

Topical: Anthropic Regeneration Limits and a Tight Characteristic Scale of Weak Interactions

Thematic Areas: The effects of the spaceflight environment on biological and biophysical systems and processes The effects of the spaceflight environment, including gravitational effects, on physical systems and processes Gravitational and other space environment effects on physical and biological processes involved in the functioning of space exploration technologies Other: data analysis driven by cosmic dualities, including BH-CMB paradigms correspondence and life sources coupling in Building Blocks

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Abstract: Under a granular analysis of BH-CMB plasma dynamics, the product sum of obstruction and overcoming measures of Anisotropy would give a not fluctuating index as limit principle for Technosignature, Indirect Remote Bio-Sensing and Regeneration Transfer. Abstracting physical processes to pulse variance, the correspondence between binary and unary operations coincides with weak interactions up to Unbalance. This suggests the origin of free parameters in SM and that permanence of experimental results for point particles reveals the nature of a tight characteristic weak scale.

1 BH-CMB duality and Pulse Conservation in a Self-Referred Language for Feed-Back Equations

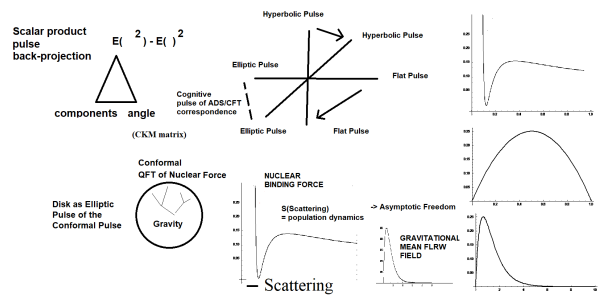
The many-facets situation in PDE still emerges in the elementary case $\frac{\partial u(x_1, x_2)}{\partial x_2} = u(x_1, x_2)$ with $u(x_1, 0) = 1/(1 - x_1)$ where no analytic solution is possible near the origin by Taylor expansion and Cauchy's theorem as $x_2 = 0$ is a characteristic surface. Under this approach, the necessity that the initial data is not characteristic for the equation in order to solve it by power series would rule NLSE, writing boundary condition for a non linear equation with a regular bulk. But this coincides with the very derivation of heat that localizes a quantum particle. In this context, extending the paradigm of Bekenstein [1] of identity between Information and Physics could give a Self-Referred language (S) the semantic operations that seem to control similar strategies at a preceding stage respect to analyticity. In particular, the gradient pulse into non linearity can compose these operations as a granule which substitute the stochastic expectation by a cognitive notion of S propagation. This sheds new light on the outstanding works [2,3,4] understanding the redundancies between super and sub solutions and the presence of bi-characteristics as S terms. Here the weak solution would correspond to propagation in the corrector-constructor axes of S , whilst a-priori estimates would correspond to the S -analytic mechanism of their consistency. Inequalities would be propagation from a back-projected scalar product: Cauchy-Schwartz from angular syntaxis, Harnack from components sum syntaxis up to Maximum Principle for the the boundary as the S term of such correspondence propagation. In general this can be done for singular equations where an invariant such as the minimal solution corresponding to Hamilton-Jacobi formulation is not a pulse invariant and is supposed to enlarge space into its cognitive assumptions which would result in the simulacrum solution of Fermi cross-section still in Bayesian logic. **1.1** The preceding approach permits to introduce heterocyclic structures into complexes or integration processes as cardinality collapse which -following heat- propagates pulse exceptions up to group dimensions of resonances. This has many drastic consequences. The first is that consciousness is an actual self-referential problem in stating what consciousness is, but can be solved by Bootstrap in principle. Indeed, the resonances at astrobiological scales could be just quotients in anthropic local language and emerge as pulse interactions in asymptotic diagrams. This could be, basically the explanation of Quantum Gravity behavior of microtubules which can have homotopes at every stage of pulses. By folding, if geometry is a String geometry, the result of incorporating the Unbalance would be a zero sum vector diagram, which, otherwise, would have an amplified axis (by folding, in correspondence to stochastic integral quadratic terms of the corresponding ODE) respect to a depressed one by a single missing grain in a principal axis of pulse. This passes from chemical-biological matter into exoplanets Life Coupling. So, the role of heterocyclic resonances must have a homotope. Respect to human-animal tension, anthropic emergence could be the case of heterogeneity respect to animals or animals respect to other biological forms (tree evolution here could be explaining chemical heterogeneity by periodic table ordering and would suppress the same quotient of language). The main idea is that granular numbers in physical dimensions have a stringent role. So, even if uncommon stars could be orbited by habitable planets it would be not enough for the same kind of anthropic life. The role of heterogeneity is much evident in the tension of Nebula where something extraneous enters into a complex of global coordination or is integrated into an emergence process. This gives meaning to a tree of exception extractions from anthropic

language whose root is the ancestor in generalized pulses, that is an avatar. Here physics enters much paradoxically in ruling the possibility of a material avatar respect to a notion of mind control where life consciousness is wormhole consciousness, which is prevented by a tautological area law as a limit principle. **1.2** In the cycle (Matter, BH-Horizon), (BH-Horizon, Planck Scale) I start from a generic material element $q\bar{p}$. A correspondence can start from the two 2-dimensional dilatons of SYK and JT. The same construction simply demands graviton-Higgs as 2-0 Spin correspondence, \pm cosmological constants and the transverse homologous of dilatons such as axion accounting for matter-energy missing amounts. Letting the photons in missing places, this is ((Higgs, photon), (graviton, dilaton)), ((photon, axion), (q, \bar{p})), ((photon, Higgs), (dilaton, graviton)). Under the last setting, I look at fluctuations in (e^+, e^-) in β -decay and strong force π^+ coupling of an atom with np assuming pe^- as the starting Object. Instead of photon, having charged p , I put π^+ and I find immediate to complete the BB and follow it in BH inquiry so connecting the preceding cycles. A stochastic model can assume the priority of constitutive stability, so that charge is just rephrasing lack of self-interaction comparing n and p and Relativistic zero point is just Entropy fluctuations of Q into m and thermal energy $E = E(T)$ under conservative reactions. There, the difference between a Quantum State and a dissipation term can be recovered by Spin-Glass condition, so that, as fluctuations proceed towards matter from antimatter, the same asymmetry induces the oscillating axion potential $V(\phi) \propto (1 - \cos(\phi))$ to become a resonance in photon coupling of quenched nature, setting ϕ at the symmetry breaking scale. This is consistent with the loose approach of stating weak interaction as the conditioning interaction from strong force to e.m. dissipation. But in cardinality collapse, the role of 4 dimensions already gives place to the homologous of wave dissipation. This is not equilibrium, which ends up to dynamical equilibrium by feed-back from $4 \rightarrow 3 \rightarrow 2 \times 2$ dimensions. Now, if integrability condition states equivalence between it and supersimmetry the first 4-dimensional block gives place to supersimmetry in a compatible way with the 3-dimensional Building-Block, that is it accounts for Higgs-graviton Spin correspondence. This means that it corresponds to the R-R sector as the renormalizing field of gravity giving axion as its Goldstone boson. Compatibility with the 2x2 block corresponds to the Boolean Valued definition for SU(2) giving U(1) by collapse of SU(3), that is compensating the loose weak-strong unification. **1.3** With the preceding purpose, in order to state MHD two Operations are possible: Set tangibility that makes collapse of dimensions from 4 to 3 as a unary operation, and exception extraction which adds a dimension from 2 to 3. By these operations a singularity can be introduced just as a signal with a cluster that after correction is not coherent with the initial one. Introducing loose operations is possible as in a space of pulses I understand the invariance as a cognitive operation which modifies dimension of space. So if I state that every particle is the same I pass from $E(X^2) - E(X)^2$ as a Minkowsky variance space to the same dimension collapse, that is I add the same branching and obtain $\frac{r^k v + 1 - v}{r^k} dt^2 - dx^2$ which preserves the same pulse of stating that infinitesimal particle is a projective infinitesimal. Following [5] I can start from the Schwarzschild case that corresponds to Plasma pressure at equilibrium with gravity for a static spherically symmetric singularity. By spherical symmetry Rindler's transform can be written respect to a branching process in x, y, z directions $\pm \log(1/r^{k_{x,y,z}})$ as $R_S(\phi_0 - \phi)$, $-y_0 + 2R_S\alpha(r)$, $R_S(\theta_0 - \theta)$ so that I can implement the equations in a Building Block (or Black Box) made by the corresponding Corrected Large Blocks. I understand these branching as the result of cognitive operations from 4 to 3 dimensions introducing $\tanh^{-1}(p) = E(\sigma \text{Log}(1 + \sigma p))$

as a mean entropy for the increment $1 \pm p$ exception extractions between homologous pulses and equating it to the set tangibility that is $Var_{BB}(n) = \tan[i * n] \tan[-i * n] - \text{Inverse Entropy}(n)$. Rindler's transform makes Schwarzschild solution flat, so that its corresponding Building Block connects e.m. variables to gravity. This corresponds to full cycles. Yet, as plasma is a source itself of magneto-hydrodynamics, e.m. variables appear in a double cycle. So, basically, it would correspond to a NLSE of Bethe-Block in which polarization and scattering are indeed weak and strong interactions. Even if phenomenological equations are much more detailed than a simple heat equation amplified in a double cycle Building Block let me suppose that they maintain Exponential solution and Tanh smoothing from that. So, they correspond to S-Language terms and are expected to be conserved in Kerr BH of the same double cycle. The simplest assumption is that equilibrium pressure be obtained as exponentially decaying both for gravity force $g(y, z)$ and plasma density $\rho(y, z)$ on the lattice as $\rho(y, z) * g(y, z) \propto \exp(-y/L_\rho) * \exp(-z/L_g)$. For the magnetic field, stability is obtained smoothing on the lattice as $B(r) \tanh(\frac{r-R}{L_B})$. These simple assumptions must be compared with the rapid growth of numeric MHD in NgEHT [see 8], but can be understood just as stability propagation in BH-CMB duality where *Tanh* term refers to spherical singularity; the exponential terms always refer to the case $P(A \cap B)$ as a product as singularity is not a light cone, so to an S-term. **1.4** I glimpse that for Kerr Black Hole I quickly find homotopes of a double cycle because, in general, I find them as complex systems are transferred into physical systems by cognitive operations that are supposed to state the not trivial correspondence between each element in GR Friedmann space and in QM Friedmann space by deformation. By them, Plasma dynamics can be simplified by Petri Nets and Euclidean Graph as different syntactic expressions of the same homotope, so inducing exception extractions as a feed-back. Here, set tangibility is equivalent to state the variance made of the difference between $e^{\log(1/r^k)}$ and $e^{\log(1/r^{2k})}$, so that pulse Unbalance propagates accretion-pattern difference, time delay and density anomalies. All these become accretion and jet respect to a grain of Unbalance with the same content of Hawking radiation. Simple interpretation starts from *Tanh* that defines rapidity w corresponding to velocity v as $w = \arctan(v/c)$. Yet, $Tanh(x) = SD(ix)/E(ix)$ so it corresponds to the fluctuation of error. Passing to *S*-language for rapidity, semantic stability of folding permits to compute the error ranges between a circle and two circumferences $\pi/(2\pi 2\pi) = 1/(4\pi)$ as the obstruction and overcoming measure of *S*-propagated anisotropy.

2 Nebula Tension and Pulse Conservation in the Characteristic Scale of Weak Interactions

NASA Propulsion Physics program has already taken into account plasma vacuum of virtual particles and photons by Casimir force [9] as a result of Unruh radiation inducing Hawking radiation around black holes. It would be attempting to inquiry for engines which already benefit from this kind of propulsion. Yet, referred to Interstellar Objects (see discussion in [6]), the nature of Technosignature would be



relevant in principle as a tautological object (photon battery in Interstellar space and gravity propulsion between Black-Holes), even if not detected. This proposal moves BH evaporation in a tautological law, so Casimir force can be post-posed in String Vacua of an "M-theory" in which the 6 poles corresponds to the BB without starting from a material notion of supersymmetry both for tachyons and space dimensions reduction. Yet, in Pulse Language, granular violation is still possible and could be restated by Object parameters redefinition of semantic stability. Making an interpolation in Plasma equation lets sufficient to use the classical energy $f_{Field} = (E^2 + B^2)/2$ and note that, instead of $\int_0^{\omega_{cutoff}} f(\omega) d\omega$, mereology in the pulse of integral calculus from scalar product back-projection demands pulse entanglement, that is between pattern of integration and sum over its partition. As it can pass the critical point p_{SG} of a Tree partition into p_{SG}^2 , the integral can be computed taking into account $\otimes dp/2 = pdp$ with p as the parameter of wave numbers. So, the loose understanding of weak force as a strong conditioning force from e.m. dissipation can be seen in $\int_0^{h_\gamma(\omega_{cutoff})} f(\omega) d\omega = \int_0^{\omega_{cutoff}} f(\omega) \otimes_\gamma d\omega$, as the unbalance can absorb all the critical point. As the integral is in p it computes an area $\propto \pi$ as a redefinition of weak characteristic scale.

2.1 At this stage, I propose to look at general arguments. Atiyah-Segal axioms systems require as a domain a bordism category $Bord_{\langle n-1, n \rangle}(\mathfrak{F})$ with background fields \mathfrak{F} as local sections of Sheaves so that a field theory is a symmetric monoidal functor to the category $Vect$ of complex topological vector spaces. So this construction becomes a Sheaf-Kahler quantization as much as complex structures are definable in Kahler compactification and a Topos is definable from the global sections of such Sheaves. Yet, Kahler quantization can be stated in dynamical systems giving to compactification the role of rare events control. So, a Topos of local sections of Sheaves would correspond to a Tree structure of compactification unfolding given by topological dynamics. Now, the same Tree construction of semantic equivalence makes the short-cut between poles in feed-back as BV model induces an equivalent Topos (as the embodiment of an intuitionistic multi-valued theory). As I back-project it from a scalar product in pulses a particular phenomenon happens: the coupling between rare events control and geometric compactification as a Language Pulse. This is the key point for analyzing Life Coupling dualities assuming Euler Characteristic as the ratio of numbers of dispositions and material axis. Interpolating scalar product back-projection is possible by population dynamics equation which represents friction in the inequivalent not-material pulse setting and its geometric tangent dual. The same is for differential operators and differential forms respect to quadratic form of scalar product. As much as Chern-Simons ends up to TQFT as a pulse propagation of heat, String invariants could be in principle filtered by tautological objects, that are object proper of a specific pulse. So, it is challenging to state Riemann-Roch formula for the dimension of the vector space of holomorphic sections of a line bundle L over an algebraic curve C as a variance $dim(H^0(C, L)) - dim(H^1(C, L)) = d - (g - 1)$ which would be Heat variance by collapse of g so generalizing the approach of Atiyah index theorem. This could be done according to the following physically meaningful case. Experiment such as [10] gives values of the quark size as $+-$ estimates, that, as coming from the cognitive definition of point particle, can equally be stated for m^2 . So, positive mass theorem starts here propagating expectation, which in $Tanh$ unbalance corresponds to the Swampland criteria of limited interaction distance of the Inflation field. In a diagrammatic reasoning, from semantic stability I have $U(1)$ by which I can compute the mass term in NLSE that survives as much as semantic stability survives. But at the end, singularity corresponds to the tangent pulse by which Bohm-Aharonov set-tangibility is taken. So the propagation, in order to

have such asymptotic regular solutions, is the same as propagation of symmetric matrix in quadratic form taken in error triangulation (that is semantic stability) from differential operator algebra and differential forms in population dynamics and their geometric tangent duals. But Log-Sobolev inequality is self-propagated (the implicit curve that corresponds to differential forms integration forces Log-Sobolev as a condition on the exponents for the integrands) and it corresponds to hypercontractive operator whose oscillation is written on the S-language of diagram, that is in its Euclidean representation. So such a diagram is closed once hypercontractivity is homologous to the positive mass condition propagated by the metric which starts in triangulation with differential form and differential operator algebra. This expresses the whole indetermination principle in the form $\Delta(s)\Delta(S(s)) + \dots + \Delta(T)\Delta(S(T)) \geq C/(4\pi)$. In fact, reasoning in S-language, the initial Nebula has a big fluctuation, that S-Language expresses in a single graph. But this graph in S-language admits small Kodaira dimensions, which become big under small fluctuations once the Picard variety includes the new analytic Objects. In order to parametrize them the whole stack of their moduli is needed with clear interpretation. The asymmetry in the propagation of an element into Plasma can be interpolated from the inequivalence in the dimer measure for SG for physics and information signals. This extends the Unbalance of the periodic table respect to the anthropic perception of general pulses of saturation of M-theory and gives a triangulation of tension (anthropic-animal, chemical-biological) possible in a pulse space where tautology is non-immersion. Since S-language propagates the oscillation with respect to Kodaira dimensions in the Picard stack that parametrizes the bundles of the implicit curves in the integration with the tensor measure $\otimes_{\gamma} d\omega$, a material Δ is defined as a fractal, with a Δ indeterminacy in the variety of general pulses which restore the equivalence principle for equivalent measurements of Hawking radiation. **2.2** The main reasoning is the tautology Pulse = S[Planck Scale] that lets Planck constant fluctuate and be absorbed in parameters redefinition. It is possible to have an orientation estimate making the same reasoning for geometric factor as a form factor by the estimated superior limit of quark. Looking for Planck scale as a square from quark flux tube scale, up to geometric form and rates redefinitions by unbalance in resonances of String tensions, gives $(5.4 * 10^{-44} / (10^{-23})^2) / (1.6 * 10^{-35} / (0.43 * 10^{-18})^2) \propto \pi$ assuming the characteristic time of strong force approximately $\propto 10^{-23} s$, Planck time scale $5.4 * 10^{-44} s$, Planck length scale $1.6 * 10^{-35} m$, quark radius upper estimate $0.43 * 10^{-18} m$ with resonances $\Gamma = \hbar/\tau$, τ the mean life time. This means that Fermi interaction is in a tight geometric link with Strong one, up to a radial redefinition that can come from astrobiological resonances quotients. To quantify them, I note that critical points for 2d QG are parametrized by replica symmetry breaking, so that in generic notation they can be assumed as $E(E(\sigma_1|\theta)E(\sigma_2|\theta))$ under the annealed variables σ_1, σ_2 with a gap that smooths resonances with θ . Identifying the 2x2 Trees as distinct Trees gives rise to critical point change (so mass term) once cardinality collapse focuses on 3 branching Tree, so that the two massive sources are coupled. This is true in the physical paradigm of searching dark matter in WIMPS and WISPS but demands the nature of such initial horizon. An attempting setting starts noting that if pulses were computed in 3/72 ways of fixing coordinates (3 pulse axes, 2 correcting axes, 3 general starting axes, 2 general starting points for each axis, 2 contiguous directions for 3 pulse axes considered material) all this amounts of finding the deviation in this fraction of dark matter-energy that is with 4.16% respect to the difference between 100% and the actual amount of unknown dark matter-energy estimate. This is given by putting the axis of pulses in 3 material under 72 possibilities and understanding singularity from a not material disposition.

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