THEORY OF OUR ORIGINS

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Abstract - Mathematical representations of cells and quanta of energy persuade us to shape the Existing as plurality of 'atoms' generates by the *Chaos*. However, the mass of elementary physical objects (like electrons) demands statistic definitions, not at all reducible to single measures. The increase of *Entropy* isn't the cause of the biophysical subsystems organization, but an effect. The minimum principle assumes a finalistic value: indeterminacy, inflation, selection represents only some effects of the Existence. This one is the *Life paradox*; as solution, I propose a ***T****HEORY* that not posses the same drawbacks of the others: introducing a new relativistic principle, the *'Biophysical Equivalence'*, I test the some (till now problematic!) Terms of the question: *3-dimensional space, Biophysical Equivalence, electro-gravity, gravitational gauge, leptons and quarks charges, Universe Potential Function*.

Index Terms: 3-dimensionality; Biophysics; Equivalence; Gauge; Gravitation; Universe.

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INTRODUCTION

The *Building Chaos* has a fundamental importance for the birth of matter since its beginning *(Big Bang)* in the theory of the *inflation*. According to this theory, a sudden expansion of the core, from which the Universe has started, created orderly structures, at least very similar in the various parts but with a not homogenous local distribution (galaxies very far away, connected by weak branch of matter and energy). But the *inflation* doesn't explain the *birth of the energy* (this already should be given): its explanation goes back to another kind of chaos, the *'Quantum Chaos'*. We above all have to explain us how our Universe had origin; for this moment, even if others existed, they should not interest us! In a volume published by *Zichichi*, the physicist *de Sabbata* describes the hypothesis more quoted *(Weinberg, Hawking and Coleman)*; the most imaginative hypothesizes the existence of *'wormholes'* between 'parallel universes' that would bring the right balance between *energetic push, inflation, and creation of gravitational matter*. [1] The defect of these theories is that, in a way or in other, they are subjected to the so-called *'anthropic principle'*: according to such principle, dear to philosophers, our Universe must have crossed at the right moment the energetic and material actions, *in order to be observable* (to the knowledge of creatures). In alternative, *de Sabbata* reconstructs the theory of *torsion* of the relativistic Universe (by *Einstein-Cartan*) [2][3][4][5] in quantum form. On the *Einstein-Cartan* theory it is based also my *'Physical Information Technology' research* that recently was presented by the author in *Italy*. [6][7] However, the mass of elementary physical objects (like electrons) demands statistic definitions, not at all reducible to single measures. The increase of ***Entropy*** isn't the cause of the biophysical subsystems organization, but an effect. The *minimum principle* assumes a finalistic value: *indeterminacy, inflation, selection* represents only some effects of the ***Existence*** (see ***Appendix***). This one is the ***Life paradox***; as solution, I propose a ***Theory*** that not posses the same drawbacks of the others.

THEORY

The *Glansdorff-Prigogine* principle [8] presupposes the existence of various 'stationary states' (even if far from the equilibrium and subjected to irreversible transformations) in the *'Universe environment'* that is of various sub-systems such as 'phases' that tend to maintain owns identity *(Survival)*. They tend to the *smallest increase of a part of the Entropy* (per unity of volume), the part due to the forces (**10**) opposite of the currents ***(J)***: $d\sigma - d_J\sigma = d_X\sigma = \Sigma(J_i dX_i) \leq 0$ (each of the ***(J, X)*** is represented by vectors of a *3-dimensional space*). Now, for the relativistic Quantum Physics, particularly for the *Wave Function of the Universe*, it raises just the problem of the number of spatial 'non compact' or 'open' dimensions; *beyond the time parameter*, the unification of the observable forces pretends *other dimensions*. [9] *Why are they 'closed' and not open?*

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We can answer to this question following an idea of *Landau*, [10] first about the impossibility of the existence of (distinguished) *phases* in the (open) mono-dimensional systems. In this case, each of the *n* contact points disposed on *L* behaves like a 'weak solution' with the *(Gibbs)* thermodynamic potential $\Phi=\Phi_0+nT\cdot ln(nL_0/L)+n\phi$. Applying the *minimum principle*, one can obtain $d\Phi/dn=T\cdot ln(neL_0/L)+\phi$. For an open system, in general it is $(nL_0/L)<<1$ and $d\Phi/dn<0$, so that just Φ (not $d\Phi/dn$) will tend to decrease if and only if n increases; this would involve the mixture of all the phases, until they disappeared!

1. The biophysical existence involves therefore that the number of (open) spatial dimensions is $D\geq 2$ *(necessary condition)*. Always applying to the principle of *minimal dispersion of the energy*, it would seem that we had to conclude that the minimal number of spatial dimensions is *two*. Nevertheless, another circumstance intervenes: the *Universe Wave Function* (like in general every system submitted to small perturbations) preserves its own shape in the space (rebuilding itself from its own front of wave) if and only if the *Huygens principle* is valid.

2. It is possible [11] only if *D* is uneven, and for all that above it is concluded that it is just necessary $D=3$ *(sufficient condition).*

3. We remember that *for a system near the equilibrium* the *Onsager principle* [1] connects symmetrically forces and currents (in the simplest case, $\sigma=\Sigma(X_iJ_i)$ just as *dynamical degrees of freedom and conjugate momentums*: $(X/k, mJ)\approx(q, p)$. Now we verify that the *Glansdorff-Prigogine* principle is compatible with the *Quantum Physics*, according to which $p\lambda=h=2\pi\hbar>0$, $|\delta p\delta\lambda|\geq\hbar/2$ (the equality is checked only for reversible phenomena). Differentiating the first one, we obtain the *microscopic* variation $pd\lambda+\lambda dp=0=d\lambda/\lambda+dp/p$, *where obviously* $(d\lambda/\lambda)(dp/p)<0$ that is $d\lambda/\lambda>0$ *and* $dp/p<0$ *(or vice versa) in the assigned versus of the time*. This means that the action due to $\{dp/p\}$ tends to decrease (or increase) while it increases (or decreases) for $\{d\lambda/\lambda\}$ *like* $d_J\sigma$ *respect to* $d_X\sigma$. Let's consider a coordinate q such that $sign(dq/q)=sign(d\lambda/\lambda)$: $|d(pq)|=|pq(dq/q+dp/p)|>0$ and the action $F(J, X)\approx F(p, q)\approx pq$ decreases (or increases) for $\{\delta p\}$ while it increase (or decrease) for $\{\delta q\}$. Since macroscopically it is *just* $|dq/q|>|d\lambda/\lambda|$ it involves the increase of *Entropy* that is the *global decreasing of the Information* of the system: in fact for the generality of *(irreversible)* phenomena the simplest measures are at least subjected to the error on $|d(pq)|>0$. All that above mentioned comes strictly from minimum principles: we observe moreover that *in general the associated waves are divergent and they define the time versus just for the irreversible phenomena* far from the equilibrium.

3.1 ***Potential Function of the Universe*.** Following *Weeler* and *De Witt*, [9] the real *co-presence* in the Universe of infinite phases (or its representations) is expressed by a wave equation of the type $[G_{ijkl}/(16\pi G)^2\delta/\delta h_{ij}\delta/\delta h_{kl}+(^3\Re\sqrt{h}-2\Lambda)/(16\pi G)-\Im]\Psi_u=0$, *where* $\Im=T^0_0(\phi, \delta/\delta\phi)$, $G_{ijkl}=h_{ik}h_{jl}+h_{il}h_{jk}-h_{ij}h_{kl}$, G*=gravitational constant,* $\Lambda\approx 8\pi G\rho_{vacuum}$*=cosmological term,* $^3\Re=K^2-\Re_{Ricci}-K_{ij}K^{ij}$ and $2NK_{ij}=-dh_{ij}/dt$, $K=h^{ij}K_{ij}$. Such equation, even if it comes from the metric $ds^2=(Ndt)^2-h_{ij}(N^idt+dx^i)(N^jdt+dx^j)$, results *deprived of the parameter* t, unless this isn't present in ϕ and in h_{ij}, because of the correlation $\Psi_u(h_{ij},\phi)\approx exp\ [iS/\hbar]$, so that $\Im'(t)\neq 0$. A semi-classic simplification *(FRW)* of the above-mentioned equation is inspired to the *Friedmann* connection $(R'/R)^2+1/R^2=\Lambda/3$, [9] with the scale factor *R* destined to represent all the h_{ij} *(like unique degree of freedom). In the extended model* $\Lambda\Rightarrow V(t)$*, but it is absent until now the opposite connection* that from the one-dimensional equation let us to reproduce the representations of the Universe, that are supplied by *the elementary particles wave* equations. [12] Anyhow, the *Biophysical Equivalence* claims a *Universe Potential Function* $\Psi(x(t))$ *like a (degree of freedom) conjugate momentum 'dominant'* $\Psi_u(R)$. To do this, preliminarily we can ignore the *Kaluza-Klein* [2] space or any other *gauge* transformation, so as the *Higgs* mechanism that supplies mass to the particles, [13] limiting us to the only particles that expand in three spatial dimensions, so that $\mathbf{p}^2=(E/c)^2-(mc)^2$. *We will verify only later* **(10)** *the necessity of an external field* (eA_m/c) for their existence, *and the* ***Universe Potential*** *form*. Let's consider therefore the ***2nd order*** (simplified) differential equation $d^2\Psi(x)/dx^2=f(x)\Psi(x)$, with $\Psi'(x)/\Psi(x)=S_1+iS_2$: $S_1'+S_1^2-S_2^2+i(S_2'+2S_1S_2)=f(x)$. It is possible to put $S_1=-S_2'/(2S_2)$, therefore $S_2=S_2(0)\ exp(-2\int S_1dx)$ observing that such determination is but always permitted also without supposing the reality of $f(x)$ *and/or* $S_i(x)$.

In correspondence it is $S_1'+S_1^2=f(x)+S_2^2$; putting $z(x)=exp(-\int S_2'/(2S_2)dx)=\sqrt{(S_0/S_2)}$ it is obtained $z'/z=S_0^2/z^4+f$, or $(1/z)^4S_0^2-(1/z)z'+f(x)=0$, *apparent equation of* ***4****th degree in* z^{-1}. To this same equation *Majorana* puts attention [14] but immediately after he introduces the classic *gauge*. Naturally, resolving z we could obtain $\Psi(x)=z(x)exp(\pm i\int S_0/z^2dx)$ that is *(remember the WKB method)* $\Psi(x)=(\sqrt{S_0}/\sqrt{S_2})\, exp(\pm i\int S_2dx)$. Putting $\sqrt{S_0}/z=\sqrt{S_2}=\Psi$ the ***4****th* degree equation is simplified in $\Psi^4-(z'/\sqrt{S_0})\Psi+f(x)=0$. From a 'measure' of $f(x)$ and $z'/\sqrt{S_0}=z[f(x)+S_2^2]=\sqrt{(S_0/S_2)}(f(x)+S_2^2)$ one can obtain Ψ except for a choice between ***4*** *algebraic solutions*, while it would suffice at the purpose a *direct measure* of S_2. You can notice that, just in the real case z(x)=|Ψ| represents the module of Ψ and the relative probability $\Pi(x)=|\Psi|^2=z^2$ from that $\Psi=\sqrt{(S_0/\Pi(x))}$. We know that from a 'classic' measure of probabilities (that is from the *statistical mixture*) it isn't possible to determine entirely a quantum system, but the detail here pointed out is interesting for how much said above: the wave equation demands a space with more dimensions for a complete description of the system. Between the ***4*** *solutions of the algebraic equation*, only one is adapted also to that differential one (the analytic solution); those 'rejected' behaves like *hidden* (or better *orthogonal*) variables ready to appear when the *bound conditions* just change. From the expression of the algebraic coefficients, according to *Newton*, among the solutions (Ψ_i) they are valid the following identity: $\Pi\Psi_i=f(x)$, $\Pi\Psi_i\,\Sigma(1/\Psi_i)=(z'/\sqrt{S_0})$, $\Sigma\Psi_i=0=\Sigma\Psi_i^2$. The latest wouldn't have sense (it would involve $\Psi_i\equiv 0$) if, how said, the S_i hadn't even a significance among complex quantity, as specified more above. Rather, just the identity always true (independents of $f(x)$ and z') $\Psi_1+\Psi_2+\Psi_3+\Psi_4=0$, $\Psi_1^2+\Psi_2^2+\Psi_3^2+\Psi_4^2=0$ are compatible in such manner with the well-known *Dirac* identity for fermions of mass m ≥ 0, *Spin*=½. [15] Using the anti-commutative operators $\alpha_a\alpha_b+\alpha_b\alpha_a=2\delta_{ab}$, starting from the equations $(\pm E/c-\alpha_1p_1-\alpha_2p_2-\alpha_3p_3-\alpha_4mc)\Psi=0$ one can obtain $[(E/c)^2-p^2-(mc)^2]\Psi=0$. Introducing the analogue operators $\beta_a\beta_b+\beta_b\beta_a=2\delta_{ab}$, relatives to a 'transformation of contact' with β_iP_i even complex it is $(\pm E/c-\beta_1P_1-\beta_2P_2-\beta_3P_3-\beta_4Mc)\Psi=0$. We deduce the equation $(\beta_1P_1+\beta_2P_2+\beta_3P_3+\beta_4Mc-\alpha_1p_1-\alpha_2p_2-\alpha_3p_3-\alpha_4mc)\Psi=0$. We can equalize $\Psi_1=\beta_1P_1-\alpha_1p_1$, $\Psi_2=\beta_2P_2-\alpha_2p_2$, $\Psi_3=\beta_3P_3-\alpha_3p_3$, $\Psi_4=\beta_4Mc-\alpha_4mc$, as soon as the relations on $\{\beta_i,\alpha_i\}$ comply with $[(\beta_1P_1-\alpha_1p_1)^2+(\beta_2P_2-\alpha_2p_2)^2+(\beta_3P_3-\alpha_3p_3)^2+(\beta_4Mc-\alpha_4mc)^2]\Psi=0$. Developing $(\beta_1P_1-\alpha_1p_1+\beta_2P_2-\alpha_2p_2+\beta_3P_3-\alpha_3p_3+\beta_4Mc-\alpha_4mc)^2\Psi=0$, it is $(\beta_1P_1-\alpha_1p_1)^2+(\beta_2P_2-\alpha_2p_2)^2+(\beta_3P_3-\alpha_3p_3)^2+(\beta_4Mc-\alpha_4mc)^2=$ $=-\Sigma_{(i<j)}[(\beta_iP_i-\alpha_ip_i)(\beta_jP_j-\alpha_jp_j)+(\beta_jP_j-\alpha_jp_j)(\beta_iP_i-\alpha_ip_i)]$, where $P_4=Mc$, $p_4=mc$, therefore it is necessary $\Sigma_{(i<j)}[(\beta_iP_i-\alpha_ip_i)(\beta_jP_j-\alpha_jp_j)+(\beta_jP_j-\alpha_jp_j)(\beta_iP_i-\alpha_ip_i)]=0$. In each one of these terms, objects of the same sub-algebra are present, like $(\beta_iP_i\beta_jP_j+\beta_jP_j\beta_iP_i)=P_iP_j(\beta_i\beta_j+\beta_j\beta_i)\equiv 0$ and the precedent is reduced to $\Sigma_{(i<j)}[(\beta_iP_i\alpha_jp_j+\alpha_jp_j\beta_iP_i)+(\beta_jP_j\alpha_ip_i+\alpha_ip_i\beta_jP_j)]=0$, from which it is obtained the condition $\Sigma_{(i<j)}[(\alpha_j\beta_ip_jP_i+\beta_i\alpha_jP_ip_j)+(\alpha_i\beta_jp_iP_j+\beta_j\alpha_iP_jp_i)]=0$.

4. Using the transcription $p=-i\hbar\partial$, and preserving the anti-symmetric statistic $(\alpha_i\beta_j+\beta_j\alpha_i)=0\ (i\neq j)$, well it is $\Sigma_{(i<j)}[\alpha_j\beta_i(p_jP_i-P_ip_j)+\alpha_i\beta_j(p_iP_j-P_jp_i)]=0=-i\hbar\Sigma_{(i<j)}[\alpha_j\beta_i(\partial_jP_i)+\alpha_i\beta_j(\partial_iP_j)]$, terms equivalent to the electromagnetic field $(\partial_jP_i-\partial_iP_j)$ and to the presence of the *Spin*$\approx(\alpha_j\beta_i-\alpha_i\beta_j)/2$ *(Dirac)*. **[15]** Could contribute to the associated *vector-product* only the components $\boldsymbol{P}\wedge\boldsymbol{p}$, *like* $\boldsymbol{P}_\wedge/\hbar=e\boldsymbol{A}/\hbar c\approx\alpha_{em}(\boldsymbol{A}/e)$. Here, the general terms cancellation involves the *electromagnetic equilibrium*.

5. You can notice even the appearance of the fourth term $(\beta_4Mc-\alpha_4mc)$ generally different from zero $(M\neq m)$ that involves possible *mass oscillations*, in particular for the neutrinos, **[16]** however connected with the *presence of the so-called dark matter* in the universe. **[9]** The *mass operator* takes part with such oscillations, as it results even from the most recent experimental data. Besides, since only one of the (Ψ_i) represents the analytic solution for the universal wave, it is necessary that it corresponds to *mc (relativistic 'pseudo-invariant')* privileged with respect to $\boldsymbol{p}$.

6. Remembering that for definition the 'true' solution $\Psi=\sqrt{S_2}=\sqrt{S_0}/|\Psi|$ have to be real, *an opposite transformation* $(Mc\Rightarrow\alpha_4mc/\beta_4)$ *restores the mass* to the original value, at least in the case in which the transformation $(mc\Rightarrow\beta_4Mc/\alpha_4)$ is *'imaginary' in comparison* (7) *with the relativistic definition of the mass*, leaving nevertheless unchanged the relations $[(E(\boldsymbol{p})/c)^2-\boldsymbol{p}^2-(mc)^2]\Psi=0=[(E(\boldsymbol{P})/c)^2-P^2-(Mc)^2]\Psi$.

In this case the corresponding equation is submitted to the classic *gauge* transformation, therefore *[(E(p)/c+eA*$_0$*/c)*^{2}*-(p+eA/c)*^{2}*-(mc)*^{2}*]*Y *=0*. Vice versa, in the case in which the 'mass transformation' corresponds to a *(real) quantization m* ⇒ ±*nm*, it is applied directly to the ***masses*** (in particular, in the quantum leap [15] from the negative state *–m* to the opposite *+m*) of the *leptons* (electron, μ meson, τ particle) and respective *quarks*. **(9)**

7. Remembering the condition of *Ferm-Dirac* [15] *(p*$_m$*A*$_m$*)*Y *=0*, that is the existence of *orthogonal operators*, it is possible that *[E(**P**)/c-(E(**p**)/c]=eA*$_0$*/c* Þ ±*neA*$_0$*/c* involves even the *electric charge quantization (rather than of the mass)* at least if a 'universal' one exists of it. From the *gauge transformation* associated to *(E/c, **p**)* Þ *(E/c+eA*$_0$*/c, **p**+e**A**/c)*, we know that *eA*$_0$*/c* » *eQ/r* depends on *1/r*, beyond on *Q* (to quantize as ±*ne*, or even ±*(n±2/3)e* passing from *N* charged leptons to *2*N* quarks). [13] For *Y=*Ö*S*$_2$, it involves the existence of a new potential *Y»1/r*, |Y|*»r (that is S*$_2$*=S*$_0$*/r*^{2}*). We deduct of it* Y*(r)=exp(±i*ò*S*$_2$*dr)*Ö*S*$_0$*/*Ö*S*$_2$*=r exp(±i(S*$_0$*/r-S*$_0$*/r*$_0$*)*; in general Y*(x)=r [c*$_1$ *exp(iS*$_0$*/r)+c*$_2$ *exp(-iS*$_0$*/r)]*, therefore *f(r)=*Y*'(r)/*Y*(r)=S*$_0$^{2}*/r*^{4}. According to *Cesàro, lim*$_{r®¥}$Y*(r)/r=0* and nevertheless *lim*$_{r®¥}$Y*(r)=±¥;* but it is possible to determine algebraically particular values *'to the bound' for* Y*(¥).* In fact, for one of the Y it is *Y*$_4$*=*Ö*S*$_0$*/*|Y|*=0, therefore Y*$_1$*+Y*$_2$*+Y*$_3$*=0=Y*$_1$^{2}*+Y*$_2$^{2} *+Y*$_3$^{2} *and easily Y*$_L$^{3}*–(Y*$_1$*Y*$_2$*Y*$_3$*)=0 (L < 4), from which Y*$_l$*=(Y*$_1$*Y*$_2$*Y*$_3$*)*$^{1/3}$*=*{*Y*$_0$*, Y*$_0$e*, Y*$_0$e*} *with Y*$_0$ *constant,* {e *=(–1+i*Ö*3)/2*}, *and holding account of Y*$_4$*: Y*$_i$*(*¥*)=*±|*Y*$_0$|{1, e*, e*, 0*} = |*Y*$_0$|{±1, ±e,± e*, *0*}.

8. It carries the determination of *exp[±i(S*$_0$*/r-S*$_0$*/r*$_0$*)]=exp[±i(S*$_0$*/r±k*p*/3)]*, in such manner that one can obtain the ***elementary electric charges****: ±(S*$_0$*/r*$_0$*)/*p *=±(2/3, -1/3), ±1, 0. Associating the conjugated functions* (separating from the others) we obtain the *quarks* **{*u, d; u , d* }** with charges ±*(2/3, –1/3)* and the *leptons* **{*e*$^+$*;* n}, {*e*$^-$*;* n*}** with charges ±*(1; 0).*

9. Eliminating the *degeneration* **(6)** that comes from the cyclic exchange (*Y*$_1$ *Y*$_2$ *Y*$_3$*)* one can obtain the *triplets of quarks **(u, d; c, s; t, b)** and leptons **(e,** n$_e$**;** m**,** n$_m$**;** t**,** n$_t$**)***. It is not difficult finally to imagine as on the same one (S$_0$/r$_0$) it can depend the *fine structure constant* (and the universality of the *Planck constant* h) but for this I refer to other works. [16]

10. Returning to the *mass-energy quantization,* **(6)** *it is necessary to consider the conversion (*d*Mc)*^{2} Þ *(*±d*E/c)*^{2}*=*d*p*^{2} for which *(*d*p*$_1$^{2} *+*d*p*$_2$^{2} *+*d*p*$_3$^{2} *)=(*d*Mc)*^{2}*=(Y*$_1$*+Y*$_2$*+Y*$_3$ *)*^{2}*=Y*$_4$^{2}*=-(Y*$_1$^{2} *+Y*$_2$^{2} *+Y*$_3$^{2} ***)***. It's possible if we pose *Y*$_k$*=*e*d*p*$_i$*+*e*d*p*$_j$, {e *=(-1+i*Ö*3)/2*} that is d*p*$_k$*=(-Y*$_k$*+*e*Y*$_i$*+*e**Y*$_j$*)/2*, S$_{(i<j)}$*(*d*p*$_i$d*p*$_j$*+*d*p*$_j$d*p*$_i$*)=0*, from which *(*S*dp*$_k$*)*^{2}*/(*d*Mc)*^{2}*=1=*S*(*d*p*$_k$*/*d*Mc)*^{2}. The last equation, well known in relativistic cosmology [17] possesses the parametric solutions d*p*$_k$*/(*d*Mc)=*{*(-s), s(1+s), (1+s)* }*/(1+s+s*^{2}*)* and such ratio is maximum or minimum for {±d*p*$_k$d*(c*t*)/ħ*}=±{*0, 0, 1*}, ±{*2/3, 2/3, -1/3*}, beside the exceptional solution ±{e, e*, 1} for *1+s+s*^{2}*=0*. Reducing in *Euclidean Ring [e.g. in Z(*e*)]* [18] just to the integers eigenvalues of |*Y*$_k$*/Y*$_4$| the relative phases Arc tan [Im(Y$_k$)/Re(Y$_k$)] correspond to the previously deduced electric charges (Q/e), with |d*Mc/*d*p*$_k$|*=Min and* |d*p*$_k$d*(c*t*)*|*=Max.* ***Note:*** {±d*p*$_k$d*(c*t*)*}/d*(c*t*)=Y*$_k$} represents the *cosmologic values* of the relativistic momentums tensor, already *associated in analogous manner by M. von Laue* [2] *to the L. de Broglie **(3)** relation p=h/*l*»h*$_L$*/R*. With regard to the general meaning of the wave equation Y***(x)***, we conclude that the ***Y*** in general represent variations of 'impulse and mass' (d***P****,* c*dM)* and, since d***P***d***x***»*ħ*, we can assume |Y|*»1/*|*Y*| £ *R*$_{max}$*/h*$_L$ like a *(Special Conformal Transformation of)* [10] ***conjugate momentum*** *producing the **Potential*** Y$_+$Y$_-$*»U(R)»(R*a$_G$*)*^{2} that models the shape of the entire ***Universe***, how requested by *Weeler, De Witt* and *Friedmann*, [9] It is not difficult to demonstrate that the previous equations are compatible with the insertion of any gravitational action like a gauge transformation (α$_G$), while in the meantime the electromagnetic fields maintain their shape, simply being able to influence the gravity [2][17] so that the *'electro-gravitational unification'* becomes possible only by *quantum-statistic* way. [16] *With* Y$_\pm$*=(x*a$_G$*)exp[±iS*$_0$òò*dx/ (x*a$_G$*)* ^{2}*]/*Ö*S*$_0$, the covariant associated equation is Y*''(x)+[S*$_0$^{2}*/(x*a$_G$*)*^{4}*-(x*a$_G$*)''/(x*a$_G$*)]*Y*(x)=0*, where |a$_G$|^2*=*|Y$_+$Y$_-$*/x*^{2}|*=*|Y*/x*|^2 (mean metric correction of the light speed) represent the gravitational gauge.

We state as first approximation $(\Lambda(x)=V(t)\to 0)$: $|\Psi|^2=(x-x_1)(x-x_2)$ that is $|\alpha_G|^2=(1-2x_0/x+x_1x_2/x^2)$, where $x_0=(x_1+x_2)/2=GM/c^2$ *(what is deducible from the energy-stress tensor)* is the 'gravitational radius' and $x_1x_2=lim_{x\to 0}|\Psi_+\Psi_-|=G[Q^2/(4\pi\varepsilon_0c^2)]/c^2$ represent the *electro-gravitational correction* [2] due to the *presence of charge*, into the 'radius' $x=r(t)$.

10.1 *Electro-gravity and strong interaction constants*. It is necessary that the parameters (x_1, x_2) are real, otherwise the associated equation $(x_{12}-x_1)(x_{12}-x_2)=0$ would involve $x_{12}=x_0exp(\pm i\gamma)$, $GM/c^2=(x_1+x_2)/2=x_0cos(\gamma)$ and for the attractive even generic field $(GM/c^2)^2<x_0^2=x_1x_2=G[Q^2/(4\pi\varepsilon_0c^2)]/c^2$ that is $GM^2<Q^2/(4\pi\varepsilon_0)$, and the charges would escape from the attractive field. So from the determinant $\Delta/4=(GM/c^2)^2-G[Q^2/(4\pi\varepsilon_0c^4)]\geq 0$, with the single maximum value $q^2/(4\pi\varepsilon_0\hbar c)=\alpha_{em}$ one has $\alpha_{em}\hbar\leq GM^2/c=r(GM^2/rc)=rE_g/c=M_grc<(n+1)\hbar$ *(also for n=0)* so in general it is necessary $\alpha_{em}<1$ for the *electromagnetic interactions*, in a compatible manner with the probabilistic nature of α_{em}, [16] and $G\hbar\alpha_{em}/c^3=x_1x_2=lim_{x\to 0}|\Psi_+\Psi_-|$. The existence of $E_g=m_gc^2\approx(n+1/2)\hbar c/r$ involves also the '*strong interactions*', from which $\alpha_s=(n+1/2)\hbar c\geq\hbar c/2$, contrasting the electrostatic repulsion. [16] In proximity or into the masses it will must intervene the $\Lambda(x(t))$ *cosmological term,* [2][1] equivalent to the strong interaction of *Yukawa* by which $M\Rightarrow M/exp(m_\pi cr/\hbar)$. [12][19] Vice versa, the internal charge distribution produces the *strong interaction,* analogous to the apparition of a mass for the gravitational field and an apparent *variation of the structure fine constant* α_{em}. [16][17][20] *Just as* ***Conclusion***, the physical constants place simply some limits, *'advantageous'* [16][1][21][22][23] for our observations *(what originates the anthropic principle)*.

CONCLUSION

Synthesizing, we can enunciate the following *'Biophysical Equivalence'* principle*: the Glansdorff and Prigogine evolution criterion* for the living matter (constructive chaos, in systems far from equilibrium) for which the part of Entropy employed just by the variation of the forces diminishes (in contrast with the currents), *is active for the whole Universe* since its origins (false vacuum, black holes, strings and monopoles at *Planck* time) *and for its own Dynamical Wave Function* (generating inflation, phase transitions and symmetries breakdown). Also crossing vary levels of biophysical stability, such systems therefore take advantage of the *free energy,* to the aim of a proper but relative *self-preservation (also of its 'phases') in a space 'necessarily and sufficiently' 3-dimensional*. In the *Quantum-Relativistic Theory,* the simpler *Universe Potential Function* involves: existence of the spinors, masses and charges quantization, the *gravitational gauge,* electro-gravity and *'advantageous'* strong interactions.

APPENDIX

The physical chemist Atkins [24] (following the ideas of *Onsager and Prigogine*) [25] supports that the growth of a cell and the same construction of its **DNA** happens in 'spontaneous' manner by means of the decreasing of the so-called *free energy* (*Gibbs* minimum principle), even if the comprehensive energy increases at expense of the environment, in connection with an increase of the disorder *(Entropy)* of the Universe. The apparent increase of structures locally ordered, with the cost of an increase of the universal chaos, is named *'building chaos'*: an example is given by the currents of a liquid warmed up, that make orderly for (the high or towards the low, phenomenon of convection) or by the *dispersion and condensation* of the oil in many drops, or still by the *formation of the proto-cells (without membrane)* already studied by *Bernal*. [19] In the conclusion, *Atkins* points out that the commune feeling of a structure apparently ordered (almost finalistic) of the Universe is incompatible with the more realistic observation for which the Universe has a privileged direction... but only towards the final *Chaos*! Nevertheless, he admits that the same theory cannot explain the 'human feeling'. [24] Following *Oparin,* [25] the biochemical *Asimov* defines materially probable the birth of the *Life on the Earth*, because it is at the right distance from the *Sun*, so that it can detain above all metallic and rocky elements, without losing the atmosphere; so even on *Venus* (and perhaps in past on *Mars*). [26] Nevertheless, beyond that a favorable Atmosphere, the coexistence of *proteins and nucleic acids* compatibles between them is correlated with a high ***causality***, as it's underlined by the biochemical *Jevons* and *Monod*. [27][28] To study the chaotic and/or casual phenomena it is necessary the calculation of the ***probabilities*** (introduced since the 17th century by *Fermat and Pascal*). According to the data reported by the astronomer *Shipman*, at distance of 150 light–years from our planet other civility should exist, with a total of a million of *'living planets'* in the *Milky Way* (our galaxy). [29]

But we still weren't able to obtain the certain proof of a communication or of a contact, in spite of the effort, like the **S.E.T.I.** project *(Search of an Extra Terrestrial Intelligence, Berkeley University)* or others. Such situation is known like *'Fermi paradox'*: he concluded that we should retain the Life really exceptional, at least as we know it! But it is necessary to think that the existence of two civilities, each with a probability of *1/million*, implicates that a contact among them could happen with a probability of *1/(million of millions)*. With a statistical calculation, we could convince our self that is necessary to look far away, quite more of *150 light-years*, that is *about one hundred thousand light-years*, value comparable with the age of the ***Homo sapiens***. The possibility of a 'reciprocal contact' depends just on ours survival!

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