Cycle [entropy ↔ negentropy] of informational type of the permanent state of universe

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Abstract

The standard model limits itself to calling the origin of the BIG BANG "singularity". The theory of everything, DUO5, justifies the existence of a Permanent Stochastic Universe (PSU) state by the unavoidable inertial paradox [1]. The PSU is the origin of the Provisional Observable Universe (OPSU) state. This permanent state is represented by a quasi-infinity of preons (also called BODYS or tachyons), in the form of oscillating stochastic dipolar 1D strings. The PSU has a quasi-infinite informational entropy. Such a state (without mass-space-time continuum) has a non-zero probability of synchronizing a part of the preons, in a BEC (Bose-Einstein-Condensate). This BEC is at the origin of the BIG BANG, by a phenomenon of [saturation→fusion→inflation→causal separation] described in [1]. There is a constant between generalized informational entropy and partial negentropy in the cycle [entropy↔negentropy]. Informational negentropy, in the form of synchronization, generates the fundamental preon which, according to DUO5 and John Wheeler [2], is the common elementary particle at the origin of matter and space-time.

1. Introduction

The notion of informational entropy H(X), introduced by Shannon, differs from thermodynamic entropy [3], because it is only information.

$$H_b(X) = E[\log_b P(X)] = \sum_{i=1}^{n} P_i \log_b\left(\frac{1}{P_i}\right) = -\sum_{i=1}^{n} P_i \log_b(P_i), \qquad (1)$$

Describing this application in the context of the steady-state universe is constrained by the absence of any determinism, quantization, or logarithmic basis. In the PSU application, the

source X is equivalent to the number of preon oscillators N→∞. Since each frequency is random, we consider that there are as many different frequencies as there are preons. The inertial paradox [1] sets a unit probability for this steady-state to exist.

The constraint of non-determinism implies an indeterminate number N of preons, with a random variance. Indeed, the inertial paradox [1] implies that each preon dipole oscillator has a randomly varying frequency. At each zero point, the probability of randomly obtaining an absolute zero, in the confined frame of each pole, is highly improbable. But in the context of a number N→∞, the probability is not zero. The variance of N is justified by the low probability of obtaining an absolute zero at the zero point. In this case, the spatial indeterminacy becomes infinite and cancels the preon concerned. The inertial paradox fills the "hole" left, which causes a fluctuation of N, making it typically randomly variable. Without this random variance, one would have to admit the ineptitude of a determinism fixing the number N of preons. Relation (2) proposes the following paradox: the informational entropy of the large number N is compensated by its tendency to synchronize a limited number No. This synchronization results in a negentropy J(No) of a limited number, which responds to:

$$J\left(N_o\right) + H\left(N\right)\frac{N_o}{N} = 0 \qquad (2)$$

The equivalence between negentropy and entropy is verified by the ratio No/N. The DUO5 theory seeks to avoid any determinism and to show that the consequences of the inertial paradox are the causes of fundamental physical laws, strictly verifiable in the observable state of the universe. In the absence of these two constraints, this theory would have a speculative character.

2. The paradox of time in the permanent state of the universe (PSU)

According to DUO5, the Permanent State of the Universe (PSU) is unconnected and therefore has no mass-space-time continuum. Each preon string is a separate "world". As a result, the random unfolding of events can continue indefinitely. Overall, the PSU is uncreated and has no time limit, because it does not flow. However, we can assign a global pseudo-time $\overline{T}$, which would be the fictitious average of the cumulative proper times of each preon oscillator. The paradox of this pseudo-time $\overline{T}$ is that its duration is infinite, although it does not flow. The disorder of the informational entropy generates a mixing, which opens the probability of synchronization. This infinity of random trials makes the synchronization of the number No of preons probable. This statistically leads to a majority probability of sterile potential universes. Here again, the non-flow of time opens the non-zero probability to obtain a

calibrated No allowing the precise conditions to obtain a fertile universe. The fertility criterion is verified by the very existence of the observable universe. The variation of N (global) as a function of pseudo-time is given by the following graph:
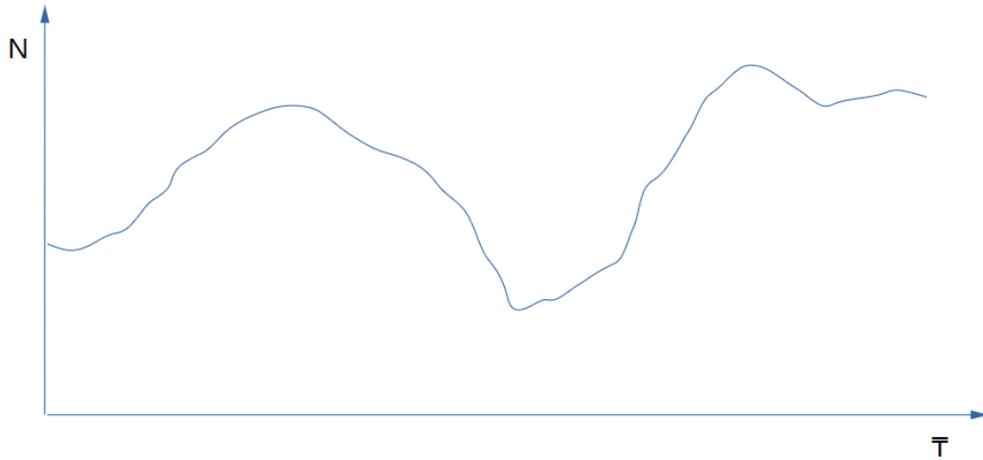

Fig 1 : The random fluctuation of the number of préons N, during the pseudo time $\overline{T}$, is consistent with unavoidable constraint of non-determinism.

3. Reminder of the permanent of préons oscillators

The inertial paradox [1] prohibits the deterministic existence of inertia, but also prohibits its reduction to absolute zero: $\{\nexists\, m > 0;\ \nexists\, m \equiv 0\}$. The only solution to this paradox is the algebraic zero obtained in the dipolar frame of the preon oscillator, according to:

$$\Delta\ell_a\,\Delta m_a \ + \ \Delta\ell_b\,\Delta m_b \equiv 0 \tag{3}$$

By definition, "nothing" or "nothingness" is sterile. But the magical existence of inertia is forever unjustifiable, outside of a mystical approach. Thus, Nature, faced with the inertial paradox, finds the solution within the framework of symmetry and duality. It distinguishes absolute zero from algebraic zero. In the frame of each pole, the pair $\{\Delta l\ \Delta m\}$ exists, but is strictly canceled by the opposite pole. In the "preon dipolar" frame, algebraic zero is guaranteed. At this scale, the notion of mass is inseparable from the notion of spatial amplitude (or indeterminacy) of each pole, according to $\Delta m / \Delta\ell = $ Cte. At the "zero point", the random mass $m_o \rightarrow 0$, generates a potential of spatial uncertainty (or amplitude), $\ell_1 \rightarrow \infty$. Then, in the extension phase of the oscillation, the reduction of the amplitude potential ($\ell_1 - \Delta\ell$), increases the mass, according to $\Delta m\,(\ell_1 - \Delta\ell) = $ Cte. The inseparability of the couple $m.\ell$ allows a perfect algebraic zero, thanks to the non-scalar character of the couple $m.\ell$. The enigma of quantum decoherence is explained by the fact that at a certain macroscopic scale the indeterminacy $\Delta\ell$ remains confined within the size of the macroscopic mass. At a certain

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scale, the mass m, becomes independent of its spatial indeterminacy $\Delta\ell$. This fundamental law of the functioning of the preon oscillator is the cause of the Heisenberg indeterminacy and the wave-particle duality. Figure 2 shows that two opposite poles: $m_o \rightarrow 0$, at the "zero point" imply a potential of spatial amplitude (or uncertainty) $\ell_1 \rightarrow \infty$. But the reduction of the spatial potential ($\ell_1 - \Delta\ell$), implies an inertial increase according to $\Delta m\, \Delta\ell = Cte$. This inertial increase slows down the extension then reverses it at the cusp point.
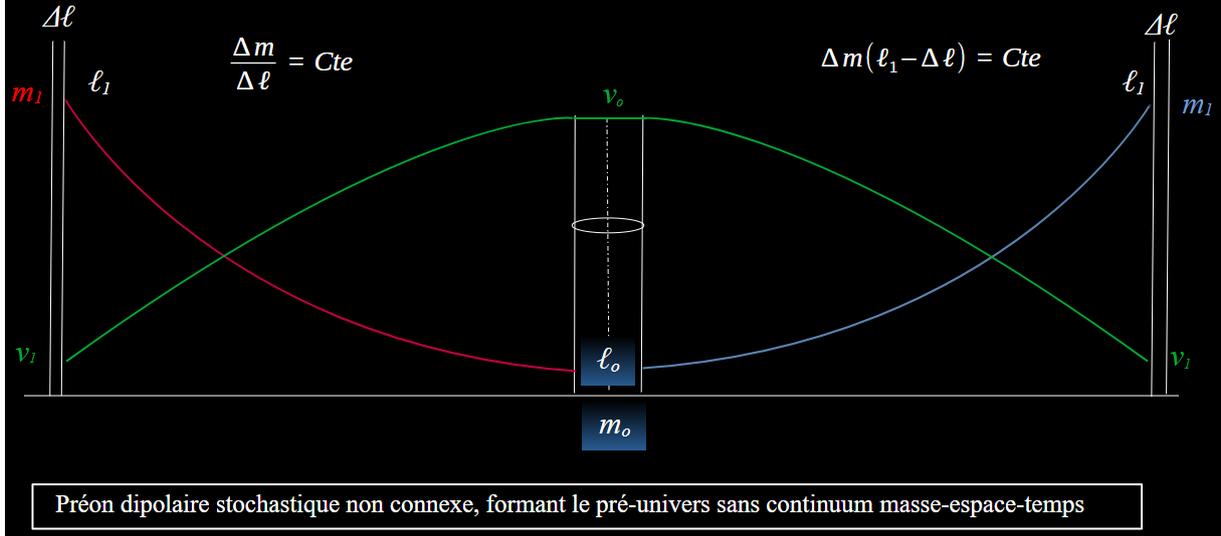

Fig 2 : Eternal functioning of preons. At the zero point a pole mo has the spatial potential ℓ_1. Its spatial progression reduces its amplitude potential ($\ell_1 - \Delta\ell$). Therefore its mass increases and slows down its progression until the turning point. The return force is generated by the inertial paradox which prohibits the separation of the masses of the opposite poles. This attraction of the opposite poles is the cause of the existence of the Coulomb force. The classical relation (4) clearly shows that the notion of elementary electric charge comes from the notion of elementary mass. The attractive Coulomb force arises from the inertial paradox ($\nexists\, m > 0;\, \nexists\, m \equiv 0$)

$$e^2 = \frac{m_e\, \lambdabar_e}{10^{-7}\alpha},\tag{4}$$

This relationship shows unambiguously that the square of the elementary charge, e², is generated by the electron torque $m.\ell$, up to a constant. The following relationship rewrites the Coulomb force for unit r.

$$F = -\frac{e^2\alpha}{4\pi\epsilon_o r^2} = -\frac{m_e\, \lambdabar_e}{4\pi\epsilon_o 10^{-7} r^2} = -\frac{m_e\, \lambdabar_e c^2}{r^2} = 3{,}1615267 \times 10^{-26}\, N\,,\tag{5}$$

The notion of elementary electric charge is artificial because it hides its origin, which is linked to the inseparability of the poles, required by the inertia paradox. It is a component of the electron me $\lambdabar$e pair. According to [1], the original electron-positron pair, inherited from the preon poles, is a boson, unlike its local creation, which did not undergo the original causal separation during inflation [3] argued by Alan Guth. Thus, this original boson-type pair is here called [electron-positron$^{\mathscr{B}}$] pair to distinguish it from the fermion-type pair, created

locally. The 1D preon "string" oscillates indefinitely as long as its poles do not reach the very improbable absolute zero, at the "zero point". If this happens, the spatial uncertainty extends to infinity and separates the poles, which amounts to the extinction of the preon concerned. This reduces the number N of preons, while creating a "hole" or "absolute zero point." Like the law of inertial paradox $\{\nexists\, m > 0;\, \nexists\, m \equiv 0\}$, constrained to avoid absolute zero, it creates a new oscillating preon. This variation of N satisfies the constraint of non-determinism. Nature is ambiguous, because it seeks nothingness, which it abhors.

4. The cycle [entropy ↔ negentropy]

The fundamental notion of duality is rarely discussed by the scientific community [4], while wave-particle duality is widely accepted. The DUO5 theory is based on the expanded notion of duality in all domains and at all scales. Thus, it concerns the two states of the universe, resulting from entropic duality. The permanent stochastic state does not have a mass-space-time continuum but rather a non-connected entanglement of stochastic preon strings. This represents an intense mixing whose (virtual) duration is potentially infinite since there is no flow of time. Thus, the probability of partial synchronization becomes unitary. According to the article [1], this manifests itself in the form of the fossil BEC which oscillates in alternating layers by pooling all the zero points of the synchronized preons. According to DUO5 [1], this BEC is at the origin of the BIG BANG, by a phenomenon of [saturation → fusion → inflation → causal separation]. The elementary pair inherited from the synchronized preon is the original [electron-positron$\mathscr{B}$] pair. Causal separation gave it the status of boson, unlike the unstable pair created locally. A probability 1/2 generalized the confined position of the positron, thus giving the charge to the proton. This quest for the original single particle, like the preon, is widely shared. By another way, Yoshio Koide [5] and myself [6] have worked in this direction. The local production of proton-antiproton pairs [7] is unstable, because the ultimate components have not undergone the original causal separation related to inflation. The local symmetry is revealed at the "composite particle" scale like the proton, while the original symmetry is revealed in the electron-positron frame. Besides the fact that the charge of the proton is measured strictly at that of the positron, several other concordant indices are shown below, which reinforce this paradigm.

5. Conclusion

This study shows that the inevitable inertial paradox justifies the permanence of the existence of the permanent stochastic universe state. The preon in the oscillating dipole form is a variety of the single particle, argued by John Wheeler. According to DUO5 theory [1]. Quarks are only internal inductions, relative to the electron-positron shells (poles separated from ex preons. The resolution of 72 enigmas by the DUO5 theory, gives it a status of physical theory, more relevant than the status of mathematical model. At first glance, one could say that the state of permanent universe is a speculation, because it cannot be experienced locally. First, there are powerful arguments to be wary of hasty conclusions from experiments carried out in the local frame of reference. The latter can in no case reproduce the causal separation relative to the inflationary phase. Second, the DUO5 theory, is verified – and explains – the origin of quantum laws, such as indeterminacy or wave-particle duality. These laws are the direct consequences of the inertial paradox. The DUO5 theory clearly indicates that antimatter is a myth, as is the naive "initial singularity". By broadening the scope of frame duality, one can understand that absolute or binary approaches are to be avoided. Informational and dynamic entropy is growing in the observable universe. This is an additional indicator that this state of the universe is tending towards a return to a permanent stochastic state. There is a societal analogy; in the form: "too much information kills information". This excess of informational entropy is naturally compensated by a need for informational negentropy in the form of simplistic and populist reasoning. This description of the stochastic and permanent state of the universe, avoiding any determinism, allows us to resolve 72 enigmas [1] including the origin of the Coulomb force and the mass of the proton. The keys to the inertial paradox are concretely found in Heisenberg's indeterminacy, the phantom link of entanglement and the wave-particle duality.

Conflicts of Interest

The author declares that this paper is not subject to any conflict of interest.

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