Ockam's Razor-Postulate 1

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Abstract: $z=zz+C$, $\delta C=0$ (eq.1)
is a very powerful expression that gives both the Dirac equation*(**A**) and Mandelbrot set*(**B**) together resulting in the New pde(eq.8) and physics(sect.2).
But eq. 1 also has the small C limit of the z=zz algebraic definition of 1,o.
So eq.1 implies (the ultimate) Occam's razor **postulate** 1 gives us the physics,fig.1

*(**A**) Plug $z=1+\delta z$ into eq.1 and get $\delta(\delta z+\delta z\delta z)=0$ (eq.2) which splits into a real component Minkowski metric and imaginary component Clifford algebra. These both imply the (Hermitian) operator observables formalism, eq.6 (thus **QM**), and a 2D Dirac equation for e*,ν*.
*(**B**) Plug in the left side (of eq.1) z into the right side zz repeatedly and use $\delta C=0$ and get the Mandelbrot set iteration formula fig.4)
The eq.6 real eigenvalues (i.e., so needs Cauchy sequence from Mandelbrot iteration) makes (A)&(B) the ONLY possible '*observable* 1' eq.6 derivation(fig.3) from postulate 1. That Clifford algebra extremum implies the Mandlebulb real Fiegenbaum pt neighborhood on the next smaller fractal scale. This perturbation ofthat Dirac eq. gives a 4D New pde eq.8
$\gamma^\mu \sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$ whose composite e,*ν* gives the **SM** and composite 3e the **baryons**, and whose *non*operator iteration on the next larger fractal scale is the Schwarzschild metric getting **GR**(gravity,sect.2).

1 Fill in algebra steps of above points *(A) and *(B)

*(**A**) So from eq.2 ($\delta z-K$)$+\delta z\delta z=C$ (constant C and K) which is a quadratic eq. with in-general complex solution $\delta z=dr+idt$. Plug that back into eq.2 with $K=\delta z$ to initialize to flat space and get $\delta(dr^2+i(drdt+dtdr)-dt^2)=0$ since $dr^2-1^2dt^2=ds^2$ is special relativity (Minkowski metric given 1^2=natural unit constant speed$^2\equiv c^2$) invariance. The imaginary extremum is the Clifford algebra $dr'dt'+dt'dr'=\gamma^r dr\gamma^t dt+\gamma^t dt\gamma^r dr=0$ since $2drdt\neq0$ here for *non*vacuum (see eq.5 below). Factor the real component and get 3 equations (eg.,**e**; $dr+dt=ds$,$dr-dt=ds$ (eq.3),etc.,dr-dt in IV quadrant so $ds>0$ ($e^\pm$only nonzero proper mass), Eq.4 $dr\pm dt=ds$, $dr=\pm dt$ light cone $(\nu,\bar{\nu})$ and eq.5 $dr=0=dt$ is vacuum. (Note complex *unknown* K for $K\neq\delta z+\delta z'$ ($\delta z'$)perturbation adds 2 degrees of freedom.)
We just derived space-time (r,t) and special relativity here!
Square eq.3 to get $+ds^2=(dr+dt)^2=(dr^2+dt^2)+drdt+dtdr$ implying $dr^2+dt^2=ds^2$ circle invariance at 45° since dr+dt and drdt+dtdr are invariant. So circle $\delta z=dse^{i\theta}=dse^{i(45°+(\sin\theta dr+\cos\theta dt)/ds))}$. Define $dr/ds\equiv k$, $\sin\theta\equiv r$, $\delta z\equiv\psi$, take the r partial derivative, and multiply both sides by $i\hbar$ and define momentum $p\equiv\hbar k\equiv\xi v$ to get the operator formalism: $p_r\psi=-i\hbar\partial\psi/\partial r$ (so *observables* p) (eq.6)
All three invariances imply the Dirac equation(2) for **e**,*ν*. (e=electron, *ν*=neutrino).
We just derived quantum mechanics(QM)!
*(**B**)That Clifford algebra small drdt area extremum is at the Mandelbulb Fiegenbaum pt. C_M fig4)on the *real* axis where the Mandelbrot iteration sequence has that Cauchy seq. subset giving the real numbers. Postulate 1 (So small C in eq.1.) then requires a new (boost γ (fig.1)) frame of reference togive *small* fractal baseline $\delta z'\equiv C_M/\gamma\equiv C_M/\xi\equiv r_H=C$ in eq.1 deriving large mass$\xi.\equiv\tau+\mu$
So $K\neq\delta z+\delta z'$ perturbation is of flat space eq.3 at ~45°: $(dr-\delta z')+(dt+\delta z')=ds\equiv dr'+dt'$. (eq.7)

derivative rotation $\delta z'$ since ds invariant. Plugging $\kappa_{rr} \equiv (dr/dr')^2 = 1/(1-r_H/r)+.$, $r \equiv dr$, into that (local Minkowski metric) $ds^2=dr^2+dt^2+..$ and using invariant Clifford alg. drdt=dr'dt'= $\sqrt{\kappa_{rr}}dr\sqrt{\kappa_{tt}}dt$, we obtain $\kappa_{rr}=1/\kappa_{tt}$ and thereby get that **4D GR** quadratic form and so a global curved space.
So the Fiegenbaum pt neighborhood perturbation $\delta z'$ of that Dirac equation implies that generally covariant **new pde** $\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$ (8) with that fractal r_H (by10^{40}Xr_H scale change). Also note 4D **GR** $\kappa_{\mu\nu}$ tensor. Hermitian operators on these new pde ψs are observables

2 New pde Eq.8 applications for z=0 (For small C in eq.1: z=0 then $r=r_H$; z=1,$r>r_H$.)

2.1 Composite e,ν: $\pm\delta z'$ in eq.7 implies (derivative)**iteration** of *New pde*: Bosons

That z=0, **4** axis' 2X45°=θ (derivative operator **iteration** of *New pde*) rotations for e,ν implies the $Z,W^\pm,\gamma$, the **4** Bosons of the **Standard electroweak Model** SM so **Maxwell's** and **Proca's** equations (PartI, appendix A). Note the *non*operator **iteration** of the *New pde* on the next higher fractal (r_HX10^{40}) scale generates that (above) 4D GR quadratic form Schwarzschild metric (i.e., **gravity**) and so general covariance:
We just derived general relativity (GR) from quantum mechanics in one line! Recall the *New pde* zitterbewegung oscillation on the next higher 10^{40}X larger fractal selfsimilar cosmological r_H scale. With us being in the expansion stage of the oscillation for $r<r_c$ this then **explains the expansion of the universe**.

2.2 Composite 3e and $r=r_H$ stability (i.e., $dt'^2=(1-r_H/r)dt^2$)) and h/e flux quantization effects

That z=0 *New pde* ($2P_{3/2}$ at $r=r_H$) composite **3e** results in rapid e motion Fitzgerald contraction of E field lines thereby deriving the **strong force** and so (the much larger mass $\xi/2$) **baryons.** PartII

3) Eq.8 New pde $\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$ applications for z=1 so $r>r_H$

For z=1 *New pde,* the 3rd order term in the Taylor expansion of the two square roots $\sqrt{\kappa_{\mu\mu}}$ in the *New pde* gets the Lamb shift (2) and anomalous gyromagnetic ratio respectively (PartI, sect.1.2.1 thus eliminating the need for renormalization and the resulting infinite charge, infinite mass, infinite vacuum density, etc.. Thus these square roots **cause theoretical physics to give right answers again** (Infinite everything is 0% right).

4) Note on list-define math (from 1(∪1)) to create real number *algebra*(fig.2)

Given this (postulate) 1 we can use *list-define* (*list* the many instances of a relation e.g., start with **1**∪1≡ 2 , then *define* them all as relation a+b=c) math(appendix B PartI) to *replace* those famous set theory axioms, order axioms, mathematical induction axioms (giving **N**) and the field andring axioms(1) to generate the numbers N and the *algebra* of eq.1. *Only* **postulate**1for math&physics

Conclusion: We finally understand, *everything*. An intuitive notion of the postulate of ONE is Given that 10^{40}X fractal selfsimilarity astronomers are observing from the inside of what particle physicists are studying from the outside, the r_H of that ONE *New pde 'object'* e we first postulated. So at big and small scales *all* we observe is that **ONE** thing (even baryons are 3**e**).

References

(1) Royden, '**Real Analysis',** Pearson modern classics
(2) Bjorken and Drell, '**Relativistic Quantum Fields'**
(3) PartI,PartII,PartII in davidmaker.com for backups

Figures: Equation 1 z=zz+C, δC=0 gets the new pde (eq.8) and physics and yet the z=zz algebraic definition of 1 is also the small C limit of equation 1. So eq.1 hints strongly that the (Ockam's razor motivated) **Postulate** 1⇒Physics is correct:

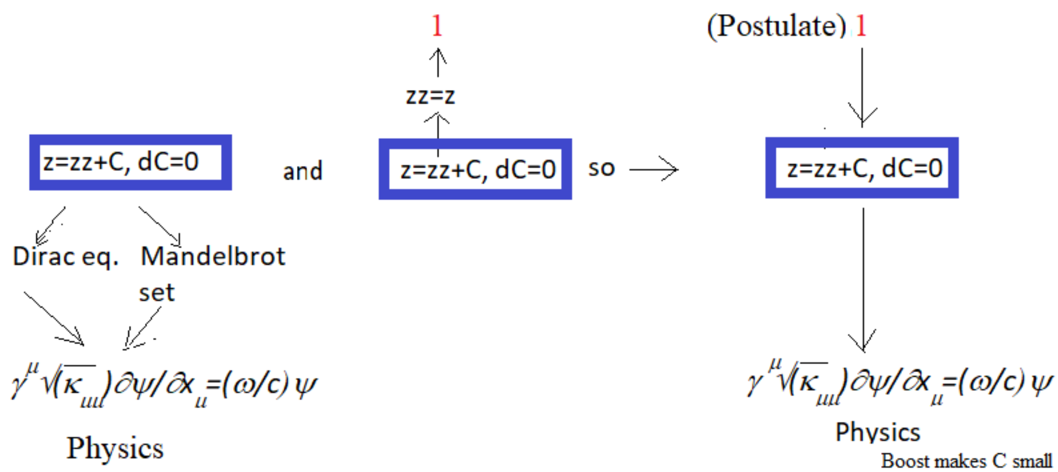
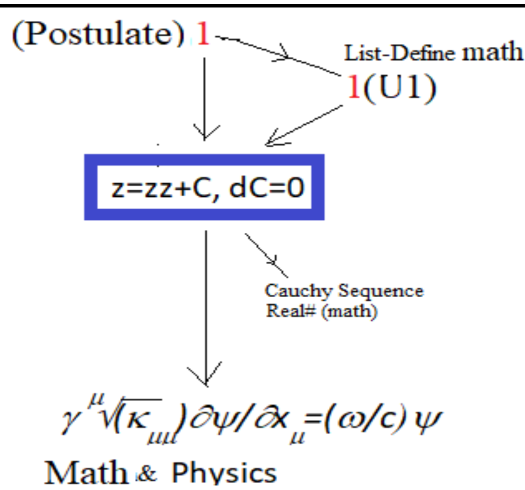


fig.1



Also math (sect.4) from 1:

fig.2

Uniqueness: Need at least some measurable "observables" (Hermitian operator formalism **eq.6**) and **Cauchy sequence** of rational numbers to derive real#(*eigenvalues*) math as well.

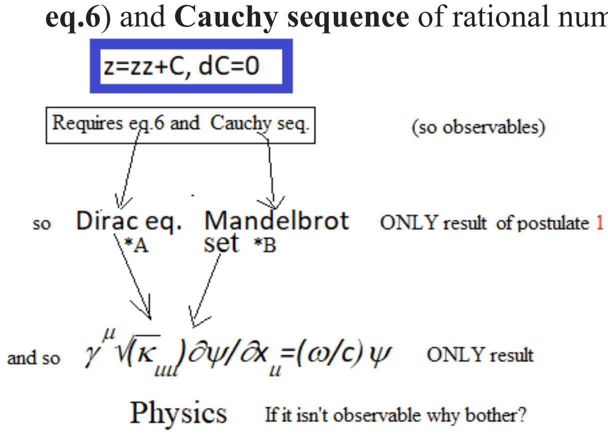


fig.3

Mandelbrot Set

Plug in the left side (of eq.1) z into the right side zz repeatedly and use δC=0 and get the Mandelbrot set iteration formula.

The Mandelbrot set C_M is then (and from the postulate $\delta C_M=0$), $z_{N+1}=z_Nz_N+C_M$

(since $\delta(z'-zz)=\delta(z_{N+1}-z_Nz_N)=\delta(\infty-\infty)\neq0$).$z_o=0$.

Fiegenbaum point C_M smallest real line Mandelbulb on next smaller (baseline) scale. Mandelbulb areas (drdt) for smallest Clifford algebra extremum drdt. 10^{40} X zoom at Fiegenbaum point http://www.youtube.com/watch?v=0jGaio87u3A

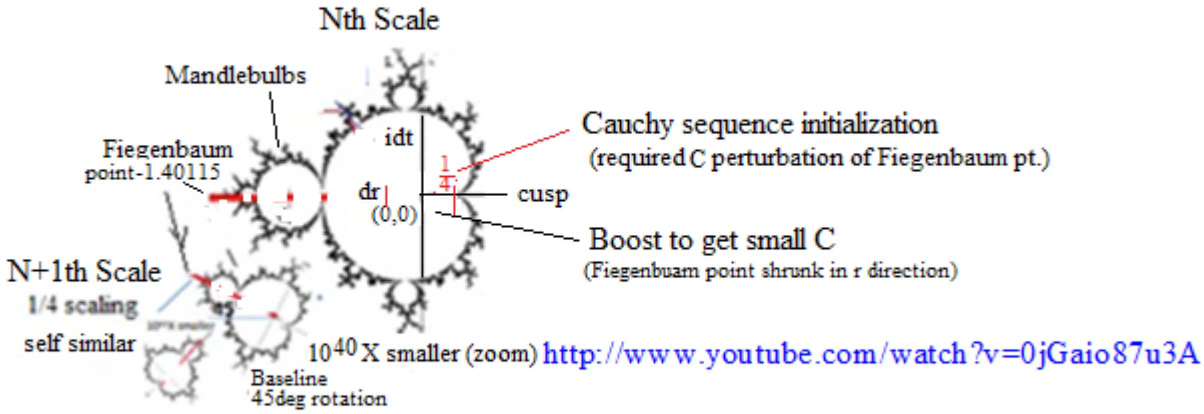


fig.4

Derivation of New Pde Using Postulate 1

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Introduction: z=zz+C,(1.1.1) δC=0 (1.1.2)

is a very powerful expression that gives both the Dirac equation and Mandelbrot set together resulting in the New pde(eq.1.2.7) and physics(sect.1.2).

But eq. 1 also has the small C limit of the z=zz algebraic definition of 1,o.

So eq.1.1.1 implies (the ultimate) Occam's razor **postulate** 1 gives us the physics,fig.1

Section 1.1 (*A) Solve eq. 1.1.1 and 1.1.2 directly (substitute z=1+δz)

Plug z=1+δz into eq.1.1.1 get (1+δz)-(1+δz)(1+δ)=C (1.1.3) and so δzδz+δz+C=0 (1.1.4)

Solving quadratic eq. 1.1.4 we get: δz=[-1±√(1-4C)]/2. For noise C>¼ δz=dr+idt (1.1.5)

(So we derived `space-time.`). Plug 1.1.4 into eq. 1.1.2 δC=δ((δz-K)+δ(δzδz))=0 (1.1.6)

1.1.2 δz=K →flat

We can then always add a (given constant C) in general complex K in $\delta(\delta z\text{-}K+\delta z\delta z)=0$ to use $K=\delta z$ to initialize to local flat (making the $K\neq\delta z+\delta z'$ cases perturbations in this formulation) since $0+\delta(\delta z\delta z)=\delta[(dr+idt)(dr+idt)]=\delta(dr^2+i(drdt+dtdr)-dt^2)=0$ is Minkowski (C becomes C_M is real) Also since K is complex for unknown $K\neq\delta z+\delta z'$ perturbation (K) merely adds 2 degrees of freedom as in 2⊕2 (Note then 4D keeps $C=ds^2$ invariant even if $K\neq\delta z$).

Given $\delta(\delta z\text{-}K)=0$ and eq.1.1.5 $\delta(\delta z\delta z)=\delta[(dr+idt)(dr+idt)]=\delta(dr^2+i(drdt+dtdr)-dt^2)=0$ (1.1.7)

Next factor the real component of 1.1.7.

$\delta(dr^2\text{-}dt^2)=\delta[(dr+dt)(dr\text{-}dt)]=\delta(ds^2)=[[\delta(dr+dt)](dr-dt))]+[(dr+dt)[\delta(dr-dt)]]=0$ (1.1.10)

Solve eq. 1.1.10 and get

(→±**e**) $dr+dt=\sqrt{2}ds$, $dr\text{-}dt=\sqrt{2}ds$ $\equiv ds_1$ (1.1.11) I, IV +ds >0

(→light cone *ν*) $dr+dt=\sqrt{2}ds$, $dr=-dt$, (1.1.12) II quadrant

" " $dr\text{-}dt=\sqrt{2}ds$, $dr=dt$, (1.1.13) III quadrant

(→vacuum) $dr=dt$, $dr=-dt$ (1.1.14) $dt=0=dr$

Equation 1.1.10 gives Special Relativity(SR) $ds^2=dr^2\text{-}(1)^2dt^2$ (note natural unit *constant* 1^2 ($\equiv c^2$) in front of the dt^2). Thus $K=\delta z$ initializes to locally flat space if also C is real. Note our quadrants were chosen so that ds>0 giving us observability since the later operator formalism at 45° which also implies that if either dr or dt is zero then everything is zero and we have our "vacuum" solution 1.1.14 and so not observable.

Note also **Imaginary** component= $ds_3\equiv$ ***drdt+dtdr*** (1.1.8)

Note our previous quadrant choice of dr,dt makes drdt+dtdr and so ds_3 positive or zero with zero being the extremum given eq.1.1.8 are finite extremums since $\delta\infty$ is undefined. But since dr, dt (in scalar 2drdt) is not 0 if not eq.1.1.14 vacuum then:

$$drdt+dtdr=0 \qquad (1.1.9)$$

implies the imaginary extremum is a Clifford algebra (since we assume we are not in the eq.1.1.14 vacuum where drdt=0 is not the eq.1.1.14 vacuum as in)$dr'dt'+dt'dr'\equiv\gamma^1dr\gamma^2dt+\gamma^2dt\gamma^1dr=2drdt(\gamma^1\gamma^2+\gamma^2\gamma^1)=0$ so $\gamma^i\gamma^j+\gamma^j\gamma^i=0$, $(\gamma^k)^2=1$ ($(\gamma^k)^2=1$ from real component of eq.1.1.7).

Third Invariant

In their respective quadrants all are +ds. Also recall the previous two invariants of ds_1,ds_3. We square $ds_1^2=(dr+dt)(dr+dt)=dr^2+drdt+dt^2+dtdr=[dr^2+dt^2]+(drdt+dtdr)\equiv ds^2+ds_3=ds_1^2$. Since ds_3 (from 1.1.9, is max or min) and ds^2 (from 1.1.10) are invariant then so is $ds^2=dr^2+dt^2=ds_1^2\text{-}ds_3$ as in figure 1 for all angles from the axis extremum. ds^2 is our 3^{rd} invariant. (Note all three of these invariants $\partial ds/\partial z=0$ are satisfied at the Fiegenbaum point, *ν* also at the limacon end, sect.1.2). Note in fig.1 min ds is at 45°. So ds is diagonal.

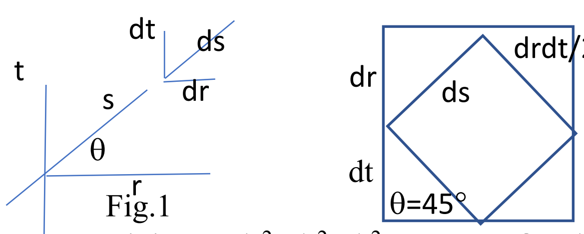


Fig.1 Nth fractal scale

Minimum $ds^2=dr^2+dt^2$ so at 45°: $\delta z=dse^{i\theta}=dse^{i(\Delta\theta+\theta_o)}$, $\theta_o=45°$ (1.1.14)

Note in fig.1 45° is always measured from extremum axis'(also in fig.4). So for variation Δθ

$\delta z = dse^{i\theta} = dse^{i(\Delta\theta+\theta o)} = dse^{i((\cos\theta dr+\sin\theta dt)/(ds)+\theta o)}$, $\theta_o = 45°$. (1.1.15)
So θ=f(t). $\delta z = dse^{i(45°+\Delta\theta)}$. In eq.1.15 we define k≡dr/ds, ω≡dt/ds, sinθ≡r, cosθ≡t. $dse^{i45°} = ds' = ds$.

Then eq.1.15 becomes $\delta z = dse^{i(\Delta\theta)} = dse^{i\left(\frac{\sin\theta dr}{ds}+\frac{\cos\theta dt}{ds}\right)}$ so $\frac{\partial\left(dse^{i\left(\frac{rdr}{ds}+\frac{tdt}{ds}\right)}\right)}{\partial r} = i\frac{dr}{ds}\delta z$ so

$$\frac{\partial\left(dse^{i(rk+\omega t)}\right)}{\partial r} = ik\delta z \quad (1.1.15a)$$

$k\delta z = -i\frac{\partial\delta z}{\partial r}$ Multiply both sides by ħ. ħk≡mv=p since k=dr/ds=v/c=2π/λ (1.1.15b)
from eq.1.15 for our unit mass $\xi_s \equiv m_e$. δz≡ψ,(eq.6.6.1) Note we also derived the DeBroglie wavelengthλ=h/mv. (<F>*= ∫(Fψ)*ψdτ=∫ψ*Fψdτ =<F> Hermitian).

$p_r\psi = -i\hbar\frac{\partial\psi}{\partial r}$ which is the observables p_r condition gotten from that eq.1.1.15 circle. (1.1.16)

operator formalism thereby converting eq.1.1.11, 1.1.12, 1.1.13 into Dirac eq. pdes.
Note these p_r operators are Hermitian and so we have 'observables' with the associated eq.1.11-1.13 Hilbert space **eigenfunctions δz** (=ψ, appendix B4). δz (in z=1-δz) is the probability z is o (see appendix D).
We derived QM here.
Note rotation to 45° for min ds_3 in figure 1 on the eq.1.1.14 circle.

1.1.3 Origin Of Math from Eigenvalue of δz: Since ds∝dr+dt can make (dr+dt)/ds a integer:
2δz≡ (1∪1)δz≡(1.11+1.11)δz≡((dr+dt)+(dr-dt))/(k'ds)))δz≡-i2(ds/ds)∂(δz)/∂r≡-i2∂(δz)/∂r (1.1.16a)
=(integer)k)δz.
So from eq.1.16a we obtain the eigenvalues of: δz=0,-1 making our z=1+δz eq.1 **real numbers 1,0 =z (binary qubits) also observables. So we have come full circle and so use this result to develop the list-define algebra** required to use eq.1-1.2. eg.,"list" as in 1+1=2, 2+1=3; "define" a+b=c replacing the usual field axioms, order axioms and mathematical induction axiom (that merely gives **N**). See appendix C, Part I. Note this third invariant ds also *gives us the quantum mechanics* operator formalism (eq.1.1.16). See appendix D.
So we have derived the observables in the postulate of 1.

1.2 (*B)Mandelbrot Set.

Iterate z-zz=C (1.1.1), δC=0, C<0 (1.1.2) to get Cauchy sequence and so real
Just plug the left side z in z=zz+C back into each z on the right side of eq.1.1.1 and get z'=z'z'+C since z'≡(zz+C)=z. $z_1=1$ instead of 0 with the two C_Ms chosen to give the upper and lower components of the Cauchy sequence. It is the Mandelbrot set displaced by -1. So you can repeat this step with this new z'=z'z'+C. We get the iteration $z_{N+1}=z_Nz_N+C_M$ with $\delta C=\delta(z_{N+1}-z_Nz_N)=0$ then implying this choice of C_M defines the Mandelbrot set since δ(∞-∞) cannot be zero. Our z=zz postulate in eq.1.1.1 has solutions 1,0 and first term in the iteration is $z=z_1$. But $z=z_1=0$ will be used here (z=1 as ξ_1 is discussed below). One such sequence z_N generated from this Mandelbrot set definition also provides a Cauchy sequence z_N of rational numbers (eg., with initialization C_M=±smallrational#<¼) that shows that 1 is a real number(2).
So we have derived the real part of observability. See appendix B also.

Clifford Algebra +Mandelbulbs Implies Fiegenbaum point Making K≠δz
Scalar component of eq. 1.1.8 δ(**2drdt**)=0 implies smallest area real C extremum Mandelbulb which is the Fiegenbaum point C= C_M subset of the Mandelbrot setκ**A Moving Observer**

1.2.1 Frame of Reference Is Also Implied by Postulate 1

But C_M is big ($|C_M|$=1.4011..) so we need a new reference frame to get small C≈0 of postulate 1 (eq.1.1.1). Define $r'_H=\delta z=C_M/1$ so we (as a Fitzgerald contraction 1/γ) boost r'_H=boost (as in the p=ξv=(1/γ)(dr/ds) definition 1.1.15b) $C_M/1\equiv C_M/\gamma\equiv C_M/\xi_1\equiv C$ to get small C≈0 (if ξ_1 is big) and so get the postulate of 1 in eq.1.1.1 (This is just the tangential instantaneous rotating frame of reference of the spin½ eq.1.2.7 new pde.). Also for the next smaller fractal baseline δz>>δzδz in eq.1.1.4 so δz≈C

z≈1 $C_M=\xi\delta z'$, δz' in z=1+δz' is small so ξ_1 is big.

z≈0 $C_M=\xi\delta z'$, δz' in z=1+δz' is big so ξ_o is small.

z≈0 $\delta C_M=\delta(\xi C)=\delta(\xi\delta z)=\delta\xi_o\delta z+\xi_o\delta\delta z$ so $\delta\xi_o$ is small so small ξ_o is stable ground state of the new pde.

z≈1 $\delta C_M=\delta(\xi C)=\delta(\xi\delta z)=\delta\xi\delta z+\xi\delta\delta z$ so ξδδz is small and $\delta\xi_1$ can be big so ξ_1 can be unstable

The Fiegenbaum point 45° line includes 3 Mandelbulbs so we have 3 ξ. So $C=C_M/1$ making the stable 1 the stable ξ_o. δξ is then big so ξ_1 unstable and also $\xi=\xi_1$ is large we have three S=½ new pde objects (each with its own sect.1.1 neutrino and its own Reimann surface.)

constituting $\xi_1=\xi_t+\xi_u+m_e$ (1.2.0)

in the new pde for r large with ξ_t, ξ_u excited states of boosted m_e.

Thus we have added perturbation $\delta z'\approx\Sigma C_M/\xi\equiv r'_H$ on eq.1.1.13 constrained by the eq.1.1.6 circle has to be written at 45° as dr-δz'+dt+δz'=ds=dr'+dt' since ds is invariant and which is a rotation θ on the z=1 baseline next smaller fractal scale.

In a boost dt also changes so arctan(dr/dt)≡θ changes so θ gets larger and larger in $e^{i\theta}$ (sect.1.1.3) and passes by successive branch cuts and so ξ_2 and ξ_3 and their respective neutrinos (eq. 1.1.10-1.1.13) (in their assigned quadrants) each having it's own Reimann surface. These are the families of the 3 leptons with their associated Reimann surface neutrino. $\xi_o=\Delta\varepsilon=m_e$ is the stable ground state for all three states for large r and so independent Hamiltonian (and momentum) operators Hψ=Eψ.

For small $r=r_H$ (and same ξ_1) the rotational reduced mass $\xi_1/2=m_p$ is derived in part II from the B flux h/e quantization and Meisner effect.

Fiegenbaum Point

Go to http://www.youtube.com/watch?v=0jGaio87u3A to explore the Mandelbrot set near the Fiegenbaum point. The splits are in 3 directions from the orbs. There appear to be about 2.5 splits going by each second (given my PC baud rate) and the next Mandelbrot set comes up in about 62 seconds. So

$3^{2.7X62}=10^N$ so 172log3=N=82. So there are 10^{82} splits.

So there are about 10^{82}splits per initial split. But each of these Mandelbrot set Fiegenbaum points is a $C_M/\xi\equiv_H$ in electron rq.9 (eq.1.2.7 below). So for each larger electron there are **10^{82} constituent electrons** (that result from the amazing equation). Also the scale difference between Mandelbrot sets as seen in the zoom is about **10^{40}, the scale change** between the classical electron radius and 10^{11}ly giving us our fractal universe.

Recall again we got from eq.1 δz+δzδz=C with quadratic equation result:

$\delta z=\frac{-1\pm\sqrt{1-4C}}{2}$. is real for noise C<¼ creating our noise on the N+1 th fractal scale. So ¼=(3/2)kT/(m_pc^2). So T is 20MK. So here we have *derived the average temperature of the universe* (stellar average). Recall again

$$\delta z = \frac{-1 \pm \sqrt{1-4C}}{2}$$

whose general solution is complex δz=dr+idt. C≥4 implies nonzero imaginary (time) component. On the next smaller fractal scale δz+δzδz=C with δzδz<<δz≈C there. But inside the Mandelbrot set large limacon cusp the ¼≥δz≈C. That cusp is required as a Fiegenbaum point perturbation because without time there is no "observable" H (Hamiltonian) so z_o=¼ is the only allowed perturbation C of the Fiegenbaum point. Note that our boost shrinks the C=C_M/ξ_o and the ¼=C_M/ξ_o as well and so boosts the proper mass ξ_o electron (THE single nonzero proper mass Hamiltonian) perturbation of C to large ξ_1 (in above sect.1.2.1). Note also our Cauchy sequence initialization C=0 before that boost. So the Cauchy sequence proves that 0 is a real# since there is a Cauchy sequence of *rational* numbers here (eg., starts with ¼) converging to it. (i.e.,0). δz is then Fitzgerald contracted (after the derivation of the new pde so C is boosted at the end) to ~0 (so the postulate of 1 (z=zz) still holds) so we can then say our C_M/ξ_1 is real. So this small C region can thereby be used to get the Cauchy sequence proof of real # as a special case of a Mandelbrot set iteration. So you could use the Mandelbrot set sequence; -1/4,-3/16,-55/256,...

$N=r^D$. So the **fractal dimension=** D=logN/logr=log(splits)/log(#r_H in scale jump) =$\log 10^{80}/\log 10^{40}=\log((10^{40})^2)/\log(10^{40})$= 2 .
which is the same as the 2D of eq.1.1.5 just below and the Mandelbrot set. The next smaller (subatomic) fractal scale $r_1=r_H=2e^2/m_ec^2$, N-1th, $r_2=r_H=2GM/c^2$ is defined as the Nth where $M=10^{82}m_e$ with $r_2=10^{40}Xr_1$

z=0,z=1, δK≠δz generally

1.2.2 K≠δz

Recall $(dt+dr)^2=dr^2+dt^2+drdt+dtdr=ds^2 = dr^2+dt^2+0$. Recall small δz, so small K, C≈ δz-K in eq.1.1.4 K≡x+iy in eq.1.1.4 also adds 2 more degrees of freedom since K can be complex and *non*locally is a free parameter. Recall that $\delta[(dr+idt-K_r-K_i)+dr^2-dt^2+i\delta(drdt+dtdr)]=0$. In section 1.1 $dr+idt-K_r-K_i=0$ for flat space initialization.

4degrees of freedom in 2 spatial dimensions in **rectangular** coordinates

Here δz≠K so given complex unknown K we have 2 additional degrees of freedom |K-δz'|≡dx'+dy' added to δz to have dx',dy',dz' behave the same for orthogonal $dr^2=dx^2+dy^2+dz^2$ so $(dr'+dt')^2=((dx'+dy'+dz')+dt')^2=dr^2+dt^2+0=ds^2$ since dr'dt'+dt'dr'=0.
We convert to dx,dy,dz, dt by $(dx'+dy'+dz'+dt')^2 = (\gamma^x dx+\gamma^y dy+\gamma^z dz+\gamma^t dt)^2 = dr^2+dt^2=ds^2$ (1.2.0) (new pde) to keep ds^2=C constant implying the Clifford algebra $\gamma^\mu\gamma^\nu+\gamma^\nu\gamma^\mu=0$, $\gamma^\mu\gamma^\mu=1$.

4degrees of freedom in 2 spatial dimensions in **polar** coordinates

Or we just add those 2 new parameters in a
2D rotation at 45° (dr-δz')+(dt+δz')≡ds (eg.,Δθ,Δr) (1.2.1)
(since ds is invariant).

In that regard in a moving frame of reference boost dt (recall $3\xi_o$ gets heavier right up to ξ_1) also changes so arctan(dr/dt)≡θ changes so θ gets larger and larger in $e^{i\theta}$ (sect.1.1.3) and passes by(successive branch cuts and so ξ_2 and ξ_3 and their respective neutrinos (eq. 1.1.10-1.1.13) (in their assigned quadrants) each having it's own Reimann surface. These are the families of the 3 leptons with their associated Reimann surface neutrino. $\xi_o=\Delta\varepsilon=m_e$ is the stable ground state for all three states for large r and so independent Hamiltonian (and momentum) operators $H\psi=E\psi$. From eq.1.1.19 $\Sigma C_M/\xi_1\equiv r'_H$ in $\kappa_{oo}=1-r'_H/r$ for z=1, $C_M/\xi_o\equiv r_H$. for z=0. So small δz implies a $\Delta\theta$ in C_1 Eq.1.1.14 $\delta z=dse^{i(45°+\Delta\theta)}$ rotation occurs here implying that the eq.1.1.4 associated infinitesimal uncertainty $\pm C_M/\xi_1=\delta z$ cancel to rotate at $\theta\approx 45°$:

$(dr-\delta z)+(dt+\delta z)=(dr-(C_M/\xi_1))+(dt+(C_M/\xi_1))=\sqrt{2}ds=dr'+dt'$ (1.2.1)

= 2 rotations from ±45° to next extremum (appendix AI below). (1.2.1a)

This also keeps ds_1 invariant so keeping the eq.1.1.10 ds invariance. Note that by keeping dt not zero we have *already* put in background white noise (since then C>¼ in eq.6 & eq.1.1.4) into eq.1.1.11-1.1.13

Recall $z\equiv 1+\delta z$ so if z=0 then $0=1+\delta z$ so $|\delta z|$ is big in $C_M=\xi(\delta z-K)$ so ξ is small

So for z=0 rotations ξ is small so big C_M/ξ_o (also $\delta\xi=0$ so stable, electron, sect1.2.4) from A1 $\theta=C_M/ds\xi_o=45°+45°=90°$. In contrast for z=1 ξ_1 big so $\theta=45°-45°\approx 0$ since small $\delta z=C_M/\xi_1$.

Define $\kappa_{rr}\equiv(dr/dr')^2=(dr/(dr-(C_M/\xi_1)))^2=1/(1-r_H/r)^2=A_1/(1-r_H/r)+A_2/(1-r_H/r)^2$

The A_I term can be split off from RN as in classic GR and so $\kappa_{rr}\approx 1/[1-((C_M/\xi_1)r))]$ (1.2.2)

From partial fractions where N+1th scale $A_1/(1-r_H/r)$ and Nth$=A_2/(1-r_H/r)^2$ with A_2 small here.

So we have a new frame of reference dr',dt'. So real eq.1.1.10 becomes 2D⊗2D:

$$ds^2=\kappa_{rr}dr'^2+\kappa_{oo}dt'^2+.. \qquad (1.2.3)$$

So a new frame of reference dr',dt'. Note from 1.1.8 $dr'dt'=\sqrt{\kappa_{rr}}dr\sqrt{\kappa_{oo}}dt=drdt$ so $\kappa_{rr}=1/\kappa_{oo}$(1.2.4)

We do a rotational dyadic coordinate transformation of $\kappa_{\mu\nu}$ to get the Kerr metric which is all we need for our GR applications. Note on the N+1th fractal scale $\kappa_{\mu\nu}$ is the ambient metric.

So we derived General Relativity (eqs.1.2.1,1.2.2,1.2.3) by the C_M **rotation** *of special relativity* (eq. 1.1.10) which shows why we said **$K\neq\delta z$** implies 4D curved space.

Relation Between The Nth And N+1th Fractal Scale (Reduced Mass) Metrics $\kappa_{\mu\nu}$

Recall (sect.6.30 he well known additional $(a/r)^2$ Kerr metric term as in $\kappa_{oo}=1-(a/r)^2-2GM/(c^2r)$ in the N+1 fractal scale. Also in the Nth scale reduced mass system $\xi_1/2=m_p$. Given the spin½ selfsimilarity the Kerr metric exists but is a mere observed perturbation due to inertial frame dragging observable only due to a nearby object B. So we have two equal masses on the N+1th fractal scale, hence we can use the reduced mass just as we do with the m_p. We can then do our scale transformation from one reduced mass system to another avoiding many complications. So multiply $\kappa_{oo}\approx[1-(C_M/(\xi_i r))]$ by $1-\varepsilon$ to then get $[1-\varepsilon-\Delta\varepsilon-C_M/(\xi_o r)]$ and then we are required to normalize (section 1.2) by $1-\varepsilon$ for 2D homogenous isotropic space-time which is then in the reduced mass m_p system (partII). Locally normalizing out the $1\pm\varepsilon$ is equivalent to that ξ_1 boost. Normalizing Given reduced mass systems for both the larger and smaller fractal scales **to jump to the next fractal scale electron we then merely multiply C_M/ξ_o by 10^{40}**. So $\kappa_{oo}=1-\Delta\varepsilon/(1-\varepsilon)-(10^{40}C_M/\xi_o)/r$ so that $-\Delta\varepsilon\rightarrow(a/r)^2$, $M=10^{80}m_e$, $10^{40}2e^2/m_ec^2=10^{40}C_M/\xi_o\rightarrow 2GM/c^2$. So $r_H\rightarrow r_H10^{40}$, $\kappa_{oo}=1-C_M/\xi_o)/r\rightarrow 1-(a/r)^2-r_H/r=1-\xi_1-(C_M/\xi_o)/r$, N+1th fractal scale, and $1/m\rightarrow m$ (since $r_H=2e^2/m_ec^2\rightarrow 2GM/c^2$) defining G.

1.2.3 4D and eq.1.2.2 in eq.1.1.11

Note from the distributive law square 1.11: $(dr+dt+..)^2=dr^2+dt^2+drdt+dtdr+$.But Dirac's sum of squares=square of sum is missing the cross term drdt+dtdr requiring the γ^μ Clifford algebra. So this is the same as if those cross terms drdt+dtdr=0 as in eq.1.1.9. So equation 1.1.9 with 4D 1.1.11, automatically implies a Clifford algebra $\gamma^\mu\gamma^\nu+\gamma^\nu\gamma^\mu=0$, $(\gamma^\mu)^2=1$. From eq.1.2.7 there is also

the covariant coefficient $\kappa_{\mu\mu}(\gamma^{\mu})^2=\kappa_{\mu\mu}$. So after multiplying both sides by $\delta z\equiv\psi$ causes the **4D** operator equation 1.1.16 to cause eq.1.1.11→
$ds=(\gamma^1\sqrt{\kappa_{11}}dx_1+\gamma^2\sqrt{\kappa_{22}}dx_2+\gamma^3\sqrt{\kappa_{33}}dx_3+\gamma^4\sqrt{\kappa_{44}}dx_4)\delta z\rightarrow$

$$\gamma^{\mu}\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_{\mu}=(\omega/c)\psi \qquad \textbf{(1.2.7)}$$

$\omega\equiv m_Lc^2/h$. Eq.1.2.7 is our new 4D pde which implies eigenfunctions δz (=ψ) and with $C_M>0$ gets leptons for z=1,0 and also 1.1.12 (ν pinned to the light cone so $C_M=\varepsilon/r_H=0$). For z=0 3e see PartII (in sect.1.2 we show that the Standard electroweak Model comes from the composite of e,ν at $r=r_H$ and in partII we show that the $2P_{3/2}$ particle physics at $r=r_H$.
So we have derived the ψ for which the observability **operator** formalism applies.

So all we did here is to *define* observable 1

Given 1 is "meaningful" (an observable is not just a squiggle on a piece of paper) we can finally just, as in Occam's razor, **"postulate 1"** (to get math *and* physics, davidmaker.com

Applications

1.2.3 Add ground state energy $\Delta\varepsilon$ to r_H/r for **r=large**

Inverse Separability implying Nth scale operator formalism and frame of reference forces

So there exists a eq.1.2.7 $(\gamma^{\mu}\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_{\mu}=(\omega/c)\psi)_N$ on every Nth fractal scale (10^{40}X larger than a given previous fractal zitterbewegung scale r_H) with an individual separate horizon r_{HN} barrier to observability (sect.2.5) between every two such space-like scale intervals given. $\kappa_{oo}=1-r_{HN}/r$. Given these independent 1.2.7 equations, as in the usual differential equation separability, we can invoke a "inverse separability" $\psi_{point}=\psi_{N*}\psi_{N+1*}\ldots_*\psi_{\infty.}$ given the usual zitterbewegung $\psi=e^{i(mc^2/\hbar)t}\equiv e^{i\xi t}\equiv e^{i(\varepsilon+\Delta\varepsilon)}$ (sect.1.2) $\Delta\varepsilon=\xi_o$ with $e^{i(\varepsilon+\Delta\varepsilon)}{}_N$ the asymptotic ψ value (i.e.,r→∞). Also note the $\sqrt{\kappa_{oo}}$ multiplier in equation 1.2.7: Thereafter after normalizing each $\psi^*\psi$ to 1 as usual we have: $\prod_N(\kappa_{oo}(\psi^*\psi)_N=\prod_N(\kappa_{oo}(\psi^*\psi)_N)=\prod_N(\kappa_{ooN})=e^{i(\varepsilon+\Delta\varepsilon)}{}_{N*}e^{i(\varepsilon+\Delta\varepsilon)}{}_{N+1**}$.(1.2.31).
The frame of reference provided by each ψ gives our forces (eg., sect.7.3)
This inverse separability makes the rectangular method apply to all fractal at once.

Object B And Kerr Contribution 6.4.16 $\kappa_{oo}=1-r_H/r\rightarrow1-(a/r)^2-r_H/r=1/\kappa_{rr}$ from eq.1.2.4

Note from Kerr metric contribution eq. 6.4.16 given space-like r_H barrier separations the operators (sect.2.5) are on quantities only within a given fractal scale. Here $\Delta\varepsilon$ is N+1 th and r_H Nth so as an operator equation: $\Delta\varepsilon(r_H\psi_N)=0$, $r_H(\Delta\varepsilon\psi_{N+1})=0$, etc. (partIII application) in:

$$E=\frac{1}{\sqrt{1-\frac{\Delta\varepsilon}{1-\varepsilon}-\frac{r_H}{r}}}=1-\frac{\Delta\varepsilon}{2(1-\varepsilon)}-\frac{r_H}{2r}+\frac{3}{8}\left(\frac{r_H}{r}\right)^2+2\frac{\Delta\varepsilon}{1-\varepsilon}\left(\frac{r_H}{r}\right)+..=1-\frac{\Delta\varepsilon}{2(1-\varepsilon)}-\frac{r_H}{2r}+\frac{3}{8}\left(\frac{r_H}{r}\right)^2+0+..$$

(1.2.32)

And since Δ ($=r^2-2mr+a^2$) is also in the denominator of the Kerr metric κ_{rr} we still have eq.1.2.4 $\kappa_{oo}\approx1/\kappa_{rr}$

Add zero point energy state ε to r_H/r for **$r=r_H$** 1.2.33

We earlier derived for the new pde (above) $\Sigma C_M/\Sigma\xi_i=r_H$ for free space fundamental $\tau+\mu+m_e=\xi_1$ 3 free leptons for **r=large,** With same (required) ξ_1 and simple deflation to r_H (**$r=r_H$**) and rotation to B flux quantized $\Phi=h/e$ we describe baryons, the **$r=r_H$** solution to the new pde. Given the Meisner effect two terms in $C_M/\xi_o-C_M/\xi_o+C_M/\xi_1$ are equal. The Meisner effect arises because of periodic virtual annihilation (PartII) inside $2P_{3/2}$ at $r=r_H$ and so a change in current in

Faraday's law. So the new pde describes both free leptons ($r\rightarrow\infty$) and baryons ($r\approx r_H$). That Meisner effect cloud is the pions (partII). So add zero point energy state ε to r_H/r for $r=r_H$. For 2P3/2 state. (for $2P_{1/2}$ the Es are separate and so Taylor expansion term ε/2 gets added). Recall from section 1.2, (eq.1.2.0) that:

$$\begin{pmatrix} C_1 \\ C_2 \end{pmatrix} = \xi_1 \begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$$

Starting with $\tau+\mu+m_e=\xi_1$ we (more generally) rotate to the B flux quantization Φ=h/e plus deflation of $\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$ to r_H all the while conserving required ξ_1 mass energy

Rotateδz+deflateδz= $\begin{bmatrix} \xi_{11} & \xi_{12} \\ \xi_{21} & \xi_{22} \end{bmatrix}\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix} + \begin{bmatrix} -\lambda & 0 \\ 0 & -\lambda \end{bmatrix}\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix} = \xi_1 \begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$

$$\begin{bmatrix} \xi_{11}+\lambda & \xi_{12} \\ \xi_{21} & \xi_{22}+\lambda \end{bmatrix} = \xi^2 - \xi Tr(M) + \det(M) = \xi_1$$

Partial fractions with 2 body ε Meisner effect implies the first two fractions have the same magnitude and so fix the value of rotation ξ_{ij}, deflation λ and so (determinant) M: Recall that the Clifford algebra drdt extremum gave us the Fiegenbaum point and inside the next smaller fractal scale Mandelbrot set the particle masses.along the 45°angle.

$r_H=$

$\frac{C_M+C_M+C_M}{\xi_1} = \frac{C_M}{x^2+x(tr)+C} = \frac{C_M}{\xi_o} - \frac{C_M}{\xi_o} + \frac{C_M}{\xi_1}$ in κ_{oo} and so the energy $1/\sqrt{\kappa_{oo}}$. (1.2.30)

So we have that baryon 3e composite. Note $\Sigma C_M/\xi_1 \equiv C$ makes C small in eq.1.1.1 preserving the postulate of 1 also.

Back to r→∞ Electron Hamiltonian From 6.6.15 Add Δε/(1+ε)

We can rewrite eq.1.2.8 and 1.2.32 for the electron assuming ambient (Kerr) metric (so $\kappa_{oo}=1/\kappa_{rr}$) as:

$$E_e = \frac{tauon + muon}{\sqrt{1 - \frac{\Delta\varepsilon}{1+\varepsilon} - \frac{r_{H'}}{r}}} - (tauon + muon + PE\tau + PE\mu.) \qquad \kappa_{oo} = 1 - \frac{\Delta\varepsilon}{1+\varepsilon} - \frac{r_{H'}}{r}$$

Note for electron motion around hydrogen proton $mv^2/r=ke^2/r^2$ so $KE=\frac{1}{2}mv^2=(\frac{1}{2})ke^2/r$ =PE potential energy in PE+KE=E. So for the electron (but not the tauon or muon who are not in this orbit) $PEe=\frac{1}{2}e^2/r$. Note also all we did in 1.2.8 is to write the hydrogen energy and pull out the electron contribution. So from 1.2.9: $r_{H'}=(1+1+.5)2e^2/(m_\tau+m_\mu+m_e)/2=2.5e^2/(m_pc^2)$.

1.2.4 Variation δ(Eψ*ψ)=0 At r=n²aₒ

Next note the $\psi_{2,0,0}$ eigenfunction variation in energy is equal to zero at maximum ψ*ψ probability density where for the hydrogen atom is at $r=n^2a_o=4a_o$. Also $m_Lc^2 =(m_\tau+m_\mu+m_e)=2m_pc^2$ normalizes $\frac{1}{2}ke^2$:

$$E_e = \frac{tauon + muon + m_e}{\sqrt{1 - m_ec^2 - \frac{r_{H'}}{r}}} - (tauon + muon + PE\tau + PE\iota) =$$

$$2(m_\tau c^2 + m_\mu c^2)\frac{1}{2} + 2\frac{2.5e^2}{2r(m_Lc^2)}m_Lc^2 - 2\frac{3}{8}\left(\frac{2.5e^2}{rm_Lc^2}\right)^2 m_Lc^2 + \frac{2m_ec^2}{2}$$

$$= \frac{2m_ec^2}{2} + 2\frac{e^2}{4r} - 2\frac{3}{8}\left(\frac{2.5}{rm_Lc^2}\right)^2 m_Lc^2 = m_ec^2 + \frac{e^2}{2r} - 2\frac{3}{8}\left(\frac{2.5e^2}{rm_Lc^2}\right)^2 m_Lc^2 \qquad (1.2.31)$$

So: $\Delta E_e = 2\frac{3}{8}\left(\frac{2.5}{rm_Lc^2}\right)^2 m_Lc^2 =$

$$\Delta E = 2\frac{3}{8}\left[\frac{2.5(8.89X10^9)(1.602X10^{-19})^2}{(4(.53X10^{-10}))2((1.67X10^{-27})(3X10^8)^2}\right]^2(2(1.67X10^{-27})(3X10^8)^2$$

$=hf=6.626X10^{-34}$ 27,360,000 so that f=27MHz Lamb shift.

The other 1050Mhz comes from the zitterbewegung cloud.

Using Separability of eq.1.2.7 to get Gyromagnetic Ratio

After separation of variables the "r" component of equation 1.2.7 can be rewritten as:

$$\left[\left(\frac{dt}{ds}\sqrt{g_{oo}}\,m_p\right)+m_p\right]F-\hbar c\left(\sqrt{g_{rr}}\frac{d}{dr}+\frac{j+3/2}{r}\right)f=0 \qquad (1.2.10)$$

$$\left[\left(\frac{dt}{ds}\sqrt{g_{00}}m_p\right)-m_p\right]f+\hbar c\left(\sqrt{g_{rr}}\frac{d}{dr}-\frac{j-1/2}{r}\right)F=0 \qquad (1.2.11)$$

Comparing the flat space-time Dirac equation to equations 1.2.10 and 1.2.11

$$(dt/ds)\sqrt{\kappa_{oo}}=(1/\kappa_{00})\sqrt{\kappa_{oo}}=(1/\sqrt{\kappa_{oo}})=\text{Energy}=E \qquad (1.2.12)$$

Using the above Dirac equation it is easiest to find the gyromagnetic ratios gy for the spin polarized F=0 case. Recall the usual calculation of rate of the change of spin S gives dS/dt$\propto$m$\propto$gyJ from the Heisenberg equations of motion. We note that $1/\sqrt{g_{rr}}$ rescales dr in $\left(\sqrt{g_{rr}}\frac{d}{dr}+\frac{J+3/2}{r}\right)f$ in equation 1.2.10. Thus to have the same rescaling of r in the second term we must multiply the second term denominator (i.e.,r) and numerator (i.e., J+3/2) each by $1/\sqrt{g_{rr}}$ and set the numerator equal to 3/2+J(gy), where gy is now the gyromagnetic ratio. This makes our equation 1.2.10 compatible with the standard Dirac equation allowing us to substitute the gy into the standard dS/dt$\propto$m$\propto$gyJ to find the correction to dS/dt. Thus again:

$[1/\sqrt{g_{rr}}](3/2+J)=3/2+Jgy$, Therefore for J= ½ we have:

$$[1/\sqrt{g_{rr}}](3/2+½)=3/2+½gy= 3/2+½(1+\Delta gy) \qquad (1.2.13)$$

Then we solve for gy and substitute it into the above dS/dt equation.

S States: Noting in equation 1.2.13 we get the gyromagnetic ratio of the electron with $g_{rr}=1/(1+\Delta\varepsilon/(1+\varepsilon))$ and $\varepsilon=0$ for electron. Thus solve equation 1.2.13 for $\sqrt{g_{rr}}=\sqrt{(1+\Delta\varepsilon/(1+\varepsilon))}=\sqrt{(1+\Delta\varepsilon/(1+0))}=\sqrt{(1+.0005799/1)}$. Thus from equation 1.2.13

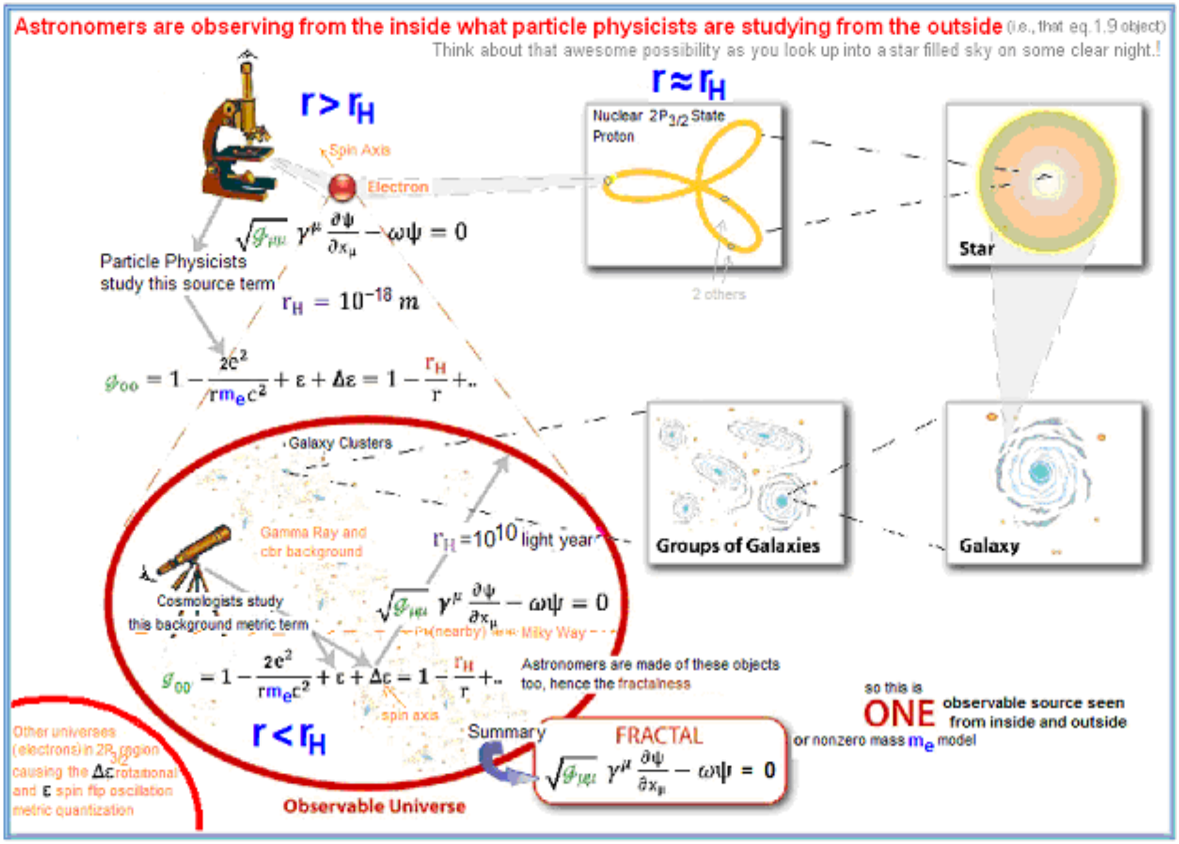
$[1/\sqrt{(1+.0005799)}](3/2 + ½)= 3/2 + ½(1+\Delta gy)$. Solving for Δgy gives anomalous gyromagnetic ratio correction of the electron $\Delta gy=.00116$.

If we set $\varepsilon\neq0$ (so $\Delta\varepsilon/(1+\varepsilon)$) instead of $\Delta\varepsilon$) in the same κ_{oo} (in equation 1.2.8a) in eq.1.2.7 we get the anomalous gyromagnetic ratio correction of the muon in the same way

SUMMARY

Given the fractalness astronomers are observing from the inside of what particle physicists are studying from the outside, that ONE new pde electron r_H of eq.1.2.7. one thing.

The universe really is infinitely simple.



References

(1) Penrose in a utube video implied that the Mandelbrot set might contain physics. Here we merely showed how to find it. The fractal neighborhood of the Fiegenbaum point is a subset. In fact all we done here is to show how to obtain physics from the Mandelbrot set.

(2) Cantor: Ueber die Ausdehnung eines Satzes aus der Theorie der trigonometrischen Reihen, "Ueber eine elementare Frage der Mannigfaltigkeitslehre" Jahresbericht der Deutschen Mathematiker-Vereinigung.Mandelbrot set sequence z_n same as Cauchy seq.z_n so real1.

MORE **Applications Of section 1**

Appendix A

A1 z=1 Charge Associated With These Two Eigenfunctions (since charge=ε≡C_M not 0)

One result is that from eq.1.18 we have nonzero ε in (dr-ε)≡dr'

So from 1.2.3: $ds^2=dr'^2+dt'^2=dr^2+dt^2+dr\varepsilon/2-dt\varepsilon/2-\varepsilon_1{}^2/4$ (A1)

From eq.1.1.12 the neutrino is defined as the particle for which -dr'=dt (so can now be in 2nd quadrant dr', dt' fig.2 can be negative) so drε/2-dtε/2 has to be zero and so ε has to be zero therefore $\varepsilon^2/4$ is 0 and so is pinned as in eq.1.1.12 (*neutrino*). δz≡ψ. So on the light cone C_M=ε=mdr =0 *and so the neutrino is uncharged and also massless in this flat space.* Also see Ch.2 for nonflat results.

1.1.11: 2D Recall eq.1.11 electron is defined as the particle for which dr≈dt so drε/2-dtε/2 cancels so ε_1 (=C_M) in eq.1.16 can be small but nonzero so that the δ(dr+dt)=0. Thus dr,dt in eq. 1.1.11 are automatically both positive and so can be in the *first quadrant*. 1.11 is *not* pinned to the diagonal so $\varepsilon^2/4$ (and so C_M) in eq.1.2.2 is not necessarily 0. So *the electron is charged* since

C_M is not 0. This then explains the positioning of the +e,-e, v vectors in figure 2.

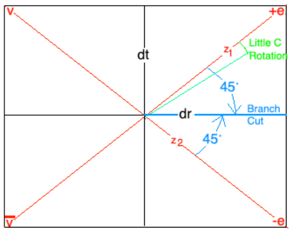


fig.2

Note for finite C in 1.2.7 we also **break** the **two** 2D **degeneracies (**in eq.1.1.11) giving us our **4D.**

A2 z=0 Implies Large $\Delta\theta=C_M/\xi_o$ extremum to extremum Rotation In The Plane:

Recall all observable z satisfy eq.1.1.15 so that $z\propto e^{i\theta}$. So Fiegenbaum point (2nd) source r_H to be observed and so there is a second rotation. Eq.1.1.14 a 45° rotation $\delta z_p\delta z= e^{i\theta p}e^{i\theta}=\delta z'=e^{i(\theta p+\theta)}=-i\partial z/\partial r$. So a 45°+45° rotation gives: $\delta z_p\delta z'= e^{i\theta p}e^{i\theta'}=\delta z''=e^{i(\theta p+\theta)}=-i\partial^2 z/\partial r^2$. z=0 implies a rotation C_M/ξ_o that we must rotate by $\theta=C_M$ that adds a spin½ (since it goes through a 45° lepton) and then $-C_M$ subtracts it using eq.1.1.4. For example start at 0° and rotate through $+45°=C_M$ through the 1st quadrant (electron) $dr+dt=\sqrt{2}ds$ in fig.1, fig.3 and get:

+45°, $[(dr+dt)/(ds\sqrt{2})]z=z_{1,r}+z_{1,t}$.. Do $z_{1,r}$ and $z_{1,t}$ separately. $\delta z_p\delta z= e^{i\theta p}e^{i\theta}=\delta z'=e^{i(\theta p+\theta)}=-i\partial z/\partial r$, $\delta z_p\delta z'= e^{i\theta p}e^{i\theta'}=\delta z''=e^{i(\theta p+\theta)}=-i\partial^2 z/\partial r^2$ So just for $z_{1,r}$: $z_{1,r}=-idz/dr$ (partial derivatives). Then do the $-C_M$ rotation:

-45°, $(dr/ds)z_{1,r}=z_{2,r}$. So $-idz_{1,r}/dr=z_{2,r}=-i[(d/dr)(-id/dr)z= (d^2/dr^2)z$. Do both and get for

45°+45° rotation $dr^2z+dt^2z\rightarrow \qquad (d^2/dr^2)z+(d^2/dt^2)z \qquad$ (A2)

So S=½+½=1 making z=0 real Bosons, not virtual. Note we also get the Laplacians characteristic of Bosons by those 45°+45° rotations so eq.1.1.4 implies Bosons accompany our leptons, so they exhibit "force". Note 2 small C rotations for z=1 can't reach 90° 2 particles. So it stays leptonic. With eq.1.1.16 and eq.1.2.7 we then have eigenfunctions z. This time however *all* variations δC=0 (even the 45° rotation to branch cut extremum) are realized and so have real (stable electron) particles instead of virtual(transitory).

A3 2D Eq.1.2.7 2P½ at $r=r_H$, for z=0 Composites of e,ν

z=0 allows a large **C** z rotation application from the 4 different axis' max extremum (of 1.1.15) branch cuts gives the 4 results: Z,+-W, photon bosons of the Standard Model fig.4. So we have derived the Standard Model of particle physics in this very elegant way. You are physically at $r=r_H$ if you rotate through the electron quadrants (I, IV) and not at r_H otherwise. So we have large C_M dichotomic 90° rotation to the next Reimann surface of 1.1.15, eq.A2 $(dr^2+dt^2)z''$ from some initial extremum angle(s) θ. Eq.1.1.15 solutions imply complex 2D plane Stern Gerlach dichotomic rotations using noise $z''\propto C$ (1.2.1) using Pauli matrices σ_i algebra, which maps one-to-one to the quaternionA algebra. From sect.1.2, eq.1.2.2 we start at some initial angle θ and rotate by 90° the noise rotations are: $C=z''= [e_L,\nu_L]^T \equiv z'(\uparrow)+z'(\downarrow) \equiv\psi(\uparrow)+\psi(\downarrow)$ has a eq.1.2.2 infinitesimal unitary generator $z''\equiv U=1-(i/2)\varepsilon n^*\sigma)$, $n\equiv\theta/\varepsilon$ in $ds^2=U^tU$. But in the limit $n\rightarrow\infty$ we find, using elementary calculus, the result $\exp(-(i/2)\theta^*\sigma) =z''$. We can use any axis as a branch cut since all 4 are eq.1.1.15 large extremum so for the 2nd rotation we move the branch cut 90° and measure the angle off the next diagonal since Pauli matrix dichotomic rotations are actually axis rotations, leaving our e and v directions the same. In any case $(dr+dt)z''$in eq.1.1.15 can then be replaced by eq.1.1.14, eq.1.2.3 $(dr^2+dt^2 +..)z'' =(dr^2+dt^2+..)e^{quaternionA}$Bosons because of eq.A2. Then use eq. 1.2.2 to R rotate: z":

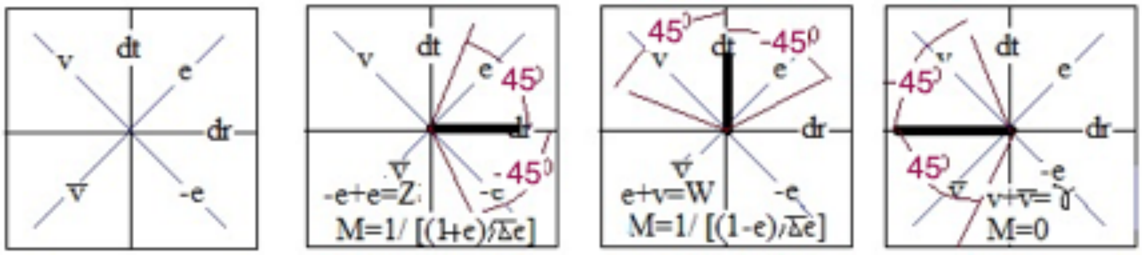


Figure 3. See eq.B4. The Appendix A derivation applies to the far right side figure.
Recall from eq.1.2.1a $2C_M$=45+45=90°, gets Bosons. 45-45= leptons.
v in quadrants II(eq.1.1.12) and III (eq.1.1.13). e in quadrants I (eq.1.1.11) and IV (eq.1.1.11).
Locally normalize out $1\pm\varepsilon$. For the **composite e,*v*** on those required large z=0 eq.3 rotations for $C\to 0$, and for stability $r=r_H$ (eg.,for $2P_{1/2}$, I→II, III→IV,IV→I) unless $r_H=0$ (II→III) are:
II→III Dichotomic variables→Pauli matrix rotations→$z'=e^{\text{quaternion } A}$ →Maxwell γ
=Noise C blob. See Appendix A for the derivation of the eq.1.1.15 2[nd]derivatives of $e^{\text{quaternion } A}$.
I→II, III→IV,IV→I $\Delta\varepsilon\to\varepsilon$ Meisner effect Dichotomic variables→Pauli matrix rotations→$z''=e^{\text{quaternion } A}$→KG Mesons.
I→II, III→IV,IV→I $\Delta\varepsilon$ Dichotomic variables→Pauli matrix rotations→$z''=e^{\text{quaternion}A}$, Proca Z,W
Composite 3e: $2P_{3/2}$ at $r=r_H \equiv C_M$ (also stable baryons, partII).

Appendix B Quad II→III eq.0.2 $(dr^2+dt^2+..)e^{\text{quaternion } A}$ =rotated through C_M in eq.1.1.15. example
C_M in eq.1.2.1 is a 90° CCW rotation from 45° through *v* and anti*v*
A is the 4 potential. From eq.1.2.4 we find after taking logs of both sides that $A_o=1/A_r$ (A2)
Pretending we have a only two i,j quaternions but still use the quaternion rules we first do the r derivative: From eq. 1.2.3 $dr^2\delta z=(\partial^2/\partial r^2)(\exp(iA_r+jA_o))=(\partial/\partial r[(i\partial A_r\partial r+\partial A_o/\partial r)(\exp(iA_r+jA_o)]$
$=\partial/\partial r[(\partial/\partial r)iA_r+(\partial/\partial r)jA_o)(\exp(iA_r+jA_o)+[i\partial A_r/\partial r+j\partial A_o/\partial r]\partial/\partial r(iA_r+jA_o)(\exp(iA_r+jA_o)+$
$(i\partial^2 Ar/\partial r^2+j\partial^2 A_o/\partial r^2)(\exp(iA_r+jA_o)+[i\partial A_r/\partial r+j\partial A_o/\partial r][i\partial A_r/\partial r+j\partial/\partial r(A_o)]\exp(iA_r+jA_o)$ (A3)
Then do the time derivative second derivative $\partial^2/\partial t^2(\exp(iA_r+jA_o)=(\partial/\partial t[(i\partial A_r\partial t+\partial A_o/\partial t)$
$(\exp(iA_r+jA_o)]=\partial/\partial t[(\partial/\partial t)iA_r+(\partial/\partial t)jA_o)(\exp(iA_r+jA_o)+$
$[i\partial A_r/\partial r+j\partial A_o/\partial t]\partial/\partial r(iA_r+jA_o)(\exp(iA_r+jA_o)+(i\partial^2 A_r/\partial t^2+j\partial^2 A_o/\partial t^2)(\exp(iA_r+jA_o)$
$+[i\partial A_r/\partial t+j\partial A_o/\partial t][i\partial A_r/\partial t+j\partial/\partial t(A_o)]\exp(iA_r+jA_o)$ (A4)
Adding eq. A2 to eq. A4 to obtain the total D'Alambertian A3+A4=
$[i\partial^2 A_r/\partial r^2+i\partial^2 A_r/\partial t^2]+[j\partial^2 A_o/\partial r^2+j\partial^2 A_o/\partial t^2]+ii(\partial Ar/\partial r)^2+ij(\partial A_r/\partial r)(\partial A_o/\partial r)$
$+ji(\partial A_o/\partial r)(\partial A_r/\partial r)+jj(\partial A_o/\partial r)^2++ii(\partial Ar/\partial t)^2+ij(\partial A_r/\partial t)(\partial A_o/\partial t)+ji(\partial A_o/\partial t)(\partial A_r/\partial t)+jj(\partial A_o/\partial t)^2$.
Since ii=-1, jj=-1, ij=-ji the middle terms cancel leaving $[i\partial^2 Ar/\partial r^2+i\partial^2 Ar/\partial t^2]+$
$[j\partial^2 A_o/\partial r^2+j\partial^2 A_o/\partial t^2]+ii(\partial Ar/\partial r)^2+jj(\partial A_o/\partial r)^2+ii(\partial Ar/\partial t)^2+jj(\partial A_o/\partial t)^2$
Plugging in A2 and A4 gives us cross terms $jj(\partial A_o/\partial r)^2+ii(\partial Ar/\partial t)^2=jj(\partial(-A_r)/\partial r)^2+ii(\partial Ar/\partial t)^2$
=0. So $jj(\partial A_r/\partial r)^2=-jj(\partial A_o/\partial t)^2$ or taking the square root: $\partial A_r/\partial r+\partial A_o/\partial t=0$ (A5)
$i[\partial^2 A_r/\partial r^2+i\partial^2 A_r/\partial t^2]=0$, $j[\partial^2 A_o/\partial r^2+i\partial^2 A_o/\partial t^2]=0$ or $\partial^2 A_\mu/\partial r^2+\partial^2 A_\mu/\partial t^2+..=1$ (A6)
A4 and A5 are Maxwell's equations (Lorentz gauge formulation) in free space, if μ=1,2,3,4.

$$\Box^2 A_\mu=1,\ \Box\bullet A_\mu=0 \quad \text{(A7)}$$

Still ONE Postulated Object: By the way we note A_μ (composed of two ν identified as 1 γ in this 90°rotation) also *composes* the z=1 $\kappa_{oo}=1-r_H/r$ virtual particle potential energy (r_H/r) of the electron. So we are *still* only postulating that single eq.1.2.7 object by since we must include

ν&γ in it. We derived the SM here because other derivations similar given their respective fig.4 sources.
Locally normalize out $1\pm\varepsilon$. For the **composite e,ν** on those required large z=0 eq.3 rotations for $C\rightarrow 0$, and for stability $r=r_H$ for $2P_{½}$ (I→II, III→IV,IV→I) unless $r_H=0$ (II→III) are:
Ist→IInd quadrant rotation is the W+ at **$r=r_H$**. Do the append B math and get a Proca equation $E=1/\sqrt{(\kappa_{oo})}-1=[1/\sqrt{(1-\Delta\varepsilon/(1-\varepsilon)-r_H/r)}]-1=[1/\sqrt{(\Delta\varepsilon/(1-\varepsilon))}]-1$. $E_t=E+E=2/\sqrt{(\Delta\varepsilon/(1-\varepsilon))}$=W+ mass.
$E_t=E-E$ gives E&M that also interacts weakly with weak force.
IIIrd →IV quadrant rotation is the W-. Do the math and get a Proca equation.
$E=1/\sqrt{(\kappa_{oo})}-1=[1/\sqrt{(1-\Delta\varepsilon/(1-\varepsilon)-r_H/r)}]-1=[1/\sqrt{(\Delta\varepsilon/(1-\varepsilon))}]-1$. $E_t=E+E=2/\sqrt{(\Delta\varepsilon/(1-\varepsilon))}$=W- mass.
$E_t=E-E$ gives E&M that also interacts weakly with weak force.
IVth → Ist quadrant rotation is the Z_o. Do the math and get a Proca equation. C_M charge cancelation.
$E=1/\sqrt{(\kappa_{oo})}-1=[1/\sqrt{(1-\Delta\varepsilon/(1+\varepsilon)-r_H/r)}]-1=[1/\sqrt{(\Delta\varepsilon/(1+\varepsilon))}]-1$. $E_t=E+E=2/\sqrt{(\Delta\varepsilon/(1+\varepsilon))}-1=Z_o$ mass.
$E_t=E-E$ gives E&M that also interacts weakly with weak force. Seen in small left handed polarization rotation of light.
IInd→IIIrd quadrant rotation through those 2 neutrinos gives 2 objects. $r_H=0$
$E=1/\sqrt{\kappa_{oo}}-1=[1/\sqrt{(1-\Delta\varepsilon/(1+\varepsilon)}]-1=\Delta\varepsilon/(1+\varepsilon)$. Because of the +- square root E=E+-E so E rest mass is 0 or $\Delta\varepsilon=(2\Delta\varepsilon)/2$ reduced mass.
$Et=E+E=2E=2\Delta\varepsilon$ is the pairing interaction of SC. The $E_t=E-E=0$ is the 0 rest mass photon Boson. Do the math (eq.A7) and get Maxwell's equations. Mass canceled and there was no charge C_M on the two ν s.
Note we get the Standard electroweak Model particles out of composite e,ν using required eq.1.2.1 rotations for z=0.
For z=0 composite 3e (For new pde 2P3/2, rapidly moving two positrons, 1 slow electron.) is ortho s,c,b and para t particle physics.
For z=1 the new pde applies to QED with **large r**.

B2 Derivation of the Standard Model But With No Free Parameters
Since we have now derived M_W, M_Z, and their associated Proca equations, and m_μ,m_τ,m_e, etc., Dirac equation, G_F, ke^2, Bu, Maxwell's equations, etc. we can now write down the usual Lagrangian density that implies these results. In this formulation $M_z=M_W/\cos\theta_W$, so you find the Weinberg angle θ_W, $g\sin\theta_W=e$, $g'\cos\theta_W=e$; solve for g and g', etc., We will have thereby derived the standard model from first principles (i.e.,postulate1) and so it no longer contains free parameters!

summary
z=1 gives the $r\rightarrow\infty$ formulation r_H=CM/m. z=0 gives the $r=r_H$ rotational reduced mass formulation $r_H=C_M/m_e-C_M/m_e+C_M/m$ to be consistent with $C\rightarrow\infty$ with m=mt+mu+me in the new pde. For z=0 you calculate the $r=r_H$ rotational reduced mass $m_p=m/2$ (using flux quantization) which for z=1 is then $C_M/m=r_H$ in koo=1-rH/r. So $Ee=m/\sqrt{(\kappa_{oo})}-m_e=V$. Take the third order Taylor expansion term to get ΔV

B3 z=0 eq. 6.6.17
z=0 Metric $\kappa_{\mu\nu}$: For only a single **electron $\Delta\varepsilon$ at $r=r_H$ in eq.1.1.14 $2P_{½}$ state** (N neutron) we must then normalize out the $1+\varepsilon$ so $\kappa_{00}=1+\Delta\varepsilon/(1+2\varepsilon)-r_H/r$. But more distant object C (Our large 3

object cosmological object is a proton) for a weakly bound state (eg., $2P_{½}$ at $r \approx r_H$) implies another smaller $r= C_M/\xi_2= r_{H'}$ so $\kappa_{00}=\Delta\varepsilon/(1+2\varepsilon) \approx \Delta\varepsilon(1-2\varepsilon)$ or in general: Equipartition of Meisner effect ε energy between the $2P_{1/2}$ and central $2P_{3/2}$ electrons (since they are "identical particles") so ε/2 is with the $2P_{1/2}$ electron at $r=r_H$, thus the W. Thus for $2P_{1/2}$ Meisner+mass=
$E=\varepsilon/2+1/\sqrt{\kappa_{00}}= 1/\sqrt{(\Delta\varepsilon(1\pm2\varepsilon))}+\varepsilon/2 =1/[(1\pm\varepsilon))\sqrt{(\Delta\varepsilon)}]+\varepsilon/2 =\xi_W$ (A7)
Eq. A7 gives the W,Z rest masses E. In fact **eq.A7 is the basis for 3 of the 4 rotations of the SM**. So W (right fig.4) is a single electron $\Delta\varepsilon+\nu$ perturbation at $r=r_H=\lambda$ (Since two body m_e.): So $H=H_o+m_ec^2$ inside V_w. $E_w=2hf=2hc/\lambda$, $(4\pi/3)\lambda^3=V_w$. For the two leptons $\frac{1}{V^{1/2}} = \psi_e = \psi_3, \frac{1}{V^{1/2}} = \psi_\nu = \psi_4$. Fermi 4pt= $2G\iiint_0^{rw} \psi_1\psi_2\psi_3\psi_4\, dV = 2G \iiint_0^{rw} \psi_1\psi_2 \frac{1}{V^{1/2}}\frac{1}{V^{1/2}}V = 2\iiint_0^{rw} \psi_1\psi_2 G \equiv \iiint_0^{Vw} \psi_1\psi_2(2m_ec^2)dV_w = \iiint_0^{Vw} \psi_1(2m_ec^2)\psi_2 dV_w$. (B2)
What is Fermi G? $2m_ec^2(V_W) =.9X10^{-4}$Mev-$F^3 =G_F$ **the strength of the weak interaction**.

Note z=0 is also a solution to z=zz
So for added $z\approx0$, $z\sqrt{2}= (z+\Delta)\sqrt{2}$ which we incorporate into $\xi\equiv\xi_1\equiv\xi+\xi_o$ where $\xi_o \equiv m_e$ is small. If $\xi=\xi_o$ then C_M/ξ is big and so those big rotations in sect 1.2.
In the more fundamental set theory formulation $\{\emptyset\}\subset\{\text{all sets}\}\Leftrightarrow\{0\}\subset\{1\} =\xi C =z_1$. So ξ_o acts as 0 in eq.1.1.1 since $\emptyset=\emptyset\cup\emptyset\Leftrightarrow0+0=0$, $\{\{1\}\cup \emptyset\}=\{1\}\Leftrightarrow1+0=1$. Thus $z_1=\xi_1=m_L$ contains $z_o\approx0$ in $\xi_1=\xi+\xi_o$ is the same algebra **as the core idea** of set theory and so of both mathematics and physics (as we saw above).

Appendix C Quantum Mechanics
In $z=1-\delta z$ δz is (defined as) the probability of z being 0. Recall z=0 is the $\xi_o=m_e$ solution to the new pde so δz is the probability we have just an electron. 1 then is the probability we have the entire ξ_1=KMQ complex (sect.1.2.1), that includes the electron (Observed EM&QM, sect.6.12). Note z=zz also thereby conveniently provides us with an automatic normalization of δz. Note also that $(\delta z^*\delta z)/dr$ is also then a one dimensional probability 'density'. So Bohr's probability density postulate for $\psi^*\psi$ ($\equiv(\delta z^*\delta z)$) is derived here. It is not a postulate anymore. Note the electron observer Eq.1.1.11 (eq.1.2.7) has *two* parts that solve eq.1.1.11 together we could label *observer* and *object* with associated 1.1.11 wavefunctions δz. So if there is no observer eq.1.1.11 then eq.1.1.10 doesn't hold and so there is no object wavefunction. Thus the wave function "collapses" to the wavefunction 'observed' (or eq.1.1.11 does not hold). Hence we derived the Copenhagen interpretation of Quantum Mechanics(QM).
On the diagonals (45°) we have eq.1.11 holding: particles. Eq.1.1.15 as an operator equation (use 1.1.16) gives waves. A wide slit has high uncertainty, large C so we are at 45°(eg., particles, photoelectric effect). For a *small slit* we have smaller C so we are not large enough for 45° so only the *wave equation* 1.2.8 holds (small slit diffraction). Thus we proved wave particle duality. $dt/k'ds\equiv\omega$ in sect.1.2 implies in eq.1.1.16 that $E=p_t =\hbar\omega$ for all energy components, universally. $mv/k=\hbar$ defines ħ in terms of mass units (1.1.15b). But equation 1.2.7 is still the core idea since it creates the eigenfunction δz, directly. So along with 1.2.7 and appendix C and eq. 1.1.15, 1.1.21a *we have derived Quantum Mechanics.*

Appendix B

Cauchy sequence proof of real numbers

Recall we got from eq.1 $\delta z+\delta z\delta z=C$ with quadratic equation result:

$$\delta z = \frac{-1 \pm \sqrt{1-4C}}{\delta 2}$$

The general solution is complex $\delta z=dr+idt$. $C>4$ implies the imaginary component is time. On the next smaller fractal scale $\delta z+\delta z\delta z=C$ with $\delta z\delta z<<\delta z\approx C$ there. But inside the Mandelbrot set large limacon cusp the $\delta z<¼$. That cusp is required as a Fiegenbaum point perturbation because without time there is no "observable" H (Hamiltonian) so $z_o=-¼$ (only allowed perturbation of the Fiegenbum point so $\xi=1/\delta z$ in $1/\delta z=1/(\delta z\delta z)$ giving mass as in the z=0 section below eg., $1/(¼¼)=1/(1/16)=\xi$): Deuteron(1), Kaon(1/4), pion(1/16)) in the Cauchy sequence initialization C=0. So the Cauchy sequence proves that 0 is a real# since there is a Cauchy sequence of *rational* numbers here (eg.,starts with ¼) converging to it. (i.e.,0). δz is Fitzgerald contracted (after the derivation of the new pde so C is boosted at the end so the postulate of 1 (z=zz) still holds. So this small C region can thereby be used to get the Cauchy sequence proof of real #. So you could use the Mandelbrot set sequence; -1/4,-3/16,-55/256,...

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r large in $\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$

κ_{oo} **and** κ_{rr}

Recall $C_M=\xi\delta z'$

z≈1 $C_M=\xi\delta z'$, $\delta z'$ in $z=1+\delta z'$ is small so ξ_1 is big.

z≈0 $C_M=\xi\delta z'$, $\delta z'$ in $z=1+\delta z'$ is big so ξ_o is small.

z≈1 $\delta C_M= \delta(\xi C)=\delta(\xi\delta z)=\delta\xi\delta z+\xi\delta\delta z$ so $\xi\delta\delta z$ is small and $\delta\xi_1$ can be big so ξ_1 can be unstable

z≈0 $\delta C_M= \delta(\xi C)=\delta(\xi\delta z)=\delta\xi_o\delta z+\xi_o\delta\delta z$ so $\delta\xi_o$ is small so small ξ_o is stable ground state of the new pde. $C=C_M/1$ making the stable 1 the stable ξ_o. So $\xi_1=\xi+\xi_o$. is our boosted ξ_o by γ.

But ξ_1 and ξ_o are both spin½ so our boost (and object B-A motion allowed metric quantization states (sect.6.3)) involves two added ξ spin ½s masses whose spins must cancel in ½=(½-½)+½ so that $\xi_1=\xi_3+\xi_2+\xi_o\equiv\tau+\mu+m_e\equiv 1+\varepsilon+\Delta\varepsilon$ and so we also have $3C_M$ for ξ_1. So for z=1 $r_H=\Sigma C_M/(\xi_3+\xi_2+\xi_o)\equiv \Sigma C_M/\xi_1$

Thus we have added perturbation $\delta z'\approx\Sigma C_M/\xi\equiv r'_H$ constrained by the circle operator formalism so keeping the dr+dt=ds invariance solution of $\delta(\delta z+\delta z\delta z)=0$ that has to be written at 45° as $dr-\delta z'+dt+\delta z'=ds=dr'+dt'$ since ds is invariant and which is a rotation θ on the z=1 baseline fractal scale.

---

r large

κ_{oo} and κ_{rr}

So $(dr-\delta z)+(dt+\delta z)=(dr-(C_M/\xi_1))+(dt+(C_M/\xi_1)) = \sqrt{2}ds= dr'+dt'$

Define $\kappa_{rr}\equiv(dr/dr')^2=(dr/(dr-(C_M/\xi_1)))^2 = 1/(1-r_H/r)^2 = A_1/(1-r_H/r) + A_2/(1-r_H/r)^2$

The A_I term can be split off from RN as in classic GR and so

$$\kappa_{rr}\approx 1/[1-\Sigma C_M/(\xi_1 r)]$$

From partial fractions where N+1th scale $A_1/(1-r_H/r)$ and Nth$=A_2/(1-r_H/r)^2$ with A_2 small here. So we have a new frame of reference dr',dt'. So real eq.1.1.10 becomes: $ds^2= \kappa_{rr}dr'^2 +\kappa_{oo}dt'^2 +..$

So a new frame of reference dr',dt'. Note from 1.1.8 $dr'dt'=\sqrt{\kappa_{rr}}dr\sqrt{\kappa_{oo}}dt=drdt$ so $\kappa_{rr}=1/\kappa_{oo}$

So: $\kappa_{oo}\approx 1-\Sigma C_M/(r\xi_1)$

$ds=(\gamma^1\sqrt{\kappa_{11}}dx_1+\gamma^2\sqrt{\kappa_{22}}dx_2+\gamma^3\sqrt{\kappa_{33}}dx_3+\gamma^4\sqrt{\kappa_{44}}dx_4)\delta z\rightarrow$

$$\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$$

$\omega\equiv m_L c^2/h$. This is our new 4D pde

r large

κ_{oo} and κ_{rr}

Ambient Metric Effects On k_{rr} ignoring fractal r_H operator formulation

This is a fractal theory so the pde gives rotations on all fractal scales. So from Kerr (rotation) metric on the next higher fractal scale (ignoring r_H as a space like horizon) and the equations for that ambient metric (sect. 6.3) with normalized out large quantities κ_{rr} goes to:

$$\kappa_{rr}=1/(1+\Delta\varepsilon/(1+\varepsilon)) \text{ and } \varepsilon=0 \text{ for electron}$$

r small $\mathbf{r=r_H}$ in $\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi$

κ_{oo} and κ_{rr}

With same (required) ξ_1 and simple deflation to r_H (**$r=r_H$**)and rotation to B flux quantized Φ=h/e we describe baryons, the **$r=r_H$** solution to the new pde. Given the Meisner effect first two terms in C_M/ξ_o-C_M/ξ_o+C_M/ξ_1 are equal. The Meisner effect arises because of periodic virtual annihilation (PartII) inside $2P_{3/2}$ at $r=r_H$ and so change in current in Faraday's law. So the new pde describes both free leptons and baryons. That Meisner effect cloud is the pions (partII). Recall from section 1.2 that:

$$\begin{pmatrix} C_1 \\ C_2 \end{pmatrix} = \xi_1 \begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$$

Starting with $\tau+\mu+m_e=\xi_1$ we (more generally) rotate to the B flux quantization Φ=h/e (speed) plus deflation of $\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$ to r_H all the while conserving required ξ_1 mass energy

Rotateδz+deflateδz= $\begin{bmatrix} \xi_{11} & \xi_{12} \\ \xi_{21} & \xi_{22} \end{bmatrix}\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix} + \begin{bmatrix} -\lambda & 0 \\ 0 & -\lambda \end{bmatrix}\begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix} = \xi_1 \begin{pmatrix} \delta z_1 \\ \delta z_2 \end{pmatrix}$

$$\begin{bmatrix} \xi_{11}-\lambda & \xi_{12} \\ \xi_{21} & \xi_{22}-\lambda \end{bmatrix} = \xi^2 - \xi Tr(M) + \det(M) = \xi_1$$

Partial fractions with 2 body ε Meisner effect implies the first two fractions have the same magnitude and so fix the value of rotation ξ_{ij}, deflation λ and so (determinant) M:

$\frac{C_M+C_M+C_M}{\xi_1} = \frac{C_M}{x^2+x(tr)+C} = \frac{C_M}{\xi_o} - \frac{C_M}{\xi_o} + \frac{C_M}{\xi_1}$ in κ_{oo} and so the energy $1/\sqrt{\kappa_{oo}}$. So we have that baryon 3e composite. Note $\Sigma C_M/\xi_1 \equiv C$ makes C small in eq.1.1.1 preserving the postulate of 1 also.