

Math Continuity in Nature and Conjectured math models exploring the resonance play in fundamental physics. Addition to Nextex set of conjectures: Version 1.0.

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Abstract

Offers a math framework to the Perspective: Is there a structural resonant ruler in Nature? An exploratory framework to neuroscience and fundamental physics studies. Addition to Nextex set of conjectures: Version 1.0. Concluding that the resonant phenomenon probably is just the best signaling mark to the Principal phenomenon underlayered in Nature:the physical (realistic) implementation of the Fundamental theorem of Calculus or the called Theorem of Stokes.

Towards the implementation of a math model related to conjectures [1] it was proposed:

Approach 1- based on the LC electric circuit model

A first tempted approach of a math model linked to this conjectures [1] especially the conjecture that the Entropy is just a name for consequences of a resonant phenomenon (originated another approach deeper in the math of fundamental theorem of Calculus and Continuity framework Approach -2) .

The physical implementation of the reported in [1] could be like:

considering: $H(tc) = \text{flux of quanta related to electromagnetics waves/unit_of_cosmic_time}$ (i.e. considering Planck distribution)-tc,

$W_0 = 2.3, 14.F_0$

Approximating natural oscillation frequency- F_0 by considering twice the estimated lifetime of a photon [2].

$H'' + W_0^2 \times H = 0$,Nt. All derivatives about cosmic time (tc) ;in accordance to a common LC oscillator circuit model..

Modelling approach 2 – based just on the physical implementation of the theorem of Stokes and using Black Holes entropy formulation by Hawking and generalized second law of thermodynamics (GSL) (Bekenstein 1972, 1973, 1974) apud [3]

Lets take an usual description of the Stokes theorem

“Stokes' theorem says that the integral of a differential form ω over the boundary of some orientable manifold Ω is equal to the integral of its exterior derivative $d\omega$ over the whole of Ω .[4]

And then interpret Black Holes as the Boundary (due to the entropy linear proportion to surface) of the orientable manifold called in physics: Space(relativistic). From the

expression “is equal” naturally emerges oscillating universe considering an above zero energy amount.

Considering the generalized second law of thermodynamics (GSL) (Bekenstein 1972, 1973, 1974) and Hawking formulation and the quanta flux of approach 1, as a seed idea, one would be directed conducted to interpret energy as VECTORS reinforcing [2] what is would be more intuitive in it's light form. Then the generalized second law of thermodynamics (GSL) would be just the physical version of the Gauss's theorem.

The oscillation proposed to energy in the model 1 would then emerge in model 2 by the interplay between energy (amount of quanta) related to CURL operator on the (probably variable) Boundary (or black holes) and the energy amount in the Space (variable see relativistic gravity) in the form of Mass (amount of energy related to a transition energy from the boundary surface to the manifold interior usually related to the Big bang and intrinsically linked to the natural oscillation frequency of the system) and Electromagnetic Waves. Point directly that the LC circuit as pointed stressed in the Nextex set of conjectures model is the perfect toy for understand the universe dynamics. From this pathway also emerges the resonant phenomenon claimed in [2] seems to in reality not ruler but the best Flag for the real universe ruler i.e. the physical implementation of the Mathematical Continuity concept or the Stokes Theorem.

Summarizing, the math models are already done is just a matter of substitute math words by physics words respectively on the Stokes Theorem and related equations an some others:

- 1) Volume, manifold – Space (relativistic)
- 2) Boundary – Black hole Surface
- 3) Vector (F)– Energy (photon formulation is more intuitive)
- 4) Maximum in continuity ,Critical behavior , prime numbers – mass; quantum entanglement, resonance (i.e. not discernible mixed states, one cannot cluster the math Curl related to the math Divergence related).And as consequence a possible explanation to gravity i.e. the tendency to recover the critical state.
- 5) Euler number – Planck constant an define steps for the natural frequency of oscillation's harmonics of a amount of energy in a defined volume.

Considering the framework above , arise that: the displacement current of Maxell's equations probably is a toy analog of the gravity phenomenon and because this Total MASS conversion mediated by Planck law could be interpreted as a kind reversal trigger to revert photon movement and start the returning branch of the oscillatory period or electrical current movement (LC toy model). This conjecture seems to be connected observed conditions to Geomagnetic field reversal.

Conclusions

Beautifully the continuity issue seems to rule the big picture of Nature. Entropy increasing is cyclic and related to the maxima resonance (or maximum in continuity) and related critical behavior of the dynamics (gravity) driven process to convert mass in light ruled by Planck law and allowing the smooth oscillatory pattern Quantum mechanics would be the result of divergence predominance of vector fields, while general relativity would be resultant of a Critical behavior of the dynamics of the Nature system. Most of reported conjectures are resultant of a set of conjectures called Nextex (5a).

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