

Perspective: Is there an structural resonant ruler in Nature? An exploratory framework to neuroscience and fundamental physics studies. Addition to Nextex set of conjectures: Version 1.0

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From the scientific field of evaluation of chemical compounds degradation by bacteria normally is observed that ring's related compounds are the most difficult to degrade. As a evolutionary consequence bacteria of anaerobic environments perform better in this task because is common to observe that this compounds persist in time more and because this are transported to deeper levels of soil/water as an example.

This also seems to be embedded in the helicoidally common protein folding pattern like DNA and also in the cross link process with sulphur called vulcanization of the rubber industry and its remarkable stability in large time scale.

In a immediate approach adequate mathematical framework to consider this tendency to keep existing only circular networks seems to be [1]. It decomposes chaotic process in to parcels: linear (periodic) and intermittent forcing

In the neurosciences observed chaotic dynamics process, one could probably try a conceptual link of the ever present tendency to a periodic neuronal activity with the linear parcel deeply connected with circular networks (perhaps an cognitive analog of the vulcanization chemical process), while neuronal spikes to be related to the intermittent forcing parcel of this recent proposed decomposition [1]. This modelling strategy show adherence to the energetic feature in its intermittent parcel of neuronal spikes and it's probable connexion to complexity and fractals [2] because of the power law bridge pointing to the construction of a priori (not sleep mode) "low resistant" scale-free network that perhaps could be consolidated as knowledge by some connexions that shifts the overall network characteristic to a more circular like links with another scale free networks during the sleep mode when normally its registered periodic patterns dominance in EEG. Some not possible to connect networks would be eliminated (forget process to allow memory use in another day. The connected structures would persist as permanent memory.

A fundamental issue raises at this point, what explain this natural brain's tendency to only keep the information that fit better to a circular network model?

This is reported also in civil engineer field too with the ancient arcs one can find in many places one well known fact is the homogeneity of the distribution of structural stress.

In this theoretical framework of: oscillatory patterns and structural resistance a frequently issue is the resonance frequency issue and cavities.

One property well known of the brain is the existence of a Ventricular system i.e. a system of cavities.

There report of abnormal low frequencies in EEG observation related to schizophrenia incidence [5] as also too a connexion of this disease to cavities and skull volumes [6] and [7] abnormalities.

A more geral research program to the future:

Probably the resonant phenomena is not used frequently as it should be and Vitruvian man hypothesis should be revisited.

The most essential: is maxima entropy a name for the destructive effects of not understood resonant phenomenon?

Could someone math model the black role as simple cavities like that we usually find in hurricanes for example...does it sounds intuitive? Could gravity be an expression of the resonant phenomena and could the quantization of energy occur due to some limitation on the destruction capacity of the this process regarding some structural property of quanta? Why encode energy in the frequency number? This approach seem to have adherence to fit the constancy of light independency about photon's content of energy; and also the non-interacting nature of pairs of photons between each other.

Is it the Young's double slit experiment an induction of the electron's desegregation process by resonance? Maybe considering the split of electron in elementary products of the resonant process called photons solving the duality behaviour: energy amounts that have different response to resonant frequency.

Could the velocity above c in the entanglement experiments be a result of "Resonance free phenomenon" for information exchange?

The recent observation on gravity waves seems to fit this approach too.

The classification of networks according Curl and divergence properties in according to Helmholtz decomposition seems to be also a promising tool[9] regarding response to resonance.

The conjectures above are linked to set called Nextex with emphasis in LC electrical model (see references 10e)

References:

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[3] Prado, P.F . Exploratory ideas towards the decodification of Borh's particle-wave duality principle. Version 1.1. DOI: 10.13140/RG.2.1.2289.8008

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[8] Ideas about a linkage between Bohr's wave-particle duality , imaginary numbers and Riemann hypothesis: addition of new extreme exploratory conjectures to the set Nextex. Version 2.5. Available from:

https://www.researchgate.net/publication/288831715_Ideas_about_a_linkage_between_Bohr%27s_wave-particle_duality_imaginary_numbers_and_Riemann_hypothesis_addition_of_new_extreme_exploratory_conjectures_to_the_set_Nextex_Version25 [accessed Sep 13, 2016].