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How to merge quantum mechanics and General relativity – Part II ***

Ismail Abbas1, Sherif Ismail2, Nora Abbas3

1 MTC, Cairo University

2 Faculty of Medicine, Cairo University

3 Faculty of Medicine, Cairo University

Abstract

In a previous article entitled How to merge quantum mechanics and general relativity we explained how to apply the B-transition matrix statistical chains techniques to solve 6 unanswered questions and generate new laws and rules in wide area of classical and quantum physics, statistics, and pure mathematics.

In this article, which extends the previous one, we use the same theory to expand our previous statistical analysis by answering and analyzing 6 new important and urgent questions:

1-What is the physical control volume (CV) proposed by the author in 2020, which we call Abbas' control volume to distinguish it from the almost inactive standard or classical mathematical control volume, and how is it used to accurately describe the nature of time-dependent events?

2-Why is it impossible to merge Schrödinger's quantum mechanics with Einstein's general relativity, while it is simple to merge Abbas's quantum mechanics with Abbas's general relativity?

3-Did Einstein go through ten years of confusion and loss of knowledge in physics just before presenting his theory of general relativity?

4-Is it true that Special Relativity is just a special case of General relativity?

5. How can we introduce and solve the time-dependent Schrödinger squared partial differential equation, and more generally, those of quantum systems?

6. How can we unify Abbas's quantum mechanics and Abbas's general relativity?

Thanks to the FRAMEWORK of the statistical theory of B-matrix chains, the answer to all the above questions is provided in a rigorous manner and, moreover, new rules and theorems have been generated

This striking fact is the subject of this article.

Finally, it should be clarified that this article does not aim to minimize the major contributions of the great physicists and mathematicians of their time such as Einstein, Schrödinger, Heisenberg, Minkowski, Hilbert and Riemann, among others, but rather to address the main errors and limitations of their theories, where applicable.

Note: If you are not familiar with the universal laws of physics, please stop reading. This article is not intended for you.

I.INTRODUCTION

Mathematics entered physics as a tool but little by little it transformed to be the master.

In the sense that universal laws of physics in 4D unitary x-t space can generate new classical physics and quantum physics in addition to pure mathematics and probability and statistics when the opposite is not **true.**

Current theories adopt mutually incompatible ontological structures:

Some consider spacetime to be dynamic, while others consider it fixed; some require strictly local interactions between free nodes, while others admit non-local correlations; and some rely fundamentally on the quantization of interaction, while others rely on regularity and continuity.

It follows that fundamental concepts such as space, time, locality and the arrow of time, etc., cannot be defined consistently within one theory without being contradicted by another.

However, a few years ago, a revolutionary physics emerged.

This new physics is characterized by a precise definition of time as a three-component vector, tx, ty and tz, defined along the x, y, and z axes, and intimately linked to them.

This definition of time in the four-dimensional unit space x, y, z, t introduces a new physics that differs radically from classical

inactive physics, defined in R^4 which is the separable space x-t in the three-dimensional geometric space xyz, where time t acts as an external controller.

One could compare the inactivity of classical or standard physics to the description of a three-dimensional cube, sphere, or pyramid in two-dimensional geometry as a square, circle, or triangle, respectively.

The question then arises:

to which of the two spaces mentioned above does the nature of the universe belong that produces all of classical and quantum physics, as well as pure and applied mathematics?

The quantitative results of experimental techniques and observations already provide the answer, demonstrating that natural phenomena, whether classical or quantum systems, are statistical, finite, irreversible over time, and subject to the principle of conservation of energy. This fact means that every well-defined physical or mathematical problem has a natural statistical solution applicable to a suitable and finite control scale; this in itself constitutes the theory of Cairo techniques [7, 8, 9, 10, 11].

We believe that the revolutionary theory of Cairo techniques can be succinctly expressed by Equation 1 below:

Stress tensor x Strain or curvature tensor =I . . . (1)

For all free nodes within the defined control volume of the physical problem under study.

Furthermore, we believe that Equation 1 enables us to solve all problems in classical and quantum physics, as well as in pure mathematics and statistics.

The physical meaning of Equation 1 is that every case in physics or mathematics, up to 2 × 3 = 6, has its own energy density and spacetime curvature.

Moreover, equation 1 preserves the Lorentz transformation dx dt = dx* dt*, which ensures the continuity of spacetime under the influence of motion, and also preserves the direction or arrow of time, which is a necessary condition for physical entropy, according to the second law of thermodynamics.

At the extreme,

in the limit, one could say that Equation 1 is the only acceptable law in mathematics and physics.

In this sense, any mathematical or physical law or rule compatible with Equation 1 should be accepted; any other would be refuted.

The above-mentioned fact was at the heart of the investigations in the previous articles entitled How to Generate New Mathematics parts 1, 2, 3, 4 as well as article 5 part 1 and part 2 which constitutes the present research [2,3,4,5,6,7].

The most important thing is that the first equation explains itself, unfolds and operates in what is called the closed-loop control volume that the author introduced in 2020 in 1D, 2D or 3D.

Equation 1 is sometimes called Abbas' equation for discrimination.

We believe that this control volume is new paradigm which is one of the best choices to model nature rather than a discovery.

In this control volume the stress tensor force F and the space-time curvature C can be expressed in terms of ∇^2.

This is something completely different to the standard physics definition F=-grad(U) where U is a space dependent amount of potential energy. Therefore, our serious attempt aiming to reconstruct the foundations of a new theory unifying quantum mechanics and general relativity is based on the appropriate definition of control volume where stress and strain tensors implying the following revolutionary equation:

Stress tensor x space time curvature tensor = I . . . . . (1)

The revolutionary Equation 1 is a universal law of physics, implicit in nature since the Big Bang, and allows us to solve all problems in classical and quantum physics, as well as those in pure mathematics and statistics. Moreover, Equation 1 preserves the arrow of time, a necessary condition arising from natural entropy and stated in the second law of thermodynamics [7,8,9,10,11].

At the extreme, we would say that equation 1 is the only acceptable law in mathematics and physics.

In the sense that any mathematical or physical law or rule compatible with equation 1 should be accepted, otherwise it will be refuted [12,13 RG].

Needless to say, Einstein's special and general relativity is not physics. Schrödinger's PDE in 1927 is not physics.

Both theories are not compatible with equation 1 and should be refuted.

Finally, in this article, we present and address six urgent and still unanswered questions:

Q1

What is the physical control volume (CV) proposed by the author in 2020, which we call Abbas' control volume to distinguish it from the almost inactive standard or classical mathematical control volume, and how is it used to accurately describe the nature of time-dependent events?

A1

the physical control volume is the first breakthrough.

Note that the closed control volume is the home or site for the statistical transition matrix B in classical physics and statistical transition matrix Q in quantum physics which generates the transfer matrices towards the stationary state.

Note also that the Heizenberg matrix in quantum mechanics is a transfer matrix, but it is neither transitional nor statistical.

To date, we only know of two transition matrices, namely the Markov transition matrix and the proposed B transition matrix which is much more efficient [12,13,14,15,20].

The simple definition of the control volume proposed by the author is any closed volume discretized into n equidistant free nodes and contained in a closed surface A subject to Dirichlet boundary conditions [18,19,20,21].

Figures 1, 2 and 3 are three illustrative examples of a closed control volume discretized into n equidistant free nodes and contained in a closed surface A subjected to Dirichlet boundary conditions.

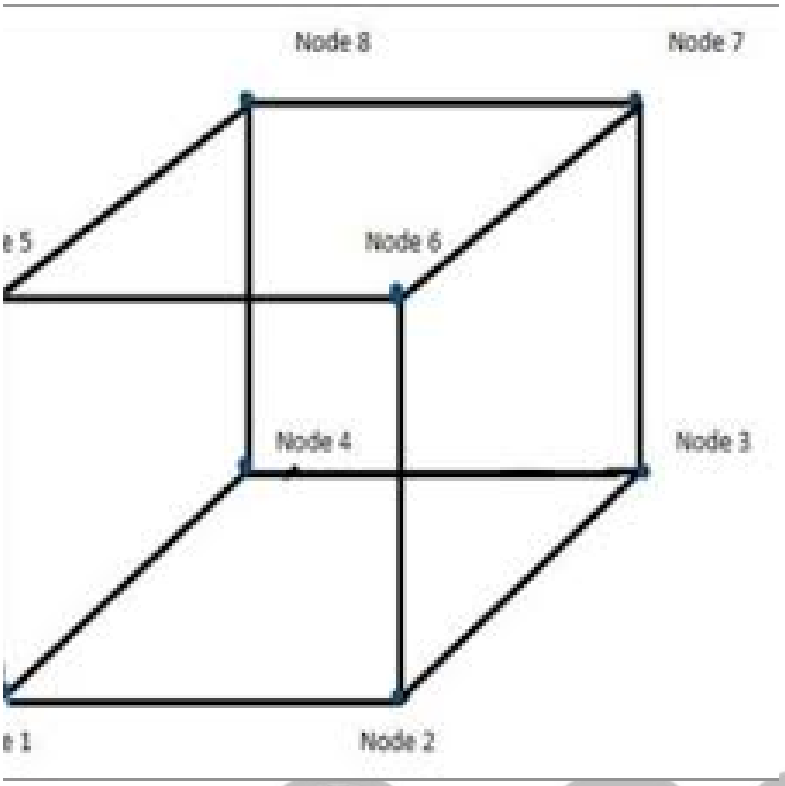

Fig.1, A 3D cube of 8 equidistant free nodes subject to 8 Dirichlet boundary conditions.

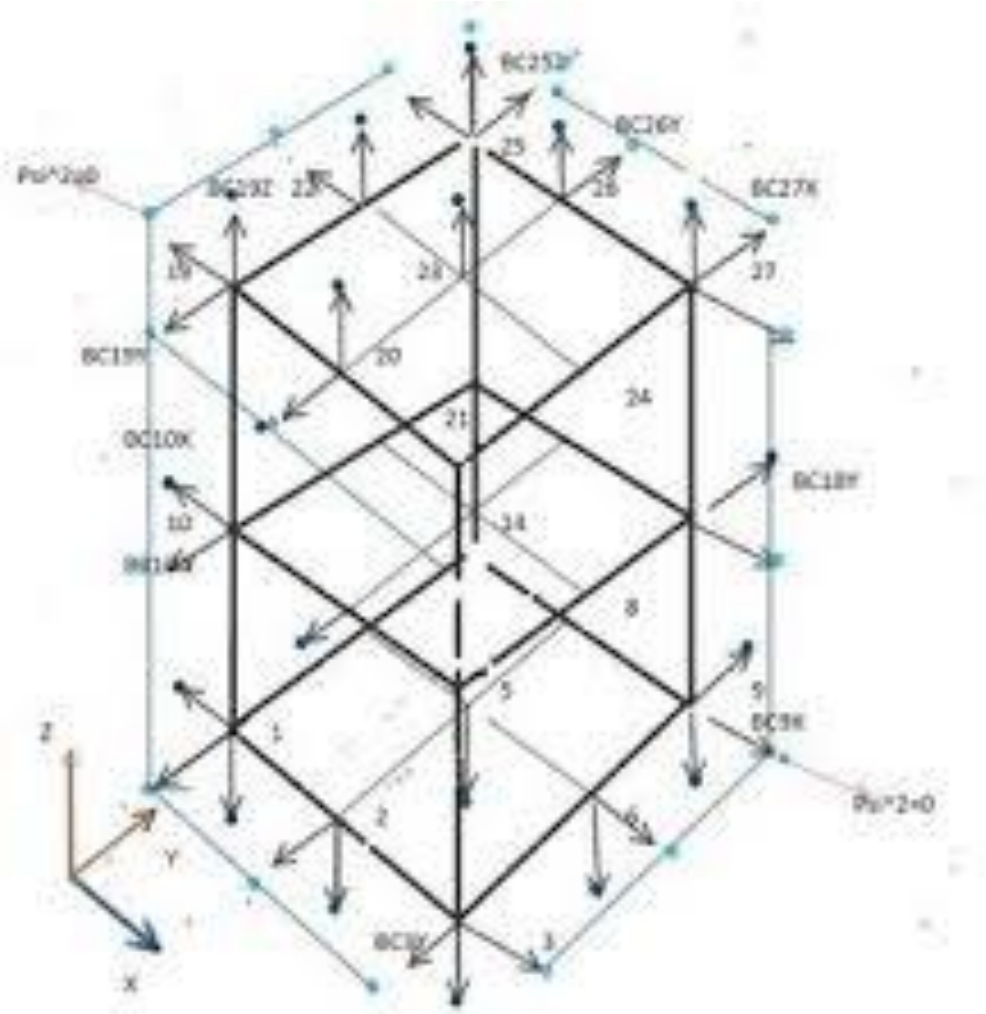

Fig.2, A 3D cube of 27 equidistant free nodes subject to 27 Dirichlet boundary conditions.

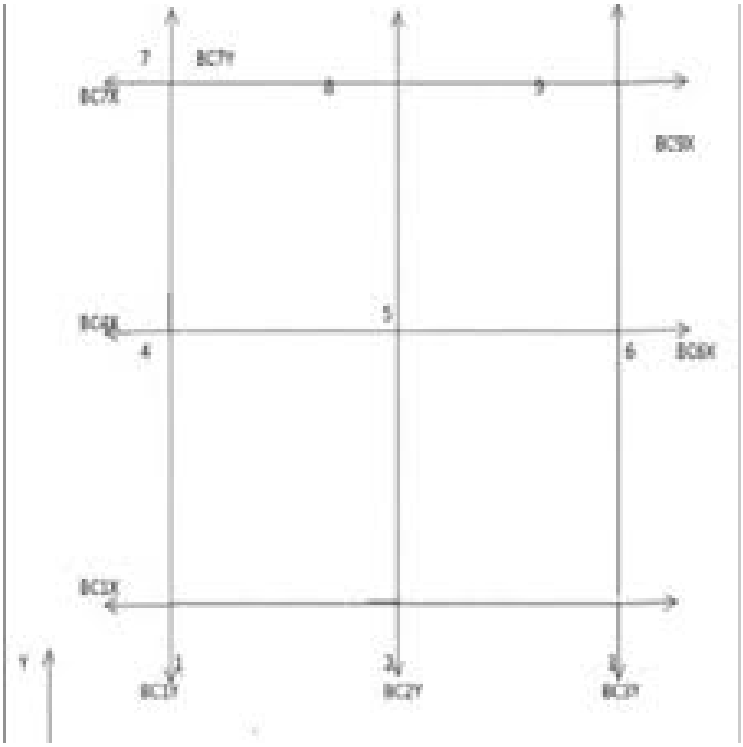

Fig.3, A 2D square of 9 equidistant free nodes subject to 9 Dirichlet boundary conditions.

The previous question can also be answered in four consecutive steps, as follows:

Step 1

Draw the 1D, 2D or 3D geometry identical to the geometry of the problem in question and discretize the resulting control volume into n equidistant free nodes as shown in Figures 1, 2 and 3.

Note that n is chosen arbitrarily, but the accuracy and speed of convergence increase as n increases.

Step 2

The input elements of the main diagonal Bi,i are not arbitrary but are subject to the medium parameters defined in the problem:

For example,

Bi,i =0 for vacuum medium.

Bi,i=Constant, for example 0.2 for thermal conduction in steel.

Etc..

Step 3

Construct the whole Bij matrix through the use of the 4 statistical conditions [2020] explained briefly as,:

The physical nature of matrix B is essential and briefly explained below through the four conditions i to iv:

i-Bi,j = ½, ¼, or ¶ for 1D, 2D, or 3D dimensions, depending on whether i is adjacent to j or not, and Bi,j = 0 otherwise. This is equal prior probability.

ii- Bii = RO, that is, the main diagonal is composed of constant ROs.

For example in the heat diffusion equation, RO can take any value in the closed interval [0,1], while for Laplace and Poisson PDEs, RO = 0. In an empty medium or vacuum, Bii = 0, which means that B is a matrix whose main diagonal is zero, corresponding to the assumption of a zero residue after each time step for all free nodes.

iii. Bi,j = Bj,i for all i and j.

The matrix B is symmetric, in accordance with the detailed physical principle of equilibrium.

iv - The sum of Bi,j = 1 for all rows far from the edges and the sum of Bi,j < 1 for all rows connected to the edges, which means that the probability of the entire space is equal to 1.

Clearly, the statistical matrix B is very different from the Laplacian mathematical matrix A and the Markovian transition matrix [HOW TO}.

The physical nature of B is clear and has been briefly explained above through conditions 1 to iv, which confirm hypothesis 3.

Step 4

Once the statistical transition matrix B is determined, the spatiotemporal transfer matrix D(N) is written:

$$D(N) = B + B^2 + B^3 + \ldots + B^n \ldots\ldots (2)$$

For a sufficiently large number of iterations N, the stationary solution is reached, and the transfer matrix D is then expressed as follows:

$$D = \{ 1/(I\_B) - I \} (3)$$

The spatiotemporal evolution of the system's energy density can then be calculated from the formula:

$$U(x,y,z,t=Ndt) = D(N) \times (b+S) + B^n \times IC \times \ldots (4)$$

Equations 2 and 4 also constitute a new formula proposed by the author, as a complement to equation 1.

Where,

b, S, and IC represent, respectively, the boundary condition vector, the source/sink vector, and the boundary condition vector.

Note that the transfer matrix D(N) is a tensor $D_{x,y,z}^{t}$ for finite N and tends towards a matrix as n tends towards infinity.

It is clear that N is the number of iterations or time jumps dt (not to be confused with n the number of free nodes).

At the extreme, one could again assert that equation 1 is the only acceptable law in mathematics and physics. In other words, any mathematical or physical law or rule compatible with equation 1 should be accepted; otherwise, it would be refuted.

A striking example is that we can use equation 1 to formulate Einstein's general relativity in a single sentence, and similarly, we use it to formulate the Schrödinger solution for the hydrogen atom, again in a single sentence, considering these two approaches or solutions as a unification of general relativity and quantum mechanics.

The preceding key events are the subject of this article.

It should be noted that A. Einstein and E. Schrödinger did not correctly define time and considered it as an external scalar controller acting independently of the geometric axes xyz and axix in D^4 space.

In conclusion, the present analysis implies that Einstein's theory of gravitation (or general relativity) in 1915 and Schrödinger's

classical partial differential equation in 1927 are not in agreement with equation 1 and must be refuted.

Q2-

Why is it impossible to merge Schrödinger's quantum mechanics with Einstein's general relativity, while it is simple to merge Abbas's quantum mechanics with Abbas's general relativity?

A2-

We assume that true quantum mechanics and Einstein's general relativity have more in common than differences.

However, it remains impossible to unify the two current erroneous theories, simply because they are both incomplete and misleading.

Needless to say, Einstein's special and general relativity is not physics. Schrödinger's PDE in 1927 is not physics.

Both theories are not compatible with equation 1 and should be refuted.

But when we analyze the matrix mechanisms underlying the geometry of the two theories, we find that they belong to the same framework of Equation 1, which allows us to resolve the difficulties and differences they present. In other words, the seemingly inherent differences between these two great theories disappear only if we modify their basic formulation to make it compatible with Equation 1.

Therefore, we assume that the standard Schrödinger wave equation,

$$i\hbar(d\psi/dt) = \hat{H}\psi \ldots (5)$$

should be replaced by its square because it is incomplete and cannot be considered within the framework of a unified field theory.

On the other hand, its square [16,17],

$d/dt)\partial U = D\,\nabla^2 U + S$... (6)

Note that equation 6 is compatible with equation 1.

where $U = \Psi^2 = \Psi \,.\, \Psi^*$

and S is the source/sink term in Jm^{-3} s (extrinsic or intrinsic),

is more complete and better suited to be integrated into a unified field theory [16,17,18,19,20,21].

Over the past four years, equation 1 has been successfully applied to the solution of almost all problems in classical physics, such as the Poisson and Laplace partial differential equations, the heat diffusion equation, and problems in quantum physics, such as those of quantum particles in an infinite potential well or in a central field. Furthermore, equation 2 has proven effective in solving problems in pure mathematics, such as numerical differentiation and integration, as well as the sum of infinite power series.

It is all linked to intelligent software algorithms required for computational physics [22,23].

Finally, equation 6 has helped to shed light on the mystery of the formation and explosion of the Big Bang.

Regarding the current definitions of stress and strain (or curvature) tensors in Einstein's general relativity, it is clear that

they are poorly defined, or even undefined, in true 4D unit space xt, making their fusion practically impossible [21, 24, 25, 26, 27].

Therefore, any serious attempt to reconstruct the foundations of a new theory unifying quantum mechanics and general relativity should be based on a novel definition of stress-strain tensors, generating the following revolutionary equation:

Stress tensor × curvature tensor of spacetime = I . . .(1)

Again, equation 1 is indeed a universal law of physics following the Big Bang that is imposed by the nature since the Big Bang itself is the source of all our physics and mathematics which solve all classical and quantum physics problems in addition to pure mathematics and statistics.

However, we can demonstrate or verify the possibility of merging QM and GR when we go through two consecutive steps:

1-We use equation 1 to generate Einstein general relativity just in one sentence.

2- We use the same equation 1 to generate the Schrodinger solution of H-atom in another one sentence and consider these two steps as a unification of general relativity and quantum mechanics.

This explained in detail in Section II the theory and numerical results.

We emphasize once again that time cannot be modeled as an external scalar quantity, as is generally the case in the well-knowns pace R^4, but must be woven or integrated with the three geometric axes xyz while remaining perpendicular to them, which is satisfied by the B-matrix chains.

Q3

-Did Einstein go through ten years of confusion and loss of knowledge in physics just before presenting his theory of general relativity?

A3

We assume that Einstein went through ten years of confusion and loss of knowledge in physics from 1905, the year he presented his semi-successful special relativity, to 1915 just before presenting his catastrophic theory of general relativity.

It is clear that his 1915 general relativity contradicts the 1905 special relativity, and that adding more failures contradicts itself.

Staunch defenders of Einstein claim that special relativity is indeed the limit of the flat space of general relativity?

But No. This is a common mistake found in all textbooks of general relativity.

Here are three questions that answer each other.

1-If Einstein himself couldn't deduce special relativity from general relativity simply by canceling curvature or acceleration, who else could?

Special relativity (SR) and general relativity (GR) remain to this day two distinct or separate theories.

2. General relativity and special relativity are both wrongly deduced from two inconsistent thought experiments that we call black magic.

It is impossible to deduce a false theory from another that is equally false.

3- The unitary 4D spacetime of special relativity is not flat but is curved only in the x dimension.

Assuming that general relativity (GR) in the 4-dimensional unit space x-t can be expressed as follows:

dx dy dz dt = dx dy dz dt ... (7)

Then, special relativity (SR), derived from GR in the 1-dimensional unit space x-t, is:

dx dt = dx dt ... (8)

Equation 8, which constitutes special relativity itself, shows that spacetime in SR is curved along the x-axis.

Furthermore, the magnitude of this curvature in SR can be calculated from the statistical chains of the matrix B [3,4,5,6].

Q4

-How is it true that Special Relativity is just a special case of General relativity?

A4

The first major advance consists of extending the current 3D Cauchy-Riemann stress tensor, x,y,z, to the 4D unit space xyzt, where this extension is logically assumed to be the following:

Fxx Fxy Fxz Fxt

Fyx Fyy Fyz Fyt

Fzx Fzy Fzz Fzt

Ftx Fty Ftz Ftt

The second major advance consists of expressing the stress tensor above in terms of the Laplacian ∇^2 as follows:

∇^2xx ∇^2xy ∇^2xz ∇^2xt]U(x,y,z,t)

∇^2yx ∇^2yy ∇^2yz ∇^2yt]U(x,y,z,t)

∇^2zx ∇^2zy ∇^2zz ∇^2zt]U(x,y,z,t)

∇^2tx ∇^2ty ∇^2tz ∇^2tt]U(x,y,z,t)

Where U(x,y,z,t) represents the energy density at the considered free node.

We call the above stress tensor or matrix **M1***

Note that transition matrix summation B+B^2+B^3+...for finite number of iterations or time jumbs N is a tensor whereas for N tends to infinity it turns into matrix.

The third breakthrough is to assume that the multiplication of the tensors involved in Equation 9 below is indeed the same as the generalization of the universal law called Cauchy-Riemann tensor in 4D unit space xyzt.

M1 * C* = I . . . . . (9)

Where C* is the strain or curvature tensor.

The forth breakthrough here is that we should properly define and express the curvature tensor M2 in terms of ∇^2 as follows,

C*=

∇2xx ∇2xy ∇2xz ∇2xt

∇2yx ∇2yy ∇2yz ∇2yt

∇2zx ∇2zy ∇2zz ∇2zt

∇2tx ∇2ty ∇2tz ∇2tt

Now, the multiplication M1 * C* in equation 9 acquires its physical meaning and gives the correct expression of general relativity.

The Lorentzian theorem in unitary 4D xyzt space, namely,

M1 * C* = I . . . . . (9)

generates the Einstein GR in one sentence.

It is important to note that the physical meaning of equation 9 is that the four-dimensional unit space xyzt is preserved, or conserved, during motion.

Furthermore, this same Equation 9 can be used to calculate the numerical value of quantum energy levels in a hydrogen-like atom, in electron volts or kelvins.

It is therefore worth remembering that equation 9 alone constitutes both the theory of general relativity and the theory of quantum mechanics.

It is also important to note that the curvature C is proportional to the energy density U, and not necessarily to the gravitational energy density explicitly, contrary to what Einstein's erroneous assumption suggested.

Finally, it is important to note that the preceding analysis suggests that the geometric locus, or seat, of the gravitational energy density lies in the vacuum near the surface of the Sun, which accounts for 99% of the mass and gravity of the solar system.

Assuming that the graviton is responsible for transmitting gravity force it should be found in the far space near the sun not on earth.

But how do we calculate the gravitational force and gravitational curvature near the surface of the sun?

The numerical values in the cosmic tables represent the following:

Universal gravitational constants:

G=6.7E-11 MKS,

Mass of the sun Ms=2. E30 Kg

and Rs radius of the sun Rs =7E8 m.

The experimentally measured result for the curvature of spacetime near the surface of the Sun, C, is.

Now, if we use the universal constants above in equation 9, we obtain:

C = E-2 m^-1 . . . . . (10)

near the surface of the Sun.

The numerical value for C in equation 10 is almost the same numerical value for the curvature of spacetime **C** near the surface of the sun obtained theoretically by Einstein [1,6,7]

The question arises as to how the precision of GPS calculations aligns with Einstein's theory of relativity and enabled him to achieve

such important and famous results within the framework of his theory of general relativity.

We assume this question is straightforward and that the reader can easily answer it.

Another question arises :

Assuming that the numerical value of C obtained by Einstein has been confirmed by cosmic measurements, do we need other cosmic measurements to confirm the same C obtained by Abbas's general relativity techniques in equation 10 [19,20,25,26,27]?

The answer is NO.

Q5

- How can we introduce and solve the time-dependent Schrödinger squared partial differential equation, and more generally, those of quantum systems?

A5

We transform the classical or standard Schrödinger partial differential equation for ψ in 1927 into its square, describing ψ^2.

Under certain assumptions, the quantum transition matrix Q exists and obeys the same rules as the transfer matrix B of classical physics.

In other words, both the quantum transition matrix Q and the quantum transfer matrix D exist for the hydrogen-like atom and allow us to generate the Schrödinger solution for this atom in a single sentence.

Note that we can consider the similarity between the transition matrix of the quantum system Q and that of the classical system B as a sign of unification of general relativity and quantum mechanics.

Therefore, it is worth stressing again that time cannot be modeled as an external scalar quantity, as is usually the case in $\mathbb{R}^4$ space, but must be integrated into the three geometric axes xyz while remaining perpendicular to them, in both classical and quantum physics.

Q6

How can we explicitly unify Abbas's quantum mechanics and Abbas's general relativity?

A6

Both theories are subject to Abbas's bending equation:

Stress energy tensor × Strain bending tensor = I . . . . . (1)

Furthermore, classical and quantum physics systems share the same formula for the spatial and temporal evolution of energy density:

U(x,y,z,t+dt) = (b+S) . U(x,y,z,t) + (B^N) IC

To avoid getting bogged down in the details of the introduction, let's move directly to Section Two: Theory and Numerical Results.

II. Theory and Numerical Results

Almost all the theoretical physics of this subject has been clearly explained in Section I, the introduction; we therefore simply solve the H atom by Abbas' quantum mechanics and compare the results

with Schrödinger's classical PDE solution of 1927 shown in Figure 4 [26,27,28,29,30].

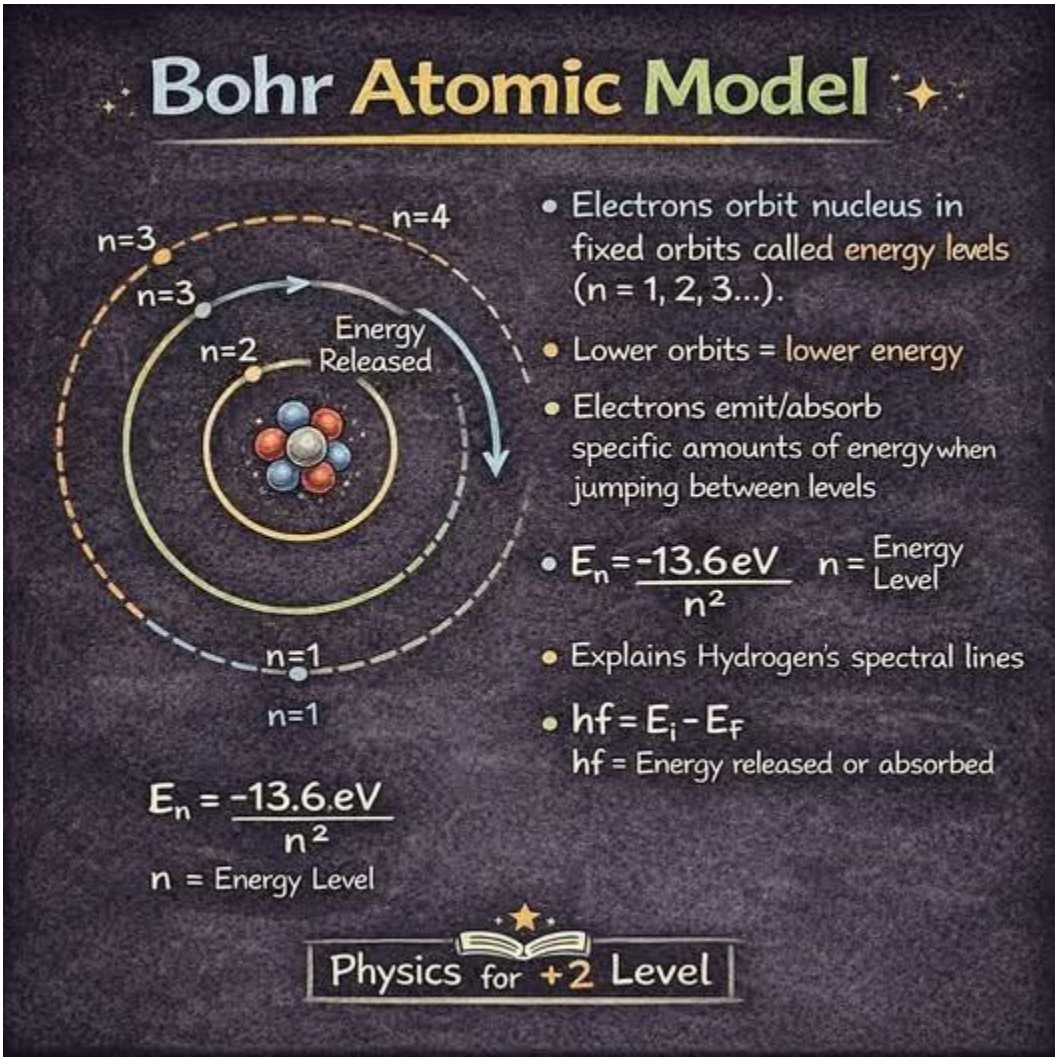

Fig.4.Bohr classical model for H-atom

The statistical theory of Cairo techniques proposes the following powerful quantum transfer matrix D [27,28,29,30]:

D 19x19=

247/400 9/16 -9/50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

1/2 1/25 3/5 -7/50 0 0 0 0 0 0 0 0 0 0 0 0 0 0

-7/50 21/40 53/200 91/200 -21/200 0 0 0 0 0 0 0 0 0 0 0 0 0

0 -21/200 39/100 23/50 33/100 -3/40 0 0 0 0 0 0 0 0 0 0 0 0

0 0 -3/40 11/40 5/8 9/40 -1/20 0 0 0 0 0 0 0 0 0 0 0

0 0 0 -1/20 9/50 19/25 7/50 -3/100 0 0 0 0 0 0 0 0 0 0

0 0 0 0 -3/100 21/200 173/200 3/40 -3/200 0 0 0 0 0 0 0 0

0 0 0 0 0 -3/200 1/20 47/50 3/100 -1/200 0 0 0 0 0 0 0 0

0 0 0 0 0 0 -1/200 3/200 197/200 1/200 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0 1/200 197/200 3/200 -1/200 0 0 0 0 0

0 0 0 0 0 0 0 0 0 -1/200 3/100 47/50 1/20 -3/200 0 0 0 0

0 0 0 0 0 0 0 0 0 0 -3/200 3/40 173/200 21/200 -3/100 0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 -3/100 7/50 19/25 9/50 -1/20 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 -1/20 9/40 5/8 11/40 -3/40 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 -3/40 33/100 23/50 39/100 -21/200 0

Note that

D^2=D and hence Q^2=Q which is property of quantum eigenmatrix.

This type of matrices A=A^2 is called in physics idle matrix and in mathematical terms, an idempotent matrix has eigenvalues ev of 0 or 1 which satisfy the golden rule

ev = ev^2 [2,4,5,31].

Therefore, the stationary energy levels of the Bohr H atom or the solution vector b of the above matrix D19x19 are obtained by multiplying the above matrix D19x19 by the vector 13.6 eV/n^2 as shown in Figure 4.

The numerical results obtained is as follows:

b*= D*[-.168 -.212 -.278 -.378 -.544 -.85 -1.51 -3.4 -13.6 -3.4 -1.51 -.85 -.544 -.378 -.278 -.212 -.168] T

assumes the following numerical values in electron volt ev:

b*=(-0.1403 ,- 0.163, -0.2121, -0.2769 , -0.377, -0.5404 ,-3.435 , -13.6 ev . . . etc) T

This stationary distribution is sometimes called quantum particle in a quadratic central field.

Here the external or extrinsic applied potential vector b*= constant/n^2 above is the eigen vectors of the transfer matrix D with eigen value ev=1 only if

Q.b*= b . . . . .(11)

The numerical result of matrix . vector multiplication in equation 11 above is:

b*=,[-877/6250 -163/1000 -10607/50000 -13843/50000 -377/1000 -54041/100000 -167633/200000 -74419/50000 -687089/200000 -68/5 -687089/200000 -74419/50000 -167633/200000 -54041/100000 -377/1000 -13843/50000 -10607/50000 -163/1000 -877/6250]T

The above values correspond almost exactly to the values obtained by N. Bohr shown in Figure 4.

In other words it is almost exact that b=b.*

We can add the following new theorems:

1- The eigenenergy state of the electron in a hydrogen atom subjected to a central quadratic field is expressed as a constant divided by n^2, n = 1, 2, 3, ..., infinity, without needing to resort to Bohr's quantization hypothesis or any other statistical assumption.

2- Equation 1, energy density tensor × curvature tensor, applies to the hydrogen atom in particular and to any quantum system in general.

Note also that Q^2=Q which is property of idle quantum eigenmatrix

III-CONCLUSION

Nature is statistically symmetric and bounded.

Furthermore, it obeys the golden rule of the irreversibility of time, as implied by the second law of thermodynamics.

Every problem in physics or mathematics, classical or quantum, possesses a natural statistical solution that applies to a suitable bounded control volume; this volume itself constitutes the theory of Cairo techniques.

The closed physical control volume CV contained in the closed zone A, subject to Dirichlet boundary conditions, is part of the Cairo statistical theory of techniques.

In this article we answered 6 important and urgent questions:

1-What is the physical control volume (CV) proposed by the author in 2020, which we call Abbas' control volume to distinguish it from the almost inactive standard or classical mathematical control volume, and how is it used to accurately describe the nature of time-dependent events?

2-Why is it impossible to merge Schrödinger's quantum mechanics with Einstein's general relativity, while it is simple to merge Abbas's quantum mechanics with Abbas's general relativity?

3-Did Einstein go through ten years of confusion and loss of knowledge in physics just before presenting his theory of general relativity?

4-Is it true that Special Relativity is just a special case of General relativity?

5. How can we introduce and solve the time-dependent Schrödinger squared partial differential equation, and more generally, those of quantum systems?

6. How can we unify Abbas's quantum mechanics and Abbas's general relativity?

The numerical solution results are stable and accurate.

Finally, it should be clarified again that this article is not intended to minimize the major contributions of the the biggest physicists and mathematicians of their time such as Einstein, Schrödinger, Heisenberg, Minkowski, Hilbert, and Riemann, among others, but rather to address the main slips and limitations of their theories, where applicable.

NB. The author uses his own double precision algorithm in Fortran language, such as that of references 31,32,33,34.

No ready-to-use Python or MATLAB algorithms are needed

Aknowledgement

The author expresses his gratitude to the Military Technical College,a distinguished joint venture of Cairo University where he began his work at the college as a lecturer assistant in physics and mathematics, in collaboration with an extremely distinguished group of Czechoslovak and Russian experts.

An experience that was both enjoyable and rewarding until he later became a professor and head of the Department of Basic Sciences, which comprises experimental and theoretical physics as well asbpure mathematics.

During this long experience, he worked at the Centre for Atomic and Nuclear Physics in Toulouse, France, where he obtained his doctorate, then as a professor at the universities ULP and UPS, as well as a research director at the CNRS in France.

The last experience, as with the first, was an opportunity to collaborate with the best leaders and the latest scientific knowledge.

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