightarrow D$ and partially racemic mixtures. The recycling of bacteria in industrial processes over time and the mutations in bacteria induced by repeated centrifugations of genes from parent to off springs of microbes repeatedly used in such processes alter the products over time. The exposures of the microbes and biomolecules to centrifugations with repeated separations by centrifugations genetically alter the bacteria, fungi, and other microbes with alterations of their DNA and RNA proteins and amino acids and produces aspartame for disease.

Upon sufficient population, the culture is added to a seed tank to provide an environment for the growth of the bacteria. This growth environment includes warm water, carbohydrates (molasses, glucose, or sucrose), acetic acid, alcohols, ammonia, and urea. Applying the procedure of RBL here

results in greater sensitivity to centrifugations of bacteria as they are fed human and animal wastes (urine) with excess ^{13}C , ^{15}N , and ^{17}O . The heavier isotopes are induced to replace lighter isotopes in biomolecules. So, the heavier isotopes cause greater sensitivity to centrifugations and altered chiralities. Also in these fermentative processes, infections of the tanks by other organisms and foreign microbes lead to altered chiralities of products. Vitamins, amino acids and other nutrients are included in the seed tank. The seed tank is mixed and aerated by a pump.

4.5. *Multiplication of Bacteria in Fermentative Processes and Possible Genetic Alterations*

After sufficient population, the culture from the feed tank is added to a fermentation tank. The fermentative tank has similar environment as the seed tank for inducing further growth and multiplication of the bacteria. In the fermentative tank, the bacteria are induced to produce amino acids with ammonia and water used to control the pH. Upon sufficient amino acid production, the content of the fermentative tank is dumped into separation vessels for centrifugal separation. (The electric (E) and magnetic (B) fields involved in these processes act to induce nuclei for seeping Q fields from nuclei). The centrifugal motions isolate the bacteria from the amino acids produced. Applying the procedure of RBL in this work leads to altered D and L isomers and isotopic compositions of amino acids and bacteria by such centrifugations. The desired amino acids are then separated and purified in an ion exchange column. The amino acids are then crystallized in a crystallizing vessel.

4.6. *Synthesis of Aspartame (Dipeptide) from Phenylalanine and Aspartic Acid*

The amino acids from the fermentative process are then used to synthesize aspartame. Methanol is combined with phenylalanine to form the L-phenyl alanine methyl ester. During the process of forming the phenylalanine methyl ester, the aspartic acid part is protected by a substance that adds a benzyl ring to protect the aspartic acid sites. The benzyl ring induces more NMM effects. The greater NMM effects due to benzyl ring result as nucleotides have more NMM effects than bare amino acids. The phenyl group also increases the mass of the dipeptide. So, the dipeptide is re-exposed to heavier leaving groups during separation for reforming the reactants from the products with entering group by attack from the opposite side. Nucleotides have more ring structures and greater NMM effects to the author's theory. The amino acids are then added to a reactor tank where they are heated to $65\text{ }^\circ\text{C}$ and maintained for 24 hours. The reactor is cooled to room temperature and diluted with solvent and then cooled to $-18\text{ }^\circ\text{C}$ decreasing temperatures for crystallization of the dipeptide. This intermediate to aspartame is then added to a large tank where palladium catalysts and hydrogen are added to the aspartame intermediate to react it with acetic acid to form the aspartame from the intermediate by catalytic effects of the palladium. Filtration is used to remove the palladium after 12 hours. Palladium has negative NMMs. By the author's theory such negative NMMs of palladium isotopes alter NMM enrichments of aspartame produced. The filtrate is then distilled to remove the solvent to then crystallize the aspartame. Recently scientists demonstrated magnetic fields can cause chiral separation during such physical processes as chiral separation [8]. Weak magnetic fields in this process can cause changes in chiralities. The author notes the gravitational alterations, accelerations and changing accelerations cause stronger effects than the magnetic fields.

4.7. *Feeding ^{13}C , ^{15}N , ^{17}O and ^{18}O Enriched Waste to Microbes in Industrial Fermentative Process for Enhanced Chiral Inversion*

Applying RBL theory to this process leads to the centrifugations altering the chiralities of some of the products. The use of urea further gives environment for altered chiralities as the urea may come from animal and human sources and the N of such sources is known to be enriched with ^{15}N relative to ^{14}N [9]. The catalytic action of palladium and its negative NMMs may also contribute altered chirality of some of the products. Crystallization is known to be affected by magnetic field so different magnetic noise can selectively crystallize on enantiomer. The result of applying RBL's theory can result in the aspartame product having some D isomer rather than pure L isomer. The ingestion of a trace amount of D isomer impurity from the process may have ill effects on consumer over long time periods.

4.8. *Isotopically Altered DNA, RNA, and Protein Replications, Transcriptions and Translations*

Such phenomena are related to the author previously noting in his book [4] that ^{15}N , ^{13}C , ^{17}O , and ^{18}O replacements in DNA and RNA alter the translations of proteins for altering patterns of amino acids in proteins [4]. Animal and human wastes are also known to be enriched with ^{13}C , ^{15}N , ^{17}O , and ^{18}O in the biomolecules [9]. The author notes that many bacteria, molds, fungi, protists [10], [11], and alga are enriched with ^{13}C , ^{15}N , ^{17}O , and ^{18}O readily and give ^{13}C , ^{15}N , ^{17}O , and ^{18}O enriched biomolecules like amino acids that they produce to surrounding hosts even to mammals, plants, and humans. Such is consistent with RBL book [4] where he discovered and disclosed ^{13}C , ^{15}N , ^{17}O , and ^{18}O enrichments in DNA and RNA for altering protein translations [4]. The observed enrichments of

protists with ^{13}C and ^{15}N [10], [11] are consistent with RBL previously proposed theory of the ability to alter RNA translation of proteins [4]. As protists are common in ponds, lakes, and ocean blooms, the water has a lot of ^{17}O and ^{18}O for enrichments of the protists' proteins, DNA and RNA with ^{17}O and ^{18}O to induce $-$ NMMs and $+$ NMMs, respectively, and to alter biomolecular properties. The prior theory in the author's book [4] of ^{13}C , ^{15}N , ^{17}O , and ^{18}O stable isotopes altering DNA and RNA for altering protein translations is proven by recent experiments with protists, where scientists observed protists altering amino acid translations of proteins by RNA [12].

4.9. Explaining Protists Divergent Genetics by ^{18}O Enrichment for Misreading G and T and Misreading A and C

In September 2023, scientists reported the alterations of protein translations by protists, *Oligohymenophorea* sp. PL0344 [12]. The *Oligohymenophorea* sp. PL0344 is a ciliate. The scientists noted that this ciliate altered its translations of lysine and glutamic acid and STOPS during protein translations by the RNA and DNA. Such genetic diversity of *Oligohymenophorea* sp. PL0344 can be explained here by RBL theory as by clumping of ^{18}O : $\text{T (or U)} \leftrightarrow \text{T}^{**}(\text{or U}^{**})$; in $\text{C} \leftrightarrow \text{C}^*$; and in $\text{G} \leftrightarrow \text{G}^*$ nucleotides. By RBL's theory, the resulting ^{18}O : enriched nucleotides (T^{**} , U^{**} , C^* , and G^*) misread for A nucleotide as: T^{**} (or U^{**}) \approx A; $\text{C}^* \approx$ A and $\text{G}^* \approx$ A. The ** on T^{**} and U^{**} denotes replacing both ^{16}O in T and U by ^{18}O for T^{**} and U^{**} . The * on G^* and C^* denotes replacing the one ^{16}O in C and G by one ^{18}O to form C^* and G^* . So by RBL's theory, the ^{18}O with its induced positive nuclear magnetic moments (NMMs) enriched in T^{**} (or U^{**}), C^* and G^* causes the T^{**} (or U^{**}), C^* and G^* to have the same number of positive NMMs (like for ^{14}N) in the common, normal nucleosides (A, T, G, C, and U) A, of DNA and RNA.

By RBL's theory, the $\text{T (or U)} \leftrightarrow \text{T}^{**}$ (or U^{**}) by enrichment with two ^{18}O occurs with less activation due to T and U having two O atoms in their pyrimidine ring structures. By RBL's theory, the $\text{C} \leftrightarrow \text{C}^*$ and $\text{G} \leftrightarrow \text{G}^*$ enrichments with one ^{18}O occur with more needed activation due to the G and C having only one O in their pyrimidine ring structures. For the ciliates, the two ^{18}O replacements for extra ^{18}O enrichment in the T and U for T^{**} and U^{**} are thereby more prevalent than enrichments of one ^{18}O in G and C for G^* and C^* . By the RBL's theory as presented here, the modified T^{**} and U^{**} cause the misreadings of STOPS (TAA and TAG); so the ^{18}O : enriched T^{**} and U^{**} cause (T^{**}AA) and (T^{**}AG) codons in the ciliates to read as (AAA) for coding lysine and AAG for reading glutamic acid (respectively) in the ciliates. In the ciliates, the T^{**} or U^{**} have the same hydrogen bonding patterns as A in normal DNA and RNA to support the misreading by structural stability in the DNA and RNA. By RBL theory for the ciliates, the enrichment of one ^{18}O in G for G^* causes the misreading of the STOPS (TAA and TAG); so the ^{18}O enriched G^* causes (TAG^*) to become (TAA) to read (TAG^*) as lysine. For such mutation of G by ^{18}O , by RBL theory, the ^{18}O enriched G^* has the same hydrogen bonding pattern as A in normal DNA and RNA to support the misreading by structural stability in the DNA and RNA. Therefore by RBL's theory, the ciliates' RNA, DNA, proteins and amino acid pools during replications, transcriptions and translations can hydrogen bond and read G^* as A and read CT^{**} (or U^{**}) as A.

RBL has previously proposed [4], [13] that the proteins select nucleotides for DNA replications by specific proteins by their number of NMMs nonlocally with entanglements interacting to read and hydrogen bond specific oligonucleotides and nucleotides by their number of NMMs as the recognitions involve hidden gravitationally (accelerative) induced fractional, reversible fission and fusing of the NMMs for perceiving targets and sourcing molecules at large distances by RBL's model. Such recognition is by gravitational interactions between the molecules by characteristic fractional twisting motions (such is the relevance of homochirality in living organisms for healthy life) by specific helicities by patterns of NMMs of centers and functional groups. And RBL noted [4], [13] that RNA is translated by protein enzymes by nonlocally interacting and entangling for hydrogen bonding and reading sections of DNA by NMM patterns and selective nucleotides by NMM patterns for RNA constructions for transcriptions.

Such reading of nucleotides for RNA transcription also involves gravitational, fractional twisting by specific twist, chirality and helicity about chiral centers between functional groups in the interacting biomolecules. Such twisting in gravitational dynamics is the reason proteins have twisted structures in regions like alpha helices as follows from RBL theory. RBL further noted [4], [13] amino acids by their patterns of NMMs are selected for translations by favorable nonlocally interactions by entanglements with patterns of NMMs of oligonucleotides of RNA. Such interactions of nucleotides with amino acids to translate proteins also occur by gravitational twist for specific recognitions to identify specific amino acids by specific nucleotide triplons. Thereby here RBL notes that protists have been measured to possess enrichment of ^2D , ^{13}C , ^{15}N , ^{17}O , ^{18}O , and other stable isotopes in their biomolecules [10], [11].

Thereby RBL notes in this work that enrichment of ^{18}O with its induced +NMM in T (or U) and G nucleotides for T** (or U**) and G* can cause T** (or U**) and G* to appear as A by the same number of +NMMs along their pyrimidine portions of nucleosides for comparable hydrogen bondings of T** (or U**) and A and G* and A. Thereby RBL's theory, the same number of positive NMMs along the pyrimidine portions of nucleosides for comparable hydrogen bonding of G* and T** (or U**) affects DNA replications RNA transcription, and protein translation by causing misreadings of G* and T** (or U**) for A. Prior papers by Little's Theory [4] and Little and Uziel [13] measure $\text{C} \leftrightarrow \text{A}$, $\text{T} \leftrightarrow \text{A}$, and $\text{T} \leftrightarrow \text{G}$ by isotopic enrichments and functionalizations. In 2023, this genetic diversity observed in protists *Oligohymenophorea* sp. PL0344 [12] is explained by Little's theory [4] and Little and Uziel's data [13].

5. DISCUSSION

5.1. Gravitational and NMM Theory of Little for Altering Chemical Reactions

The author has discovered and invented the alterations of chemical reactions by gravity and stronger fields coupling gravity to electric and magnetic fields by Little's Rules. Subsequently, scientists have computed intense gravity producing light [14] in support of Little's theory. (Just as results here show simulated zero gravity in bacterial, fermentative experiments in space). The author [4], [5] has applied his theory to explain data from NASA and the effects of zero gravity on humans and other living materials. On such a basis, the author proposed the alteration of biochemistry as organisms are displaced from the gravity at the earth's surface into free fall and zero gravity as satellites aboard the experimental laboratories on the International Space Station.

5.2. Accelerative Equivalence of Gravity for Altered Chemistry

Due to the difficulty and expense of transporting samples to the International Space Station, scientists have attempted to simulate zero gravity by free fall in aircraft in earth's atmosphere [15]. Scientists have also attempted to simulate gravity by rotations in centrifuges [16]. The author has proposed altered gravity in free fall for killing cancer cells as during parachuting [4]. The author has proposed that centrifuging release biomolecules when biochemists extract proteins and nucleic acids from cells during centrifugations [17]. The author further proposed and applies here his prior discovery and results here of centrifugations altering isotopic enrichments and the author reasons such centrifugations altering the productions of L amino acids during bio-fermentative productions of amino acids by bacteria, alga, protists, mold, and fungal cultures in massive industrial processes. The author here demonstrates the identical phenomena of chiral modifications experienced by organisms in space and satellite of the International Space Stations by zero gravity and altered gravity of bacterial and fungal cultures in centrifuges of industrial fermentative amino acid reactors by simulated zero gravity and/or excessive gravity. Scientists have observed altered biochemistry aboard International Space Station [18], in this work the direct effects of zero gravity and accelerations on chirality and biochemical reactions are given by the author to explain such effects of zero gravity.

5.3. Excessive and Reduced Gravity and Changing Accelerations Couple More Strongly to NMMs to Cause Cancer and Disease in Organisms and to Kill Cancer Cells

Excessive gravity couples to nonzero NMMs more strongly for altered nucleophilic attacks to alter chirality for causing cancer. The author proposed altered biochemistry by reducing terrestrial gravity may cause greater harm to cancer cells by greater altered biochemistry by nonzero NMMs in cancer cells by heavier isotopes relative to lesser altered biochemistry in normal cells having common less massive isotopes mostly of 0 NMMs [1]–[3]. The author further notes motional, collisional, and thermal gravitational irrationality inducing NMMs in elements of even atomic numbers and mass numbers. As in ^{18}O the thermal and gravitational irrationality by the author's theory induces n^0 in ^{18}O to transmute reversibly to p^+ and e^- for momentarily nucleus of O^* having $9p^+ + 9n^0 + e^-$. As $9p^+$ NMMs of dominate $-NMM$ of $9n^0$ due to net charge of proton by RBL theory; so the O^* is reasoned to have transient +NMM with accelerating e^- inside the nucleus with consequent altered recognition of ^{18}O relative to ^{16}O ; ^{18}O may be transiently recognized as ^{14}N or ^{19}F for altered chemistry and biochemistry.

Scientists reason strong force increases in power as quarks pull apart. But RBL considers nucleon—nucleon interactions to counter the huge strong force inside the two nucleons. RBL further notes the proton and neutron in gravity and thermal space can be induced in changing motions to flip some pieces of the proton and neutrons as the interior of the nucleons then act internally in contrary ways to sustain fractional fission. But eventually further perturbations induce nucleons to refuse by RBL's theory. But externally it is hard to pull p^+ and n^0 apart. But the irrationality and motions can cause

inside the nuclei to alter to counter refusing by nucleon — nucleon interactions to prolong fission and ease fission by RBL's theory. Also, the weak interaction is an alteration of internal interactions so as to flip the inside to alter protons and neutrons during reverse beta. External rotational motions like during centrifugations alter the fractional reversible breaking of nucleons. Thereby ^{18}O is predicted to have collisional, thermal, accelerative and gravitational induced +NMMs for explaining novel chemical, physical and biological phenomena.

RBL here notes not only do collisions, thermal, accelerative and gravity induce nonzero NMMs in nuclei of even atomic numbers and/or mass numbers. But collisions, accelerative, thermal and gravity, and strong interactions also alter NMMs in nuclei of odd mass numbers and atomic numbers. The NMMs are not static by RBL's theory. The quarks and nucleons intrinsically rotate. The rotations intrinsically result from thermal space agitation and the release and reabsorption of the torqued space in irrationality.

RBL's theory determines macroscopic rotations produce great effects on these huge internal rotations inside nuclei and the nuclei themselves and inside nucleons and the quark motions by Little's Rules 1, 2 and 3 for transiently, reversibly fractionally fissioning the nucleons and nuclei for hidden fields and energy release. The knotting due to the denseness and the sensitivity so pulling apart accelerates more for more binding. But if flip some Dk to Br and Br to Dk then the fractional fissioning is stabilize over longer times with finite size preventing black hole from collapsing. The author proposed intrinsic isotopic enrichments in cancer cells of ^2D , ^{13}C , ^{15}N , ^{17}O , ^{18}O , ^{25}Mg and ^{33}S may cause greater sensitivity to altered gravity relative to isotopes having zero NMMs so that increased gravity and pressure helps cancer cells like in tumors and decreases gravity like in space kills cancer cells.

5.4. RBL's Theory of Thermal and Gravitational Spaces Interacting with Quanta and Vice Versa

The author proposed thermal space is superluminous, infinitesimal, irrational numbers and thermal spaces integrate to gravitational irrationalities of superluminous integer + fractional irrationalities. The author reasoned matter is space; and space is matter. More details of RBL's mechanism are given here. By such irrationalities acting on integer quanta of electric (E) and magnetic (B) fields (and quanta of particles) to reversibly, fractionally fission the integer quanta E and B fields (and particle quanta). The E and B fields by the author's theory compound to form leptons of e^- or e^+ and quarks for hadrons and nuclei. The author proposed the e^- , e^+ and quarks compound to nucleons, nuclei, atoms, and atoms in compounds of molecules and formula units. Gravity (G) affects nuclei; and G affects nonzero NMMs more than zero NMMs. Thereby atoms, ions and molecules having nonzero NMMs more easily and strongly recognize each other over longer distances and for shorter times.

Nonzero NMMs have denser rationalities to couple with irrational G and reversibly fractionally fission greater rational fields to electronic lattices and surroundings of atoms and molecules to alter their dynamics. So changing G changes zero NMMs to nonzero NMMs by isotopic replacements and enrichments. The gravity and thermal spaces can also transiently transmute the zero NMMs to induce momentary nonzero NMMs in zero NMMs for transiently altering the electronic shells of atoms having zero NMMs. For instance, ^{18}O requires more intense higher energies and fields to induce its + NMM relative to the existing negative NMM in ^{17}O . The nonzero NMMs may manifest smaller inertia at lower activations relative to zero NMMs. Zero NMMs have more inertia and manifest mass.

On such basis of author's theory ^{18}O may behave as ^{14}N and ^{15}N may behave as ^{16}O as the induced positive NMM in ^{18}O reduces the nuclear charge transiently pulling electrons for it to behave as ^{14}N and the negative NMM in ^{15}N causes it to pull electrons more for it to transiently draw electrons like ^{16}O .

Then placing biomolecules and microbes in $G = G_{\text{max}} \leftrightarrow G = G_{\text{earth}}$ alters their dynamics and metabolisms by turning off centrifuge and observing altered biochemistry after centrifuging due to isotopic replacements. The altered gravity during centrifuging enriches the biomolecules with heavier isotopes of nonzero NMMs thereby making them more sensitive to change in gravity relative to the prior molecules having common isotopes of zero NMMs or + NMMs of ^{14}N , ^{31}P , and ^1H (causing the primordial dynamics). By RBL theory the nuclei with nonzero NMMs should have more dynamical motions for transiently altered interactions with surrounding electrons, less inertia and less dissipations of their motions altered chemical dynamics and altered nuclear transmutations.

On such basis, RBL theory determines ^{15}N may transiently act as ^{16}O and ^{18}O may transiently act as ^{14}N due to accelerative, gravitational, thermal and/or strong field perturbations for novel chemical and physical effects as in recognitions and enzymatics. On such basis, RBL theory reasons ^{15}N counters cancer as ^{15}N counters effects of ^{18}O for causing cancer by ^{18}O induced mutations in DNA and RNA. The ^{15}N binds ^{18}O in detrimental ways to the cancer. RBL reasons cancer cells lose permeation of ^{15}N across cell membranes due to altered K^+ , via depletion of $^{41}\text{K}^+$ with its negative NMM in cancer cells and their opposing ^{14}N transport across cell membranes for ^{15}N depletion in cancer cells relative to normal cells for proclivity to cancer.

It is known that cancer cells are depleted in ^{41}K and such depletion of ^{41}K is associated here with a corresponding ^{15}N depletions due to mutations in cancer cells that induce genes expressing protein AMT/Mep/Rhs which excludes $^{15}\text{NH}^+$ and here the author notes AMT/Mep/Rhs also excludes $^{41}\text{K}^+$ ion also for reason cancer cells mutate so they deplete both ^{15}N and ^{41}K (both having negative NMMs, but induced negative NMM for $^{41}\text{K}^+$) relative to normal cells. It seems that the cells are more tolerant of ^{18}O for life due to its transient + NMM but ^{18}O causes an inefficiency in metabolism for cancer and its properties in ways (such as accelerated glycolysis, suppressed Krebs cycle, altered DNA replications, altered RNA transcriptions and altered protein translations) that are not as life or death of the cells but a modification of the cells and its metabolic efficiency to distinguish cancer cells from normal cells.

By RBL's theory it is proposed that ^{18}O causes cancer by causing such as accelerated glycolysis, suppressed Krebs cycle, altered DNA replications, altered RNA transcriptions and altered protein translations by altering hydrogen bonding strength and dynamics, interactions and recognitions, and altering nucleophilic substitution reactions involving biomolecules associated with these metabolic processes. But it seems ^{15}N in specific bonds are not as tolerant as ^{18}O due to ^{15}N 's permanent negative NMM compared to ^{14}N and its positive NMM. So the fast metabolism of cancer causes cancer cells to quickly involve ^{15}N and cancer cells to be more subject to deadly effects of ^{15}N compared to normal cells. On the basis of RBL theory, it is reasoned that ^{15}N and ^{17}O may treat or cure cancer on the basis of ^{15}N and ^{17}O altering hydrogen bonding, interactions and recognitions and nucleophilic substitution reactions of these biomolecules having the ^{18}O causing cancer.

Thereby the acceleration and altered gravity may increase ^{13}C and ^{18}O enrichments in the biomolecules by the microbes in centrifugal motions and the ^{13}C and ^{18}O in biomolecules may increase humans by ingesting these biomolecules and the cancer is induced. But then if humans are taken to outer space, then the gravity is reduced even more for those with heavier isotopes to alter properties even more with greater effects on cancer, which by RBL theory has more nonzero NMMs. So, cancer is altered by zero gravity more than the normal cells as the cancer cells have a greater change in dynamics due to their dynamics involving nonzero NMMs. But RBL notes that in altered gravity whether excess gravity or reduced (zero) gravity, atoms of zero NMMs can be strongly and intensely activated at high temperatures and/or strong fields. So NMMs are induced in the nuclei for altered chemistry. Lightning is an example considered next.

5.5. Gravity Induced Fractional Fiss and Fuse of Heavier and Lighter Nuclei for Different Effects for Varying Intensity Gravity

The author reasoned that just as gravity in its irrationality causes E and B fields to fractionally, reversibly fiss and fuse, so also the author proposed gravity causes the $e^- e^+$, atoms, quarks, nuclei, atoms, and compounds to fractionally, reversibly fiss and fuse. Thereby thermal space and gravity acting on objects cause the atoms of the objects to fractionally, reversibly fiss and fuse. Fissing and fusing are used to explain phenomena of transportations, transformations, long range recognitions and transmutations of matter as the atoms reversibly transform to space as induced by gravity and thermal spaces. How are fractional fissing and fusing involved with dynamics in general? Thereby irrational gravity and thermal spaces couple more strongly to quarks, nucleons, and nuclei than $e^- e^+$ due to greater denser masses of quarks by Little's Rules. Thereby the nuclei with non-zero NMMs would be more easily activated than the nuclei of zero NMMs and nuclei of nonzero NMMs would also release more net B, E, G and quarks fields to surroundings than null NMMs as thermal spaces and gravity spaces may intensify, induce and agitate their reversible, fractional fissing and fusing during transportations, transformations, recognitions and transmutations and energetics. The author thereby introduces motional induced isotopic fractionations.

Nuclei with nonzero NMMs fiss to released greater QF, B, and E fields than those with zero NMMs. But nuclei of zero NMMs if energized and forced more intensely can be relativistically altered to release NMMs and alter their NMMs. Nuclei with zero NMMs, fractionally fiss and fuse to release more balanced fields of + and - electric fields E and N and S magnetic fields. On such basis the heavier, isotopically, enriched atoms in compounds like amino acids, carbohydrates, nucleic acids, and lipids composing living matter (organisms) by the author's theory will release more intense QF, B, and E fields as induced by fractional, reversible fissing and fusing.

Such greater released fields more alter quanta fields in biomolecules as proposed by the author to alter the biochemistry of cells having these heavier isotopic enriched biomolecules. Such phenomena release more intense fields from nuclei to more alter molecules to disrupt cancer in space to release molecules in microbes to cause cancer in humans. The heavier molecules in humans in altered gravity alter metabolisms. But heavier molecules as in cancer are more altered in their dynamics in space due to the cancer having heavier molecules relative to normal cells having lighter molecules and less released nuclear fields for altering their dynamics. Such altered biochemistry is proposed by the author to cause disease in zero gravity and furthermore to harm cancer cells in more detrimental ways than normal cells in reduced gravity of space or accelerating motions.

5.6. *Centrifugal Microbial Isotopic Enrichment and Altered Stereochemistry of Aspartame for Cancer and Zero Gravity Killing Cancer*

So, the author reasons that the D-aspartame (caused by heavier isotopes from centrifugation) is eaten by humans; and the humans are not in motion like microbes in centrifuges and the human metabolism is altered due to heavy isotopic enrichments with nonzero nuclear magnetic moments (NMMs) in the bacterial produced aspartame to cause cancer in humans by the heavy molecules in the aspartame. But then changing gravity (by taking into outer space) then kills the cancer cells more due to the heavier (nonzero NMMs) isotopes of either different NMMs and/or nonzero NMMs in the cancer and more sensitive of the heavier isotopes to the change in gravity for killing cancer faster than killing normal cells. Then so it is that gravity caused the heaviness (and nonzero NMMs) causing the cancer then the change in gravity or zero gravity more affects the heavier (and nonzero NMMs) molecules in cancer than lighter molecules in normal cells. So it is that the changing motions caused cancer by increasing gravity. Then to remove the gravity the cancer is more affected as the molecules are heavier (with different and nonzero NMMs). The chemistry is here noted to be nanoscale and of greater gravity and more collective interactions and dynamics via the nonzero-NMMs. Organic chemistry is atomic and weaker gravity and less collective dynamics.

5.7. *Thermal Space, Gravity Space and Collisions and Motions Alter Exchange and Correlations from Macro to Nano to Atomic to Nuclear Sizes*

Why does gravity couple (C Frame) more to interior nuclei and leptons (RS, NS, and LS Frames) than to quantum orbitals (of L Frame)? The C Frame macro-motions have interior motions of L Frames and RS, NS, and LS Frames. The author already published energetically why gravity and thermal spaces cannot as effectively energetically couple directly to L Frames, but they can energetically couple to RS, NS, and LS Frames by Little Rules 1 and 3 [1]–[3]. But now indirectly, the author noted that the C Frame can energetically couple to L Frames by coupling to RS, NS, and LS Frames, and the fractional fissioning and fusing of RS, NS, and LS Frames energetically affect the intervening L Frames for driving biochemical reactions and causing recognitions between biomolecules even in background of huge planetary gravity fields. (Here it is discussed why NMMs and nuclei cause stronger gravity and affects of gravity on target objects.) But here the author notes further in terms of momenta rather than energies in the macro-outer (C Frame), intermediary quanta (L Frames), and inner quark/hadron (RS and NS Frames). The C Frame momenta are affected more strongly by electron spins (LS Frames) than the electron orbitals (L Frames) affect C Frame. The coupling to C Frame also increases with the number of electrons.

Such phenomena were already disclosed by the author already published in 2022 [19] as the change in numbers from 1 to 2 molecules to moles to macro numbers of molecules involve change (increasing) in surface to volume of spins. The surface to volume of motions (momenta) in C Frame and its component spins in LS Frames have more internal motions (momenta) in C frame due to the greater number of internal spins (in microvolume relative to nano-volumes and atomic volumes). Thereby the spins unpair in exchanges and correlations in macroscopic C Frames and exhibit ferromagnetism with more stabilizing rapid C Frame motions (momenta) as the many internal motions (momenta) by exchanges (superexchanges) and correlations (supercorrelations) can cancel each other by exchange so the backward internal motions (momenta) are not opposing the macro-motions as much.

Here the author determines altered electron and fermion exchange and correlations from atomic to nano to macro systems in motions, accelerations and gravity. The changing exchanges and entanglements with size can redistribute isotopes in bond specific ways. But as the size is reduced to nano-motions (nano-momenta) the number of internal spins diminish so the compensations of macro motions and gravito-accelerations are lost so the spins can flip by exchanges and correlations to diamagnetism to pair to stabilize the bulk motions of nano systems and sub-nanosystems (momenta) as size reduces from macro-meter to nanometer and to even smaller sizes of atoms, nuclei, nucleons, quarks and electrons. Thereby the author in this work proposes that nano to macro size objects polarize electrons and fermions as they move faster and faster for ferromagnetism. And the author proposes forming smaller objects from nano size to molecular to atomic to nuclear to quarks unpolarize or pair their spins and fermions as they move faster and faster for diamagnetism. Such motional and gravitational effects and agitations lead by the author's theory to new bases for interactions between functional groups in biochemistry by the gravities and acceleration of the functional group for new bases for molecular recognition gravitationally even in huge background gravity of say a planet.

So the orbitals in sub-macroscopic sizes do not couple as strongly to C Frame motions (momenta). And the electron fissionings do not as much help the electronic orbitals to couple to the C Frame as the masses are too tiny of the electrons and the energies produced by fissioning electrons. But many electrons may increase the effective mass for fissioning of many electrons for noticeable effects of electrons of L Frames for affecting C Frames by bending the light rays for explaining refractions (by Little's Rules

1 and 3) as light traverses different materials by wave natures of electrons as electrons fission and fuse to waves by quantum fluctuations. But during absorptions of spaces or photons the waves fuse to electrons (few electrons are involved) so the spaces are decoupled from the electron spins by the electrons being particles and the fusing takes in energy so the coupling cannot occur by Little's Rules 1 and 2. So absorption and emission are decoupling and removing energy as quanta of electrons from and to space by Little's Rules 1, 2 and 3. So, for purely electronic phenomena, the spins do not as well couple to the spaces except at limit of speed by photons and electromagnetic waves. But the photons change the electrons' orbitals in this way as the C Frame couples with fissioned electrons or electron waves, so the C Frames alter the orbital. But the orbitals are in one way so motions can cause the electrons to fission and alter the orbitals in two ways as the spins can reinforce the orbitals or oppose the orbitals. The spins fissioned by C Frame perturbations that reinforce the orbitals are the favored. It is on such basis that magnetic and gravitational fields can cause homochirality by coupling to electron spins; so, spins alter orbitals unsymmetrically. But the magnetic field is a more local effect. The gravity is more global and the gravity would amplify homochirality as it is global and acts on many electron spins (assuming zero NMMs of nuclei of these electrons) at once by Little's Rules 1 and 3 by wave nature of electrons. But the non-zero NMMs can allow gravity to act locally and even for weaker gravity fields act locally to alter momenta and alter chiralities. But the magnetic field acts on fewer electrons (assuming zero NMMs of nuclei having these electrons) but involving higher spin densities of higher spin energies of the fewer electrons for altering the electrons by weaker gravity. Nuclei with nonzero NMMs may act under weaker magnetic fields. So, this is why RB Little is correct and Naaman is not correct by magnetism causing homochirality. But Little's gravity is global but weak. But next RBL notes how his gravity is amplified by NMMs!

5.8. From Leptons to Quarks for More Mass and More Fissioning

But the nucleons, nuclei and quarks (RS and NS Frames) are denser than leptons (e^- and e^+) so by Little's Rules these heavier leptons and quarks can fission to couple more strongly to C Frame. This is how gravity is amplified. Whereas gravity cannot as easily couple to L Frames and electron spins as well, gravity by Little's Rules couples more strongly to RS and NS Frames due to greater energy densities and momenta of such nucleon and nuclear frames. Due to differences in masses and interior charges and charge motions, lighter elements couple to gravity in a different and more stronger way than heavier elements. Such follows as the core electrons in heavier atoms shield nuclei from perturbing gravity and lower fissioning and fusing of their nuclei. For instance, comparing ^{16}O , ^{17}O , and ^{18}O , the ^{16}O and ^{18}O have null (zero) NMMs but the heavier ^{18}O couple to gravity and accelerations by fissioning its nucleons in its nucleus to form $^{18}\text{O}^*$ with $9p^+$ and $9n^0$ and e^- and the $9p^+$ dominate the $9n^0$ to manifest induced net positive NMMs. The RF selective rotations of ^{18}O may selectively induce positive NMMs to kill cancer as cancer maybe enriched with ^{18}O . The gravity acts thereby by internally on NS and RS Frames to perturb nuclear magnetic moments (NMMs) to release NMMs into L Frames for C Frame to indirectly affect L Frames and quantum mechanics via denser RS and NS Frames. (Nuclei are heavier and compounded of both Br and Dk. Hadrons differ from leptons as hadrons have both Br and Dk. Hadrons differ from leptons as hadrons have both Br and Dk. Protons have excess Br. Neutrons have excess Dk. The mystery of Dk is in the neutrons. Negative (-) NMMs are ways to counter entropy and energy crisis!) This is how RBL's theory determines that gravity is intensified in force by nonzero NMMs and even 0 (null) NMMs under more energetic conditions with stronger fields. On such basis, gravity via NMMs manifests amplification over larger spaces for causing homo-chirality. On the basis of NMMs, RBL couples gravity to magnetic as nonzero NMMs gravities transduce magnetism to denser gravities and vice versa. Furthermore, nuclei and nucleons can have positive and negative clockwise and counterclockwise chiralities. Thereby gravity can if negative NMMs are present cause counter orbitals of electrons for serious transportational, transformational and transmutational, and thermodynamic effects.

Thereby the changing surface to volume from macro to atomic sizes causes increased surface to volume for the nuclei and nucleons to experience thermal spaces and gravity spaces to fractionally fission and fuse so that the nuclei and nucleon spins and orbitals can alter orbitals as objects move and accelerate in C Frame at higher velocities (such alterations release fields and is basis for molecular recognition). The nucleons can polarize orbitally to compensate the macro-motions and accelerations and gravitational waves for Little Effect. The author proposes here Dk and Br NMMs may be a basis for detecting Dk gravity, Dk waves and Dk particles. And vice versa, macro-motions can alter orbital polarities and nuclear magnetic moments. The nucleons can flip spins to compensate for the macro motions for Little Effect. And vice versa, the macromotions can flip nuclear spins. The nuclei and nucleons can manifest relativistic mass-energy conversions for enhancing the motions and fields from fissioned nuclei both clockwise and counterclockwise patterns.

So, by such, the ^1H , ^{14}N , and ^{31}P are more common and positive NMMs and composing proteins and nucleic acids and may explain the D chirality of nucleotides and the L chirality of proteins. Gravity on earth is bright, so by author's theory, gravity twists chirality in one direction for homochirality in life on earth. The author here proposes chiral molecules with positive and negative NMMs may be a basis for detecting Dk energy and Dk particles. But the uncommon isotopes of ^{15}N and ^{17}O can act to locally alter the Br gravity for twisting and the homochirality as ^{15}N and ^{17}O have negative NMMs of induced opposite chirality to the positive NMMs of ^1H , ^{14}N and ^{31}P . The author notes gravitational effects on chirality may manifest more strongly in molecules having heavier nuclei and nuclei of nonzero NMMs. The purely magnetic effects on chirality may involve molecules having less massive nuclei.

5.9. Acceleration Increases Thermal Space to Alter Quanta and Limit Recovery for More Fissing

Not only gravity would affect the chirality due to the NMMs more strongly coupling to gravity, but by general relativity the acceleration is indistinguishable from gravity. So, gravity causes the accelerations and here RBL notes also that the accelerations cause gravity. So as nuclei fractionally fission and fuse the released fields can momentarily increase gravity and vice versa gravity can be altered by changing motions to fuse to center. [On such basis near massive objects like planets, two molecules in planetary gravity and in motion in the changing gravity can fractionally fission and fuse nucleons and NMMs to affect each other to recognize each other even in the strong background gravity of the planets.] The accelerations and changing motions can also cause altered enrichments of isotopes. Therefore, in accelerated motions of the bacteria and fungi, the NMMs in their molecules can cause stronger couplings to the accelerations for altering nucleophilic attack for changing biochemistry and chiralities.

The motions back and forth can have altered gravity and altered spin flippings of nuclei to alter motions and ease of motions and accelerations at edge. The vibrational motions may be twisted in accelerations due to NMMs as the NMMs flip spins in linear accelerations and decelerations and the flipped spins alter the magnetic moments and the altered magnetic moments by Little Effect can twist the linear motions to circular motions. So nuclear spins can cause C Frame vibrational motions to transform to L Frame circular quantum motions. NMMs may cause such transformations at lower speeds so C Frame \leftrightarrow L Frame transitions occur at lower energies when they have nuclei of nonzero NMMs.

5.10. Nonzero NMMs with Motions and/or Gravity Alters Living Organisms

The author notes here that materials having nonzero NMMs may also undergo less inertia relative to nuclei with zero NMMs. The author notes that nucleophilic attacks may momentarily alter nuclear magnetic moments! The vibrations are not only driven by NMMs but the NMMs are altered by vibrations. Like in superconductivity, the phonons induce alterations of NMMs and vice versa for NMMs can diminish effects of phonons. The author here predicts many new phenomena based on this theory put forth here. The author is applying this to the centrifugations of the C Glatamicum forming phenylalanine and B. Flavum forming aspartic acid in the aspartame synthesis for altered chirality and ^{13}C , ^{15}N , ^{17}O , and ^{18}O enrichments in these amino acids during the centrifugations for the isolations of these products during fermentative productions of aspartic acid. This explains the author's theory why aspartame causes cancer, diabetes, and other diseases due to its fermentative productions by the bacteria and fungi in simulated zero gravity in the centrifuges during separations.

The author further predicts that bats due to their awkward motions produce chiral molecules that fight viruses bacteria and cancer in more effective ways than humans [20]. Bats sleep upside down in gravity field and their biochemistry is altered. Spiders hang in webs upside down and their biochemistry is altered so spider venom kills cancer. Bees and their simulated zero gravity produce biomolecules that fight cancer. Accelerated bacteria and viruses may produce strains that are resistant to the immune response of humans. Accelerated viruses and bacteria in bats, bees, mosquitos produce viruses and bacteria that are not in humans and cause illness in humans.

5.11. RBL's Theory Explaining Planetary Lightning

Just as in the living world in the atmosphere of geosphere NMMs in the atmosphere under gravity and magnetic fields of the earth drive dynamics and phenomena: lightning. Here, the author develops his theory of isotopes of + and - NMMs of ^{14}N and ^{15}N cause lightning on earth by the thermal, gravitational, accelerative, electromagnetic and/or strong fields induced fractional, reversible fission and fusing. Also lightning on Jupiter, Saturn and Uranus are explained by ^3He , ^{17}O , ^{15}N of -NMM and ^{14}N , ^1H , and ^{13}C of +NMMs as by fractional, reversible fission and fusing of these stable isotopes for seeping their NMMs into surroundings as induced by thermal spaces, gravity, accelerations, strong fields, electric fields and/or magnetic fields. But the recently lack of lightning on Venus is explained by the author's theory as due to CO_2 and O_2 in Venusian atmosphere. The much lower temperature and

raining of N_2 and NH_3 of ^{14}N and ^{15}N from Neptunian atmosphere are used to explain the lack of lightning in Neptune.

As water evaporates, molecules in droplets are entangled due to nonzero NMMs and spread entanglements in the space of resulting vapor as liquid droplets evaporate to voluminous vapor. RBL already published that the NMMs cause liquid state as the random oriented NMMs gaseous species couple as gases to condense to liquid with the rotating NMMs inducing rolling of molecules, atoms and/or ions in liquid states [19]. RBL noted in ref [19] that species lacking NMMs (like CO_2) tend to lack liquid state and deposit to solid from vapor and sublime from solid to vapor as RBL proposed that the rolling in the liquid states is facilitated by the NMMs of the atoms, ions, and/or molecules; and without NMMs, the induced rotations for liquid state are missing by RBL's theory.

And as liquids with entangled NMMs vaporize there is memory of entanglements of the intimate NMMs—NMM interactions of the vaporizing liquid. Thereby the condensations of the vapors to liquids as discovered here are facilitated by entangled NMMs of atoms, ions, and molecules of the vapor. This is why $Pb_9Cu(PO_4)_6O$ requires sublimation and re-deposition for superconductivity. The vaporizations and condensations reorient the NMMs in the $Pb_9Cu(PO_4)_6O$ for the NMMs to induce the superconductivity. If no NMMs, then the vapor forms solid for deposition. It is important to note that based on this work, the motions and accelerations of atoms, ions, molecules and/or nanoparticles in the planetary atmospheres increase gravitational entangling the species with more intensities for nonzero NMMs undergoing motions and accelerations (gravities) for increasing fractional fissing and fusing to enhance the interactions and promote the entanglements.

On Venus, CO_2 cannot liquify, therefore deposits and sublimates and the CO_2 lacks sufficient entanglements, exchanges, and correlations in vapor in the atmosphere of Venus due to the low relative abundances of ^{13}C and ^{17}O . So, the charges cannot organize lightning to explain the absence of lightning in the atmosphere of Venus. The reverse process of vaporization has solids of zero NMMs subliming or liquids of nonzero NMMs evaporating to vapors with separations of NMMs from liquids, but the NMMs correlate and exchange by quanta of droplets and remember and recognize such correlation and exchange over miles in gas phase. If macro-space of liquids, then the droplets do not as well exchange. Droplets introduce quantum mechanics during cluster to vapor physical transformations, so the vapor molecules are entangled, correlated, and exchanged due to quantum mechanics. The positive NMMs keep charges separated but tiny. But bulk liquids lack such quantum mechanics and vaporization is classical and involves less entanglement of species in resulting vapor.

Vaporizations from nano-droplets cause stronger entanglements of species in vapor states than entanglements from vaporizations from bulk liquid states. The N_2 and its $+/-$ NMMs mediate the entanglements of the water molecules on Earth. After evaporation of bulk water as the droplets in clouds undergo vaporization and re-condensation of droplets, multitudinous cycles more entangle the atoms, ions, and molecules more in the clouds. Such entanglements cause collective dynamics of droplets and such entanglements in the charged cloud momentarily couple these clouds to the magnetic field of the Sun via entangled solar particles hitting the Earth's atmosphere and the changes in the solar particle's quantum states instantaneously alter the quantum states of the particles in the Sun. In Saturn, Jupiter, Uranus, and Neptune the H_2 and He gives NMM solvents to exchange the NH_3 ice and N_2 NMMs. In these gas giants, the charged CH_4 and NH_3 clouds and H_2 media superluminously couple to the Sun via entangled quantum particles in the Sun and solar particles hitting the atmospheres of these gas giants.

The author here notes that such superluminous entanglements and changes in spins via the target affecting the separated entangled particles from the source are the quantum mechanism of gravity! Such mechanism via entanglements is here noted a magnetogravitometric interaction that manifest not only between Sun and planets but also between molecules, atoms and ions and even electrons, nuclei, nucleons and quarks. As the NMMs exchange, the isotopes are redistributed in bond specific ways. The gravity, motions and accelerations induce more fractional, reversible fissing of NMMs in the nanocluster, molecules, atoms, and/or ions for stronger entanglements and recognitions over larger space of the clouds and atmospheres.

The clusters of NH_3 vaporize to media lightning. The exchange of H and He involves the strong force and is greater than the N_2 on Earth and its exchange by nuclear force. The hydrogenous solvents of the atmospheres of gas giants cause similarity to H/p^+ solvent of the solar plasma for stronger gravitomagnetic entanglements of these gas giants to the Sun relative to Earth coupling to the Sun by Earth's N_2 atmosphere differing from p^+ solvent in the Sun. These interactions of molecules (H_2O on Earth, NH_3 and CH_4 on gas giants) entangle lakes of water and methane and ammonia in steam and vapor of clouds with N_2 gaseous solvent on Earth mediating the entanglement of H_2O on earth (with H_2 and He solvent on gas giants mediating entanglement of CH_4 and NH_3). The condensation of water molecules on earth to liquid droplets changes the NMMs of the H atoms and polarizations

with a change in size from subnano to nano to macro sizes (similar phenomena occur for H in CH₄ and NH₃ in clouds of the gas giants).

The ice changes internal spin polarization by altered internal exchanges and correlations. So, the core of ice is negatively charged, the surface positively charges and the surface fragments. This is the first consideration of such nucleation in gravity and in accelerations and in magnetic fields of the planets and the NMMs for a new perspective on nucleations of seed clusters and evaporations of cloud droplets and freezing of liquids in motions in gravities and NMMs. The NMMs order when liquid ↔ solid as discovered by RBL [19]. As the nano droplet increases in size, the surface freezes with interior liquid and includes surface pressure; so a small cluster is solid due to pressure and grow and interior melts (with redistributing positive and negative NMMs between the interior and surface for negative NMMs segregating to the surface of the nano-clusters). And surface of the nano-clusters freeze so the melting pulls isotopes from interior to surface to fractionate enriching negative NMMs at surfaces of nanoclusters.

Differences in NMMs can cause charge separations in the particles. The - NMMs of ¹⁷O in the edge surface of freezing droplet accumulate due to larger ion size of ¹⁷O and greater polarizability in clouds. The ¹⁷O²⁻ also causes charge separation as ¹⁷O is more easily ionized than ¹⁶O; so ice shell with ¹⁷O becomes + charged and liquid core becomes negatively charged dense liquid. The denser liquid-core of ice separates and falls to bottom of the cloud and the + charge ice fragments from the surface of the nano-cluster separate and rise to the top of the cloud. RBL predicts the top of cloud should be enriched with ¹⁷O and explains why ozone in the stratosphere is enriched with ¹⁷O.

The increase in the size of nano-liquid droplets in the clouds also change exchanges and correlations in the core of the droplet relative to the surface of the liquid droplet as the core maintains diamagnetic polarizations of NMMs and e⁻ e⁻. But the larger surface layer grows and the liquid droplet changes to ferromagnetic polarization of NMMs at the surfaces of the nano-clusters. And e⁻ e⁻ magnetically polarize at the surfaces of the nano-clusters. So, Pauli exclusion principle pushes e⁻ from bonding molecular orbitals to antibonding molecular orbitals to fragment the freezing liquid surface from the denser liquid core. This theory of RBL explains the origin of charging in clouds. This mechanism also explains recent intrinsic H₂O₂ formation in nanodroplets of water. The resulting charged particles are entangled by colliding particles in gravity. So as the charges pull together, they affect each other due to entanglements over; miles so this gathers lightning in clouds.

The cores of the liquid surface freezing cause difference of nuclear spins polarizations as e⁻ e⁻ exchange and correlate in cores differ from surfaces. The denser core and magnetization stabilize electrons and ¹⁸O in core of the nano-clusters. The thin surface and diamagnetic exchange correlation stabilize + charge with more ¹⁷O at surface of the nano-clusters. By RBL theory the acceleration of the ice in gravity of the planet accelerates charges transfer due to NMMs of ¹H, ¹⁷O, and ¹⁸O, ¹⁴N and ¹⁵N. This is analog to acceleration causing charging and altered chemistry in the centrifugation of biomolecules due to NMMs.

The phase changes from liquids to solids occur if the temperature drops too low. Here RBL further applies his theory of NMMs affecting liquids forming solids [19]. By RBL theory the liquid droplets solidify from their surfaces to cores for H₂O and possibly NH₃ due to greater density of the liquid states of these substances. The freezing to solid particles polarizes NMMs in the solid particles at the edges. The magnetic edges and paramagnetic NMM cores cause the fragmenting of the edges of the nanodroplet as they freeze. The changing gravity and acceleration of droplets also induce fragmentations of the solid edges from the denser liquid cores of the nanoclusters in the clouds.

The greater atomic density of the +NMMs and lesser atomic density of the -NMMs cause +NMMs to segregate to denser liquid cores and -NMMs to segregate to edge solids of the freezing nanoclusters. The +NMMs in denser cores tend to pull e⁻ and -NMMs in the surface of the freezing solids; there by the freezing surfaces tend to lose e⁻ to charge the ice fragments with + charge and charge liquid cores with - charge for mechanism of charge separations by RBL theory of NMMs. The ¹⁷O in H₂O ice shell about the denser liquid core of mostly ¹⁶O in H₂O cause ¹⁷O to lose e⁻ due to its -NMM. The resulting charge transfer induces fragmenting of the ice shell from the liquid denser core. The lesser dense + ice fragments separate from the denser - water droplet to structure clouds with +NMM tops and - charge base of the clouds. The charge separation helps suspend the cloud against gravity. The surrounding N solvent gas separates the + charged ice droplets at the top of cloud and - charged water droplets at the base of cloud.

The positive NMMs of ¹⁴N and ¹H (in earth and gas giants, respectively) facilitate entanglements between the + ice particles and between the water, CH₄ and NH₃ droplets, and between + charged top and - charged bottom of clouds to build huge megavolts to gigavolts of potential difference in the cloud. The greater the charging cause stronger E fields and B fields to increase the fractional fissing of NMMs to more strongly polarize the nano ice and nano-water droplets. The polarizations of NMMs in + charged ice and NMMs in - charged water droplets prevent the melting of + ice droplets and

freezing of – water droplets. The water droplets in the clouds cause them to couple more strongly with the H/p⁺ plasma of the Sun due to common H and quantum gravity between Sun and Clouds on Earth relative to weaker gravitomagnetic coupling between N₂ of Earth and the Sun.

RBL here notes that based on such aspects of his theory, the formation of hurricanes on Earth by solar storms is reasoned. Recent determination of greater photon efficiency for evaporation of H₂O relative to thermal energy efficiency of vaporizing water gives more support for the RBL's theory of the solar storms coupling to Earth's ocean water and clouds for stimulating hurricane genesis.

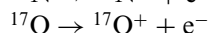
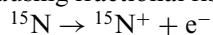
The tiny –NMMs of ¹⁵N, ¹⁷O and ³He and ¹⁷O in the ¹⁴N (earth) and ¹H (gas giants) atmospheres can in the huge electric field polarize to create channels of low resistance to charge transfer. Such is mechanism for leader formations to cause the lightning stroke mechanism in the charged cloud on earth and in the gas giants. –NMMs of ¹⁵N, ¹⁷O and ³He, ¹⁷O on earth and gas giants, respectively, frustrate the NMM entanglements of ¹⁴N and ¹H in these atmospheres to frustrate entanglement of H₂O, NH₃ ice and H₂O, NH₃ liquid droplets. So, ice can melt and release charge conducted by line of ¹⁵N and ³He. The pockets of melting ice create rain and the pockets of negative water droplets produce rain with e⁻ flow from the bottom of the cloud to the top for lightning discharge in the cloud. The build-up of charge in bottom of cloud can polarize the ground for electron flow from the bottom of the cloud to the ground. The build of + charge on the top of the cloud can cause electron flow from the ground to the top of the cloud. Of the gas giants, Neptune is different as it is stripped of its NH₃ and N₂ due to its lower temperature it rains and sleets most of its NH₃ and N₂ from its atmosphere. So there is less charging dissipation of Neptune's CH₄ clouds as the ³He is above the CH₄ cloud as He is much less dense and floats in layers above the CH₄ clouds. So ³He cannot produce leaders to cause lightning mechanism in Neptune and N₂ and NH₃ are stripped from Neptunian atmosphere by condensation to liquid and ice.

5.12. RBL's Theory Invents Negative NMMs of ¹⁵N and ¹⁷O for Induced Ionization by their e⁻ Loss

On this basis, the author introduces a new theory for electron avalanche for generating lightning on basis of NMMs in some planets. Can acceleration cause ¹⁵N to ionize or ¹⁷O to ionize during collisions of atoms? Yes, according to the author's theory, the negative NMMs of ¹⁵N and ¹⁷O can cause them to push out electrons under electronic collisions and atomic collisions for more easily forming cations of ¹⁵N⁺ and ¹⁷O⁺ for explaining such phenomena as ¹⁵N and ¹⁷O in the atmosphere causing streamers for organizing lightning strikes in the resistive atmospheres of planets.

Similarly, the author notes that this lower ionization energy of ¹⁷O and ¹⁵N (relative to ¹⁶O and ¹⁴N, respectively) cause altered enzymatic and biochemistry in living organisms. Phenomena of superconductivity in Ranga Dias room temperature and near ambient superconductivity can be explained by such ¹⁵N under pressure ionizing to ¹⁵N⁺ and transferring electrons to form LuH⁻. Also, the replacement of few Pb ions by Cu ions in Lead Apatite with ¹⁷O enrichment in such material can be superconductive as the ¹⁷O (relative to ¹⁵N) at ambient temperature can more readily release electrons to Cu for the superconductivity due to the negative NMM of ¹⁷O. And in proteins ¹⁵N and ¹⁷O can release electrons to surrounding electrophilic centers for forming weaker nucleophilicity of the attacking ¹⁵N and ¹⁷O as during centrifugal accelerations.

But back to the lightning, such ease of ionizing ¹⁵N and ¹⁷O in the Earth's atmosphere can explain lightning. Moreover, as electrons collide with these isotopes of ¹⁵N and ¹⁷O as during electric discharge in clouds, the resulting acceleration in the strong electric fields causes RBL's newly discovered (as given here) easier ionizations of ¹⁵N and ¹⁷O as first determined and reported here. So, lightning for instance may originate by electron induced ionization of ¹⁵N and ¹⁷O due to the negative NMMs causing fractional fission of nuclei of ¹⁵N and ¹⁷O for lowering ionization energies of ¹⁵N and ¹⁷O:



By such ionization of the ¹⁵N and ¹⁷O, the numbers of electrons increase in the electron avalanche for accelerating the breakdown and the charging of the atmosphere and thereby increases the conductivity of the insulating gas for streamers and leaders for conductive path of lightning. Here the author reports his original theory of the lightning mechanism and applies it to understand why various planets like Earth, Venus, Jupiter, Saturn, Uranus, and Neptune vary in their ability to manifest lightning activities.

5.13. RBL Theory Explains Lack of Lightning on Venus due to CO₂ having No NMMs

The author here contemplates that 2 publications in Sept 2023 [21], [22] further substantiate RBL's theory of lack of NMMs explaining that CO₂ in Venus prevent Venusian lightning as ¹²C; and ¹⁶O compose over 99% of CO₂ and both ¹²C and ¹⁶O have 0 NMMs; and so lacking NMMs Venus should not have lightning. Although there is trace ¹⁷O in Venusian atmosphere with its –NMM for possibly discharging huge potential differences in Venusian dust, aerosols, gases, and clouds, there is no excess of nuclei of +NMMs to build-up the charge to create such huge potential differences in Venusian

atmosphere. These two studies [21], [22] substantiate my theory as they determine Venus has little to no lightning: due to magnetic disturbances causing whistlers [22]; and due to meteors causing light flashes previously thought to be lightning [21].

5.14. RBL Theory Explains Lack of Lightning on Neptune Due to Its Raining N_2 to Strip Away ^{15}N

But now in this work, the author also focused more on Neptune and Uranus and both having H_2 and He atmosphere with trace of NH_3 and CH_4 in Uranus and trace of CH_4 in Neptune. But the author in this work discovered and disclosed [23] that lightning on Neptune and Uranus would form N_2 by decomposing NH_3 . The author noted that the resulting N_2 would be like on earth having ^{14}N and ^{15}N and the author realized ^{15}N forms the leaders for lightning in background ^{14}N gaseous solvent; which I did publish for earth [19], [23]. But RBL noted [23] that for Uranus and Neptune the warmer Uranus would have N_2 as gas, but the cooler Neptune would condense N_2 from its atmosphere [23]; so, without ^{15}N in Neptune's atmosphere, there is no mechanism for the charge to form leaders for lightning discharge in Neptune [23]! The author (RBL) thereby just enhanced his nuclear magnetic moment (NMMs) theory of lightning by Little Effect. The author discloses in this work a critical idea of why cooler temperatures of Neptune prevent lightning relative to warmer temperatures of Uranus. Neptune's average temperature ($-214\text{ }^\circ\text{C}$) is near but below the boiling point ($-195\text{ }^\circ\text{C}$) of molecular nitrogen (N_2) and Uranus average temperature ($-195\text{ }^\circ\text{C}$) is well above the boiling point of liquid N_2 and NH_3 .

Although both Uranus and Neptune rain N_2 , Uranus is warm enough to perpetually evaporate and rain N_2 and NH_3 . But Neptune is so cold that the vapor pressure of N_2 is too low to rain N_2 so Neptune condenses N_2 to strip its atmosphere of N_2 for lack of ^{15}N in Neptunian atmosphere for also lack of negative NMMs for streamers to discharge the huge potential in clouds of Neptune! 3He in Neptune is less dense and it exists in the upper atmosphere above the clouds and even He more easily escaping the atmosphere of Neptune. So 3He is not able to accumulate and discharge lightning deep inside Neptune. So, Neptune's atmosphere has permanent charged and large potential differences due to the build up of charge in clouds with inability by lightning to discharge the huge electric potential differences in the clouds.

5.15. Prediction of Cause of Disappearance and Reappearance of Neptune's Clouds

RBL predicts Neptune's clouds may have persistent huge charge and potential. Today (Oct 8, 2023), the authors discovered that by his theory. RBL can explain by RBL's theory the disappearance of Neptune's clouds as observed in Aug 2023 [24]. Scientists have coupled the flip of the magnetic field of the sun to the appearance and disappearance of Neptunian clouds by the change in UV radiation from the sun with its flip of its magnetic field [24]. But here RBL gives a different theory for Neptunian cloud appearance and disappearance as by RBL theory of lightning by trace negative NMMs and the lack of ^{15}N of negative NMMs in Neptunian atmosphere for persistent charge separation and high potential differences in Neptunian atmosphere by RBL theory. RBL in this work proposes coupling of such charge layers in Neptunian clouds to the sun's magnetic field and gravity. So, the flip in the sun's magnetic field every 11 years magnetically alters charge layers in clouds of Neptune by RBL theory to explain the disappearance and appearance of Neptune's clouds!

By RBL theory of the persistent charging in Neptune's atmosphere is due to its 1H and ^{13}C in CH_4 for charge accumulations due to their positive NMMs; but there is a lack of ^{15}N for streamer and leader formations to discharge the Neptunian atmospheric charge by lightning. The charged Neptunian clouds may couple more strongly to Sun's magnetic field and flip Neptunian clouds with the flip in the Sun's magnetic field by RBL theory as noted in this work. There is some 3He in the upper atmosphere of Neptune but it is above Neptune's clouds. The 3He in the upper atmosphere may interact with Sun's magnetism to affect Neptune's clouds. Neptune is cooler and allows longer NMM polarizations due to its lower temperature relative to the warmer temperatures of Uranus, Saturn, and Jupiter. This is why the Sun's magnetic field can more strongly couple to NMMs in Neptune's atmosphere and the Sun's magnetic field flips the NMM polarizations of Neptune's clouds and causes the clouds to disappear and reappear over 11-year cycle of the Sun's changing magnetic field and flip of the solar magnetic poles.

The changing magnetic field of the Sun disrupts the entanglement of electric charge layers in Neptunian clouds. The magnetic coupling between the Sun and Neptune (and other planets as well) is introduced in this manuscript by polarized particles released with entanglement to the Sun's magnetic field and with release from the magnetic surface and corona of the Sun. The interactions of the solar particles with the atmosphere of Neptune alters the quantum states of the solar particles and RBL by his theory proposes that the change in entanglement of the Solar particles alter the entangle particles in the Sun (even with millions of miles separating the Sun and Neptune) and alter the entanglement of the clouds of Neptune for inducing the disappearance of the Neptunian clouds.

The cycle of thunderstorms on other planets (Earth, Jupiter, Saturn and Uranus) are affected by the solar magnetic fields and magnetic cycle of the Sun as previously noted by the author. The clouds during thunderstorms are charged as the Neptunian clouds are charged over long time periods of years. The Sun's magnetic field couples by magnetogravity to the thunder clouds on these planets having lightning via the entangled particles from the Sun colliding with the clouds on the planets for altering the entanglement of the solar particles with superluminous alterations of the entanglement in the cloud and the entanglement of the particles at the surface of the Sun. The change in entanglement of + charge ice in upper clouds causes them to melt to rain. The change in the entanglement of liquid particles in the lower clouds causes them to rain to cause the disappearance of Neptunian clouds by changes in the Sun's magnetic field during 11-year solar cycle. During the 5.5 years, the changing magnetic solar field cycle causes the vapor in the Neptunian atmosphere to condense and freeze with cloud reformations with the 5.5 years the magnetic field changes so the clouds disappear again to repeat the cycle of cloud disappearing, reappearing and disappearing, and reappearing as the Sun's magnetic field weakens flips, strengthen and then weaken and flip and strengthen again over the 11-year solar cycle.

Some may criticize RBL's gravito-magnetic coupling between Neptune and the Sun for explaining the appearance and disappearance of Neptune's clouds by claiming the magnetic field is weak between Neptune and the Sun. The author here notes that his theory couples gravity to the magnetic field for longer range action of Sun's magnetic field to Neptune via gravity. The author also here gives criticism of the UV theory as the author detracts from the UV theory and substantiates his theory by the fact that Uranus also has clouds and UV is more intense on Uranus than Neptune. But Uranus clouds do not disappear like Neptunian clouds, therefore the UV explanation cannot explain the disappearance of Neptune's clouds if it were the UV then Uranus clouds would also disappear by changing UV from the Sun due to flip in magnetic poles of the Sun. The author's theory of gravitomagnetic coupling between the Sun and Neptune is stronger for explaining the magnetic pole reversal of the sun causing magnetic disappearance and reappearance of Neptune's clouds charging of Neptune's clouds and magnetization of Neptune's clouds by the charging; as this theory of RBL also can explain lack of disappearing clouds on Uranus as Uranus has lightning and no charge accumulation like Neptune.

Due to cooler temperatures of Neptune and the charge Neptunian atmosphere, the gravity of the Sun and the solar magnetic field couples more strongly to the charged magnetized atmosphere of Neptune for gravitomagnetic entanglement of the solar p^+/H plasma to the charged H atmosphere of Neptune. Even over the breadth of the solar system, the author demonstrates gravitomagnetic entanglement of nanoparticles, molecules, atoms, ions, nuclei, nucleons, quarks and electrons in Neptunian clouds with p^+ in plasma of the Sun. The transient clouds in Uranus, Saturn, Jupiter and Earth also during thunderstorms couple by their electric fields to the solar plasma by gravitomagnetic entanglements between the Sun and its quanta and solar particles emitted from the Sun and interacting with entanglements of atoms, ions and molecules in clouds of Neptune and other planets like Earth, Jupiter, Saturn and Neptune.

5.16. *What about Gravity Differences between The Planets?*

What about the sun's magnetic field coupling by gravity to affect the planets magnetically by gravito-magnetism and NMMs assisting this? NMMs of Earth, Saturn, Jupiter, Neptune, and Uranus cause stronger magnetic interactions with the Sun than Venus. What about Mercury it is closer to the Sun, but Mercury is not as hot as Venus. Mercury has a thin atmosphere composed of mostly sodium, magnesium, calcium with trace amounts of oxygen, hydrogen, helium, and potassium that form by the solar wind blasting these substances off the surface of Mercury. Mercury's lack of atmosphere causes it to be cooler in spite of being closer to the Sun than Venus.

The CO_2 making up Venusian atmosphere causes green house effect for causing high temperature in Venusian atmosphere as caused by the dissipation of charge and electric energy to thermal energy and green house effects of Venus. It is thought that atmospheres lacking convection cannot have lightning. Mercury lacks convection and this may diminish the charging effects of its sodium (Na) of positive NMMs and the ^{25}Mg (magnesium) of negative NMMs in its thin atmosphere.

Does 1H of Saturn, Neptune, Jupiter, Uranus have a couple of Sun's magnetic field to these planets? Then what about the earth's N_2 atmosphere? Yes, H and He lack outer $e^- e^-$. So, the nuclei couple directly to $e^- e^-$ in Jupiter, Saturn, Neptune, and Uranus. The O and N have core $e^- e^-$ in earth's atmosphere so they couple to Sun via nuclear force and $e^- e^-$ cores shielding the valence electrons. So, the valence electrons of N and O do not feel direct gravity and strong fields as the valence electrons are shielded from the nuclei by the core electrons. So, the gravity of Uranus, Saturn, Neptune and Jupiter couple directly to nuclei of H and He, so as to fission their nucleons (strong) fields. N_2 and O_2 on earth fission nuclear fields as the nucleon nucleons in these heavier atoms manifest weaker nuclear fields and not the greater strong field. The nucleon fields of O_2 and N_2 on Earth are weaker than the

strong field of protons of Jupiter, Saturn, Uranus, and Neptune at cooler temperatures for allowing stronger polarization of their proton magnetic moments by the Sun's gravitomagnetic field. These Gas Giants are heavier and couple gravitationally more strongly to the H and He nuclei. This can explain the stronger magnetic fields of the gas giants relative to Earth's magnetic field. Also the common nuclei of ^1H in Sun and the gas giants cause stronger gravitomagnetic coupling

The author (RBL) explained in more detail his theory of NMMs of ^1H and ^{14}N causing lightning on Earth and on Jupiter, Saturn and Uranus. Considering that Neptune's (-201 Celsius) atmosphere is about 80.0% H_2 and 19.0% He and 1 % CH_4 (methane). Uranus's atmosphere (-193 Celsius) is 82% H_2 and 15.2% He and 2.3% CH_4 with trace of NH_3 and H_2O . Saturn's atmosphere is 96.3% H_2 , 3.25% He. Jupiter's atmosphere is 89.8% H_2 and 10.2% He. RBL think NH_3 in Neptune and Saturn can by lightning strikes form $\text{N}_2 + \text{H}_2$ gases. But by RBL's theory the N_2 gas in Uranus (average temp -193 Celsius) is not as liquified ($T < -210$ Celsius) in Neptune as Uranus; as Uranus (-193 Celsius) is slightly warmer than Neptune; and Uranus temperature is above boiling point of N_2 gas whereas Neptune's temperature (-214 Celsius) is near boiling point of N_2 . So, Neptune rains N_2 to deplete its atmosphere of ^{14}N and ^{15}N to explain why Neptune lacks lightning even though the composition of its atmosphere is similar to the composition of the atmosphere of Uranus. RBL think $-\text{NMM}$ of ^{15}N causes leaders in charged atmosphere, but such ^{15}N in Neptune's atmosphere is missing as Neptune is so cold the N_2 gas is condensed to liquid N_2 and solid NH_3 ! On Earth the N_2 gas with 1% ^{15}N allows leaders. Jupiter and Saturn, Uranus have trace ^{15}N ($-\text{NMMs}$) in N_2 and ^{17}O in H_2O for lightning leaders! But Neptune lacks trace ^{15}N to provide leaders for lightning.

RBL's theory can explain the disappearance of Neptune's clouds by a change in NMM polarizations as solid \leftrightarrow liquid \leftrightarrow gas. RBL used a prior paper [19] where gas has diamagnetic spins of NMMs and liquids have varying polarization of NMMs due to closer interactions and the rolling nature of liquids in contact. RBL notes that the NMMs cause the nuclei to rotate in the liquid state. Thereby RBL theory the liquid state forms due to NMMs. Life itself has H_2O with rotating NMMs and the liquid in life. If change NMMs then change life. But solids have polarized NMMs, in a size varying way. The formation of solids in the atmosphere of planets has surface pressure inducing solid with smaller sizes. But as increase size the surface pressure diminishes. With larger sizes the exchanges and entanglements of spins change as the exchanges have diamagnetic nuclear magnetic moments (NMMs) on the atoms molecule scale and this changes to ferromagnetic polarization on macroscales. The exchanges of nuclear rotations by NMMs can be bases for biomolecules to recognize each other. The clouds have ice particles with polarized NMMs and Sun's magnetic field can couple to clouds of polarized NMMs. When Sun's magnetic field weakens and disappears then the cloud ice particles cannot polarize. UV excitation helps the polarization and depolarization in manner already proposed by RBL for curing cancer. In some ways thunderstorms on earth couple to sun's magnetic field.

6. CONCLUSION

RBL thereby determines Neptune rains earth's atmosphere (N_2 and its nuclear magnetic moments positive and negative, ^{14}N and ^{15}N) stripping Neptunian atmosphere of lightning for explaining the lack of lightning on Neptune. Venus is as hot as Earth's volcanic lava, but Venusian CO_2 (of zero nuclear magnetic moments, NMMs) cannot host lightning by RBL's theory of NMMs. So unlike Tolbachik volcano on Earth and volcanic lightning, Venus lacks lightning! And further by the lack of Neptunian lightning and persistent charging of Neptunian atmosphere, RBL explains Neptune coupling to the Sun magnetically so the 11-year cycle of solar magnetic pole flips modulate the appearance and disappearance of Neptunian clouds.

Just as the NMMs can explain these atmospheres of planets and lightning activities and clouds appearing and disappearing, RBL theory also explains gravity effects on the NMMs in living organisms as life on Earth is shown to organize its homochirality by Earth's Gravity. The author demonstrates that based on gravity's effect on homochirality, scientists and engineers have unknowingly imposed excess gravity by centrifugation on living organisms to alter the chiralities in these microbial organisms during fermentative amino acid industrial productions. The human consumption of the product amino acids as in aspartame has so impurity D isomers with L isomers by the author's theory to explain the ill effects of aspartame. The author notes such change in chirality can further explain aspartame being a carcinogen. The author notes changes in chirality can in general explain all cancers and NMMs in his theory of altering chiralities. Thereby the author reasons reducing gravity affects cancer in a different way than normal cells as cancer has clumped ^{13}C , ^{15}N , ^{17}O , and ^{18}O of enrichments for a stronger response to the reduced gravity for killing the cancer.

REFERENCES

- [1] McConathy J, Owens MJ. Stereochemistry in drug action. *Prim Care Companion J Clin Psychiatry*. 2003;5(2):70–3.
- [2] Murtas G, Pollegioni L. A-amino acids and cancer: friends or foes? *Int J Mol Sci*. 2023;24(4):3274.
- [3] Little RB. A theory of the relativistic fermionic spinrevorbital. *Int J Phys Sci*. 2015;10(1):1–37.
- [4] Little RB. On the carcinogenic mechanism and cure for cancer: ferrochemistry for cause of warburg effect. Published as book (BP International). 2022; Available from: <https://www.bookpi.org/bookstore/product/on-the-atomic-carcinogenic-mechanism-and-cure-for-cancer-ferrochemistry-for-cause-of-warburg-effect/>.
- [5] Little RB. On the terrestrial gravitational bending of quantum fields during optics, enzymatics and catalyses of biomolecular and nanoscale chemical reactions. *Chemrxiv*. 2020. doi: 10.26434/chemrxiv.11634786.v1; to be published in Journal of Modern Physics.
- [6] Lavergne A, Harrison SP, Prentice IC. Investigating C3/C4 plants competition using carbon isotopes and optimality principles. *EGU General Assembly 2022*. Vienna, Austria; 23–27 May 2022. EGU22-1111. doi: 10.5194/egusphere-egu22-1111.
- [7] The NNPDF Collaboration. Evidence for intrinsic charm quarks in the proton. *Nature*. 2022;608:483–7.
- [8] Furkan Ozturk S, Liu Z, Sutherland JD, Sasselov DD. Origin of biological homochirality by crystallization of an RNA pre-cursor on a magnetic surface. *Science Advances*. 2023;9(23):1–10. doi: 10.1126/sciadv.adg8274.
- [9] Czank C, Cassidy A, Zhang Q, Morrison DJ, Preston T, Kroon PA, et al. Human metabolism and elimination of anthocyanin, cyanidin-3-glucoside: a ¹³C tracer study. *Am J Clin Nutr*. 2013;97:995–1003.
- [10] Orsi WD, Wilken S, del Campo J, Heger T, James E, Richards TA, et al. Identifying protist consumers of photosynthetic picoeukaryotes in the surface ocean using stable isotope probing. *Environ Microbiol*. 2018;20(2):815–27.
- [11] Kupparth S, Chatzinotas A, Kastner M. Development of a fatty acid and RNA stable isotope probing-based method for tracking protist grazing on bacteria in wastewater. *Appl Environ Microbiol*, 2010;76(24):8222.
- [12] McGowan J, Kiliass ES, Alacid E, Lipscombe J, Jenkins BH, et al. Identification of a non-canonical ciliate nuclear genetic code where UAA and UAG code for different amino acids. *Plos Genet*. 2023;19(10):1–21. doi: 10.1371/journal.pgen.1010913.
- [13] Little RB, Uziel O. Correlating ¹³C isotope in oligomeric proanthocyanidins with their anticancer properties. *J Cancer Genet Biomarkers*. 2023;1(4):33.
- [14] Brandenberger R, Delgado PCM, Ganz A, Lin C. Graviton to photon conversion via parametric resonance. *Phys Dark Universe*. 2023;40:101202.
- [15] Topal U, Zamur C. Microgravity, stem cells, and cancer: a new hope for cancer treatment. *Stem Cells Int*. 2021;2021:5566872.
- [16] Shamloo A, Naghdloo A, Besanjideh M. Cancer cell enrichment on a centrifugal microfluidic platform using hydrodynamic and magnetophoretic techniques. *Sci Rep*. 2021;11:1939.
- [17] Little RB. Author personal communication in 2018; redge_little@yahoo.com.
- [18] Grimm D, Wehland M, Corydon TJ, Richter P, Prasad B, Bauer J, et al. The effects of microgravity on differentiation and cell growth in stem cells and cancer stem cells. *Stem Cells Transl Med*, 2020;9(8):882.
- [19] Little RB. Nano-domains of nuclear magnetic moments for gravitational stimulation of biological processes. *Eur J Appl Phys*. 2022;4(2):14.
- [20] Little RB. Possible treatment of corona-virus and other viruses by stable isotopes and electromagnetic fields and waves. viXra. 2020. Available from: <https://vixra.org/abs/2003.0493>. to be published Journal of Cancer Science and Clinical Therapeutics.
- [21] Blaske CH, O'Rourke JG, Desch SJ, Borrelli ME. Meteors may masquerade as lightning in atmosphere of Venus. *JGR Planets*. 2023;128(9):e2023JE007914.
- [22] George H, Malaspina DM, Goodrich K, Ma Y, Conner D, Bale SD, et al. Non-lightning-generated whistler waves in near-Venus space. *Geophys Res Lett*. 2023;50(19):e2023GL105426.
- [23] Little RB. Public communication on linkedin on Oct. 4. 2023. Available from: https://www.linkedin.com/posts/reginald-little-10ab0038_venusian-lightning-may-be-a-rare-phenomenon-activity-7115168566127075328-OY2A?utm_source=share&utm_medium=member_desktop.
- [24] Chavez E, de Pateer I, Redwing E, Molter EM, Roman MT, et al. Evolution of Neptune at near-infrared wavelengths from 1994 through 2022. *Icarus*. 2023;404:115667.