Validity in Physics: Parsimony and Synchronicity

Principle of Measure: Equivalence and Inequivalence

(C) Paris Samuel Miles-Brenden

August 30, 2018

Exchange Locality Theorem

In this paper we wish to bring resolution and comparativeness into solutions of the two body problem to explain the appearance of matter. To begin we identify a given admixture of partial differential equation following the principle of a connection to a given here ultimately knowable quantity; that of the orientation and juxtaposition of the particle's inertial field(s). With the statement of symmetry being:

"*Extrinsic modifications to a given equation under antisymmetry of operators and symmetry of operators have intrinsic interior symmetric and antisymmetric parallels under operation of exchange of a particle with a pair field.*"

Under these provisions the properties of a two body particle and field equation are decomposed into a regeneration of the operator; seen alternatively as a completeness of it's given self enfolding for one particle and a replicated particle and partner field. The two body particle equation is: The general properties of hyperbolic equations implicate that an equation take a form of a wave equation:

$$(f(\tilde{\omega})-\alpha\cdot\partial_{(x,t)})(g(\tilde{\omega})-\beta\cdot\partial_{(x,t)})\Omega(\alpha,\beta)=0 \tag{1}$$

When it is rewritten it becomes:

$$(f(\tilde{\omega})g(\tilde{\omega})+\alpha\cdot\beta\partial_{\mu}^{2}-(\gamma_{\mu}\cdot\left[\partial_{\mu})(f(\tilde{\omega})+g(\tilde{\omega})\right]))\Omega(\alpha,\beta)=0 \tag{2}$$

The idea here is to factor the equation in a different manner; owing due to phase and conjugate phase freedom from the logarithmic identities of principle equivalence and principle inequivalence provided. First; we need phenomenological reason to believe that a composite factoring of the two body equation occurs in the first place; the foundational reason of which is provided by relativity.

Relativity Theorems

To comparability there are two given's in physics with *displacement* as the proof:

Principle Equivalence:
Comparative measurement with reference to what is measured.

Principle Inequivalence:
Measuring with reference to what is performing the measurement.

Therefore there are fundamental limitations of physics; to which in order for there to be self and other consistency of articulation; must be *geometric* in nature:

Property of Light Variance (1): *The speed of light in being fixed to a universal standard; implicates that all such velocities under deduction to time itself must be measured greater relative to the speed of light universally for their comparative difference of rate congruent to light as measures.*

$$\gamma_c > \gamma_m \tag{3}$$

Property of Light Variance (2): *For; the property of dilation is obverse to a measure of fixed relation; therefore the rate of time for mass is always measured lesser than light; and to deduce the rate of passage of time we must convert to a system in which all velocities must be as a given greater than c.*

In this, γ is seen as a measure of a rate to a rate, with light, unity in it's own frame; and of matter; less than unity for time to time conversions (for of matter light is of the opposite propensity) precisely because for a moving clock referenced to a stationary one; time moves more slowly; therefore to which it ticks more rapidly, and acquires a greater interval in any duration of a path at motion. This is consistent with the special theory of relativity and gravitation because a thrown ball will experience greater accumulation of time than one stationary on the Earth (for comparative ***to*** a stationary frame time went more rapidly and more accumulated). Therefore measurement dictates that the comparative measure of the rate of time for the thrown ball is diminished; to which it's extension over a path is longer comparatively to any other observer, such as the one stationary on Earth.

Therefore as the rate of time goes more slowly in the moving frame referenced to the stationary one; more time is acquired comparatively to either observer alone and individual measurements reference equivalence for the two body problem.

Note of Measureability

In order then to investigate a potential factoring of the Dirac equation into which the two body problem can be dissected; it is necessary at first to understand that the reference of the measurement is to one body or the other; to which we escape the twin paradox; a local phenomenon of which either measures lesser or greater of an otherwise equivalent situation with differing descriptions.

In this then we prescribe that $\{\tilde{\omega}, \bar{\omega}\}$ are different wave descriptions of particles; to which belong to differing frames; denoted by $\sim$ or $-$:

Principle Equivalence:

$$\eta + \rho = \log(\tilde{\omega} \cdot \bar{\omega}) \tag{4}$$

The first equation described here just above is the equation we arrive at to describe the addition of velocities into which sum to a finite difference in an externally situated point of measure and reference. The second equation is to which we find that inequivalent velocity combinations in their own frame's (under their congruence) afford for extra proportionality of either given intermediary time dilation contraction effect (here denoted σ):

Principle Inequivalence:

$$\eta\rho + \sigma(t) = \log(\tilde{\omega} \cdot \bar{\omega}) \tag{5}$$

The direct consequence is that: *Any two such contraction dilations are uniquely independent of any other by that of commensurate action of congruency of geometric difference under open relation of objective addition of factor; for in that of one following adirectionally apart; together; or separately; there is seamless transparency of beginning to end of logical union of motion; with an interior dilation contraction factor owing due to their comparative measurement of time.*

The substitution of one of η or ρ under either given point-like relation of relativistic factor is a free substitution which forms either given difference of that of perspective and vantage; that which forms the uniqueness condition of that of any two point like limits of relativity; for that of each such principle equivalence of time and principle inequivalence of codeterminism.

The implication of this for signals of frequency and functional form under transformation is that of the fact that: By comparative differential to quantifiable means with difference of driving frequency the encompassing of either of two subcomponents of the alternative exterior difference is constructible.

Therefore with general functions:

$$\eta + \log(g(\tilde{\omega})) = \log(f(\tilde{\omega})g(\tilde{\omega})) \tag{6}$$

Implies:

In log decibels any two differently concordant rhythms are separable by any measure; as each singular log decibel pertains to a different frequency of any given equipartition of each such given foundational means of comparability of any choice of any two given amplitudes of differential nature.

Therefore considered together these two imply:

Addition of the Logarithms: *Either one; or both (2), given absolutely arbitrary limits of independent point-like relation(s) of proportion of electricity & magnetism to (a) given variety of non-locality exist(s); for which with but one; beginning or end congruent relation is empty of boundary condition.*

To illustrate that this is not impossible; non-locality would need to be insisted to violate (4) and (5) for which an exterior probe of measurement would need under all conditions measure the relative rates of time of the two constructible relationships. Therefore it is perfectly amenable to analysis to conclude the equations (4) and (5) hold in general for the two body quantum problem; and as these are consistent with the special and the general theory of relativity per the derivation; there is no necessity of further discussion. The outcome of logarithmic addition is the extension of electromagnetism when this variety of phenomenon is admitted.

Reduction under the Temporal

Therefore the given representation of the above equations with that of the velocity divided by the speed of light as a unitless measure is of unity proportion in the measure of system of units. Therefore the given holds as true by the following; that:

$$\zeta = \sin(\alpha) \qquad \chi = \tan(\alpha) \qquad \alpha = \frac{v}{c} \tag{7}$$

$$\zeta = \sin(\alpha) \qquad \chi = \tan(\alpha) \qquad \alpha = \frac{v}{\sqrt{v^2 - c^2}} \tag{8}$$

Are equivalent parameterizations of the same problem.

This principle of inequivalence is to be contrasted with the exterior space of symmetry of the theory of relativity when it is considered that actual determinations of validity are certain when one is deducing from time rather than spatial measure.

As a consequence either given end is not to be found; even in the singular; for the projective forward and backward relations contain no common zero; and time as a relation is an intermediary identity everywhere for which there are no two to be found but in the local.

Conclusive Remark on Time: *The relation of a distant observer in observation of that of a point of the first observer is when in motion of a greater measure the reference to which the observer under observation observes a lesser time comparatively to that of the observer of it's given observation* & *greater, comparatively; to what it comparatively observes; as the two natures of time in relation to any one (of either) such observers differ by equivalence under separation.*

The Principle Inequivalence with σ is then the marriage of the one to the two body problem by which either agrees with reason and consistency; the extra σ being the accordance by phase of that of a temporal signature to inertia. When then one analyzes a mirror with this concept in mind; for that of the velocity of *that object* we result in two defining relations by analysis of the 'vertical' and the 'horizontal' rate of time comparative to a given arbitrary velocity of the mirror as:

$$\zeta = \sin(\alpha) \qquad \chi = \tan(\alpha) \qquad \alpha = \frac{v}{c} \tag{9}$$

Proof of Certainty

The rules of probability, statistics, and expectation impart a rule for that of the comparison of mathematical expectation to physical expectation; for which certain total certainty is possible with the following relation in mind; which is:

Foundation of Empirical Validity: "*Via dimensional analysis quantities of measure that exceed in dimensionless unit guarantee absolute certainty in principally equivalent dimensionless quantities; without which physical law is not established.*"

Beginning with a preliminary notion of that of prediction in relation to the root mean square deviation there is that of the relation to standard deviation for which a functional relation is defined as:

$$x_{rms}^2 = \bar{x}^2 + \sigma_x^2 \qquad : \qquad f \tag{10}$$

Then defining a limit of $\sigma_x \to 0$ and hence the terms under which expectation deviance and variance exceed zero shrinking to a limit of local relation of zero and null relation there is defined:

$$\lim_{\sigma_x \to 0} f \equiv x_{rms}^2 = \bar{x}^2 \tag{11}$$

The relation of that which is greater assuming the relation of a subtraction of one equation beside the other reduces the expectation to that of a verifiable difference of one; and conveyed as such:

$$f - \lim_{\sigma_x \to 0} f \equiv 0 > \sigma_x^2 \tag{12}$$

Or as:

$$(1 - \lim_{\sigma_x \to 0}) f \equiv 0 > \sigma_x^2 \tag{13}$$

By which it is true that $f \to x_{rms}^2 = x^2$ in practice for that of colocal observables in relation to empirical deduction from which mathematical law and expectation is based; in virtue of measureability (inclusive of singular variants). Therefore as $\sigma_x > 0$ implies $x_{rms}^2 \to x^2$ & $x_{rms} \equiv x$ of either given expected distribution: quantities that exceed **guarantee** formatively for unit based systems by dimensional analysis of smooth differential quantities of a given functional form with variants of mixed quantifiable expectations of a unitless measure nature.

In this a simple ratio does not suffice; however any quantities derived from dimensional analysis of unit based system do function for the given reason that quantities under elimination by units of measure reduce to subsets of sampling for which error exceeds expectation under surjective subset to set relationship.

Proof of Translation

The relation of one observable to another of measureability and the empirical proof of which is found in reproducibility reduces to the given of a statement for which principles can be deduced, and when understood echoes the relation of former to formative to latter; whether of colocal or differential order for that of relation to a given process. The proof of this is as simple as the observation that one singular difference along any path of instruction leads to at least two orders in relation to singular difference of inclusion of principle for which displacement is afforded.

The proof proceeds as:

$$(f - \lim_{\sigma_x \to 0} f)(g - \lim_{\sigma_x \to 0} g) = 0 * 1 + 1 * 0 = 0 \tag{14}$$

Then; deriving the relation in reverse as an expansion for the sense in which 0 is within means to be expressed as a local zero null relation to that of the former of the given open relation as of either distribution; and leaving behind the sense in which 0 is representational of absence although; keeping exclusively of absence as indicated in an affirmative we have:

$$(f - \lim_{\sigma_x \to 0} f)(g - \lim_{\sigma_x \to 0} g) + (h - \lim_{\sigma_x \to 0} h) \equiv x^2_{h,rms} = \bar{x}^2_h \tag{15}$$

From which we have the representation for either of f or of g. In this statement going back a multiplication is married to it's surjective division; by which certainty is achieved. Equation ten is to be understood as the proof that is the master statement; for the reason that in reduction; any surjective limit is less than a given ϵ:

Given of Whole: *To be dearly noted is that of the manner in which any two errors of given nature impose a directly false relation when they encompass a greater union; therefore as error never exceeds half; and half squared is less half; no error of one falsifies a count; nor does any for quantitative means signify a true doubt.*

Then:

$$(f - \lim_{\sigma_x \to 0} f) * 1 + 0 = 0 \tag{16}$$

From which we have as a given derivation:

$$0 > \sigma^2_{h,x} \to 0 > \sigma^2_{g,x} \to 0 > \sigma^2_{f,x} \tag{17}$$

Which means that in either given limit of that which is within limitation of relation of measurement, from a beginning of a sequence of given order unto a given distribution of finite and relational quantifiability to limit end occurrence with consideration of time; a limitation is expressed as a given truncation of error to greater than reproducibility; therefore a reduction to zero by any end quantifiability.

In summary the error introduced by any such dependence scales as the inverse of parabolic temporal relationship of path and always exceeds any given accuracy of experiment as a consequence of separation in time of arrival and departure as dependent upon initial conditions. As a result geometric parabolic relation of common comoving equivalence principle a terminus of the path represents a dimensionless sensitivity on initial conditions as the square root of the path like error. The error introduced by different freely falling bodies would then therefore be larger than that so produced by any experiment all of which are in confirmation for the reason that expectation exceeds prediction in validity.

This is true because if the contribution of error by the interval exceeding the limitations of the test equipment is indicated under all conditions other than a transparent, indivisible, and independently true relation then the result of the experiment can be used to provide positive indication of the elimination of the alternative, and for what ever remains, the provability of a natural law. Therefore verifiable and valid confirmation of the principle equivalence of physical law for that of certainty of relation is proven as can be confirmed as the surface area is always less than volumetric quantity; therefore error is certain below the limit of surface threshold for each such interior point by the dual of the statement of unitary reciprocity in electromagnetism and reality:

$$0 > \sigma^2_{A,ds} \to 0 > \sigma^2_{X,dx} \to 0 > \sigma^2_{V,da} \tag{18}$$

Where A is an area, V is a volume, and X is a point area, and ds is a path dx is a point infinitesimal and da is an area element.

Methods of Displacement

We therefore have two natures to this problem; one of the quantum analogue of a generator of a time signature (σ) which relates to the given of an impartially hidden local contraction time dilation factor of which is privately shared between any two given bodies; and that of certainty in that of the equations of motion; by which error exceeding predictive to experimental verification leads to empirical validity of experiment; for displacement capacitates solid relations. The equations were:

Principle Equivalence:

$$\eta + \rho = \log(\tilde{\omega} \cdot \bar{\omega}) \tag{19}$$

Principle Inequivalence:

$$\eta\rho + \sigma(t) = \log(\tilde{\omega} \cdot \bar{\omega}) \tag{20}$$

And the method by which we constrain error:

$$(1 - \lim_{\sigma_x \to 0}) f \equiv 0 > \sigma_x^2 \tag{21}$$

The first 'constitutive' argument goes as follows. It can be seen that were we to mute the relation of $\sigma(t)$ to zero it would no longer hold true in general that a measurement process on two bodies would obey a restriction on simultaneity. Take for instance the local theorem of (19) and (20); these here serve as translation tools by which the triangle inequality translates to:

$$\beta : \eta + \rho \geq \eta\rho + \sigma(t) \tag{22}$$

It is therefore impossible to suppress the existence of $\sigma(t)$ for otherwise we must insist non-locality for the reason that measurement error is second to the process of equivalence by (17) and as $\sigma \to 0$ side (c) of the triangle inequality becomes less than (a) or (19) plus (b) or (20) in hyperbolic space. Therefore the old intuition remains with the Given of the Whole; (where α derives from error in β):

$$(1 - \lim_{\sigma \to 0}) \beta \equiv 0 > \alpha^2 \tag{23}$$

This means that probabilistic and geometric natures of certainty are of two entirely different and *distinct* kinds; yet remarkably agree upon that of to which $\sigma(t)$ cannot be rejected, the instance of displacement by which certainty in physical law is founded and mass exists. Therefore this law adheres to a law of displacement; for which σ is a quantity which vanishes to zero when performing either a two body or one body experiment with displacement freedom and *any* potential mass.

Abstraction in Conclusion

Therefore it can be seen that these equations afford us two natures of certainty; one probabilistic; the other geometric; and that both enable the process of deduction from time to which is differentially passing in moments. We wish to convert from the hyperbolic equations to the spherical equations to produce a proof in certainty and manifest disappearance of super-symmetry by displacement to matter. The equations $(4,5)$ explicate the process. By substitution:

$$(\sigma_{\mu}(t)-\alpha\cdot\beta\partial_{\mu}^{2})\Omega(\alpha,\beta)=0 \tag{24}$$

With:

$$\sigma_{\mu}(t)=(\gamma_{\mu}\cdot\left[\partial_{\mu})(f(\tilde{\omega})+g(\tilde{\omega})\right]) \tag{25}$$

And under factoring:

$$(f(\tilde{\omega})-\alpha\cdot\partial_{(x,t)})(g(\tilde{\omega})+\beta\cdot\partial_{(x,t)})\Omega(\alpha,\beta)=0 \tag{26}$$

Therefore under super-symmetry a bound state and a unbound state are *both* seen as bound states of which displacement furnishes an energy gap $\Delta > 0$ by which they are descriptively bound but otherwise free. The argument proceeds as follows. If two particles are in different frames; then they experience the rate differential of time and space differently; to which when one slows it's consequent experience of time deduced from motion depreciates it's partial differential in the other frame.

Therefore of what of one is of the greater in time accumulated comparatively to the other in owing due; there is an 'extra' reduction in differential due to their interaction; by which relativistic and non-relativistic factors (explicated phenomenologically here) co-conspire to bind a state to it's displacement freedom. Therefore all masses exist with *displacement freedom* at a reduced mass in an otherwise particle particle equation of attraction, repulsion and pair potential. The pair potential is:

$$\Delta=2\sqrt{\sigma} \tag{27}$$

Time is then seen as something that is coparticipated in and, of, in particular, participated in; but that time for a differing point does indeed differ both quantitatively and qualitatively to that of the process of measurement and measured. The corollary of this is that all certainties of motion in reality differ by merely displacement freedom (Parsimony); and, it's counterpart being the conglomerate and aggregate of two body problem relations (Synchronicity) *together,* explaining the appearance of mass and motion; for certainty in Δ exists for all finite displacive motion.