MINI REVIEW

Configuring observables solving physical algorithm quantum matrix gravity

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Iyer R. Configuring observables solving physical algorithm quantum matrix gravity. Mod Appl Phys. 2022;5(2):1-4.

ABSTRACT

Observables have been extracted out of theoretical formalisms of Superluminous Gage Integrated Quantum Astrophysics. These models will predict an eternally cyclical generating ordered energy signals with hod Pauli Dirac Planck stabilizing circuit assemblage. Exemplification of mesoscopic problem-solving observables have gotten demonstrated conceptually adequately. Quantum Gravity observables have been explained by having proposition of critical density matrix, signal/noise ratio criteria to determine gravitational or levitational aspects of a typical object mediated by environment, specifically geodesics, while describing magnetic tensor action on electric tensor fields all in terms of point gradient vortex discontinuity dissipative physics quantum modeling.

Key Words: *Quantum; Gravity; Critical density matrix; Signal/noise ratio; Geodesics; Point; Gradient; Vortex; Modeling; Discontinuity; Dissipative; Entropy; Electromagnetism; Observable; Gage; Physics; Grand unifying; Gage Fields; Algorithm; Mesoscopic; PDP circuit; Vacuum tensors*

INTRODUCTION

Based on authors extensive literature surveys [1-7], here briefly the problem-solving observable physics has been emphasized to get into the phase of experimental designs for observed measurements. Observables subsequently obtained out of theoretical formulations provide proper physical means to obtain meaningful results [1,6-25]. Hence, this aspect to configure observables have more emphasis subsequently within this paper.

Author has arranged sections within this paper as follows: Heading 2 emphasizes problem-solving observable physics general formalism expanding with already developed theoretical models that author has achieved by working with scientists worldwide. It provides proposition to explain gravity in terms of the gage physics, that author achieved having peer-reviewed publications [1-7,12]. This shows how observables will work demonstrating observed mesoscopic effects, students may be to prove in simple laboratory set-ups of ubiquitous gravity on objects, with the levitation, gliding, or falling. Results and Discussions starts off with giving micro-macro grand unifying algorithm that author developed collaboratively with peer-reviewed publications. It analytically derives, extending gage time gage space fields probability signal matrix physics developed previously, schematically laying out how monopoles observables may look like that are being tested by Bose Einstein condensates and spin-ice measurements, alongside other techniques enumerated by author elsewhere [2-6]. Again it extends analysis to general parametric variables signal/noise ratio density matrix mesoscopic entropy in terms of temperature and pressure that are physically measurable. Conclusion summarizes what the paper presents briefly with key aspects that will help in reader to pursue further with ansatz novel models that author is continuing.

PROBLEM-SOLVING OBSERVABLE PHYSICS

Peer-reviewed publications [1,2] have thoroughly derived the mathematics of point dynamics of Helmholtz decomposition dissipative fields, having gradient and the vortex actions mathematically characterized exactly by 2x2 eigen tensor matrix form, originally justified by magneton observations with a Ferrolens {Commercially known as a Ferrocell. Ferrocell®USA Trademark. US Patent 8246356 "Magnetic flux viewer"; Website: https://www.ferrocell.us}. Observables with mesoscopic examples have been extracted out of generalized formalisms of a Superluminous Gage Integrated Quantum Astrophysics modeling theoretically eternally cyclical generating ordered energy signals [1-12]. Gage fields obtained from mesoscopic example are pressure and temperature of observable population pattern with 2x2 matrix and a gage functional of modon strings as communicators; algorithmic formulae employed are amenable to matrix extension to experimental measurements with simulation programming [6]. Density matrices are commonly employed explaining quantum states' measurements, physical sciences, as well as generalized observables [7,8,13-16]. General concept associated to density matrices are utilized further.

Proposition

There exists critical density matrix; object that exceeds this requirement will be heavier than the medium holding it, for example, air or fluid or even solid, making such an object to fall through the medium, essentially manifesting gravity action. Conversely, if an object has point density matrix less than critical density matrix it will have levitation or floatation in the medium holding it, for example, air or fluid or solid medium that holds the object. Otherwise, if they are the same or equal, i. e., object density matrix = critical density matrix, then terminal velocity results, for example with glider parachute. Quantized effect comes because of wavefunction collapse of possibilities with signal/noise ratio aspects. At a given {latitude, longitude, mode of switches...0, off, on} there are multiplicity of events possible with differing signal/noise ratio, Γ constituting probability addition or multiplication to satisfy.

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\Gamma_{ij}=1 \tag{1}$$

$$\text{having example} = \left[\Gamma\right]\{\Psi_{11}\Psi_{12}\Psi_{13}\ldots\ldots\ \Psi_{21}\Psi_{22}\Psi_{23}\ldots\ldots\ldots\}$$

that is summed over the values of i and j, acting as nodes of finite element model network circuitry assemblage, like hod-Plenum* Pauli Dirac Planck circuit model [6]. One may surmise that therefore quantum gravity will come into effect with modon strings communicating like typical charge couple entanglement satisfying above requirements.

Observable

Thin paper if it possesses point density matrix less than critical density matrix, it will levitate in the air. Origami glider may have terminal velocity because of shape metrics geometry [1, 17, 18] generating density matrix = critical density matrix. Paper balls, however, possessing point density matrix greater than the critical density matrix will gravitate in geodesics like within

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Received:- 21-Mar-2022, Manuscript No.- PULJMAP-22-4526; Editor assigned:- 24-Mar-2022, Pre-QC No. PULJMAP-22-4526 (PQ); Reviewed:- 07-April, 2022, QC No. PULJMAP-22-4526(Q); Revised:- 09 April, 2022, Manuscript No. PULJMAP-22-4526(R); Published:- 18 April, 2022, DOI: 10.37532/puljmap.22.5.(2).1-4

earth causing it to have gravitational falling effect on the object.

RESULTS/DISCUSSIONS

Micro macro grand unifying algorithm [3-7, 10, 11]

Pure mathematical algorithm, developed by the author applied to physics gage matrix parametrically defined as system quantum density matrix, scalar potential matrix, the wavefunction inner product as also connective functional gaged to vacuum solutions of magnetic hod Plenum* PDP assemblage transforms have been achieved [3-8]. An Integrated Physics Model quantum cosmological algorithm vacuum gage fields equation will be given by [6]

$$\|\left[G_g\right]Pg\left[\varepsilon_{GR}\right]^1\left(<\left[\Psi_E\left(t_g\right)\right]\left[\Psi^M\left(t_g\right)\right]>\right)\left[\varepsilon_{GR}\right]\|=$$

$$\left[\rho_P\left(t_g\right)\right]*\left[\varepsilon_{GR}\right]\|=\Lambda_{gv}.Here,\left[G_g\right]_{Pg}$$

is gage wavefunction inner product of the electric and magnetic tensor fields;

$$\left(<\Psi\mu(tg)\,|\,\Psi\mu(tg)>\right) \;=\; \left(<\left[\Psi_E(tg)\right]\left[\Psi^M\left(t_g\right)\right]>\right)$$

Plenum* gradient functional $[\rho P(tg)]$ is gage Plenum* quantum density matrix, [ƐGR] stands for the quantum gage fields, $\Psi E(tg)$ is the wavefunction of gage electric fields, $\Psi M(tg)$ is the wavefunction of gage magnetic fields, (tg) is gage time, and Λgv is the gage vacuum energy density equivalent to cosmological constant. Purpose of this formula is to enable physical description quantifiably of magnetic tensor action on electric tensor fields point gradient vortex discontinuity dissipative physics. Thereby, actual observables that are eventually testable with experimental observations measurements get facilitated to be appropriately extracted out of theoretically developed algorithmic formulations. Pulling out micro quantum aspect matrix to macro mesoscopic measurable matrix to have direct possibilities to verify with one-to-one correspondence of pure theory to practical measurements. Then fine tuning to extending to a global matrix of real systems are essentially empowered both to computer programmable simulations, as well as experimentally instrumented observations with real time measurements [5,6]. This will provide first steps towards grand unifying physics, with usefully employable mathematical physical algorithms. Eventually, theory will lead to appropriate experimentation with real observables, then vice versa experimental measurements correlating to theoretical developments further [1, 6-25].

Gage time gage space fields probability signal matrix [5,6,10,11], Equations [2-4]

$$\begin{pmatrix} \varepsilon_\tau \\ \hline \varepsilon_x \\ \hline \varepsilon_y \\ \hline \varepsilon_z \end{pmatrix}\left(\psi_{r_{\circlearrowleft}^{\dagger}}\,\psi_{\Gamma^-{}_\vartheta}\psi_{\Gamma^+{}_\vartheta}\psi_{\Gamma_{\circlearrowleft}^-}\right)\text{gauge field sense}$$

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\Gamma_{ij}=1,\text{as discussed above}$$

$$\text{in Equation }(1)\text{ with reference }[6,\ 10,\ 11].$$

$[\Gamma_{XYZ}][\Gamma_{X'Y'Z'}]\ [\Gamma_{X''\,Y''\,Z''}]$ …………., with $\{\Gamma_{X'Y'Z'},\Gamma_{X''Y''Z''}\} >\ [\Gamma_{XYZ}]$, since

$$\begin{pmatrix} \varepsilon_\tau \\ \hline \varepsilon_x \\ \hline \varepsilon_y \\ \hline \varepsilon_z \end{pmatrix}\left(\psi_{r^{\dagger}}\,\psi_{\Gamma^-{}_\vartheta}\psi_{\Gamma^+{}_\vartheta}\psi_{\Gamma^-}\right)=>::<=\begin{pmatrix} \Gamma_t^- & \Gamma_X^{\circlearrowleft} & \Gamma_Y^- & \Gamma_Z^{\circlearrowleft} \\ \Gamma_t^{\vartheta} & \Gamma_X^+ & \Gamma_Y^{\vartheta} & \Gamma_Z^+ \\ \Gamma_t^+ & \Gamma_X^{\vartheta} & \Gamma_Y^+ & \Gamma_Z^{\vartheta} \\ \Gamma_t^{\circlearrowleft} & \Gamma_X^- & \Gamma_Y^{\circlearrowleft} & \Gamma_Z^- \end{pmatrix}\text{expansion to a 4D timeSpace} \quad (4)$$

where:

$$\begin{pmatrix} \varepsilon_\tau \\ \hline \varepsilon_x \\ \hline \varepsilon_y \\ \hline \varepsilon_z \end{pmatrix}$$

represent time space gauge fields of 4D time space {t, X, Y, Z} creations;

$$\left(\psi_{r_{\circlearrowleft}^{\dagger}}\,\psi_{\Gamma^-{}_\vartheta}\psi_{\Gamma^+{}_\vartheta}\psi_{\Gamma_{\circlearrowleft}^-}\right)$$

Represent probability functions quantifying distributions of signal/noise sense $\psi_{r_{\circlearrowleft}^{\dagger}}$

clockwise positive, $\psi_{\Gamma^-{}_\vartheta}$

anticlockwise negative, $\psi_{\Gamma^+{}_\vartheta}$

anticlockwise positive, and $\psi_{\Gamma_{\circlearrowleft}^-}$

clockwise negative}. Thereby,

$$\text{expansion }=>::<=\begin{pmatrix} \Gamma_t^- & \Gamma_X^{\circlearrowleft} & \Gamma_Y^- & \Gamma_Z^{\circlearrowleft} \\ \Gamma_t^{\vartheta} & \Gamma_X^+ & \Gamma_Y^{\vartheta} & \Gamma_Z^+ \\ \Gamma_t^+ & \Gamma_X^{\vartheta} & \Gamma_Y^+ & \Gamma_Z^{\vartheta} \\ \Gamma_t^{\circlearrowleft} & \Gamma_X^- & \Gamma_Y^{\circlearrowleft} & \Gamma_Z^- \end{pmatrix}\text{4D timeSpace} \quad (3)$$

$$\begin{pmatrix} \Gamma_t^- & \Gamma_X^{\circlearrowleft} & \Gamma_Y^- & \Gamma_Z^{\circlearrowleft} \\ \Gamma_t^{\vartheta} & \Gamma_X^+ & \Gamma_Y^{\vartheta} & \Gamma_Z^+ \\ \Gamma_t^+ & \Gamma_X^{\vartheta} & \Gamma_Y^+ & \Gamma_Z^{\vartheta} \\ \Gamma_t^{\circlearrowleft} & \Gamma_X^- & \Gamma_Y^{\circlearrowleft} & \Gamma_Z^- \end{pmatrix}\text{expansion to a 4D timeSpace} \quad (4)$$

with matrix of points signal/noise distributed over Γ with {t, X, Y, Z} {- negative, + positive, ϑ anticlockwise, $\circlearrowleft$ clockwise}. Each 2x2 pan-diagonal submatrices work like PDP circuit cell assemblies like molecular crystallographic observable unit cells, that are presently known to be like time crystals [5, 6, 21]. Permutations to generate dynamically expanding time space sense consider {gradient, vortex} gage fields that are attributable to real gage fields of pressure and temperature [6]. Observables are hence extractable by solutions with the Physical Algorithms, derived here. There exists, therefore direct relationships between theoretical and experimental observables that are measurable quantitatively in terms of observations at quantum, mesoscopic, astrophysical, and universal levels. We may, however, must consider quaternion algebra to get real time computer simulation programming [5,6].

Physically, matrix sketch of quantum density monopoles, per PDP circuit assemblage enhanced modeling [4-6] will look like, per Figures 1 and 2 schematics.

Critical (Γ, ρ) matrix electromagnetic gravity keying parametrically

Per gage physics, [Γ]: matrix of signal/noise ratio determines existence of matter, while [ρ]: point density matrix pattern determines property of gravity,

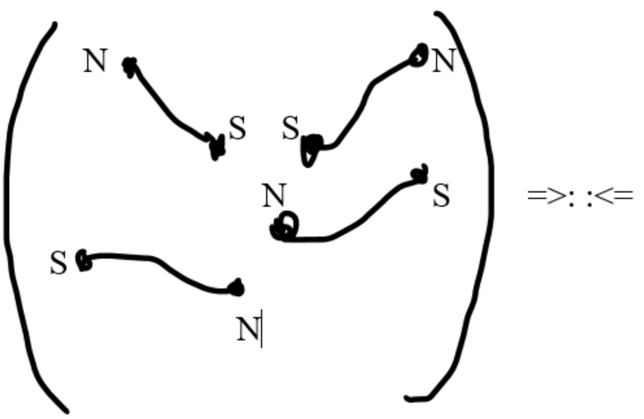

Figure 1) G *Matrix showing Dirac monopole strings with modon strings, transitorily per Equations (1-4).*

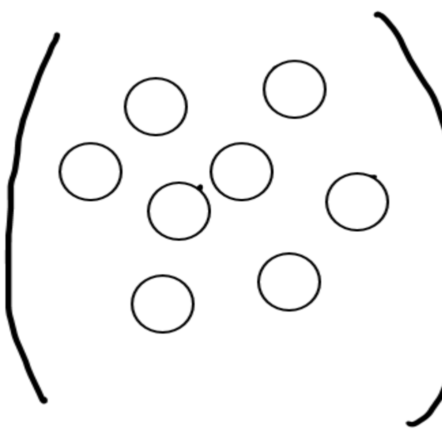

Figure 2) *Matrix showing how NS monopoles embed per Figure 1 chirally.*

derived here above. Magic square symmetry prime factorization [8] will eventually differentiate charged and neutral matter per above schema.

If [Γ] > [Γcr], then multiple phases matrices mix, or combine. Otherwise, if [Γ] < [Γ_{cr}], then it will differentiate or split-separate onto multiple phases matrices. Mesoscopic examples having low Γ nebular plasmatic gases will tend to split-separate onto multiple liquids-solids phases matrices, or plasma to gases, or mixed gases to elemental gases like hydrogen, or multiphase liquids to elemental liquids and/or solids phases matrices [19, 22, 20]. Similarly, high Γ phases will combine or mix into appropriate forms. These are evidenced physically in real living universe proof verifying with observations of theoretically derived observables, that are measurable in natural physics. Mathematically, they will correlate to "Gage time gage space fields probability signal matrix", given above in Equations (2-4) Compactly.

$$\left(\begin{array}{c} \varepsilon_{\tau} \\ \hline \varepsilon_{x} \\ \hline \varepsilon_{y} \\ \hline \varepsilon_{z} \end{array}\right)\left(\psi_{r^{\dagger}_{\circlearrowleft}}\,\psi_{\Gamma^{-}{}_{\vartheta}}\psi_{\Gamma^{+}{}_{\vartheta}}\psi_{\Gamma^{-}_{\circlearrowleft}}\right)=>::<=\left(\begin{array}{cccc} \Gamma^{-}_{t} & \Gamma^{\circlearrowleft}_{X} & \Gamma^{-}_{Y} & \Gamma^{\circlearrowleft}_{Z} \\ \hline \Gamma^{\vartheta}_{t} & \Gamma^{+}_{X} & \Gamma^{\vartheta}_{Y} & \Gamma^{+}_{Z} \\ \hline \Gamma^{+}_{t} & \Gamma^{\vartheta}_{X} & \Gamma^{+}_{Y} & \Gamma^{\vartheta}_{Z} \\ \hline \Gamma^{\circlearrowleft}_{t} & \Gamma^{-}_{X} & \Gamma^{\circlearrowleft}_{Y} & \Gamma^{-}_{Z} \end{array}\right)$$

$[\Gamma_{XYZ}]=>::<=[\Gamma_{X'Y'Z'}][\Gamma_{X''Y''Z''}]\ldots\ldots\ldots\ldots$, with $\{\Gamma_{X'Y'Z'},\Gamma_{X''Y''Z''}\} > [\Gamma_{XYZ}]$, since

$\sum_{i=1}^{n}\sum_{j=1}^{m}\Gamma_{ij}=1$, as discussed above in Equation (1) with reference [6, 10, 11].

If [ρ_{object}] > [ρ_{cr}], then object will sink or fall in relational gravitational inertial environment. Otherwise, if [ρ_{object}] < [ρ_{cr}], then object will levitate or float in that environment. These were explained having the proposition and observable physics with real measurable observations.

Configurational entropy versus compositional entropy [23-25]

Absolutely nothing vacuum non-existence to something non-vacuum existence is a configurational entropic event, thermodynamically since topologies' structures transformations happen irreversibly spontaneously progeniture.

We can perceive this as at time t-0, zero null matrix, UDE per Taylor & Iyer Physics Essays paper may have existed, but at t=0, spontaneously transformed to gage null matrix per my paper with OJPS having 0 and [dark] {energy, matter} skeleton network matrix. Then at time t+0, it may have had 4D time space matrix, i.e. Gage time gage space fields probability signal matrix. Hence, t-0 will imply 0- existence or nonexistence, t=0 will imply therefore no nonexistence, and t+0 will imply existence thereafter. One may surmise that at t=0, zero-point fluctuations will occur between states t-0 and t+0, perhaps, quantum noisy state, likely nebular. Following these systemically, compositional entropy with arrow of time cyclically universally have been operating with phase transformation of switching modes to monopole-particle assemblies, like PDP circuit stabilizing hod-Plenum* vacuum frictional matter real [5,6]. What connects these states may very well be multiverse with higher dimensional Dirac modon super fibrational strings operating hod-Plenum* PDP vacuum frictional mechanism. As shown per Critical (Γ,ρ) matrix electromagnetic gravity keying parametrically above, modes of switches {0, off, on} modulate outcomes. Altogether, these generate warping that vacuum absoluteness.

At mesoscopic levels, chemistry would be then playing a role with the formation of elements, evolving hydrogen stars to carbon-oxy-hydrogen structures of life. Both configurational as well as compositional entropies explain production of matter structures with iron metals, alloys, to nuclear uranium and further to fusion-fission processes ongoing.

Here the author has outlined only what is critically deduced from the theoretical models advanced so far [2-6,10,11], based on observables and observations as well [1-6,10,11].

SUMMARY CONCLUSION

Superluminous Gage Integrated Quantum Astrophysics eternally cyclically generating ordered energy signals general formalisms have provided basis to extract mesoscopic observables. Pressure and temperature will parametrize gage fields to dynamically characterize with modon strings gage functional as communicators to analyze population pattern, configuring algorithms that are amenable to experimental measurements with simulation programming.

Quantum Gravity observables have been explained by having proposition of critical density matrix, signal/noise ratio criteria to determine gravitational or levitational aspects of a typical object mediated by environment, specifically geodesics. An Integrated Model quantum cosmological algorithm vacuum gage fields equation gives description of magnetic tensor action on electric tensor fields point gradient vortex discontinuity dissipative physics.

Gage time gage space fields probability signal matrix, Critical (Γ, ρ) matrix electromagnetic gravity keying parametrically, compositional versus configurational entropy as well as quantum to mesoscopic phases transitions with transformations have been all explained physically with quantitative mathematics, linking absolute matrix all the way to observable plasma, gas, liquids, solids phases matrices having components of electromagnetism, charges, neutral matter, gravity as well as hitherto unexplainable observed physical phenomena.

Mesoscopically observable physics with paper in various shapes, like thin large areas levitating, origami glider having terminal velocity, and paper balls sinking or falling in gravity are explained having critical density matrix. Multiple phases with plasma, gases, liquids, and solids transitions with transformations have been explained having how gage space fields probability signal matrix having critical [Γ_{XYZ}] signal/noise ratios matrices. [Γ_{XYZ}] can split-separate or mix-combine, depending on phase matrix being higher or lower than critical [Γ_{XYZ}].

Entropy noisy states with vacuum absoluteness get warped having a proposed mechanism of multiverse with higher dimensional Dirac modon super fibrational strings operating hod-Plenum* PDP vacuum frictional mechanism, modulated by {0, off, on} modes of switches. Whereas at mesoscopic levels, chemistry would dictate formation of elements, out of spectra having standard particles, then assembling to create per Periodic Table rules, the compounds, metals, and structures living universe.

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