What The Mainstream Says:

The universe is infinitely complicated according to the mainstream (eg.,string theory, dark matter, colors, gauges, infinite mass and charge electrons,....) but I am finding ***in contrast*** that the universe is more and more simple, in fact it is infinitely simple eg.,1. The notion of reducing everything around us to a single real thing is the (infinitely) simplest idea I can conceive of. It is ultimate reductionism (eg., of complex z) to a single real number 1. So just **postulate 1**

(algebraically) Define 1,0 from z=zz. But for 1 (**zz-z**=0) to be real then min(zz-z)>0 which is our entire theory.

Definitions: **Postulate 1** (elementary algebra:)

with 1 (and 0) algebraically defined as

$$z=zz \qquad (1)$$

so (given also the 0 definition) rewrite equation 1 as

$$\mathbf{zz-z=0} \qquad (2)$$

But in order for 1 to be a real number (so having a Cauchy sequence) we must postulate 1 as:

$$\mathbf{min(zz-z)>0} \qquad (3)$$

Relation 3 is our entire theory and can be rewritten as:

$$z=zz+C \qquad (4)$$

$$\delta C=0,\ C<0 \qquad (5)$$

We next show that 1 is a real number and rewrite eq.4,5 in a more familiar form to note physics implications.

Table Of Contents

Postulate 1 as min(zz-z)>0 (so 1 is a real number) rewritten as

z=zz+C (4) , δC=0,C<0 (5)

Slide 2 definitions

Slides 4 (with result slides 14-18) show eq.4,5 imply 1 is a real # (by plugging left z back in right side). Get Mandelbrot set.

Slides 5 (with result slides 7-12) Rewrite eq.4,5 in a more familiar form (by defining z=1+ δz). Get δ(δz+ δz δz)=0 (Amazing equation)

Slides 11,12; 16-19 Those familiar physics Implications (from min(zz-z)>0)

So this is all merely a elementary algebra derivation from **min(zz-z)>0**.

Relation 3 Implies 1 is Real

Requires Cauchy sequence of rational numbers. So in equation 4 just plug the left side z in z=zz+C back into each z on the right side and get z'=z'z'+C given z'≡(zz+C)=z. So you can repeat this step with this new z'=z'z'+C iteration to get $z_{N+1}=z_Nz_N+C_M$ with (eq.5) $\delta C=\delta(z_{N+1}-z_Nz_N)=0$ for some C_M and thereby get our Cauchy sequence z_N and also the Mandelbrot set C_M.

Familiar form for equations 4,5 (and so for relation 3)

We need equations 4 and 5 put into familiar forms to easily recognize the usual physics outcomes (eg., operator formalism).

So we define δz from $z=1+\delta z$ and substitute this z into equation 4. And get

$$\delta z+\delta z\delta z=C \qquad (6)$$

which is a quadratic equation with complex solutions (if $C>1/4$)

$$\delta z=dr+idt \qquad (7)$$

Plug equation 6 back into equation 5 and get

$$\delta(\delta z+\delta z\,\delta z)=0 \qquad (8)$$

which I call the 'amazing equation' since it (with eq.7) gives:

real part is special relativity (A). Slide 11

imaginary part is Clifford algebra (B)

and these both imply the operator formalism (C)

(A),(B),(C) here imply the Dirac equation for the electron e and neutrino ν.

(slide 12). Composite e,ν gives Standard electroweak Model. Simply amazing!

Other Results

The Clifford algebra also implies a extremum smallest area Mandelbulb and so the Fiegenbaum point. slide 16

The Fiegenbaum point (fractal) local source and the Dirac equation imply that (slide 20)

New pde (9).

Given equation 9 the composite e,v give the Standard electroweak Model and the 3e composite the rest of particle physics (partII). The fractalness implies cosmology and gravity. Getting A,B,C out of eq.8 in one step like this has the ring of truth to it. The fact that the Mandelbrot set and amazing equation come out of eq.4,5 in one step is almost as amazing. To cap it off that all this math comes out of **min(zz-z)>0** shows I nailed it.

$\delta C=0$ (5)

$z=zz+C$ (4) goes to

Amazing Equation

Familar form of equations 4,5

$\delta C=0$ (5)

$z=zz+C$ (4) goes to

Amazing Equation

Plugging $z\equiv 1+\delta z$ into $z-zz=C$ (eq.4) gives the quadratic equation

$$\delta z\delta z+\delta z+C=0 \qquad (6)$$

so $\delta z = \frac{-1\pm\sqrt{1-4C}}{2}$, with in-general complex number solutions. $\delta z=dr+idt.$ (7)

for noise C>1/4.

Plug eq.6 into eq.5 and get:

$$\delta C=\delta(\delta z+\delta z\delta z)=0 \qquad (8)$$

Amazing Equation

Amazing Equation

$\delta(\delta z\text{-}K+\delta z\delta z)=0$ (5)

Because of that δ on the extreme left in eq.5
we can add constant arbitrary -K to δz in eq.3
to use $\delta(\delta z\text{-}K)=0$ in eq.5 to initialize C to a
global flat space-time with arbitrary (noise) level C since
$C \approx \delta z$ allowing K to be a constant in K- $\delta z=0$.

$K\neq\delta z$ (curved) $K=\delta z$ (flat).

Slide 15 Slide 10

Amazing Equation

$$K = \delta z$$

Initialization to flat space

$K = \delta z$

Large ambient C (noise) case implies C>1/4 so $dt \neq 0$ in quadratic equation.

Given $\delta(\delta z - K) = 0$ and eq.8 $\delta(\delta z \delta z) = \delta[(dr+idt)(dr+idt)] =$

$$\delta(dr^2 + i(drdt+dtdr) - dt^2) = 0 \qquad (9)$$

and $ds_3 \equiv$

$$(drdt+dtdr) = 0 \qquad (10)$$

If dr,dt positive then drdt+dtdr=0 is a minimum.

Alternatively if dr,dt is negative then drdt+dtdr=0 is maximum instead for dr-dt solutions. In fact all dr,dt sign cases imply a single invariant extremum:

$$drdt+dtdr=0 \qquad (11)$$

Note in general dr,dt are any two of these 4 independent variables implying eq.11 defines a Clifford algebra. Next factor eq.9

Factor eq.9

$\delta(dr^2-dt^2)=\delta[(dr+dt)(dr-dt)]=\delta(ds^2)=[[\delta(dr+dt)](dr - dt))] +[(dr+dt)[\delta(dr - dt)]]=0$ (12)

Solve eq. 12 and get* (→±e) $dr+dt=\sqrt{2}ds$, $dr-dt=\sqrt{2}ds \equiv ds_1$ (13)

(→light cone ν). $dr+dt=\sqrt{2}ds$, $dr=-dt$. (14)

" " $dr-dt=\sqrt{2}ds$, $dr=dt$ (15)

(→vacuum) $dr=dt$, $dr=-dt$)

Equation 12 gives Special Relativity(SR) $ds_1^2=ds^2=dr^2-(1)^2dt^2$ (note natural unit *constant* 1^2 ($\equiv c^2$) in front of the dt^2); hence the $K=\delta z$ globally flat space initialization and also is a **familiar equation**..

Equation 8 gives the Clifford algebra (Also see slide 20). A new invariant is also implied by these ds_1 and ds_3 invariants by squaring eq.13: $dr+dt\equiv ds_1$:

(*The e,ν composite gives the Standard electroweak Model (see PartI, fig.4,B1) and the 3e composite the $2P_{3/2}$ at r_H in the new pde (slide 18) particle physics (see PartII of davidmaker.com)

new invariant

Squaring eq.13: $ds_1^2=(dr+dt)(dr+dt)=dr^2+drdt+dt^2+dtdr=[dr^2+dt^2]+(drdt+dtdr)\equiv ds^2+ds_3=ds_1^2$. Since ds_3 and ds_1^2 (from eqs.9&11) are invariant then so is $ds^2=dr^2+dt^2=ds_1^2-ds_3$ in $\delta z\equiv dse^{i\theta}$. (Note in slide 14 all three of these invariants $\partial ds_i/\partial z=0$ are satisfied at the Fiegenbaum point extremum where there is the smallest Mandelbulb.). This ds^2 is our new invariant.

Minimum $ds^2=dr^2+dt^2$ at 45°: $\delta z=dse^{i\theta}$ ·So $\delta z=dse^{i\theta}=dse^{i(\Delta\theta+\theta o)}=dse^{i((\cos\theta dr+\sin\theta dt)/(ds)+\theta o)}$, $\theta_o=45°$, (16)

So $\theta=f(t)$. $\delta z=dse^{i(45+\Delta\theta)}$. In eq.13 we define $k\equiv dr/ds$, $\omega\equiv dt/ds$, $\sin\theta\equiv r$, $\cos\theta\equiv t$. $dse^{i45}=ds'=ds$.

Then eq.13 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

$$\frac{\partial\left(dse^{i(rk+wt)}\right)}{\partial r}=ik\delta z \qquad (17)$$

$k\delta z=-i\frac{\partial\delta z}{\partial r}$ Multiply both sides by ~~ħ~~. ~~ħ~~k≡mv=p since $k=dr/ds=v/c=2\pi/\lambda$ (18)

from eq.15 for our unit mass $\xi_s\equiv m_e$. $\delta z\equiv\psi$,(eq.6.6.1) Note we also derived **the DeBroglie wavelengthλ=h/mv**

$p_r\psi=-ih\frac{\partial\psi}{\partial r}$ which is the observables p_r condition gotten from that eq.13 circle. (19)

operator formalism thereby converting eq.9, 11, 19 into Dirac eq. pdes.

Note these p_r operators are Hermitian and so we have 'observables' with the associated eq.17-19 Hilbert space **eigenfunctions δz** (=ψ). δz (in $z=1-\delta z$) is the probability z is o, the electron..

We derived QM here.

$\delta C=0$ (5)

$z=zz+C$ (4) goes to

Mandelbrot Set

&Amazing Equation

$$\mathbf{K\neq\delta z}$$

1 is a real number too

$\delta C=0$ (5) $z=zz+C$ (4) goes to

Mandelbrot Set

$z=zz+C$ (eq.4) is also the iteration $z_{N+1}=z_N z_N+C_M$ with $\delta C=\delta(z_{N+1}-z_N z_N)=0$ (Just plug the left side z in $z=zz+C$ back into each z on the right side and get $z'=z'z'+C$ given $z'\equiv(zz+C)=z$. So you can repeat this step with this new $z'=z'z'+C$.) then implying this choice of C_M defines the Mandelbrot set since $\delta(\infty-\infty)$ cannot be zero. $z_1=z$ and our two z solutions to $z=zz$ are $z=1,0$ in eq.4. We use the usual $z_1=0$ ($z_1=1$ is discussed in slide 17). One such sequence z_N generated from this Mandelbrot set(1) definition also provides a Cauchy sequence z_N of rational numbers that shows that 1 is a *real* number(2).

Must Bring Back The C≈0 In Some Reference Frame

Eq.11 says that $\delta(2drdt)=0=\delta(\text{area})=0$ which occurs at the Fiegenbaum point C_M, the smallest (minima) extremum of the Mandelbulbs.

We can then bring back the C≈0 by defining $C_M \equiv \xi\delta z$ since for small δz (in $z\equiv 1+\delta z$ and eq.6 for $z_1=z=1$), $C\approx \delta z=C_M/\xi_1$ then $\xi\equiv\xi_1$ is big in $C_M\equiv\xi C$ (So small local noise C_M/ξ_1 also making C real since C_M is). Note also the $z_1=0$, small ξ_o must then be boosted to the ξ_1 reference frame.). So $(z-zz)/\xi\equiv z'-z'z'\approx C$ and so $z'\approx z'z'$ so $z'\approx$**real#1**. Thus:

Postulate1 as **min(zz-z)**>0.

(and so also making 1 a real#)

The Mandelbrot set also gives the fractal cosmology at the Fiegenbaum Point

The Value ξ_1 In $C=C_M/\xi_1$

Again for $z_1=z=0$ given $z\equiv1+\delta z$ then $\delta z=-1$ so $|\delta z|$ is big. Also $\delta z+\delta z\delta z=C$ then $\delta z<<\delta z\delta z\approx C$ for the big fractal scale baseline. So $C_M\approx\xi C=\xi\delta z\delta z$ and so $\xi=\xi_o$ is small since $\delta z\delta z$ is big. ($\xi_o\equiv m_e$). $\delta C_M= \delta(\xi(\delta z\delta z))= (\delta\xi)(\delta z\delta z)+2\xi(\delta\delta z)\delta z =0$. So both $\delta\xi$ and ξ are small for z=0. This **small** ($\xi_o<<\xi_1$) and **stable** ($\delta\xi_o=0$) particle is our equation 13 (spin½) electron since its $r_H=C_M/\xi_o$ (see partII) is in the $\kappa_{\mu\nu}$ s of eq.25.

But C must still be small for *both* z=1 and z=0 because 1-(1)(1)=**0** for z=1 and 0-0*0 =**0** for z=0. Since ξ_o is small we must be in the boosted reference frame of ξ_o gotten by adding KE $=\xi$ to ξ_o in $\xi_1\equiv\xi+\xi_o$ implying only one $C=C_M/\xi_1$. So we can then use only postulate 1 $z=z_1=1$ which is then the single result of combining our two ($z_1=0,z_1=1$) Mandelbrot sets. Also since ξ_1 and ξ_o are both spin½ then ξ must be ½-½=0 (since ξ is mass in new pde eq.25 which is also S=½) so there must be two spin½ particles defining

$$\xi_1=\xi_2+\xi_3+\xi_o\equiv\tau+\mu+m_e\equiv1+\varepsilon+\Delta\varepsilon, \qquad (20)$$

3 leptons with their associated Reimann surface neutrinos eq.14; 15. $\xi_o=\Delta\varepsilon=m_e$ is the stable ground state for all three states. The reduced mass $\xi_1/2 =m_p$ is derived in part II from the B flux quantization thereby deriving ξ_1.

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 own 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 r_H ($\equiv C_M/\xi \equiv r_H$) in new pde (eq.9 slide 16, That result from the amazing equation.).

So for each larger electron there are **10^{82} constituent electrons.**

Also the scale difference between Mandelbrot sets as seen in the zoom is about **10^{40}, the scale change** between the classical electron radius r_H and the cosmological 10^{11}ly r_H giving us our fractal universe.

Recall from eq.3 that $\delta z = \frac{-1 \pm \sqrt{1-4C}}{2}$. is real for noise C<¼

creating our noise on the N+1 th fractal scale. So ¼=(3/2)kT/($m_p c^2$). So T is 20MK.

So here we have *derived the average temperature of the universe* (stellar average).

$N=r^D$. 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,

the *same* as our 2D equation 4 and for the Mandelbrot set as it should be.

In this document the next smaller (subatomic) fractal scale $r_1=r_H=2e^2/m_e c^2$, Nth; $r_2=r_H=2GM/c^2$ is defined as the N+1th where $M=10^{82}m_e$ with $r_2=10^{40}Xr_1$.

$K\neq\delta z$ local noise C_M/ξ must be added to our constant C>1/4

Recall from the amazing equation for small δz and small K, C≈ δz-K= x+iy in eq.8 adds 2 more degrees of freedom since K can be complex. So 4D lets ds^2 to still be invariant even with the added C_M. Also C>1/4 implies |dt|>0. Also from the Mandelbrot set $\delta C_M=\delta(\xi C)\approx \delta(\xi(\delta z\text{-}K))= \delta\xi(\delta z\text{-}K)+\xi\delta(\delta z\text{-}K)\approx 0$. So ξ large (in $C_M=\xi(\delta z\text{-}K)= \xi C$). So z-zz=C=$C_M/\xi$ fractalness with large ξ implies small C and so small δz implies a nonzero Δθ in Eq.13 $\delta z=dse^{i(45°+\Delta\theta)}$ rotation occurs here. This then implies that the eq.4 associated infinitesimal uncertainty $\pm C_M/\xi_1=\delta z$ cancel to rotate at θ≈45°:

$$(dr-\delta z)+(dt+\delta z)=(dr-(C_M/\xi_1))+(dt+(C_M/\xi_1)) =\sqrt{2}ds= dr'+dt' =ds_1 \qquad (21)$$

= 2 rotations from ±45° to next extremum. This also keeps ds_1 invariant. Note that by keeping dt not zero we have *already* put in background white noise (since then C>¼ in eq.6) into eq.13-15. So the postulate of 1 z-zz=C with C small can once again be written but for a local source $((C_M/\xi)\delta(r-r_H)/\pi r)=C\approx 0$ for large ξ.

Recall z≡1+δz so if z=0 then 0=1+δz so |δz| is big in $C_M=\xi(\delta z\text{-}K)$ so ξ is small.

So for z=0 rotations ξ_o is small so big C_M/ξ_o So for z=0 rotations ξ_o is small so big C_M/ξ_o (also $\delta\xi_o=0$ so stable, electron,eq.20) so from A1 $\theta=C_M/ds\xi_o=45°+45°=90°$. In contrast for z=1 ξ_1 big so θ=45°-45°≈0 since small $\delta z=C_M/\xi_1$. Using partial fractions have the usual RN:

$\kappa_{rr}\equiv(dr/dr')^2=(dr/(dr-(C_M/\xi_1)))^2 =1/(1-r_H/r)^2 = 1/(1-r_H/r)^2 =A_1/(1-r_H/r) +A_2/(1-r_H/r)^2$ where ξ_1 comes from eq.16. The A_I term can be split off from RN as in classic GR and so

$$\kappa_{rr}\approx 1/[1-((C_M/\xi_1)r))] \qquad (22)$$

So from partial fractions (on the N+1th fractal scale) $A_1/(1-r_H/r)$ and Nth=$A_2/(1-r_H/r)^2$ with A_2 small here.

Generalizing

$$ds^2= \kappa_{rr}dr'^2 +\kappa_{oo}dt'^2 \qquad (23)$$

So a new frame of reference dr',dt'. Note from eq.7 $dr'dt'=\sqrt{\kappa_{rr}}dr\sqrt{\kappa_{oo}}dt=drdt$ so $\kappa_{rr}=1/\kappa_{oo}$ (24)

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**. Hence the general case of $K\neq\delta z$ curved space

New Pde

Note from the distributive law square eq.10: $(dr+dt+..)^2=dr^2+dt^2+drdt+dtdr+$.
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.8. So equation 8 with 4D eq.10, automatically implies a Clifford algebra

$\gamma^\mu\gamma^\nu+\gamma^\nu\gamma^\mu=0$, $(\gamma^\mu)^2=1$. From eqs.8,2.3 there is also the covariant coefficient $\kappa_{\mu\mu}(\gamma^\mu)^2=\kappa_{\mu\mu}$. So after multiplying both sides by $\delta z\equiv\psi$ the **4D** operator equation 15 causes eq.13$\rightarrow$ $ds=(\gamma^1\sqrt{\kappa_{11}}dx_1+\gamma^2\sqrt{\kappa_{22}}dx_2+\gamma^3\sqrt{\kappa_{33}}dx_3+\gamma^4\sqrt{\kappa_{44}}dx_4)\delta z\rightarrow$

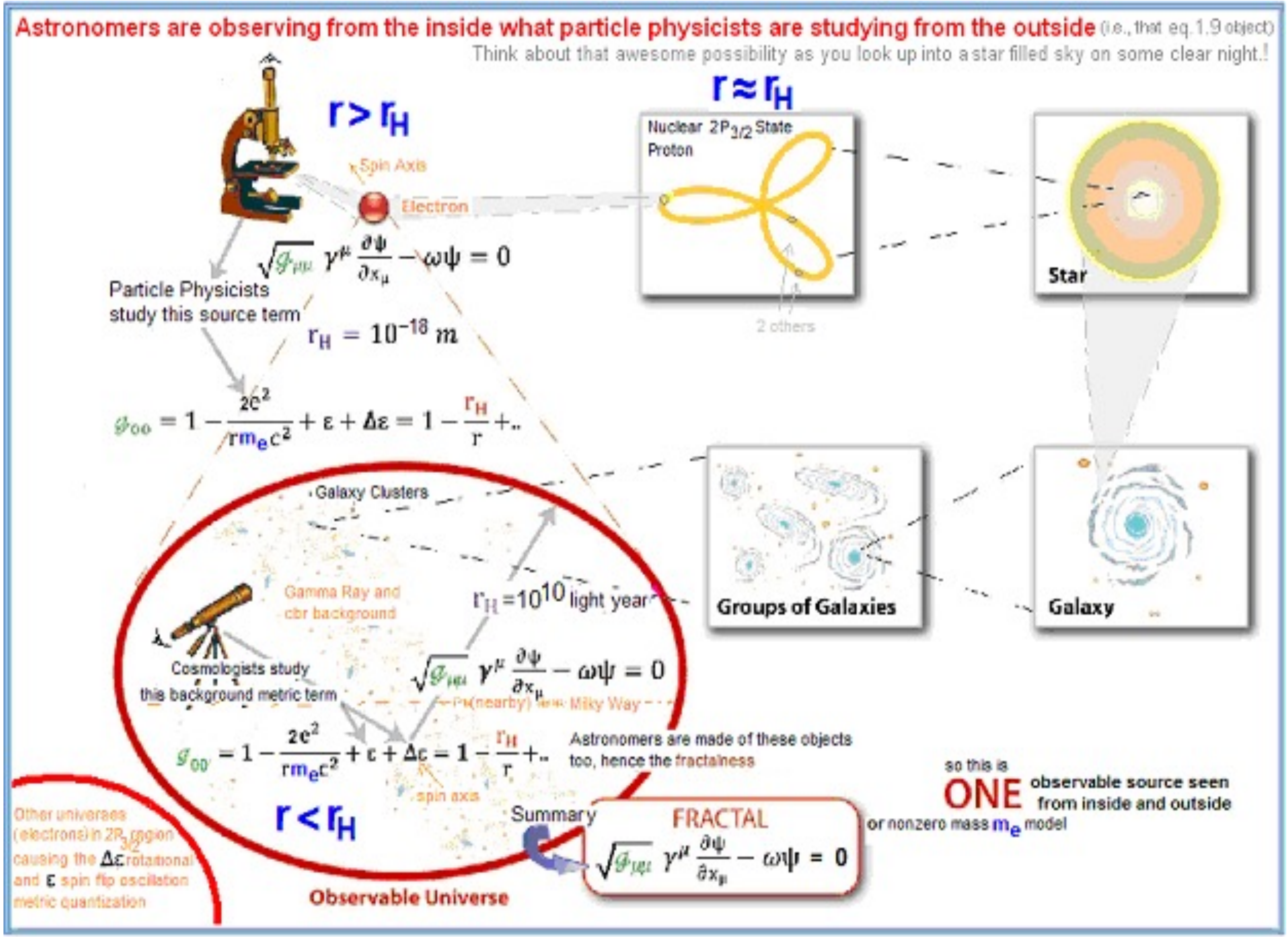
$$\gamma^\mu\sqrt{(\kappa_{\mu\mu})}\partial\psi/\partial x_\mu=(\omega/c)\psi \qquad (25) \qquad \text{New Pde}$$

$\omega\equiv m_L c^2/h$. This equation combines both the fractal C_M with the general case **$K\neq\delta z$** and so implies all eigenfunctions δz ($=\psi$) and composites. Thus this equation describes that one 1 thing we postulated at the beginning, the new pde electron.

Summary

Given the fractalness astronomers are observing from the inside of what particle physicists are studying from the outside, this **ONE** thing we postulated at the beginning, this new pde electron (r_H). We really do live in an infinitely simple universe! Contemplate that as you look up into the starry night sky sometime!

Please see davidmaker.com for backups and many thousands of other applications of the postulate of 1.



Astronomers are observing from the inside what particle physicists are studying from the outside (i.e., that eq.1.9 object)
Think about that awesome possibility as you look up into a star filled sky on some clear night.!
r > rH
Spin Axis
Electron
$\sqrt{g_{\mu\mu}}\,\gamma^{\mu}\frac{\partial\psi}{\partial x_{\mu}} - \omega\psi = 0$
Particle Physicists study this source term
$r_H = 10^{-18}\,m$
$g_{00} = 1 - \frac{2e^2}{rm_ec^2} + \varepsilon + \Delta\varepsilon = 1 - \frac{r_H}{r} + ..$
r ≈ rH
Nuclear $2P_{3/2}$ State
Proton
2 others
Star
Galaxy
Groups of Galaxies
Galaxy Clusters
Gamma Ray and cbr background
$r_H = 10^{10}$ light year
Cosmologists study this background metric term
$\sqrt{g_{\mu\mu}}\,\gamma^{\mu}\frac{\partial\psi}{\partial x_{\mu}} - \omega\psi = 0$
rH(nearby) Miky Way
$g_{00} = 1 - \frac{2e^2}{rm_ec^2} + \varepsilon + \Delta\varepsilon = 1 - \frac{r_H}{r} + ..$
spin axis
r < rH
Astronomers are made of these objects too, hence the fractalness
Other universes (electrons) in $2P_{3/2}$ region causing the Δε rotational and ε spin flip oscillation metric quantization
Observable Universe
Summary
FRACTAL
$\sqrt{g_{\mu\mu}}\,\gamma^{\mu}\frac{\partial\psi}{\partial x_{\mu}} - \omega\psi = 0$
so this is
ONE observable source seen from inside and outside
or nonzero mass m_e model

Conclusion: Universe as simple as it can be, 1 real thing. So

Assumption **Postulate 1** as

Definition $\min(zz-z)>0$

Applications

Real# Mathematics(2)
Slide 12

Mandelbrot Set

Slide 12 (cosmological physics(1))

Amazing Equation

Slide 5 Clifford algebra & SR

Dirac Eq

(the rest of it)

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 we require . In fact all we have 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. A Mandelbrot set sequence z_n same as Cauchy seq.z_n so real1.