Volume 9, Issue 9, September– 2024 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP1243

An Effective Alternative to Current Mathematics

Ismail Abbas
MTC- Cairo University

Abstract:- If you don't understand mathematics, ask yourself if I'm right, because others don't understand mathematics either.

By effective alternative to current mathematics, we mean working in a more complete mathematical space than the classical 3D+t variety which is inadequate for generating well-defined definitions and hypotheses as well as its limited ability to solve time-dependent partial differential equations.

The current classical discrete 3D+t space PDE, in which time is an external controller and not integrated into the 3D geometric space, cannot be integrated digitally. This space is logically incomplete and misleading in the production of definitions and hypotheses as well as in the resolution itself of time-dependent PDEs.

It is no wonder that these definitions/assumptions are confusing and result in weak or intractable mathematics, leading to all kinds of misunderstandings, from horrible notations to undisciplined length of theorems containing a considerable amount of black magic and ending with a gray nature of the mathematical result obtained.

In this article, we present some of the most inaccurate assumptions and definitions in current classical mathematics that arise from using the 3D+t manifold space to specify initial conditions, boundary conditions, and the source/sink term.

Fortunately, these inaccurate assumptions that start with inadequate space for boundary conditions, initial conditions, and source/sink term can be spotted and analyzed via 4D unitary numerical statistical theory called Cairo techniques in the format of transition chains of matrix B to complete what is missing.

In other words, we present how to spot some of the worst mathematical conclusions of classical 3D geometry plus t as an external control numerical space, and then show how to correct them via the 4D unit space which is the subject of this article.

I. INTRODUCTION

- *If you don't Understand Math, ask yourself if I'm right, because other People don't Understand Math Either.*

The classical R^4 mathematical space is logically incomplete and generates unclear definitions and hypotheses.

It is no wonder that these definitions/assumptions result in weak or intractable mathematics, leading to all types of misunderstandings, from horrible notations to undisciplined length of theorems containing a considerable amount of black magic and ending with a gray nature of the resulting mathematics.

We identify and analyze the top 6 inaccurate assumptions existing in current classical mathematics resulting from the use of the 3D+t manifold space to specify initial conditions, boundary conditions and the source/sink term.

Fortunately, an eye trained in space recognition can detect these imprecise assumptions and analyze their inconsistency via a four-dimensional unitary numerical statistical theory in the form of B-matrix transition chains.

- *The Question Arises:*

- *Is there a so-called statistical proof or statistical refutation of a certain hypothesis?*
- *In other words, what do you mean by statistical proof never mentioned before?*

It is worth mentioning that the numerical statistical theory called Cairo Techniques is based on four universal statistical assumptions, each of which constitutes in itself a universal law or universal rule [1,2,3].

Cairo numerical statistical theory techniques result in matrix B transition chains for energy density U satisfying the four conditions above.

It is therefore logical to assume that the emerging numerical calculations and rules based on Equation 1 below are also universally true.

In other words, we admit the so-called statistical proof which is the statistical solution B-Transition-Matrix-Chains which has never existed before.

The heart of the B-matrix chain solution for the energy density U is the existence and uniqueness of the following relation Eq 1.

U(x,y,z,t+dt) = B . U(x,y,z,t) . . . . . . ……………………..(1)

Note again that B-Matrix chains are the only statistical evaluation as proof or refutation of any existing rule, definition or hypothesis.

Statistical transition matrices are missing in R^4 as well as the entire 4D unit space itself.

In other words, the 4D unit space xt where the discrete time t is a dimensionless integer woven into the geometric space is a valuable missing piece in current D^4 mathematics.

In the rest of the text, we will call the chain proof of matrix B simply a statistical proof so as not to make the text cumbersome.

Numerical statistical proof should not be confused with EXPERIMENTAL statistical proof based on random sampling from a relevant statistical population space of equally probable elements.

It should be noted that the experimental statistical evidence by sampling remains an evidence regardless of the sample size, while the theoretical statistical proof remains a proof even for a small number of free nodes n.

We emphasize again that statistical evidence or inferences that have never been known before are now available via Matrix B techniques.

Going to the limit, we would say that in the near future, all other rules or definitions based on the current mathematical multiple space R^4 (or 3D+t) that entered 20th century science should be revised and labeled as incomplete.

This would divide current science into statistical science and non-statistical science, which would mean that the actual situation is extremely serious and frightening.

Most current mathematical assumptions/definitions should be considered scary for the following four reasons:

- They live and operate on false spaces other than the only physical space of unitary nature 4D x-t, they therefore confuse false and right, which means that they are deceptive.
- These incomplete hypotheses/definitions are introduced by the greatest scientists of the 20th century such as R. Feynman, Fourier, Dirac. etc. and have therefore acquired unjustifiable credibility in physics and mathematics, whether in research or education.
- These false hypotheses cannot have rigorous mathematical proof and therefore cannot be elevated to the rank of mathematical law.

Furthermore, they do not correspond to a physical law with universal physical measurements.

The danger comes from many 20th and 21st century scientists who add gruesome stories and black magic to the subject almost every week just to prove their night and day dreams.

- Time passes quickly, leaving behind physics and mathematics, whether research or teaching, facing a bleak future in the West.

In short, these are false or useless instructions.

In the following theoretical Section II, we present a question-and-answer approach that reveals false or unnecessary instructions in different areas of classical physics, quantum physics, and mathematics.

II. Q/A THEORY AND NUMERICAL RESULTS

Throughout this section entitled Theory and Numerical Results, we present and explain the topic in a question and answer format for the sake of clarity and simplicity.

➢ *Can the first of Maxwell's four equations be improved?*

- *The first of Maxwell's four equations, namely:*

∇. E = ρ / ϵ. . . . . …………………………………………..(2)

- *Can be improved.*

Knowing that E=-Grad V and that Div Grad V = -∇^2 V where V is the electrostatic potential and ρ is the electrostatic charge density (source/sink term), then for a closed system with Dirichlet boundary conditions, equation 2 reduces to,

∇^2 V = -ρ / ϵ . . . . . ………………………………….… (3)

Equation 3 is called Poisson PDE and for ρ =0 is called Laplace PDE in 3D geometry.

If you look closely at equation 3, you will notice at first glance that it is incomplete, that is, time t is missing.

Ultimately, we would say that equation 3 looks bad.

All formulas in x-t space must contain time.

Therefore, equation 3 should conform to equation 1 and must be rewritten as follows:

d V/dt)partial = D . ∇^2 V + D. ρ / ϵ . . . . . . ………………(4)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP1243

When the time t reaches sufficiently large values, d V/dt)partial tends towards zero and we again arrive at the initial stationary state independent of the time expressed by equation 2.

The correction transition path carried out from equation 3 to reach equation 4 and the superiority of the latter are discussed in detail in refs 4.5 while the classical space Eq 3 is discussed in refs 6,7.

It is obvious that the unitary equation (4) of the 4D space xt is superior to the timeless equation 3.

Furthermore, it is clear that there are special cases where equation 3 becomes useless.

- *Is it Possible to Calculate Finite Numerical Integration via Statistical Matrix Mechanics?*

It is possible to calculate finite numerical integration via statistical matrix mechanics.

It is obvious that here it is not necessary to use FDM or any similar numerical calculation method [7,8].

Single, double or triple finite statistical integration for 1D, 2D, 3D space is not complicated but a little careful.

The starting point is to discretize the space considered into n equidistant free nodes then to calculate the transfer matrix Dnxn given by the following expression [9],

$$D_{nxn} = [1/(I - B_{nxn})] - I$$

Where B is the well-defined nxn statistical transition matrix in 1D (for a single finite integration) with RO=0.

The resulting statistical finite integration formula $I = \int_{x1}^{x7} y\, dx$ is the following numerical expression for n = 7 nodes,

$$I = 6h/77\,(6.Y1 + 11.Y2 + 14.Y3 + 15.Y4 + 14.Y5 + 11.Y6 + 6.Y7) \ldots\ldots (5)$$

And the statistical integration formula $I = \int_{x1}^{x11} y\, dx$ for 11 nodes gives:

$$I = 10\, h/\, 145*[6.191 + 10.715 + 13.862 + 15.921\ 17.056 +$$

$$17.4344025 + . . +. . .] \ldots\ldots (6)$$

Equations 5.6 are the equivalence of Simpson's rule for 7 and 11 nodes respectively.

It is worth mentioning that the numerical results of equations 5.6 are more accurate than those obtained from the trapezoidal rule and those obtained from Sympson's rule.

Also note that the artificial method of Lagrange multipliers or any other statistical assumption is not required.

This clearly shows that the numerical statistical method of B matrix chains in a 4D unit space is more complete than the classical 3D+t one.

In the digital integration process, current mathematical tools are weak and tend to be useless in borderline cases.

- *Can B-Matrix Statistical Techniques Derive Gauss's Statistical Law?*

The Gaussian distribution, is a continuous probability distribution sometimes called a normal distribution, is widely used to model continuous random variables.

This is the most important type of random variable, sometimes called the normal distribution f(x) of the random variable x, parameterized by a mean (μ) and variance (σ^2).

The Gaussian distribution is not easy to derive mathematically but it can be obtained in a simple way via B-matrix statistical techniques.

$$f(x).\, dx = 1/\, \sigma \sqrt{2\pi}\ \ \mathrm{Exp} -1/2(\,[x - \mu\,]/\,\sigma)^2 .\, dx \ldots\ldots (7)$$

- *In Normal Conventions.*

We expect the distribution of the energy density field resulting from the B transition statistical matrix chains to be exactly the same as that of the Gaussian distribution Eq 7.

We also assume that it can simply be derived numerically using modern B-matrix statistical mechanics along the same route as statistical numerical integration (**Q/A (2)**).

The current definition of the Gaussian distribution is one of the most vague and misleading definitions in so-called useless mathematics: “A discrete Gaussian distribution is a distribution over a fixed lattice where each point in the lattice is sampled with a probability proportional to its probability mass according to the standard (n-dimensional) Gaussian distribution.”

It is clear that the above definition is useless and should be replaced by [9]:

A discrete Gaussian distribution is a steady-state distribution over any fixed network, where each network state of any initial conditions evolves statistically over time toward the given Gaussian distribution:

$$f(x) = C1.\, \mathrm{Exp}\,(-x^2/\, \sigma^2) \ldots\ldots (8)$$

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP1243

For example, in the formula of 1D statistical integration:

The statistical integration formula for 7 nodes is obtained from the formula,

I = 6 h/77 (6.Y1 +11.Y2 + 14.Y3+15.Y4 +14.Y5 + 11.Y6 + 6.Y7). . . .(9)

And the statistical integration formula for 11 nodes gives,

I=10 h/ 145*[6.191+ 10.715 +13.862 +15.921 17.056+ 17.4344025 + . . +. . . and so on] . . . .(10)

By performing a numerical curve fit to the numerical values of the dependent variable Y in Equations 9.10, you obtain values similar to those obtained from the Gaussian distribution of Equation 7 with C*1/σ^2 = 0.07 and 0.047, respectively.

It is clear that the Maxwell-Boltzmann statistical equation 7 is only a stationary state of the statistical integration formulas from the Cairo techniques, which leads to what is called the Gaussian distribution.

It goes without saying that classical mathematics does not lend itself to this derivation.

➢ *What is the Diffusivity Coefficient α for the Energy Density and what is the so-called Laplacian theorem?*

To our knowledge, the diffusivity α of the energy density U(x,y,z,t) has never been correctly defined in vacuum or elsewhere.

The naive definition of thermal diffusivity as α = k/ρ s in normal conventions is almost useless.

The need for a common definition for all types of energy density is obvious.

We begin by explaining the so-called Laplacian theorem [12,13] for a volume of sample space V surrounded by a closed surface A.

there exist two types of diffusivity α:

- *Microscopic Diffusivity with n Free Nodes Inside V given by,*

α = dU(x,y,z,t)/dt)partial/ U(x,y,z,t) . . . . (11)

And,

- *Macroscopic Diffusivity at the Boundary Surface Surrounding V given by,*

α = **C**. $U_{Boundaries}$ / Unodes

Where **C** is the speed of the wave = 330 m/sec for sound and 3E8 for EMW.

A striking fact is that the macroscopic diffusivity is exactly equal to the microscopic diffusivity for all RO element of [0,1]

The above fact belongs to energy conservation in a closed system.

This equivalence is a form of Laplacian's theorem.

Another form of Laplacian's theorem is given by equation 1.

Furthermore, the solution of the heat diffusion equation in 4D unit space via B-matrix string technique predicts that the speed of the signal which is the speed of light in vacuum **C** as [9,10,11,12]

C=T1/2 *log 2 * L^2/ (thermal diffusivity α)……………(12)

From the thermodynamic tables, you obtain,

For metallic aluminum, α(Al) = 1.18 E-5 MKS units

For legal carbon steel, α (steel) = 2.5 E-5 MKS units

And from ref 10 you get,

T1/2 for aluminum cube of 10 cm side = 45 sec.

T1/2 for a steel cube with a side of 10 cm = 100 sec.

Substituting the above values for α and T1/2 into equation 12, we arrive at a value of c close to **Cemw = 2.9 E3** in for both cases of aluminum cube and steel cube.

Needless to say, there is no way to find a relationship between the speed of light and thermal diffusivity via classical R^4 mathematics.

The same Laplacian theory can help to find the value of the diffusivity coefficient of the vacuum energy density α as,

α = $\mathbf{C}_{wave}$ * **U** at A_{BC} / **U** . Volume . . . . m^2/sec

For a cube of side L.

This means that α tends to zero for free space inside a closed volume for all types of energy density.

Again, classical R^4 mathematics is useless for finding the value of energy diffusivity in a vacuum or for finding the correct relationship between the speed of light c and the thermal diffusivity of metals.

➢ *Is Unified Field theory Schrödinger's wave Equation or its Square?*

We assume that the Schrödinger wave equation,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24SEP1243

h dΨ/dt)partial=-h2/2m . Nabla^2 Ψ+ V Ψ …………… (13)

In 3D + t, classical space is incomplete and cannot be considered as a unified field theory.
on the other hand, its square,

d/dt)partial U= D Nabla^2 U+ DS. . . ………………….. (14)

Where U=Ψ^2=Ψ . Ψ*

and S*=DS is the source/sink term (extrinsic or intrinsic).

Is more complete and more eligible to be a unified field theory.

Over the past four years, Equation 2 has been successfully applied to solve almost all classical physics situations such as Poisson and Laplace PDE, heat diffusion equation, and quantum physics problems such as quantum particles in a well of infinite potential or in a central field.

Finally, Equation 14 was applied to shed light on the mystery of vacuum dynamics, as well as the formation and explosion of the Big Bang.

➢ *Can the Statistical theory Explain the Formation and Explosion of the Big Bang?*

The statistical theory of B-matrix strings can explain the formation and explosion of the Big Bang.

The details of this topic are explained in detail in ref 12.13 and so there is no point in repeating it.

III. CONCLUSION

The idea of this work is to begin to replace current numerical mathematics and theoretical physics that live and operate in an R^4 spatial manifold with those operating in a modern 4D x-t space.

We first describe what useless mathematics is and its dangerous consequences and how to resolve this dilemma via the use of the 4D discrete unit space from the numerical statistical theory of matrix chains B of Cairo techniques.

Next, we introduce the equality of microscopic energy density diffusion and macroscopic energy density diffusion into the modern Laplacian theorem in 4D unit space.

Finally, we explain the unexpected and striking results when we replace current classical mathematics with higher B-matrix string techniques.

The top 6 mathematical questions and answers in classical physics, quantum mechanics and pure mathematics are explained and validate the superiority of 4D xt unit space.

The accuracy and precision of the numerical results show beyond doubt that the proposed 4D unit space is the one in which mother nature operates.

We can state that the proposed 4D unit space, which has never been mentioned before, forms the basis of a unified field theory of all types of energy density, while the classical manifold space R^4 is inferior and incomplete.

In conclusion, we recommend the proposed 4D unit space which constitutes a real breakthrough in the search for a new 4D numerical statistical theory to replace the classical incomplete R^4 mathematical space.

- *The author uses his own double precision algorithm [15,16,17].*
- *Python or MATLAB library is not required.*

REFERENCES

[1]. I.M. Abbas, A numerical statistical solution to the partial differential equations of Laplace and Poisson, I.M. Abbas, IJISRT journal, Volume 5, Number 11, November – 2020.
[2]. I. Abbas, IJISRT, Time Dependent Numerical Statistical Solution of the Partial Differential Heat Diffusion Equation, Volume6, Issue , January – 2021.
[3]. Abbas, How nature works in four-dimensional space: the complex and untold story, ResearchGate, IJISRT journal, May 2023.
[4]. I. Abbas, Is it time to reformulate the partial differential equations of Poisson and Laplace? , ResearchGate, IJISRT review, June 2023.
[5]. I.M. Abbas, IJISRT, Time Dependent Numerical Statistical Solution of the Partial Differential Heat Diffusion Equation, Volume6,Issue ,January – 2021
[6]. John H. Mathews, Numerical methods for Mathematics, Science and Engineering,1994, pp. 346-399.
[7]. Mona Rahmani, UBC, Numerical methods for solving the heat equation, the wave equation and the Laplace equation (finite difference methods, January 2019
[8]. I. Abbas, Partial differential equations versus modern statistical mechanics-The doomy future, ResearchGate, IJISRT review, May 2024.
[9]. I. Abbas, Effective unconventional approach to statistical differentiation and statistical integration, ResearchGate, IJISRT journal, November 2022.
[10]. I. Abbas, A rigorous experimental technique for measuring the thermal diffusivity of metals, ResearchGate, IJISRT review, August 2022.
[11]. I. Abbas, Unitary space, Laplacian theorem and speed of light c, , ResearchGate, IJISRT journal, August 2024.
[12]. I. Abbas, Is it time to demolish current mathematics ?,IJISRT journal, Sept, 2024.
[13]. I. Abbas, Quantum Buzzle, Vacuum Dynamics and the Big Bang June 2024, International Journal of Innovative Science and Research Technology. DOI: 10.38124/ijisrt/IJISRT24JUN1700 Lab: Ismail Abbas's Lab
[14]. I. Abbas, Theory and design of audio rooms -Physical formulation, ResearchGate, IJISRT review, August 2024.

[15]. B12- -I. Abbas, How to transform B-Matrix chains into Markov chains and vice versa, ResearchGate, IJISRT review, December 2020
[16]. I.M. Abbas et al, A critical analysis of the propagation mechanisms of ionizing waves in the event of a breakdown, I Abbas, P Bayle, Journal of Physics D: Applied Physics13 (6),8-
[17]. I.M. Abbas et al, IEEE.1996, Pseudo spark -discharge, PlasmaScienceTransactions24(3):1106 - 1119, DOI:10.1109/27.