Part III

Type B Metric Quantization: Mixed States From eq.4.5.3 $\kappa_{oo}=g_{oo}$

11.1 Review of section .2

Recall $\prod_N(\kappa_{oo}(\psi^*\psi)_N=\prod_N(\kappa_{oo}(\psi^*\psi)_N)=\prod_N(\kappa_{ooN})=e^{i(\varepsilon+\Delta\varepsilon)}{}_{N*}e^{i(\varepsilon+\Delta\varepsilon)}{}_{N+1**}$.(1.2.31).

The frame of reference provided by each ψ gives our forces (eg., sect.7.3).

Object B And Kerr Contribution 6.4.16

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: $\Delta\varepsilon r_H=0$ (partIII) in:

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

(1.2.32)

11.2 Notional Idea Of Metric Quantization

Quantization on the fractal subatomic scale should be repeated on the next higher 10^{40}X fractal scale(cosmological), hence the (both type A and type B) metric quantization.

11.3 Equation 1.2.31 $\kappa_{oo}=g_{oo}$ With Mixed State Operators $\varepsilon\Delta\varepsilon$ For Type B metric Quantization

Recall form sect.1.2 that ε and $\Delta\varepsilon$ are operators. eg., from Kerr $\kappa_{00}1-(a/r)^2-r_H/r_H=$ $1-((dr/ds)r/r)^2-1=((dse^{(i\omega t+kr)/}ds)^2=e^{i2(\omega t+kr)}$. So $E=1/\sqrt{\kappa_{00}}=1/\sqrt{(e^{i2(\omega t+kr)})}=e^{-i(\omega t+kr)})$.
$E=e^{i(\omega t+kr)}=e^{i(H/h)t}$ (B6) in SM section 6.9. $\kappa_{oo}=e^{i2(\omega t+kr)}=e^{-i2(t/\sqrt{\kappa oo}-kr)}=e^{i2((1+\varepsilon/2+\Delta\varepsilon/2)-rH/rH)-kr)}$. Again $r=r_H$ so $\kappa_{00}=e^{-2i(1+\varepsilon/2+\Delta\varepsilon/2-rH/rH)}=e^{-i(\varepsilon+\Delta\varepsilon)}$. For normalized out ε the cosine expansion gives $\kappa_{oo}=e^{i\Delta\varepsilon/(1-\varepsilon)}$ (B7). The Taylor expansion cross term $\varepsilon\Delta\varepsilon$ is the starting point.

In the rotating galaxy halo set the local background metric =metric quantization background since they should be equal here: $g_{oo}=\kappa_{oo}$. (4.5.3)

Circular motion so $mv^2/r=GMm/r^2$. So $2v^2/c^2=2GM/rc^2$. So $1-2GM/c^2r=Rele^{i\Delta\varepsilon}=\kappa_{00}=1-2v^2/c^2$. So $1-\Delta\varepsilon^2/2=1-2v^2/c^2$. So $v=\Delta\varepsilon c/2$

1st case Near flat space with $r\to\infty$ so small C, so SR, eq.1.1.10. ε can then be normalized out so $\kappa_{00}=e^{i\Delta\varepsilon/(1+2\varepsilon)}$

2nd case Near largeN+1 fractal scale **g gradient** ε can't then be normalized out so $\kappa_{oo}=e^{i(\Delta\varepsilon+\varepsilon)}$

1st case $g_{oo}=1-2GM/(c^2r)=\kappa_{oo}=\exp[i(\Delta\varepsilon/2)/(1-2\varepsilon)$. Take real part of both sides:
$g_{oo}=1-2GM/(c^2r)=\kappa_{oo}=\cos[(\Delta\varepsilon/2)/((1-2\varepsilon)2)]$. Use v^2 and first order Taylor expansion (eq.1.1.1)
$1-2v^2/c^2=1-[(\Delta\varepsilon/2)/(1-2\varepsilon)]^2/2$. Subtract off the 1 and take the square root.
$v=n(\Delta\varepsilon/2)c/(1-2\varepsilon)/2$ (11.4)
$=n(.00058/2)3X10^8/[2(1-2(.06))]=n(98,860/2)$m/sec=n49.4km/sec=
nX(98.86/2)km/sec→n(100/2)km/sec. So in the galaxy halos we have v=(100/2)km/sec, 100km/sec, ((100/2)+100]km/sec, 200km/sec., replaces the need for dark matter.

If the rings are heavier than the hub then the metric quantization is between the sides of the rings, twice the COM speed and so still a integer multiple of 100km/sec.

2^{nd} case Mixed state near large g gradient so can't normalize out ε so v not constant with r. So $\kappa_{00}=e^{i(\Delta\varepsilon+\varepsilon)}$. So

$g_{oo}=1-2GM/(c^2r)=\mathrm{Rel}\kappa_{oo}=\cos[\Delta\varepsilon+\varepsilon]=1-[\Delta\varepsilon+\varepsilon]^2/2=1-[\sqrt{(\Delta\varepsilon+\varepsilon)}]^4/2=1-[(\Delta\varepsilon+\varepsilon)/\sqrt{(\Delta\varepsilon+\varepsilon)}]^4/2=1-[(\Delta\varepsilon+\varepsilon)^2/(\Delta\varepsilon+\varepsilon)]^2=1-[(\Delta\varepsilon^2+\varepsilon^2+2\varepsilon\Delta\varepsilon)/(\Delta\varepsilon+\varepsilon)]^2$

The $\Delta\varepsilon^2$ is the first case so just take the mixed state cross term $[\varepsilon\Delta\varepsilon/(\varepsilon+\Delta\varepsilon))]=c[\Delta\varepsilon/(1+\Delta\varepsilon/\varepsilon))]/2=c[\Delta\varepsilon+\Delta\varepsilon^2/\varepsilon+...\Delta\varepsilon^{N+1}/\varepsilon^N+.]/2=\Sigma v_N$. Note each term in this expansion is itself a (mixed state) operator. There can't be a single v in the large gradient 2^{nd} case so in eq.1 just above we can take

$$v_N=[\Delta\varepsilon^{N+1}/(2\varepsilon^N)]c. \qquad (11.5)$$

as in eq.11.4. Note N=0 is just case 1. Each of these terms in this expansion is itself a mixed state operator so these speeds arise from mixed metric quantization states. In classical thermodynamics they are Grand Canonical ensembles with nonzero chemical potential.(1) If there is zero mixing, so zero chemical potential, these v s do not apply (so classical trajectories apply).

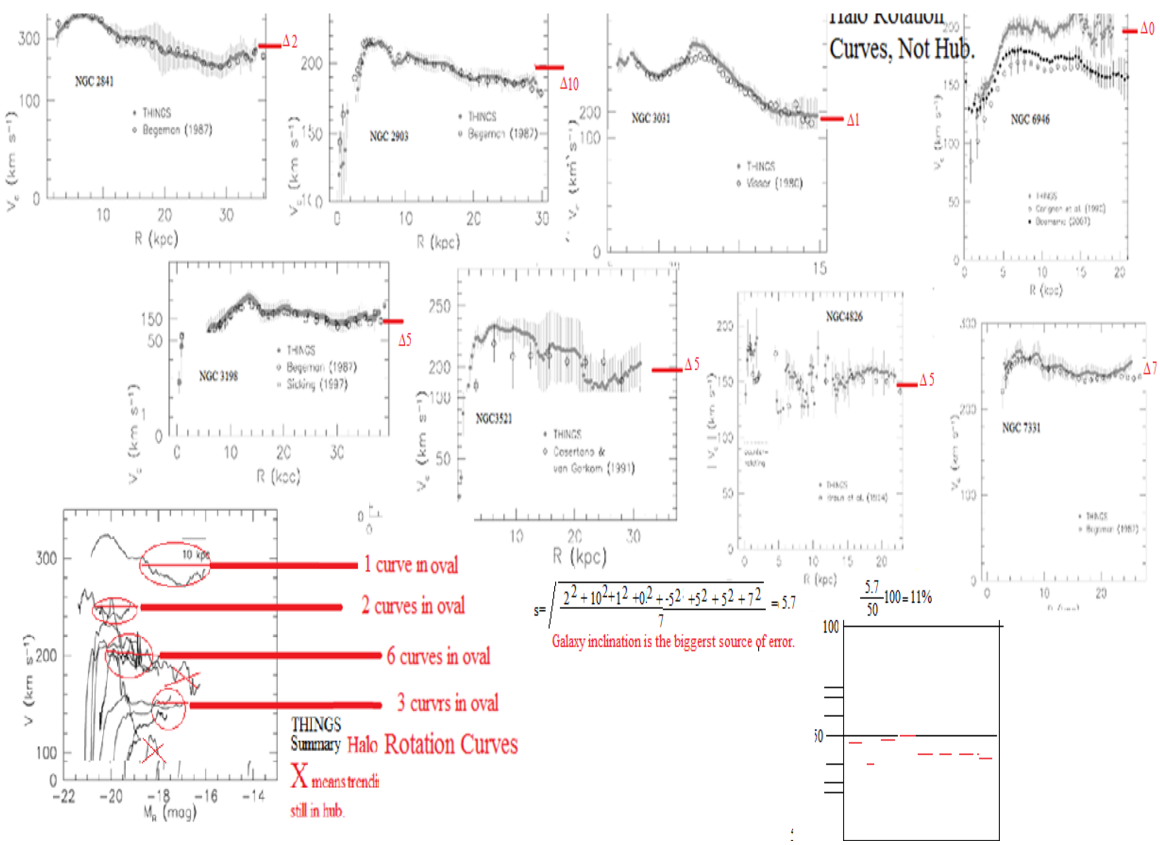
(1)Konstantin Batygin. Monthly Notices of the Royal Astronomical Society, Volume 475, Issue 4, 21 April 2018. He found that cosmological Schrodinger equation metric quantization actually exists in the (observational) data.

Examples:

11.5 Examples Of Case I $g_{oo}=\kappa_{oo}$

Here we look at distance vs velocity in galaxy halos to note possible constant velocity

Here use the THINGS survey data instead of SINGI. We include in this section only flat trending v vs r galsxy halos. NGC 3031 rotation curve is consistentwith flat trending galaxy halos , at 200km/sec, NGC 3198 rotation curve is consistent 100+100/2, NGC 2903 at 200, NGC2841 at 300 km/sec consistent, NGC 3521 is consistent at 200km/sec, NGC 4826 is consistent with100+100/2, NGC 5055 consistent at drop off 200?, NGC 6946 consistent for THINGs survey., NGC 7331 is consistent at 200+100/2, NGC 7793 consistent with 100 (but should not count since still in hub). If the rings are heavier than the hub then the metric quantization will be between the rings which will be twice the COM speed. (see 2X50 below cases).

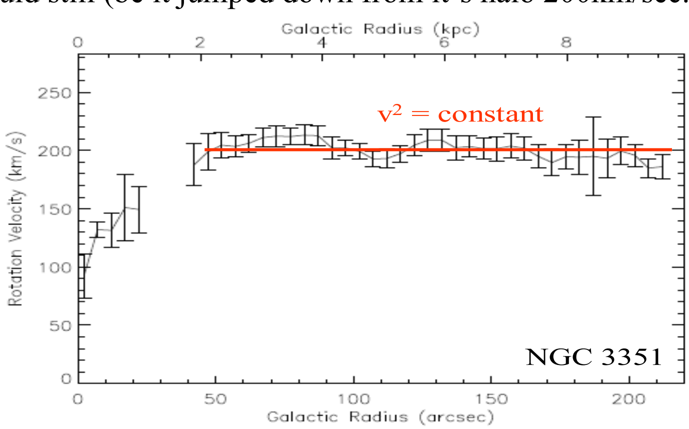


11.6 Still In Hub

Still in the hub means the curve is still trending up or down. So do not count NGC 925 and NGC 2976 (still in hub). IC2574 not counted since Things didn't show its rotation curve. NGC 4736 don't count still in the hub, DD154 still in hub. NGC2366 not include since no rotation curve given. Since some error bars include 100+100/2 NGC 2403 might not not be an outlier.

1.

So out of 10 galaxies that must be counted only one is uncertain NGC 5055 but even that one could still (be it jumped down from it's halo 200km/sec. near the end. Andromeda does that too.)



Stellar halo speed at ~200km/sec

Metric quantization is exact.

11.7 Transition Matrix Elements of These Weak Mixed States
4.3.1 Transition Matrix Elements Of Metric Quantization Mixed States
V_s=C Here
These ε^N are M+1 fractal scale quantum eigenstates every bit as much as the principle quantum number N and the Rydberg $E=R/N^2$ is for the hydrogen atom for the Mth fractal scale. So each of the terms in the series represents individual (metric quantization entangled substates state jump c given entanglement perturbation V_e in $V_e/(Ee_1-Ee_2)$ and also entanglement <en2|H|en1> probability of transition matrix from entangled state to entangled state. The $V=kC^2$ in eq.2 assumes the role of the noise (energy) V and is limited by eq.4A relativity considerations. Thus relativity puts an upper limit on noise C. Also in the entangled state cases these terms imply constant v s for a range of radii (eq.23.9) in a grand canonical ensemble with nonzero chemical potential. Note in chapter 23 that entangled ground state $\Delta\varepsilon/(1-\varepsilon)^2$ gives 100km/sec, entangled $\Delta\varepsilon^2/\varepsilon$ gives 1km/sec, $\Delta\varepsilon^3/\varepsilon^2$ gives 10m/sec metric quantization $\Delta\varepsilon^4/\varepsilon^3$ gives 0.1m/sec . $\Delta\varepsilon^5/\varepsilon^4$ 1mm/sec. Eq.4.4.12 then gives the mixed state background metric. This state mixing is analogous to the trig identity result for real valued quantum operator $<|O|>^2= |\psi|^2 =(\cos\omega_1 t+\cos\omega_2 t)^2 = \cos^2\omega_1 t + \cos^2\omega_2 t + 2\cos\omega_1 t \cos\omega_2 t= \cos^2\omega_1 t + \cos^2\omega_2 t + 2\cos\omega_1 t \cos\omega_2 t= \cos^2\omega_1 t + \cos^2\omega_2 t + (\cos((\omega_1-\omega_2)t + \cos((\omega_1-\omega_2)t)$. This generation of smaller $(\omega_1-\omega_2)$ "beat" frequencies by entanglement represents the smaller and smaller terms in the equation 4.4.12 Taylor expansion since this calculation can be repeated again and again with these even smaller frequencies. The classical analog of this type of quantum entanglement is that metric quantization grand canonical ensemble with nonzero chemical potential (i.e., interconnected systems hence the mixed states) and thus implies the many metric quantization applications of part 6 of this book. Note in metric quantization that also $C\rightarrow 0$ and so these separate objects can exhibit bosonization given that $v\rightarrow 0$ in the eq.17.2 pairing interaction. So singlet states and multiples of singlet states have minimum energy. So Vs/(Es2-Es1) is the largest for the singlet state so transitions to these states have higher probability (so $\Delta\varepsilon$ gives 2(100)km/sec let's say is seen more than 3X100) and even larger for two singlet states 4(100km/sec) . Recall from that Tokomak edge effect analysis those dense plasmas are metric quantized in multiples of 400km/sec, 800km/sec,1200km/sec.
There appeared to be jumps to those plateau speeds as you go from the outer to inner part of the plasma in the toroid.
The solar wind appears to be metric quantized too, also in units of about 400km/sec with highest solar wind speeds quoted as 800km/sec. Equation 13 indicates there are many rotational states of equal separation, there is the first rotational state at ~100km/sec, and those many smaller 10km/sec entangled states.
For the rotational states the transitions are for J and so for S and L and can be handled with the Clebsch Gordon coefficients which give you the singlet and triplet states for example..
The corona arises because of a $<r_o|H|en>$=large nonzero metric transition between rotation states <ro| and entangled state <en|. H is the Hamiltonian which includes these vibrational and rotational states and nixed states. The $<r_2|H|en>$ mixed state probability is much larger than for $<en_{99}|H|en1>$ mixed state. For global magnetic field high energy density recombination we get flares. Locally we get 511kV rotator oscillator microflares since have high local energy density. .

This comes out of time dependent perturbation theory in which the first order perturbation state probability coefficients c go as $Ve/(Een_1-Een_2)$). So when the energy is high enough the entangled state jump c is much smaller than the rotational since Vr in $Vr/(Er_1-Er_2)$ and so c is much larger. (local 511kVoscillator ROTATOR microflares provide the Vr=energy=<H> to the dep rotator states here making <ro|H|en> large. Each local microflare becomes an individual filament of the corona.
The rotation is caused by $mv^2/r=q(vXB)$ helical rotation around the B flux tube).
(en is the mixed state, r1 the first rotator state).
So the transition is into the rotational states $\langle r^2|$, not the <en99| mixed state for example. cannot occur and the solar corona actually disappears (solar min and also coronal holes).
Also from Stoke's theorem the integral over the surface S of curlv*dS/C=integral of vds/C around the boundary C. $\oiint_S ((\nabla X v) * dS)/C = \oint_C v * ds$/C =constant comes out of $g_{oo}=k_{oo}$.

11.8 High Frequency Metric Quantization Jumps Here Imply Low Amplitude Jumps.

Low object B frequencies means for the Dirac zitterbewegung $r= r_o e^{kt}$ the jumps are much higher if separated by a larger time so their amplitudes are larger. Recall the definition $2mc^2=\hbar\omega$ so km=ω.so higher frequencies in ε in $\kappa_{oo}=1-r_H/r+\varepsilon$ in $E=1/\sqrt{\kappa_{oo}}$ mean lower amplitude metric quantization E. So the mass energies are given by ω=1, ε or Δε for the mass and so the Δε is the lowest fundamental $\Delta\varepsilon=\omega_o$,. $\varepsilon/\Delta\varepsilon=n\omega o=100\omega_o$ harmonic antinodes across the rotator between antinodes ε/Δε. The Δε is about 100=ε/Δε antinodes across and at the moment of the big bang were spherical Bessel function standing wave antinodes inside a sphere. They provide the nucleus for the perturbations of a Rayleigh Taylor instability $\omega^2 =(\rho_1-\rho_2)kg/(\rho_1+\rho_2)$ Richtmeyer Meshow. Thus the Laplacian gives us $\omega_2=100X\omega_1$ producing 100 nodes in that big bang object diameter from that solution of that Ricci (Beltrami) Laplace wave equation for this third order feedback mechanism. Note we can in addition model the big bang as a core collapse supernova resulting in that Rayleigh Taylor instability (seen in the M1 supernova). These nodes give the Rayleigh Taylor instability inhomogeneity's in the explosion responsible for those filaments of galaxy clusters. Thus the Laplacian gives us $\omega_2=100X\omega_1$.producing 100 nodes in that big bang object diameter from that solution of that Ricci (Beltrami) Laplace wave equation for this third order feedback mechanism of present day average radius of 280Mly assuming a present 13.7by radius universe radius. Thus there are $(4\pi/3)50^3$= 524,000 nodes in all resulting in about 500,000 voids in the later universe (370by later).
Also the Gamow factor is $T=\exp(-2\pi\alpha(ke^{-kr}))/\beta)$ with β=v/c, α=fine structure constant, and r≈0, (i.e., nuclear force analogous to thin 'glue' layer) with k depending on T. v gets bigger at small t so small volume (Think of it as a Charles's law effect if you want to.) so the Gamow factor increases. Thus the rate of tunneling increases implying the nuclear force k is decreasing since more particles are leaving the potential well. With k getting smaller too this results in a mere ~1/10 volume decrease and associated smaller atomic weight supernova output (eg., C,Si,O, not Fe, Ni at that time) makes for a dusty universe and little iron and nickel at that time. O++ (green) could then dominate in the spectrum then.

11.9 Metric Quantization States Are Fermionic

In the equation 11.3 metric quantization states there is a mixture of ε and Δε states, both Fermionic since they are both eigenstates of the new pde. As an analogy recall in atomic physics you fill the S states and fill the P states to get stable states.(eg. Nobel gases). So that means the filled singlet states are two Fermions, usually the highest energy state.. So instead of the ground

state 100km/sec we have the filled state as 200km/sec for galaxy halo speeds and for O,B,A spectral class stellar speeds. . For the sun's equatorial velocity we have the filled state 2km/sec instead of the ground state 1km/sec. For a Mesocyclone and other air motion we have the filled state of 20m/sec instead of the 10m/sec ground state.
Note about 80% of the galaxies in the SINGII galaxy survey were 200km/sec, not 100km/sec. Note the sun's surface is at 2km/sec, not 1km/sec. Note the mesocyclone is at 20m/sec, not 10m/sec.
So both the theoretical eq.13) and the observational evidence points to the fact that these metric quantization states are Fermionic!

The implication here is the there is a spin component on the ambient metric, Bwhich is singlet in most cases, nullifying the spin, allowing us to disregard this effect, in almost all cases in Einstein's equations.
Einstein's equations themselves apply to spin 2 and so four of these states implying another stable metric quantizatioin state at 4 (eg. 400km/sec which has been seen in Tokomaks)

Also note our own Milky Way halo **2 level** of figure 23.6 (i.e., 2X100km/sec) background metric quantization for the $\Delta\varepsilon$ electron lends itself to the N.N.Bogdiubov quasiparticle transformation (two electron) pairing interaction discussed at the end of section 17.2. So the superconducting state might look very different in 3 level (i.e., 3X100km/sec) NGC 2841 halo for example.
Note also that small galaxies would appear anomalously heavier (giving that ~100km/sec) as has recently been observed by the Stacy McGaugh group (seeing a 100 to 1 ratio of quantized metric to baryonic mass gravity effects). A violent disruption of a small galaxy (with its halo v~100km/sec) on collision with a larger galaxy (e..g., v=200 or 300km/sec) would occur when it transitioned to the higher quantized v causing far more rapid mergers than those purely Newtonian computer multibody simulations would imply Also, given the radial distribution of (metric quantization) would be provided by a galaxy cluster collision analogous to an electron radiating coherent oscillatory radiation as it drops down in energy (ie.,collides with) in a hydrogen atom.
The metric quantization region also exhibits self gravity (like the cosmological long 511 tubes do) and so can be in metric quantization spherical states just as an electron in a hydrogen atom can be in spherical quantum states (eg. S states).

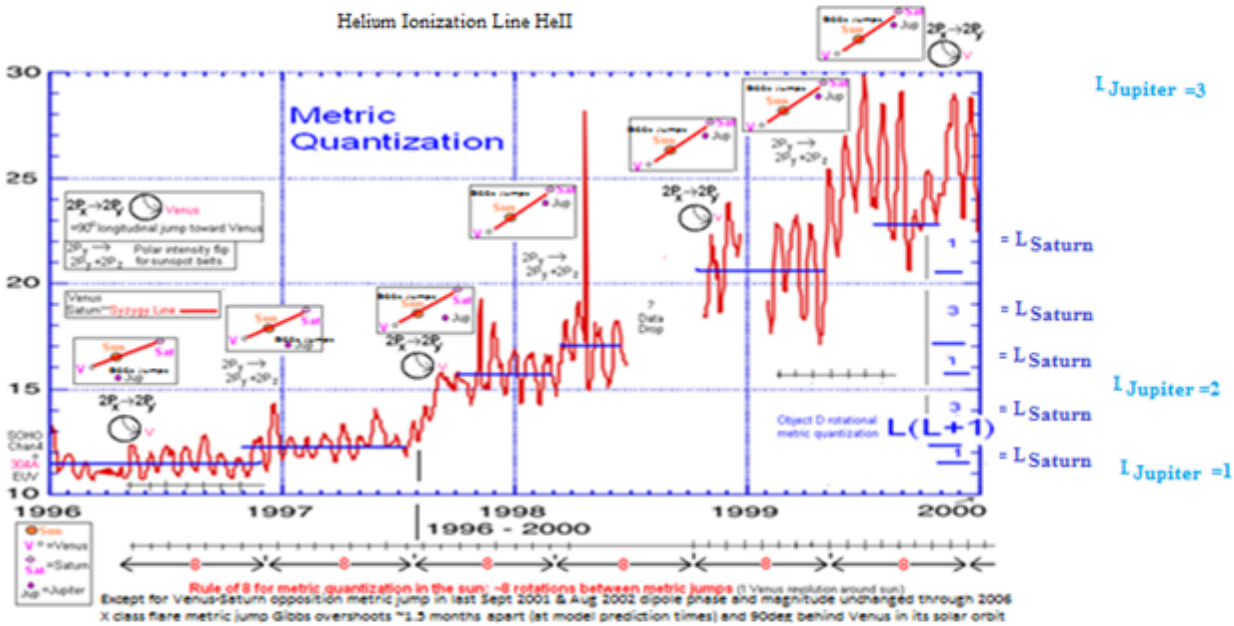
Chapter 12 Cosmological Observations Of Metric Quantization

Recall the Metric quantization 1km/sec,10m/sec,...,1mm/sec.
Recall metric quantization applies to grand canonical ensembles with non zero chemical potential.
(On the quantum level that would be an mixed state (eq.13)). .It does not apply to a single ballistic trajectory.
But what about the in-between case of the ballistic trajectory particles just beginning to interact with the other object (ie,. exchange energy) but not quite the full scale grand canonical ensemble with non zero chemical potential as in Saturn's rings or that spark gap? A space craft flyby sling shot trajectory is such an in-between case. . Well then, in that case we might start seeing a barely detectable (possibly not) bit of metric quantization, perhaps at 1mm/sec, 2mm/sec,. 4mm/sec ,.., 13mm/sec, anomalous speed difference from the predicted one?

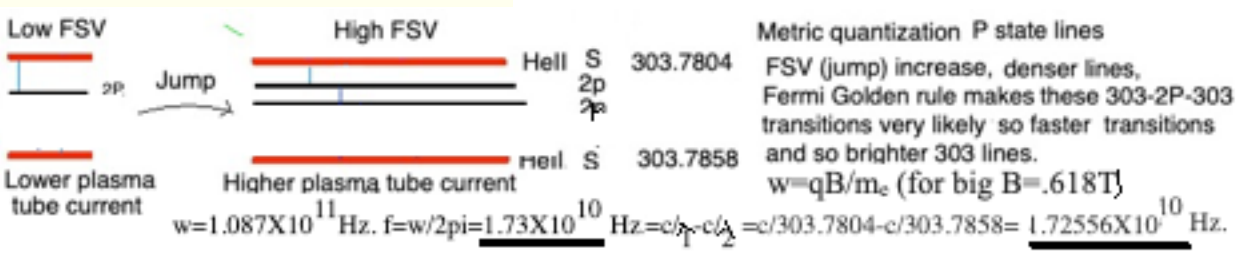
Hey, the Galileo space craft slingshot earth flyby got a anomalous 3.92mm/sec boost and the NEAR spacecraft flyby got a 13mm/sec boost.

>, "anomaly appears to be dependent on the ratio between the spacecraft's radial velocity and the speed of light, "
There is maximal chemical potential (exchange of energy) for the radial motion.

12.2 Direct Measurements For Local Metric Quantization Are Possible
Recall fig 1-1, ch.1 gives two other extrema for ds^2 (but not for dr+dt) at $\theta=0$ ($dr/dt\rightarrow\infty$) 90° ($dt/dr\rightarrow\infty$). The 90° extrema simply implies particle stability and the 0° extrema, since it must apply to some $dr>r_H$, implies that effects that move through horizons r_H are seen as instantaneous inside (i.e.our periodic metric jumps of the next chapter).
Recall we required the cosmological radius $r_c=1.325X10^{26}$m for average speed c/2 and $(c/2)^2/r_c$ $=1.7X10^{-10}$m/s2 when doing the '1' metric quantization instead of the $\Delta\varepsilon$ choice in equation 23.2. Recall from equation 23.4a that 'a' is quantized in units of $a_M=10^{-10}m/s^2$ so that $a=Na_M$ where N=1,2,3,..Those (huge) electron metric small sized jumps have a 5 minute period (recall $\Delta\varepsilon$ jumps were 2.7my period). We can calculate how many jumps that represents over a gravity change for Jupiter moving from its perihelion position with Saturn syzygy to a neap tide minimal solar tide position. Each acceleration of gravity jump is taken to be that of $\Delta g=a_{Mond}=a_M=1.7$Angstrom/sec^2.
Note we use $GM_sm/r^2/2=M_sa$ between Saturn syzygy with Jupiter (section 24.8) and no Saturn syzygy the difference in the suns acceleration is simply in what is provided by Saturn:
$GM_sm_s/(1/r_s)^2)/2=6.67X10^{-11}(2X10^{30}).5(95.1X6X10^{24})(1/(9.048(93X10^6X1600)^2$
$=(1.7X10^{46})(.5)(5.52X10^{-25})=.5X10^{21}=2X10^{30}a$ so 'a'$=.5X10^{21}/2X10^{30}=$
$23X10^{-10}m/s^2=23a_M$. 23/1.7=13.5.
Gravity gives the rate of solar activity and diffusion and so sudden metric changes give sudden (and very small) radiance changes. The calculation implies about 13 such jumps.
There were about 15 in the example. The jumps go in the sequence 1,3;1,3;1,3,6
By the way the equivalence principle will not allow observers in inertial (free fall) frames to notice these jumps so the celestial mechanics orbits are for the most part unaffected.
But for two 1kg masses 20cm apart the acceleration of gravity would be $10a_M$ s.
The jumps would be easily observed as one mass was brought in toward that other (i.e.,$1a_M,3a_M,6a_M$,..)
In contrast if measurements of G were made at different laboratories at different separations the error bars in the measurements might not overlap because of this G quantization.
Solar cycle is proportional to rate of fusion. The rate of fusion is proportional to T^{17}.for CNO stars. For the PP fusion in the sun it is proportional to T^4. T in the sun is a function of the isostatic equilibrium of gravity pull and thermal energy pressure. Thus a small change in gravity(here metric) gives a small change in solar activity. Planetary tidal effects given by $\Sigma F_i|\cos\theta_i|$=re give short term solar activity cycle because a diffusion charge layer exists on the sun (due differential diffusion of protons and electrons) . Amperes law currents and B fields are then modified and through Fick's law the rate of energy diffusion out of the sun is then modified.



150	P	256.3177	He II	MK00b
1000	P	303.7804	He II	MK00b
500	P	303.7858	He II	MK00b
10		320.293	He I	TW71
2		505.50035	He I	M02



The cyclotron frequency $w=qB/m_e$ (for big B=.618T from observed Zeeman effect , so $w=1.087X10^{11}$Hz. $f=w/2\pi=1.73X10^{10}H=c/\lambda_1-c/\lambda_2=c/303.7804-c/303.7858= 1.72556X10^{10}$ Hz. The λ_1 line can then directly lose a photon to the λ_2 line through the cyclotron frequency Bremsstrahlung photon closer is the cyclotron frequency to the ideal of $1.72556X10^{10}$Hz, cyclotron frequency. The 10m/sec metric quantization jumps in the plasma tube raise the energy in steps and get the cyclotron frequency closer to the $c/\lambda_1-c/\lambda_2$, frequency analogous to the jumps to the next energy level in a helium laser with electrical current rise. A jump in modes mean, from Fermi's Golden rule, a lower FSV and so higher rate of energy level jumps between 303 lines and these intermediate lines and so brighter the HeII lines. Thus the HeII lines jump in intensity like a Heaviside function at metric quantization jumps. Other spectral lines don't do this.

The Quantum Mechanics of the Transitions Between Metric Quantization Lines and Ordinary E&M Quantization. Lines

So where does this other hidden metric jump quantization energy go since optically we cannot detect it?

I did a computation of that quantity and surprisingly curlv terms at. distance come out. They are very high frequency and so may elude your run of the mill small gravitometer but not a large body or gaseous matter, (eg.,hurricanes on earth). or the large LIGO before they put in the crackle filters.

Recall the HeII (helium 2) line. If the speeds jump in metric quantized units in the plasma tube the intensity of the upper line separated by the cyclotron frequency 17.25 Gighz will jump also since the temperature and so free energy around the plasma tube thereby jumps. We use mw^2r=evB so evB/(mw^2)=r here (also need $.5mv^2=3/2kT$ to solve for v in terms of T). It lifts electrons, just as happens in a laser, from a stable state to a metastable state where transitions to ground occur rapidly due to spontaneous emission here and so you get a brighter 303 line at metric quantization jumps because the v and so the temperature jumped. So higher temperature and so more photons are involved. The effect of the Hell line jumping in intensity with metric quantization jumps is then similar to the functioning of a laser! Note the temperature in the plasma tube has to jump also with the v.

The metric quantization of the sun's gravity (seen in those EUV metric jumps) is due to a huge electron at 10^{16} LY "Bohr radius" orbiting that proton containing objects A (i.e,. our own "universe"), object B (responsible for the galaxy halo metric quantization and farther away object C.

An electron at this (huge) Bohr orbit does numerically give the correct metric quantization seen in the (above) solar EUV data and is consistent with the 5 minute solar oscillation resonance as well. Thus the ratio of the frequencies: 2.7My/1monthmin≈10^{10}, ratio of the Fdx energies: $1/10^{-15})^2$ dx/1/(10 $^{-10}$) ^{2}dx/≈10 ^{10}

The period of oscillation of those supermassive and massive black holes in the same way (section 23.7) is in resonance with the ε(250my) and Δε (2.7my) metric jump times respectively. Recall the Δε metric contribution gives the galaxy halo quantization, the numbers work out extremely well also (section 23.4, that 87km/sec beautiful halo velocity result). Note here for superluminal motion the relationship between energy and velocity and frequency is reciprocal of the usual relationship. So for v>>c in the dr/o extrema superluminal regime (of section 1.1) :

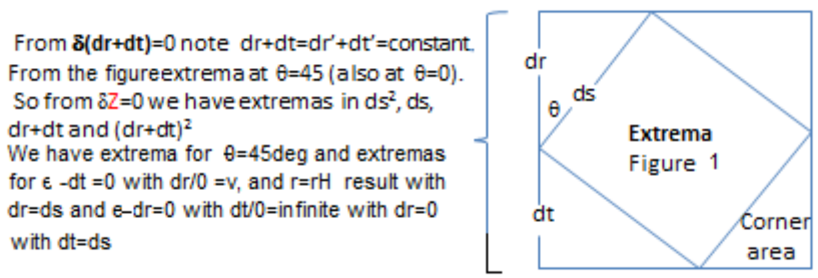
$$E = mc^2 = \frac{im_o c^2}{\sqrt{1-\frac{v^2}{c^2}}} =\approx \frac{im_o c^2}{i\frac{v}{c}} = \frac{m_o c^3}{v} = \frac{m_o c^3}{\omega r_H}$$

So that energy changes are proportional to 1/ω. Thus for superluminal motion the higher the velocity and higher the frequency the smaller the energy, in contrast to standard quantum mechanics that has the usual relationship between energy and frequency. Thus the ε and Δε metric jumps are much larger and with a larger period than the metric jumps giving the solar gravity metric changes due to that "electron" motion at the (10^{16} LY) Bohr radius of our object A,B and C proton we are inside of (recall we are inside the object A electron).

This is exciting stuff, probing another (fractal) atomic physics on a 10^{16} light year scale. by simply observing the EUV stair steps over the duration of a solar cycle (see above figure).

The compressed big bang object behaves like a water drop the same as the nucleus does.as we mentioned in chapter 2. The speed of the superluminal changes (or the speed of sound for that matter) is greater then the expansion rate when the object is completely compressed. The small $\Delta\varepsilon$ oscillation is a L=100,000 spherical harmonic on top of the fundamental oscillation giving the cbr power spectrum and is the large void regions observed in the present universe. The object D electron has an even higher frequency and so smaller superluminal effect and is responsible for a $L=10^{10}$ harmonic and so is the origin of the galaxy.substructure of the universe.
In quantum mechanics the *particle* states such as energy and angular momentum are quantized in bounded systems. In this fractal physics we 'inside' those particles so this translates into a *quantization of what the particle is made of, the metric itself.*

12.2 ε,$\Delta\varepsilon$ Metric Dispersion Relation In the Gravity Wave Equation For $r<r_H$



From the figure ε-dt≡0. So dr/dt=dr/0 makes metric quantization propagation effectively instantaneous. See figure 23-11 for an example. The other extrema implies ε-dr =0. So for $r<r_H$ this is an extrema at the center r=0. Recall the plus sign in $r=r_o(1--e^{\pm kt})$ for motion back to the central extrema. Note the axis of evil gives a hint of this second extrema at r=0.
Recall that regard recall we found that the minimal 45° extrema of $\delta ds=0$ in figure 1-1 (with $dr+dt=ds\sqrt{2}$) also gave us our ordinary relativity and our new pde. But there are observable consequences of the other two extrema conditions of figure 1-1 as well. For example in moving from a position of that minima 45° extrema of $\delta ds=0$ to the maxima extrema $dr/dt=\infty$ you *must* pass through a horizon r_H as mentioned in the mathematical induction part of section 1.4. Thus those quantized motion effects (e.g.,rotational quantum number changes for objects B and C) reach the inside of r_H nearly *instantaneously.* For example in the gravity wave equation there is that usual $1/c^2$ denominator factor in front of the second time derivative so we have speed c. But to include the ambient metric $r=r_o\sinh\omega t$ repulsive component however we must include the ambient metric factor $(1+2GM/c^2r)c^2\equiv(c^2+(\omega r_H)^2)$ for the metric cosmological expansion (repulsion). This equation essentially is a dispersion relation in the gravity wave wave equation since in the usual gravity wave derivation this new component ends up in the wave equation denominator as a coefficient of the time component dt^2. Note for the universe $GM\approx10^{55}$(mks), $r\approx10^{25}$m so $(1+2GM/c^2r)c^2\approx c^2+v^2=10^{16}+10^{30}$ giving a dispersion relation speed v of several billion c. Note ordinary GR gravity does not contain this repulsive component. Thus metric changes move across the universe instantly while weak gravity (as well as ordinary E&M) waves move at the speed of light. Thus a metric change event is first observed locally and then is later observed at some large distance, even though the event occurred simultaneously at all these points.
As an example the observable consequences (e.g., increased star formation in the great wall) appear to propagate away from any given location at the speed of light in a steadily expanding

shell. Thus the observed metric quantization jump boundaries must move away from us. So there must be a periodic rapid decrease in the ambient metric coefficients because of those object B and C quantum jumps. In that regard recall just the quantization of the $\Delta\varepsilon$ red shift in units of observed 75km/sec. That $\Delta\varepsilon$ and ε lead to a 75km/sec and $(\varepsilon/\Delta\varepsilon)$75km/sec $=v_q$ =7345km/s quantization of the red shift(calculation above). c/v_q=13billion/x leads to x=3.1million (for the $\Delta\varepsilon$ substitution) and for the $\varepsilon/2$ substitution we get 310million year interval in time between major metric changes(actual 290mY) along with the above object C 1/3 split. Recall from equation 22.1 that $E\propto\int\sum_{n=0}\sin((2n+1)\omega t)/(2n+1)dt$ for both ε and $\Delta\varepsilon$ separately.
Thus there is an associated Gibbs overshoot phenomena. Now when the metric changes like this the very properties of mass have to change. See figure 23-11.for ε changes (red lines). Note you should see greater star formation in such a metric shift region at the upper overshoot, stars about 600mY light years away from us. In fact this is seen. It is called the great wall of galaxies.

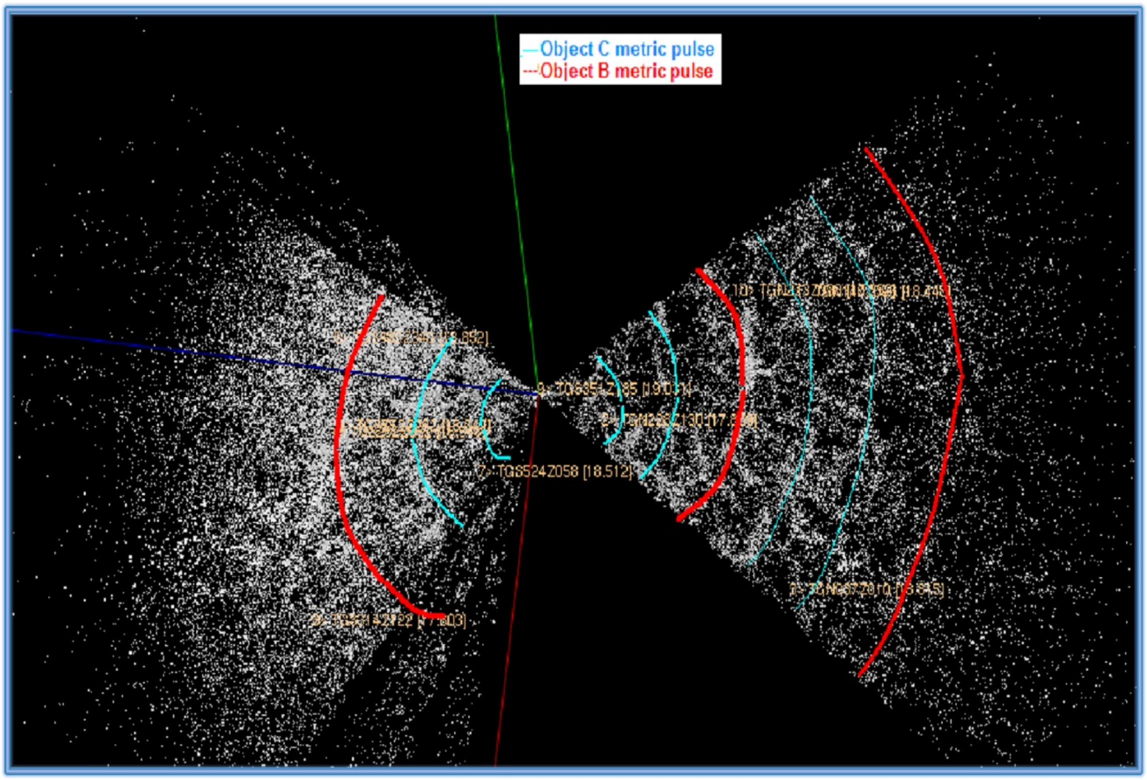


Figure 12-11 2df red shift survey, galaxy distance from earth, first red line~600mLY
2df red shift survey, galaxy distance from earth, first red line~600mLY

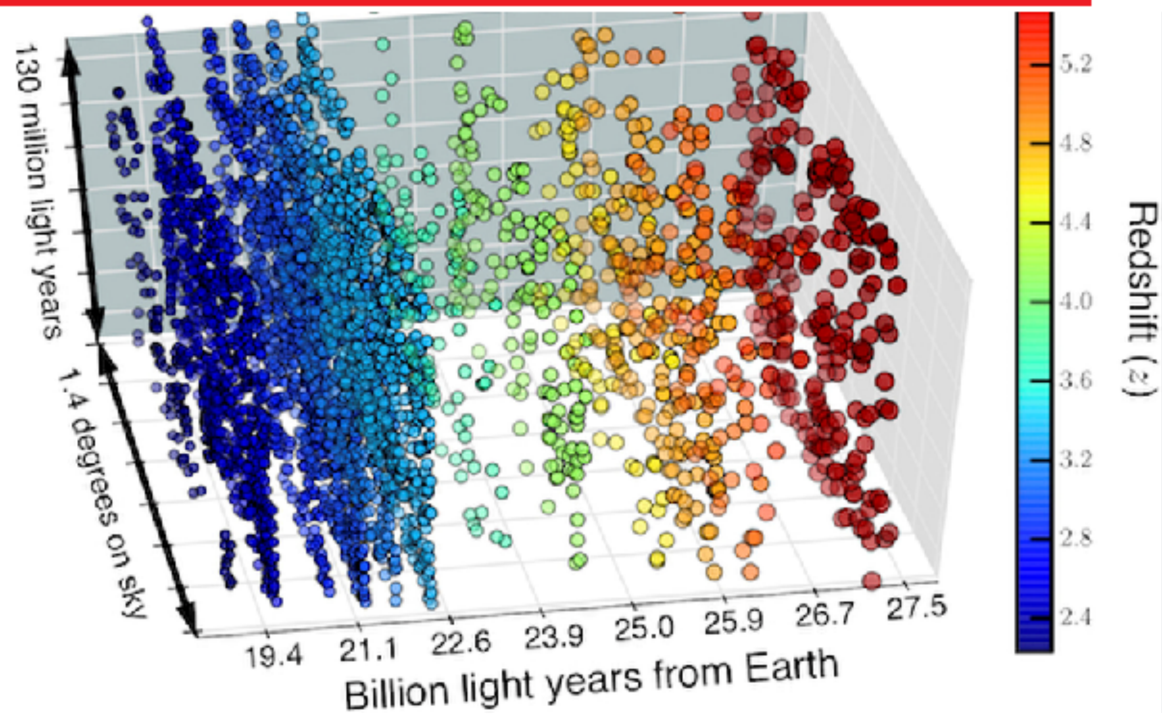
The (small) $\Delta\varepsilon$ quantized metric effect is washed out (in 2df and Sloan surveys) by random galaxy gravitational interactions (except in the halos of stable spirals, section 23.4) but the ε quantization is too large to be washed out here. Thus the triplet ε quantization (due to object C) is seen in the red shift surveys, is the light blue curved lines in figure 23-11. Note the metric change is nearly instantaneous over the whole cosmos which is an example of the dt=0, dr=large extrema of ds in figure 1-1 giving a phase change in equation 4.11a in $\kappa_{oo}=e^{i(2\varepsilon+\Delta\varepsilon)}$ since it is a ordinary time dependent quantum jump as seen at $r>r_H$. This is a QM phase propagation contribution inside this exponent in κ_{oo}, not a group velocity, so no energy is being propagated across this object at these $dr/dt\approx10^{40}c$ velocities (explaining fast gravity contribution at least as seen locally). One analogy would be a light bulb turned on inside a spherical room illuminating all parts of the room simultaneously. The observable effects (e.g., more rapid star formation at

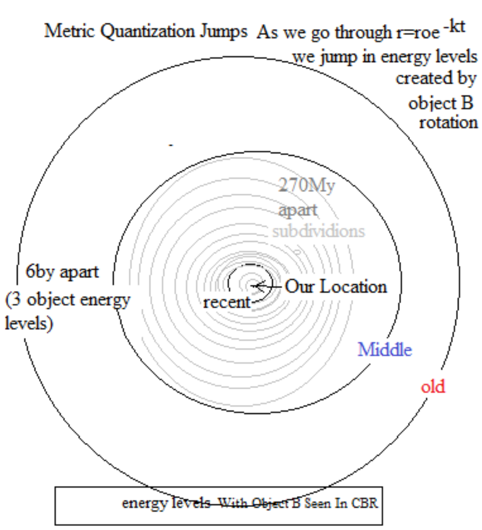
the eq.22.1 Gibbs phenomena jump) however do propagate outward at c giving the appearance of a spherical shell around our particular location as in, great walls in 2df survey, etc.,. All x,y,z points would then experience this same illusion of being at the center.
One interesting consequence is that the huge scale outside observer sees this 10^{40}Xc phase velocity as a real, very near c, velocity, with resulting huge Fitzgerald contraction. If his clock runs the same rate as ours he sees this (10^{40} times larger) universe to be as small as we see ours. So the universes are all *observed* to be the *same size* at all fractal scales!
Given this same size there truly is then only ONE observable object (given by that new pde, equation 2) as in equation 4.14.

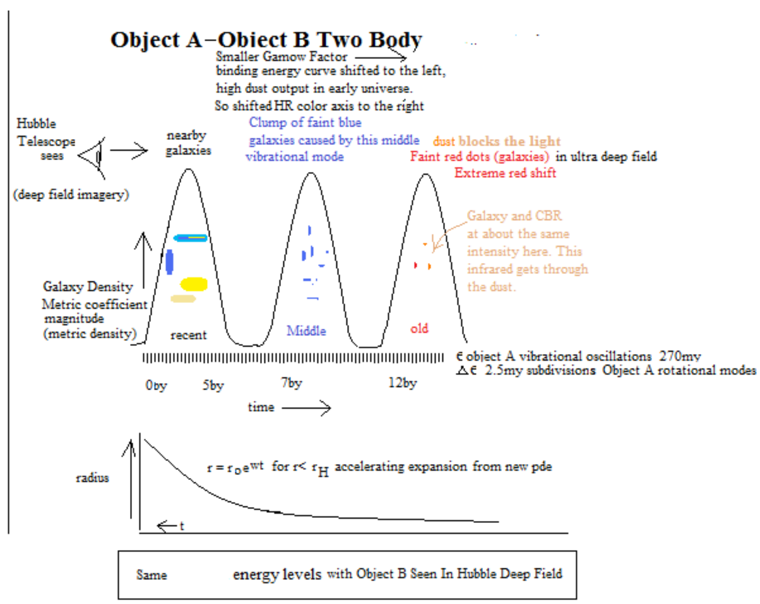
Note that outside r_H we use the standard Dirac equation operator - eigenvalue formalism. Let's say we solve the Schrodinger equation (a nonrelativistic limit of the Dirac equation that equals $\hbar/2m)d^2\psi/dx^2+V\psi=E\psi$) for eigenfunctions ψ. We then do the eigenvalue= $\int\psi^*OP\psi dV$ =expectation value where OP is a typical quantum mechanical OPerator such as energy (H) or angular momentum (L) for which we apply the operator formalism $p_x\psi=-i\hbar(d\psi/dx)$ also. As an example recall that the Hamiltonian H is the time development operator $H\psi=-i\hbar d\psi/dt$. Here $(e^{iHt})\psi=OP\psi$. Note the time development assumes the Dirac particle is a point, so that the change in state happens over the whole particle all at once even if you approximated it to be a "small" point.
So what happens inside r_H? *The same thing!* The change in energy level for example due to the outside dynamics happens over the whole particle all at once. Also inside $r<r_H$ we have that $dt=dt_o\sqrt{(1-r_H/r)}$ is imaginary so the time development operator is not oscillatory anymore, gives decay e^{Ht} attenuation. The metric inside is also the same H as the outside H but given the energy level changes with this e^{Ht} attenuation we then go through the sequence of energy level changes of the outside state! Note *we have not assumed a superluminal movement of the metric quantization change here.* We have just applied the outside r_H quantum mechanics to the inside r_H.
So what does the outside observer infer for the inside region QM operator changes? The $dt'=dt_o\sqrt{(1-r_H/r)}=0$ for $r=r_H$ so that dr/dt' = infinity for inside propagation from his frame of reference. Thus there is Gibbs effect attenuation of the square wave higher frequencies.

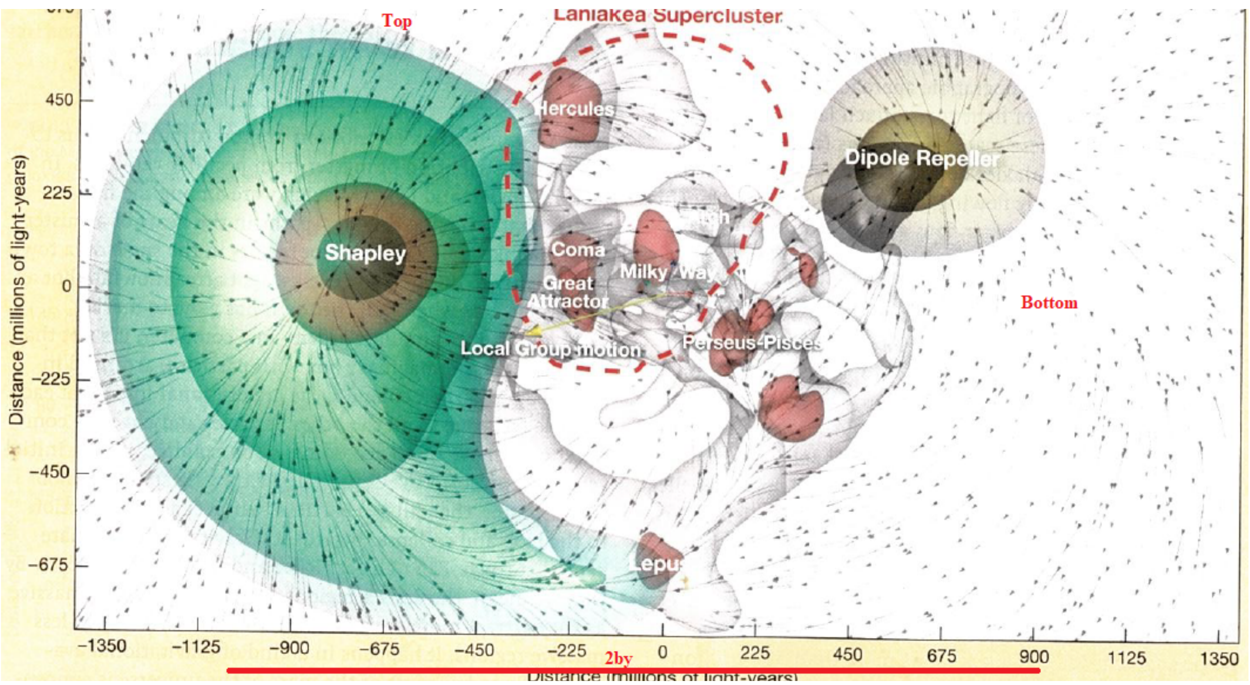
In any case **the *inside observer* need not worry about superluminal propagation of metric changes:** you simply apply the outside quantum mechanics self consistently to the inside and find that the inside r_H metric jump changes occur all at once.

SHM States caused By object B









Noam Lebeskind.

The Shapely concentration is the compressional part and the dipole repeller the expansion part of that 6by vibrational wave from object B. The Shapely concentration is the compressional peak of the 6by wave and the great void of Eridanus the rarefaction low of that wave. The 270My oscillations are the smaller voids. The 2.5My oscillations are the key to understanding the scale of galaxy formation

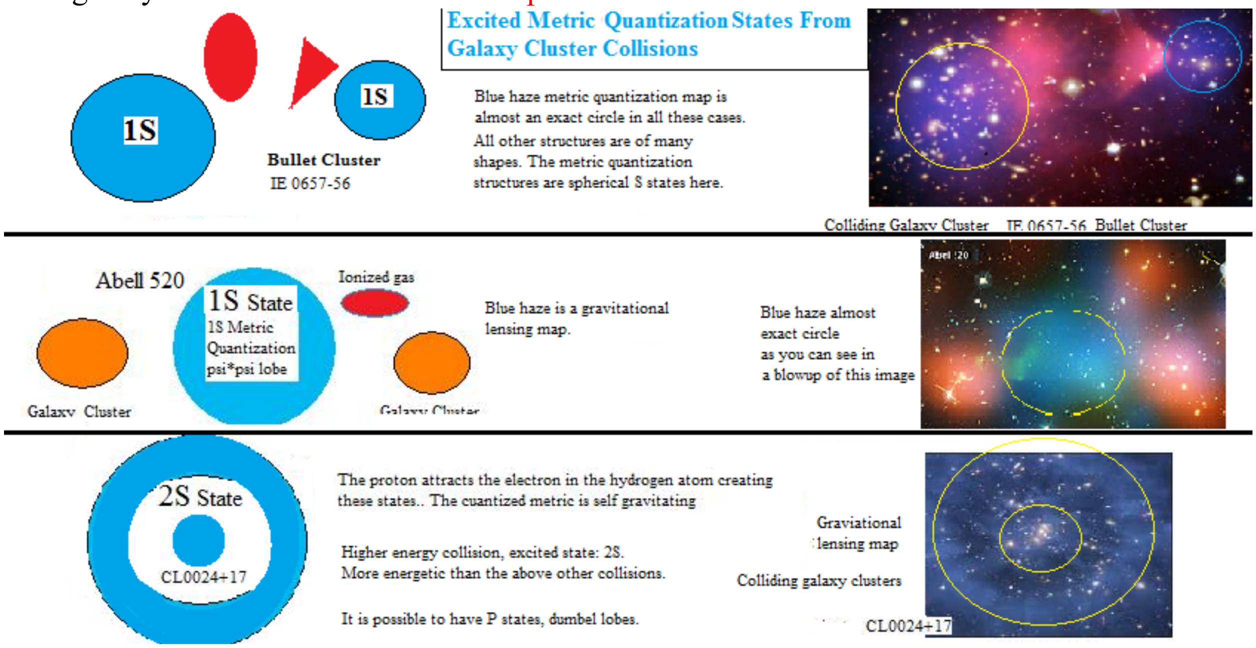
Note the vibration eigenfunction above right. The rotational was the ε which the great walls of the many voids. When the outside observer sees the contraction starting the inside ($r<rH$) must begin contraction also so the sign of w in $r=r_oe^{wt}$ for the interior observer must change. Thus the red shifts change to blue shifts at this time. Object B is ultrarelativistic with respect to object A so it has a much higher observed zitterbewegung frequency. So object Bs zitterbewegung oscillation frequency is seen to much higher than object A s frequency. Object C gives same zitterbewegung period as object A so not observed separately. Object C gives that 2.5My metric jump (Ch.23) due to moving through rotational eigenstates. There is one object B metric jump period every 6by and so 60 such oscillations in the past 370by. So $(1/3)1836\approx600$; $600/60=10$ and so $10X370=3.7\approx$ 4 Trillion years before our own contraction, when the red shifts change to blue shifts.

Note there are three motions going on at once here. The first motion is the $r=r_oe^{kt}$ object A zitterbewegung expansion inside r<Compton wavelength (fractal-cosmological). This motion ends at $r=r_H$ 4trillion years commoving time. The expansion then turns into a contraction. The second motion is that (above) 6by zitterbewegung oscillation of the object B plate superposed on top of that $r=r_oe^{kt}$ expansion. This yields a peak of galaxy numbers at 6by and 12by. There is also a stair step (object B rotational quantum state) metric quantization effect at 270my with Gibbs jump down and jump up (freeze and then bake) of 100k years duration.

violating baryon conservation since from the fractal theory these objects originated from a previous collapse.

Perturbative Limit

The Bullet Cluster collision, Abell 520 collision and Galaxy cluster CL0024+17 collision gravitational lensing maps (Hubble space telescope) all illustrate the excited S states resulting from galaxy cluster collisions. Note the spherical 1S and 2S states that result.



Also the central black hole of one or the other of one of these colliding galaxies would no longer be in resonance (next section) with the now new ambient metric and so it could suddenly "turn on" a jet to come to the correct equilibrium mass.

Also metric jumps out in the halo transition between galaxies would have the effect of clearing those regions of stars, especially of globular clusters. Also black hole jets would suddenly terminate at metric jump boundaries as apparently M87 s does. 1S sphere, 2S sphere-ring and sigma bond metric quantization between groups of galaxies exist also. This sigma bond metric quantization connection also explains the large strings of galaxies (in analogy with long molecules).

So we can set $2GM/rc^2= \Delta\varepsilon$=to get the effective mass M that $\Delta\varepsilon$ represents at a galaxy halo distance r. But note that for centripetal force $mv^2/r=GMm/r^2$ so that $v^2/c^2=GM/rc^2 =\Delta\varepsilon$. Thus if $\Delta\varepsilon$ is constant so is v^2 which is seen in the flat parts, especially at large distances, of the curves in above figure 7. We can also compute v^2/r at 60kLy and get $(261\text{km/s})^2/60\text{k ly}=1.22\text{X}10^{-10}\ \text{m/s}^2 \approx 1\ \text{Angstrom/s}^2$ (ala Mond who just adds this to 'a' in F=ma (Milgrom, 1983) which stays the same ratio at 15k ly which is set by the $\omega^2 r_o \sinh\omega t$ equation (2nd time derivative of eq.1.11) acceleration of the universe. Local gravity sources are quantized as well as in $2\Delta\varepsilon=v$ in $a=v^2/r$ goes up by $2v\text{X}2v/r=4v^2/r= 4\text{X}1.2\ \text{A/m}^2=5\text{A/m}^2$ which is the galaxy bulge and anomalous pioneer 10 & 11 accelerations (if that radioisotope thermoelectric solar sail effect is considered as well(which itself is 5A/m^2).

Note as t increases and if n is finite (so Gibbs jumps) this function goes up in a stair step fashion with time with each Gibbs jump increasing the integral. These are the metric jumps giving the quantization of the redshift. Note that the galaxy hubs (including black holes) gravity jumps rapidly at jumps transmitting a pressure wave radially from the center. Thus star formation is more rapid at these locations. Also Hubble dark matter maps seem to show a constant density distribution more indicative of a quantized metric source of this effect than what seemingly random distributions of dark matter are capable of. **So there is an enormous amount of evidence for a quantized metric and for there being NO DARK MATTER!!!**

12.3 Metric Quantized Stable Quantum States

Case II Recall from the first part the result of mixing the states:

$i\varepsilon e^{-(\Delta\varepsilon/\varepsilon)}=i\varepsilon(1-(\Delta\varepsilon/\varepsilon)+\Delta\varepsilon^2/\varepsilon^2-\Delta\varepsilon^3/\varepsilon^3-..)$ (13)

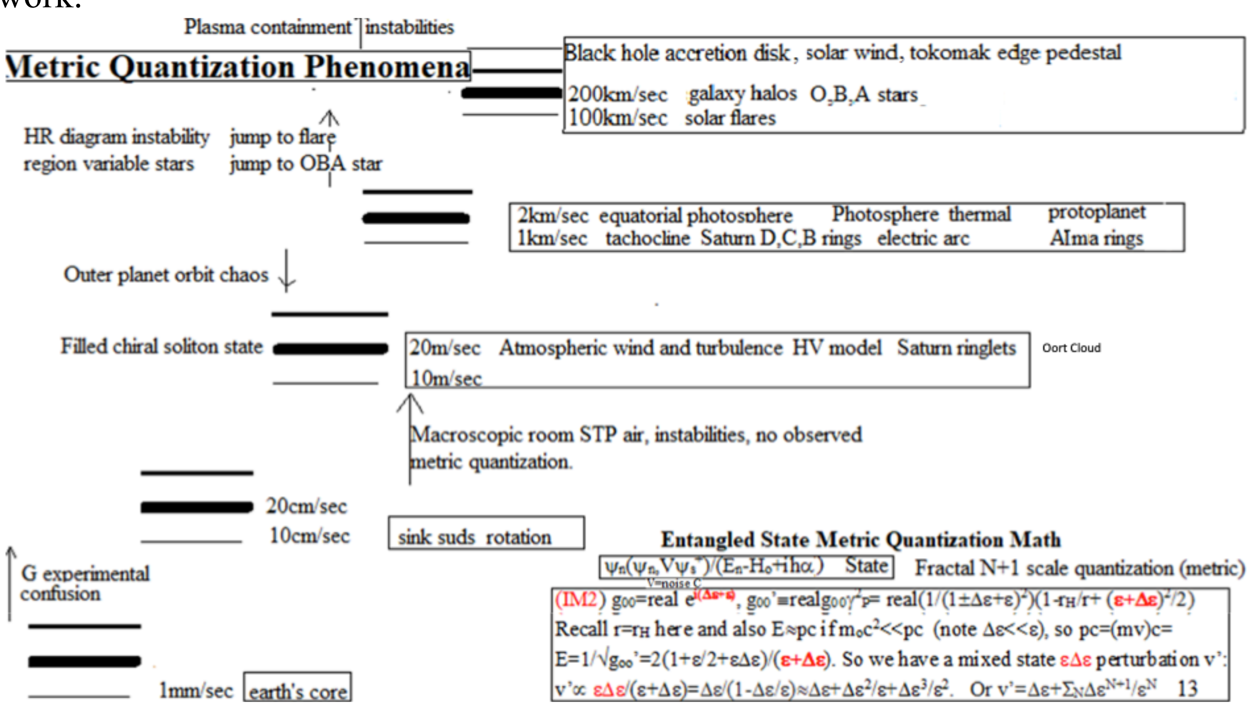
Note from equation 13 that the metric quantization mixed state is:

$$(|\varepsilon>+|\Delta\varepsilon>)/\sqrt{2}\equiv|QM>,$$

But ε is a Fermionic state and Δε is a Fermionic state.
with the |QM> the singlet ↑↓ state with double the values of v.
given the Fiegenbaum point there is a slight helicity to the background metric since the Riemann surfaces from $dz=dse^{i\theta}$ are exact fractals at $-\sqrt{2}$ that puts a ε term in the ds^2 reparameterization equations thereby adding a tiny helicity onto the object B ambient metric. Having two such opposite spin "S' states however restores the spin 0 zero net energy to the vacuum.
Recall the S states in QM are filled stable states, just as are the p states with their chemically stable Nobel gases.
So the most stable |QM> state is

100km/sec -> **200**km/sec	(majority of galaxy halos)	↑↓ S state
1km/sec -> **2**km/sec	(the sun's equator)	↑↓ S state
10m/sec -> **20**m/sec	(Mesocyclonic and other..)	↑↓ S state

So the spin 2 metric background metric has a spin ½ component that cancels in most cases to a singlet and so allows classical General Relativity (GR) theory to work.



But spin2 means another “pedestal” of stability ↑↑↑↑ implied by GR itself so that 4(100km/sec) is yet another stable level, See DIII QDB tokomak result below.

Laboratory Measurements Of Metric Quantization

If you run an electric arc at very high amperage you get an ordinary Maxwell Boltzman distribution for the output molecular speeds. Note the envelope of the graphs below are approximately Maxwell Boltzman. But if you lower the current to the point the arc is just about to go out (Here below at 100Amp) you find that these interesting energy levels show up. Note the abscissa is in eV so I had to obtain v by setting delta(eV)X($1.6X10^{-19}$)=(1/2)mv^2 where m=MWmp=MW$1.67X10^{-27}$ and MW stands for the Molecular Weight.and delta(eV) means the difference in eV from peak to peak.I had to use the molecular weight of silver and zinc to find those velocity intervals.

Recall the 1km/sec represents stability regions in my metric quantization theory..

“In as much as the current stabilizes the arc, it can be assumed that the energy distribution of the ions is connected with the instabilities of the arc”

The same can be said for the “stabilities of the arc”.

Maximum speed of LS was 1km/sec. LS is brass.

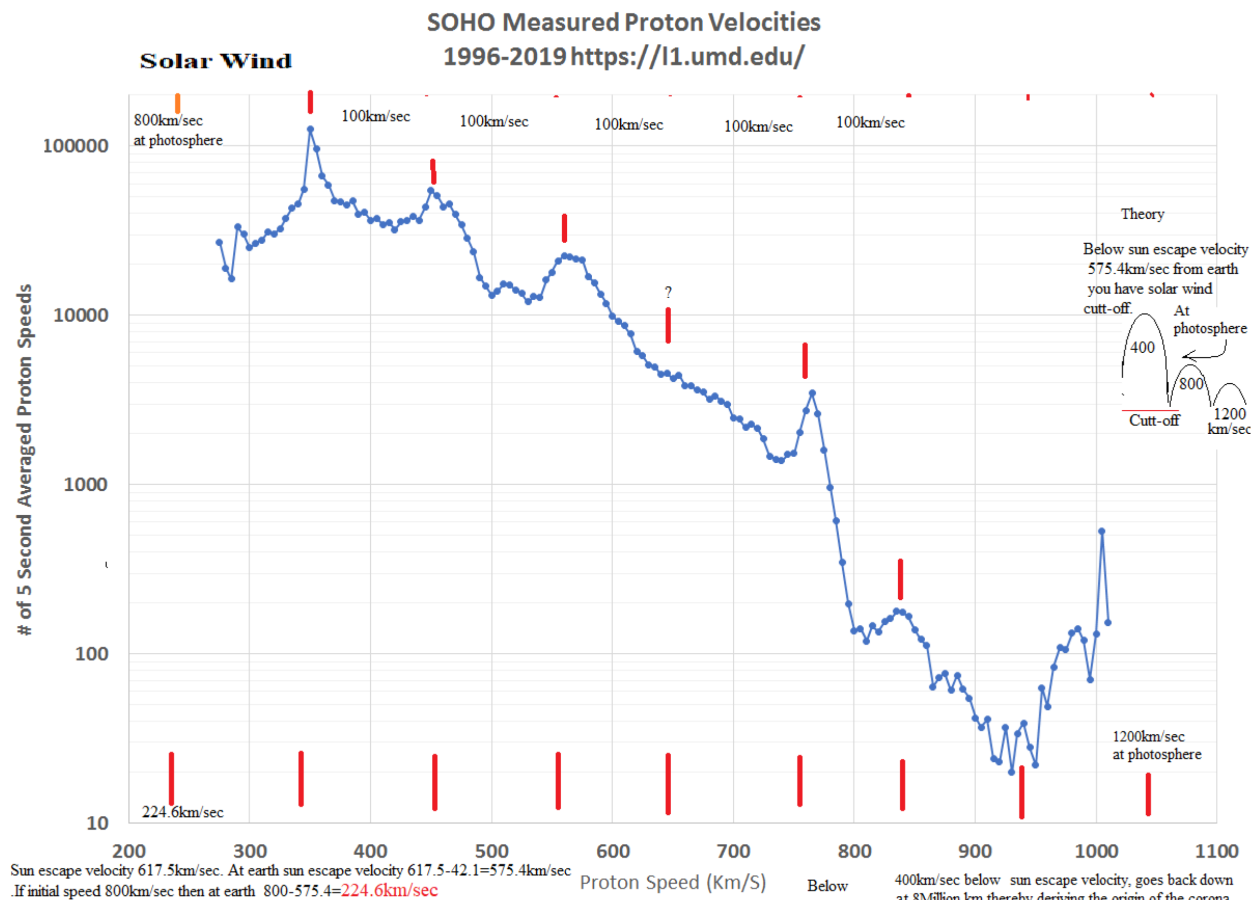
271828

Soviet Physics,JETP, Vol.20, No.2, February 1965, Plyutto

High Speed Plasma Stream In Plasma Arcs

Note you have the same separation in velocities for both zinc(Zn) and silver(Ag) .

But silver and zinc have different quantum energy levels and so clearly this 1km/sec effect is not associated with their energy levels, it is something *more universa*l. Recall we also see a N100km/sec effect in tokomaks.(there N=3)



You probably are wondering why you can't observe metric quantization in your living room for example given that the air in it is also a grand canonical ensemble. The reason is that the next lower metric quantization speed is 20m/sec which for liquid helium4 gives us 0.065K which is difficult to observe (room temperature is around 300K). Helium4 is the only material still liquid at these temperatures and so it can still be in a grand canonical ensemble.

You could ask why this metric quantization velocity "impeding" effect is not seen in accelerators as some new kind of 'impedance' or something as they are ramping up the speed of the particle. First of all in relativity velocity is relative so we must specify a COM frame as we do in quantum mechanics where we have the usual quantized KE energies (eg.,$1/N^2$ Rydberg energies) and so $v=\sqrt{[(2/m)KE)]}$ “quantized” average velocities as well. Secondly the quantization levels fizzle out for masses much smaller than the sun’s mass (eg.earth). Also as we move in the earth’ orbit and rotate as well so no such velocity will be easily observable anyway. Most importantly the conservation of energy must be used. So if in a natural system (such as at the tachocline) there are several types of energy the velocity will be held constant and the energy transfered to one of the other types as in that tachocline example. Note you then still conserve energy. In the accelerator on the other hand you have only that accelerating energy so to *conserve energy* the particle must move right through the metric quantization velocity as though it was not there. The same applies to space craft motion. In these high temperature laboratory plasmas the effect would most certainly be in the noise in comparison to all the chaotic instabilities. The velocity quantization is in fact nearly all smeared out in the hubs of galaxies due to the many surrounding mass perturbations. A 2014 edition of Physics Today magazine said that the value of Newton’s

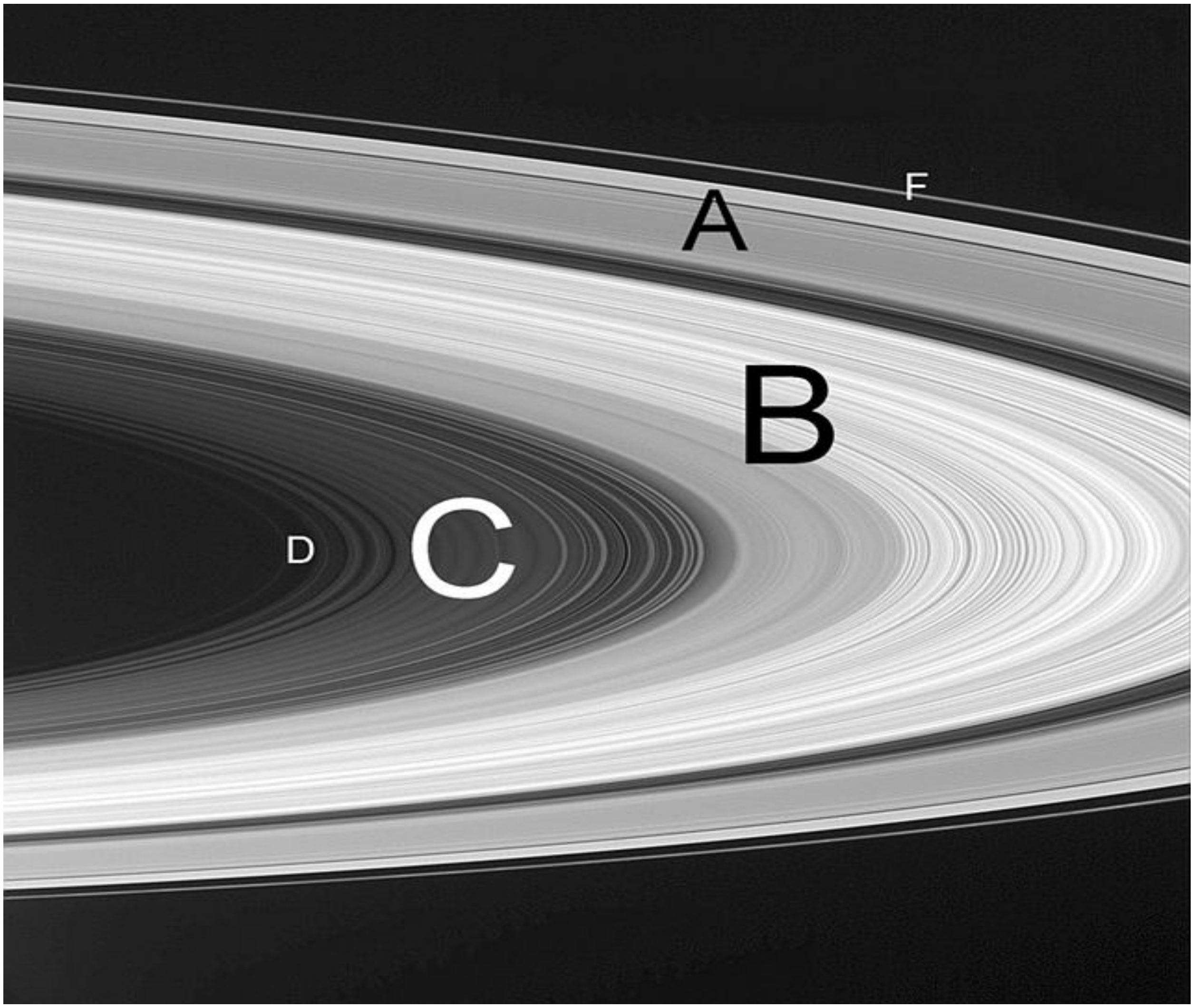
gravitational constant G is currently only known to **3** significant figures (somewhere between **6.672** and **6.676** $X10^{-11}Nm^2/kg^2$), really no significant advance beyond what Cavendish himself measured in the 1700s and a typical experimental error the students would have gotten in one of the many physics labs I used to teach! The problem is not in the experiments themselves which are accurate to around 20ppm-40ppm (even given torsion calculation uncertainties). The problem is in the spread of the results of these several very accurate, precise experiments.
In my view metric quantization is the problem here especially with the experiments that require a moving oscillating torsion bar to measure the torsion constant, where we can then have a grand canonical ensemble with nonzero chemical potential (as in Saturn's rings), the requirement for that metric quantization to effect relative speeds and here mess up the torsion constant calculation and therefore the G calculation. By the way the new experiments, with no such motion requirement (e.g.,floating the balls in mercury), will probably finally nail down the gravitational constant.
Note that these pendulum speeds are far less than 20m/sec and so must be responding to much smaller metric quantization sources than object B, object C, object D and the Milky Way galaxy. The Sun and earth are the next likely candidates for even smaller metric quantization speeds, where we even go to the ***continuum limit*** (eg.,what about your desk?).

16.10 Red's Law Of Metric Quantization

$(1/\pi)^{2n}$ =velocity amplitude of metric quantization
$(1/\pi)^{-2n}$ =time interval of metric quantization
n=0,1,2,3

velocity:	n=1 v=20m/sec;.	n=2 v=1km/sec;	n=3 v=100km/sec,	n=4 v=c/3
time interv	n=1 100ky	n=2 2.5my;	n=3 270my	n=4 4by
phenomena:	cold cycles	Pacific volcanic cycles	Mass extinctions	Dust
phenomena	ringlets	rings, sun convection zone	great wall	Faint blue galaxies HDF
phenomena	ice ages	chaotic Oort cloud	galaxy halo speeds	Faint red dots HDF
			O,B,A rot, , coronal temp.	

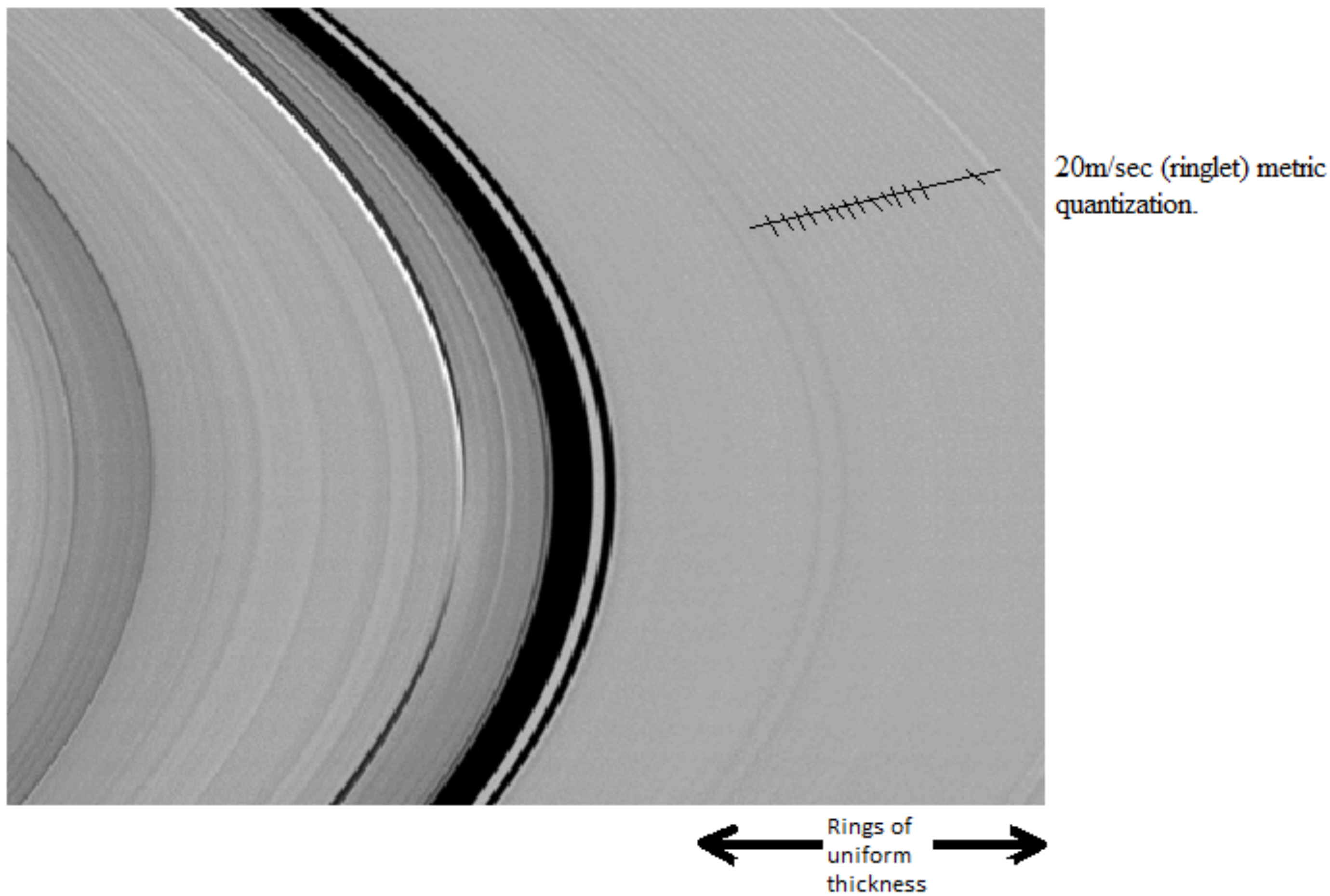
HDF =Hubble Deep Field



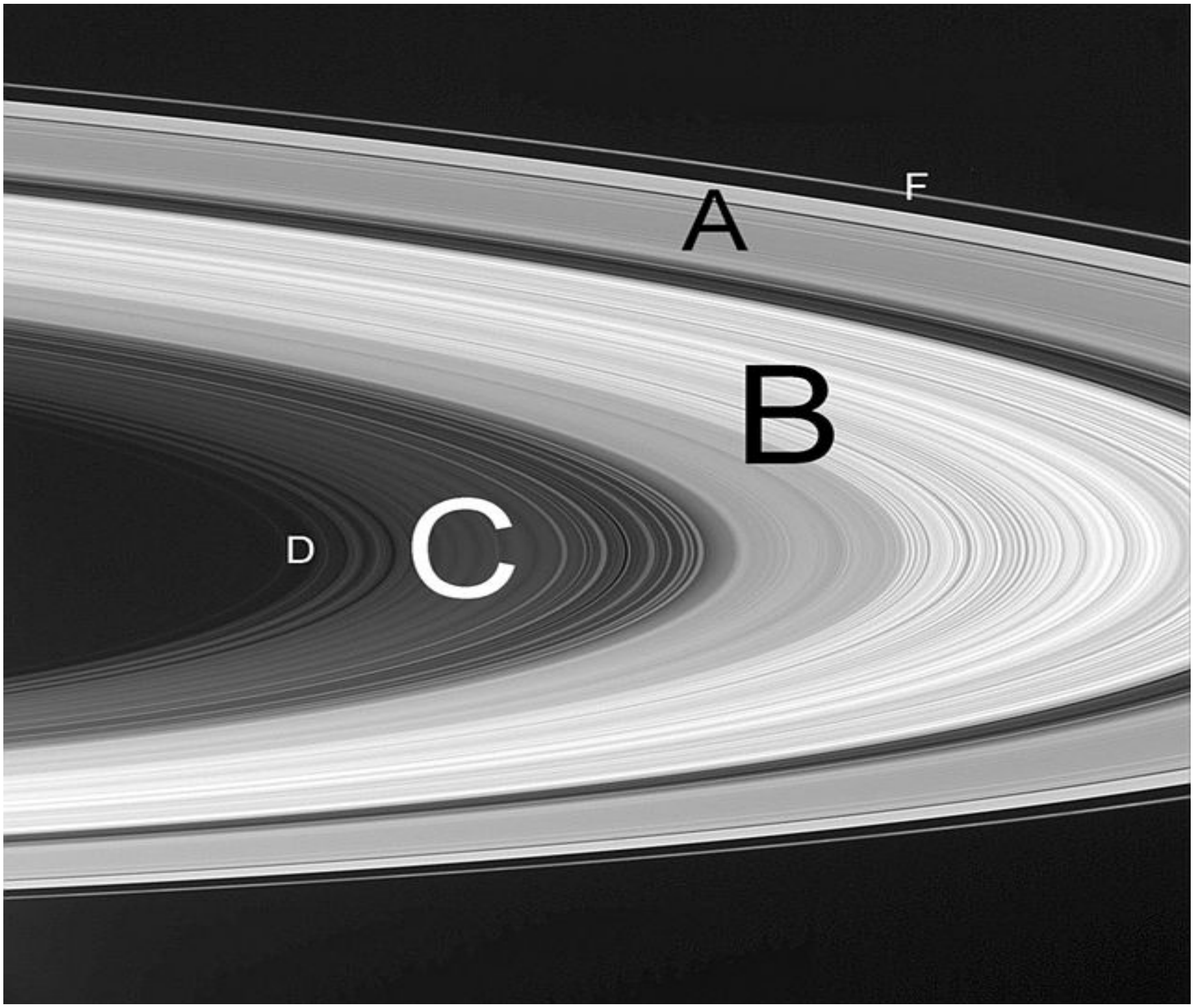
In the most detailed Cassini image of Saturn, there are 5 narrow rings, 8 2X widely spaced rings in the D ring: there are few shepherding moons here, the Roche limit will pull apart just about any big object here, *You see two levels of metric quantization in the D ring*. What an awesome sight, metric quantization in the raw**, as explicit as it could be!!!**

The speed of each consecutive inner ringlet increases by that 1km/sec (the outer D ring has 2km/sec metric quantization) of object C quantized metric value that also created Bode's law and the rotation of the sun's equator.

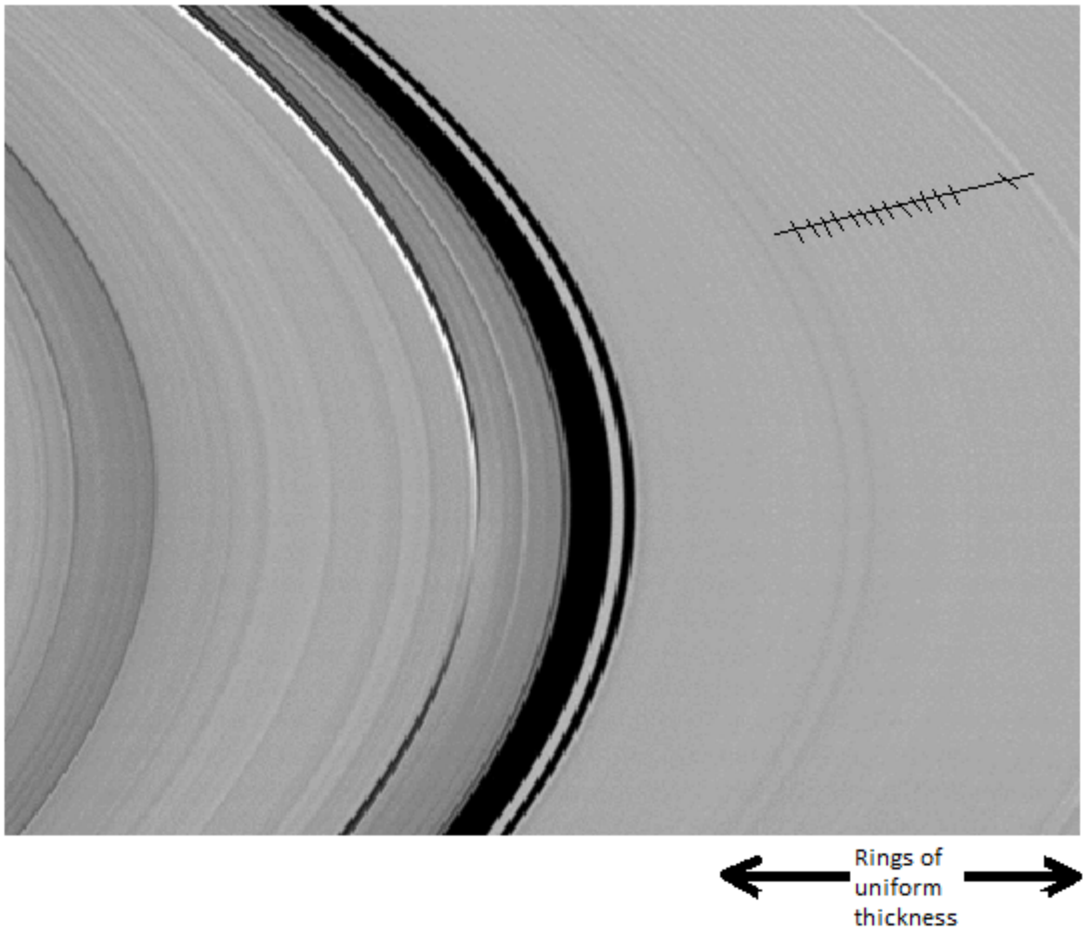
Also the velocity difference between perihelion and aphelion for the earth is .98km/sec very close to the metric quantization value, the key to its orbital stability, just as with those rings. This explains why there was enough time for life to establish itself on earth, so explains why we are here.



20m/sec ringlet quantization



1 km/sec differences be outer edge of D to C;   C to B and B to A.



Close up Of Ringlets (20m/sec Metric Quantization

In a close up image of these small ringlets, visible in image, it is noted that
There appears to be no new subdivisions implying 20m/sec is the smallest metric quantization (after the 100km/sec, 1km/sec) and no smaller metric quantization exists. The neutron 2P ½ state electron at the poles of the 3 particles of the 2P3/2 state would have a plate interaction directly on it.
So this 20 m/sec must be caused by a more distant electron in orbit around this proton.
Thus we are in a isolated hydrogen atom in interstellar space.

Give dark shadow, main concentration, 1 unit, then the light empty region is 1/4..

$20 \frac{m}{sec}$

1 $\frac{1}{4}$

This 20m/sec metric quantization appears to be as small as it gets There is nothing but this 1 and also 1/4 quantized metric information in this ringlet data implying that object D is a electron in a hydrogen atom in interstellar space . This metric quantization appears to be caused by the groundstate and first excited Rydberg state hydrogen atom energies $1/n^2$: so 1 and 1/4.times the Rydberg number. This is nonmolecular hydrogen and also an excited state of hydrogen in interstellar space implying it is in a active star forming region or ionized gas region between galaxy clusters containing many black holes.

Thus this next larger scale fractal universe (or Reimann surface) is a mature but not extremely old universe, perhaps 6 billion years old in their years. In our years it would be $\sim 10^{10} X 10^{40} = 10^{50}$ years old making the next higher scale fractal object bigger than that one have an equivalent age of 10^{100} of our years, one google years old!

Appendix C

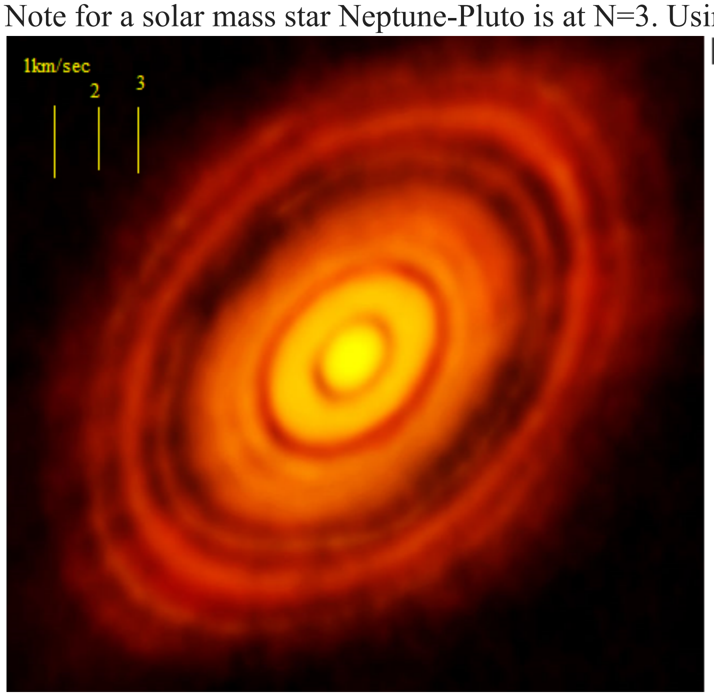
Recall the galaxy halo and O.B.A star 100km/sec (object B) and note the D ring **1km**/sec, C ring **2km**/sec and B ring **3km**/sec (object C) implying a kind of Pauli exclusion principle to these metric quantization states. But note also a new ringlet 20m/sec metric quantization. caused by the Milky Way Galaxy gravity and/or object D.

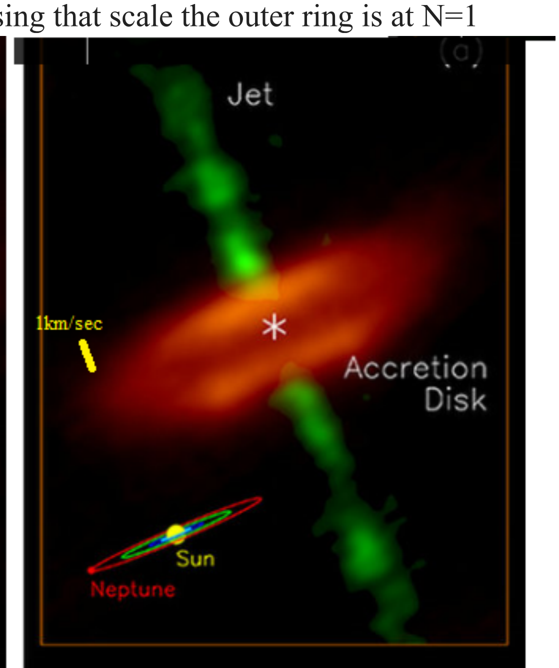
Recall I found that a combination of the Jupiter movement in going from perihelion to aphelion (10m/sec) and Saturn 2X effect (10m/sec) is ~20m/sec to get the solar cycle.

Apparently the stability of Jupiter's and Saturn's orbits and therefore the **solar cycle** itself also **depends on that (20m/sec) metric quantization**!

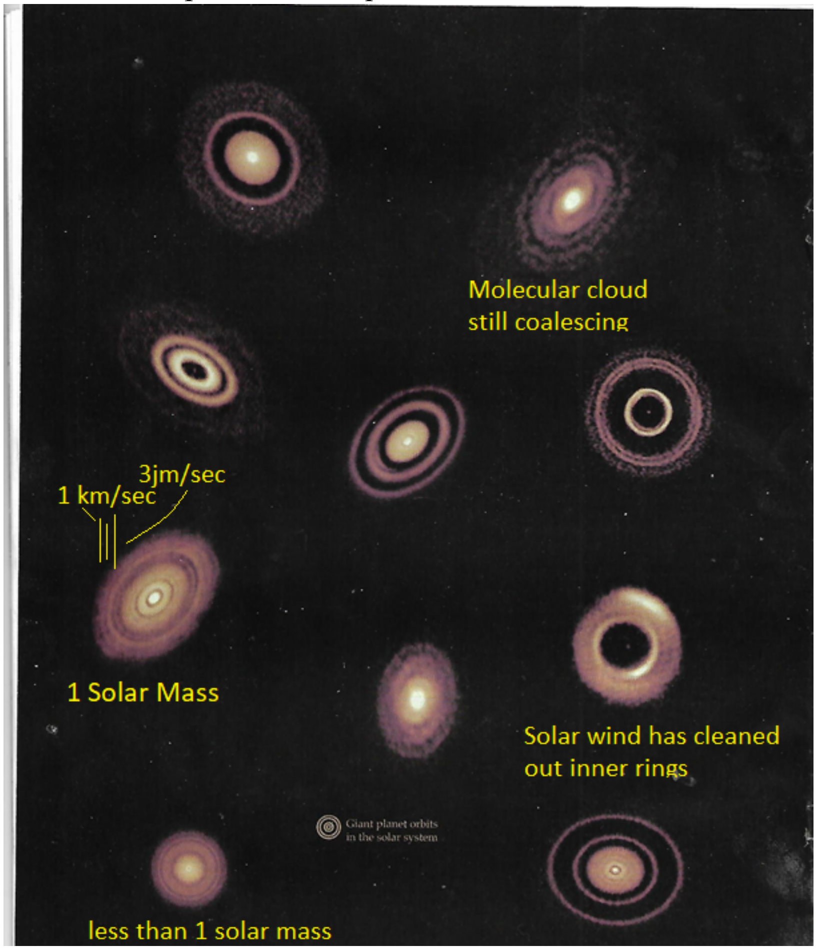
1km/sec Metric Quantization In Protoplanet Dust Rings

Note for a solar mass star Neptune-Pluto is at N=3. Using that scale the outer ring is at N=1





The 20m/sec metric quantization between the ringlets of Saturn. There may be yet another 20m/sec example of metric quantization closer to home. See below.



Alma images.

Recall from equation 13 (first attachment) there are those 100km/sec Δε, 1km/sec and 20m/sec metric quantization speeds. Recall from above that 20km/sec speed in those Saturn ringlets as a higher order term in my equation 13 for mixed states (i.e., grand canonical ensembles with nonzero chemical potential). Recall in equation 13 of the first attachment (section 1G of book) the 10meter/sec . $\Delta\varepsilon^3/\varepsilon^2$ metric quantization term.

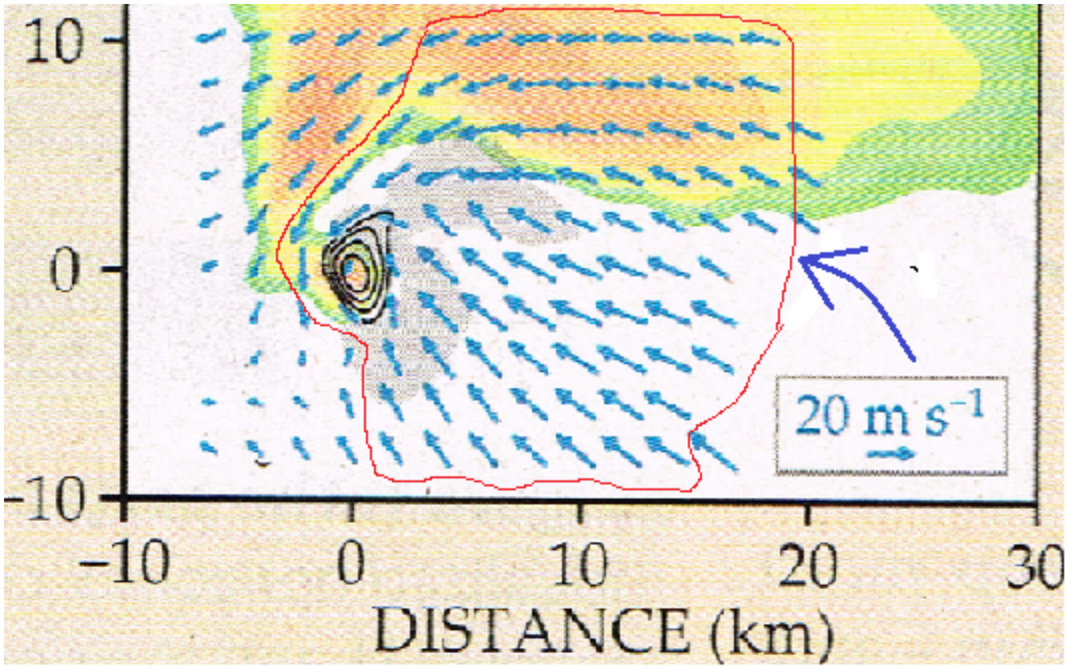
In that regard from a recent 'Physics Today' article on tornado formation (1)

"On tornado outbreak days, the wind shear can be so severe that the winds can vary by as much as **20m/sec** within the lowest 1 km". Also there is the statement in that article that for a supercell updraft , the vertical component of the vorticity, is on the order of 10^{-2}/s"

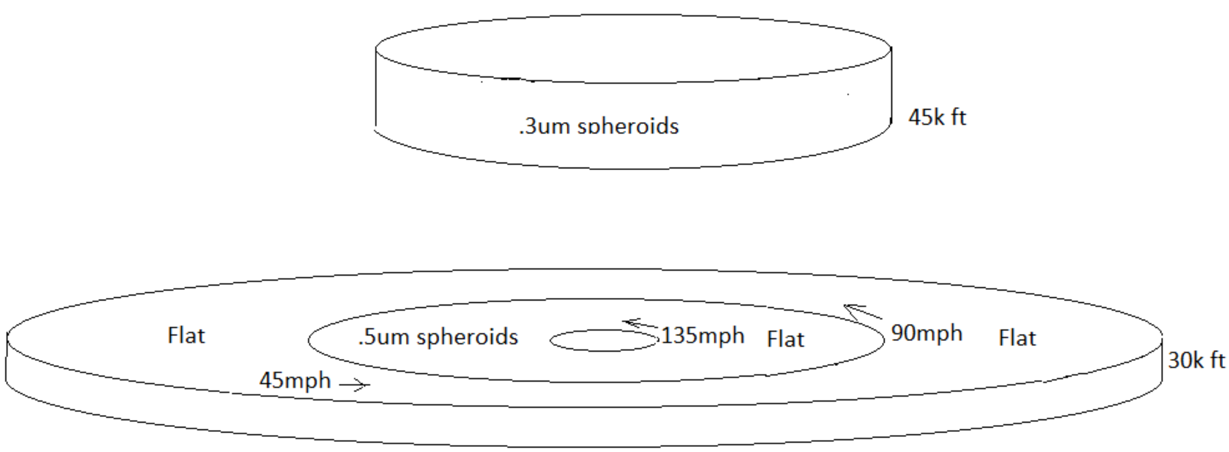
∇Xv=curlv=2w=.01. So w=.01/2=.005=v/r. If **v=20m**.sec then r=20/.005=4km =approximate supercell radius (attachment image) If v=10m/sec the r=10/.005=2km.

Also in the below VORTEX2 Doppler data (below figure) the WHOLE right side and half the smaller left side exhibits a **20m/sec** speed (the tornado is at coordinates (0,0)).

That 20m/sec value certainly has nontrivial implications for tornado formation.
(1) What We Know and Don't Know About Tornado Formation" Physics Today, Sept.2014



To induce this effect we also require that 511kV rotator oscillator axial (z) force result since that is what provides the vertical pulse inducing the vorticity. So this object has to be at a high voltage as is the case in thunderstorms and given observations of a bright coronas deep inside the vortex of tornados. Also it has to be oscillating, in that regard recall the 'ground thumping' that gives tornados their characteristic seismic signature that has even been used to locate their positions.
By the way the (above) tornado 20m/s metric quantization occurs in the accompanying mesocyclones (the huge cloud just above the tornado) and not in the vortex itself: can't get to 1000m/s with terrestrial air. 45mph=10m/sec. 10,20,30m/sec Metric quantization in canes:



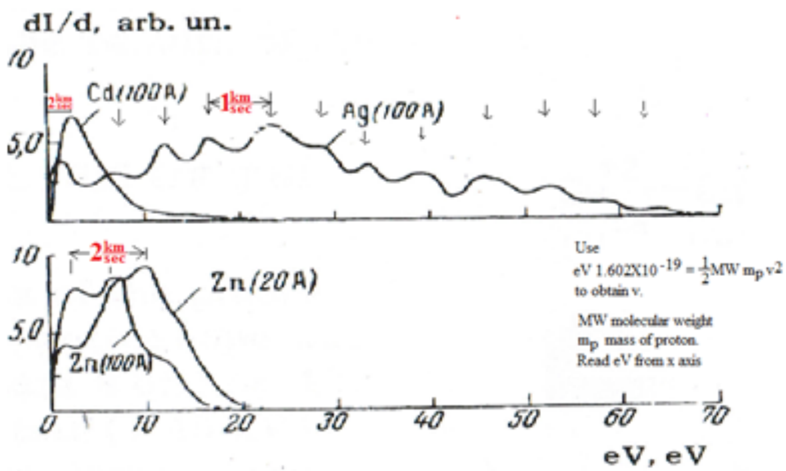
Flat Cylinder

Metric Quantization In An Electric Arc

Recall metric quantization requires a grand canonical ensemble. A plasma moving in an electric arc can satisfy that criteria. In one experiment a 100Ampere silver (Ag) electric arc was produced. The apparatus had a device for measuring the distribution of ion energies inside the arc. Another experiment substituted zinc (Zn) instead in a 20Amp electric arc. If the metric was quantized at 1km/sec intervals stability regions of individual high streams in the arcs.in multiples of 1km/sec should be observed and they were.

Soviet Physics,JETP, Vol.20, No.2, February 1965, Plyutto

High Speed Plasma Stream In Plasma Arcs

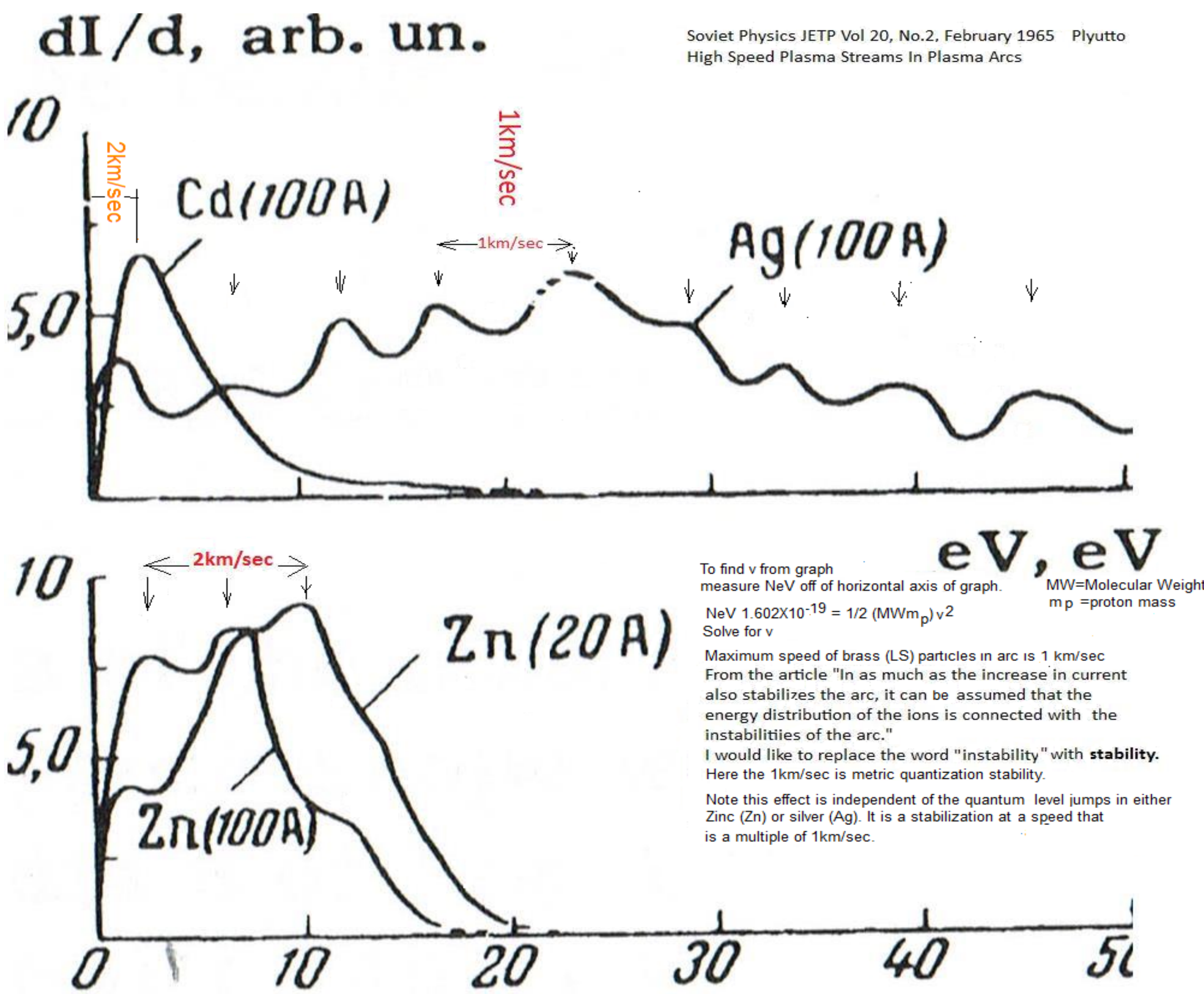


Recall the 1km/sec represent stability regions.

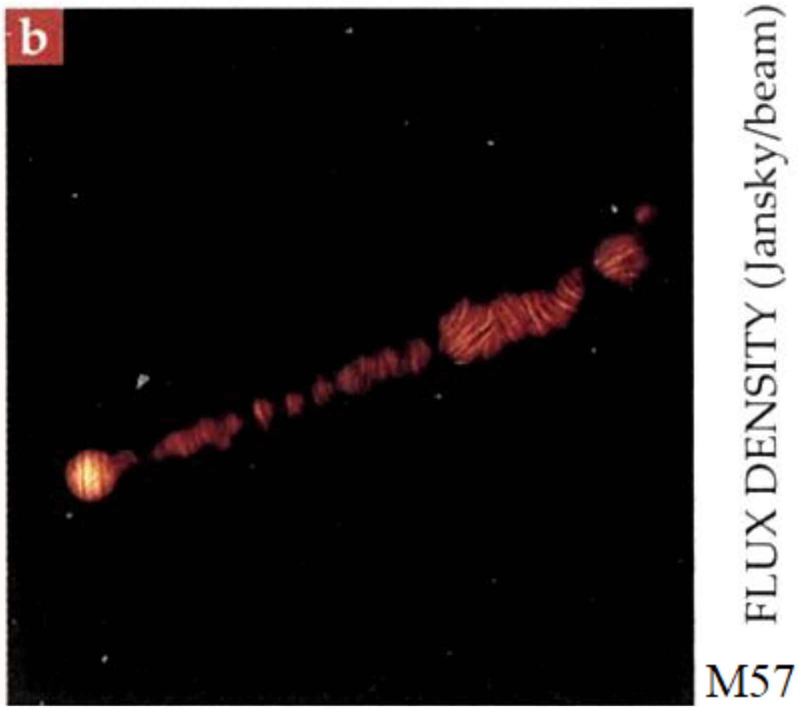
"In as much as the current stabilizes the arc, it can be assumed that the energy distribution of the ions is connected with the instabilities of the arc"

The same can be said for the "stabilities of the arc".

Maximum speed of LS was 1km/sec. LS is brass.



Note you have the same separation in velocities for both zinc(Zn) and silver(Ag) .
But silver and zinc have different energy levels and so clearly this 1km/sec effect is not associated with their energy levels, it is something more universal. Recall we also see a 100km/sec effect in tokomaks.
You probably are wondering why you can't observe metric quantization in your room for example given that it is also a grand canonical ensemble. The reason is that the next lower metric quantization speed is 20m/sec which for liquid helium4 gives us 0.065K which is difficult to observe (room temperature is around 300K). Helium4 is the only material still liquid at these temperatures and so it can still be in a grand canonical ensemble.



Note in above metric quantization jump down on left. The speed went from 200km/sec to 100km/sec and the wavelength halved. The periodicity is due to the vdot term below, which must be sinusoidal.
Apply to rotations since a radial force from an artificial object will have no directionality. Rotations at least imply an axial direction.
$ds^2 = \rho^2[(dr^2/\Delta)+d\theta^2]+(r^2+a^2)\sin^2\theta d\phi^2 - c^2dt^2+(2mr/\rho^2)[a\sin^2\theta d\theta - cdt]^2$ Kerr metric (applies to rotations) $\rho^2(r,\theta)=r^2+a^2\cos^2\theta$, $\Delta(r)=r^2-2mr+a^2$.
Next convert to a quadratic equation in dt ($Ax^2+Bx+C=0$ where x =dt. (organize into coefficients of dt and dt^2)

$$ds^2 = \rho^2[(dr^2/\Delta)+d\theta^2]+(r^2+a^2)\sin^2\theta d\phi^2+(2mr/\rho^2)a^2\sin^4\theta d\theta^2-[2(2mr/\rho^2)a\sin^2\theta d\theta cdt]-c^2dt^2(1-(2mr/\rho^2) \quad (1)$$

Write down A B and C in their associated quadratic equation:
$A=c^2(1-(2mr/\rho^2)$, $B=2(2mr/\rho^2)ac\sin^2\theta d\theta$, ("A" is set to zero)
$C=-ds^2 +\rho^2[(dr^2/\Delta)+d\theta^2]+(r^2+a^2)\sin^2\theta d\phi^2+(2mr/\rho^2)a^2\sin^4\theta d\theta^2$ Solve for $rd\theta=dz$.

$$\frac{dz}{dt} = \frac{\frac{4mv}{r}sin^2\theta}{1+\left(\frac{2m}{r}\right)\left(\frac{v}{c}sin^2\theta\right)^2} = \frac{4m\omega sin^2\theta}{1+2mr\left(\frac{\omega}{c}sin^2\theta\right)^2}.$$

(2) Take the derivative

$$\frac{d^2z}{dt^2} = \frac{8\left(\frac{m}{r}\right)\dot{v}sin^2\theta\left(1+\left(\frac{2m}{r}\right)\left(\frac{v}{c}\right)^2 sin^4\theta\right) - 4\frac{m}{r}vsin^2\theta\left(\frac{4m}{r}\right)\frac{\dot{v}v}{c^2}sin^4\theta}{\left(1+\left(\frac{2m}{r}\right)\left(\frac{v}{c}\right)^2 sin^4\theta\right)^2} \quad (2)$$

dv/dt is the derivative and is sinusoidal here between two metric quantized values and so is the d^2z/dt^2 and so the beam is pulsating. Replace N+1th fractal scale GM/c^2 with Nth fractal scale $2e^2/m_ec^2$ and we have a new and revolutionary breakthrough pulsed propulsion.
Black holes jets are not caused by magnetism but by this above “gravimagnetism” at the ergosphere.

Black holes with "hair" will quickly go bald. A key theoretical prediction about black holes called the no-hair theorem states that an isolated black hole can be described by just three numbers – its mass, spin and charge – and any other properties, or "hair", are irrelevant. Now, a set of detailed simulations has shown how black holes can shed a magnetic field to comply with the no-hair theorem.

When a black hole forms from a magnetised star, it is born with a magnetic field. How …
Read more: https://www.newscientist.com/article/2285619-black-holes-with-magnetic-field-hair-shed-it-in-loops-of-hot-plasma/#ixzz7BhhDSely

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Discoveries

Review

Postulate I

Abstract 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 ultimate reductionism (eg., of complex z) to a single real unit (i.e.,*single* **|realz|=1)** is the (infinitely) simplest idea I can conceive of so most simply:

Postulate 1 as min(z-zz)

given **z-zz**=0 is an algebraic definition of 1 and min is needed to define *real*1. Define min(z-zz) as z-zz=C (1.1.1), δC=0 (1.1.2); *single* minz (for the |realz|=1 or o solutions for some C) to simply guarantee the min is not a max in 1.1.2 along realz. Plugging z≡1+δz into z-zz=C gives the quadratic equation δz+δzδz=C (1.1.4) with in-general complex number solutions. Plug the solution to eq.1.1.4 into eq.1.1.2 and get δC=δ(δz+δzδz)=0 which splits into real (special relativity) and imaginary (Clifford algebra) components and 4D (and so the Dirac equations of the electron **e** and the neutrino *ν* (**sect.1.1**)) which also imply the operator formalism (invariant circle C_1 eq.1.1.14 at 45°diagonals.). Also composite **e**,*ν* gives the Standard electroweak Model (sect.1.2) and composite 3**e** solves particle physics (partII). It doesn't get any better than that!!

The C For |relz|=1

Given |Relz|=1then single minz (at 45°)=-1 in (-1- (-1)(-1))≈-2=**C**=C_M^2≡C_1 for *single* minz in fig.4. Plug the left side z in eq.1.1.1 into each z in zz on the right side and so start a C_{N+1}= C_NC_N+C_1 iteration lemniscate **s**equence**.** The N=∞ limit is the Mandelbrot set (1) subset **real**#

Fiegenbaum point $C_M \equiv \xi C$ (sect.1.2 appendix C) and so also get the fractalness (GR, gravity cosmology). Because of the δ in eq.1.1.6 we can add arbitrary -K to δz in eq.1.1.4. Here δ(δz-K)=0 in eq.1.1.6 to initialize to locally flat space as in 1.1.10 (In sect.1.2 K≠δz). For small δz,C≈ δz in eq.1.1.4 so $C_M=\xi C \approx \xi\delta z$. So ξ large (in $C_M=\xi\delta z$) and z-zz=C=$C_M/\xi \approx 0$ so z≈zz and z≈**real#1**

Section 1.1 K=δz (flat space initialization)
Section 1.2 K≠δz (eg., C_M/ξ rotates z at 45°, curved space).
Sect.1.1 Postulate 1 as min(z-zz) which can be rewritten as: z-zz=C (1.1.1), δC=0 (1.1.2)
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 noisy 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)+δ(δzδz)=0* (1.1.6)
Given δ(δz-K)=0 and eq.1.1.5 *δ(δzδz)=δ[(dr+idt)(dr+idt)]=δ(dr^2+i(drdt+dtdr)-dt^2)=0* (1.1.7)
and: *(drdt+dtdr)=0* (1.1.8)
If dr,dt positive then drdt+dtdr=ds_3=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* (our 1st invariant,sect.1.2.5) (1.1.9)
Note in general dr,dt are any two of these 4 independent variables implying eq.1.1.9 defines a Clifford algebra(sect.1.2.3). Next **factor**
δ(dr^2-dt^2)=δ[(dr+dt)(dr-dt)]=δ(ds^2)=[[δ(dr+dt)](dr - dt))] +[(dr +dt)[δ(dr – dt)]]=0 (1.1.10)

Solve eq. 1.1.10 and get	(→±**e**)	dr+dt=√2ds, dr-dt=√2ds,	(1.1.11)
	(→light cone *ν*)	dr+dt=√2ds, dr=-dt,	(1.1.12)
	" "	dr-dt=√2ds, dr=dt,	(1.1.13)
	(→vacuum)	dr=dt, dr=-dt)	

See https//david.maker.com for backups

Discoveries

1) **Mathematics *and* Physics**

Postulate of 1 (dzdz+dz=-C, small C) we show implies a real number C so a Cauchy sequence z_n of rational numbers limit given by the Mandelbrot set iteration sequence zn (appendix C) at the Fiegenbaum point. From the list-define method we derive mathematics without the many axioms, just postulate 1.
So **we derived *both* rel#math and physics** at the same time. That is why this method works.

2) The amazing equation (at the Feigenbaum point with mapping C_M=mC on a given fractal scale) **derives special relativity** *and* Clifford algebra and so the **neutrino** ν and **stable electron e**(1.11).
Finite C_M (when plugged into eq.1.11) **generates General relativity** and the new pde, eq.2

3) **Composites e,ν**

Composite 3e: The **two +e s create 3 ortho (s,c,b) and one para t**: **solves particle physics**, each ortho having a chi baryon. See PartII
That 3e Bflux quantization gives ultrarelativistic e and so with Fitzgerald contracted field lines (compressed) **explaining the "strong" force**. H and Y are Thomas precession perturbations. In Ch.8 those k_{oo} anomalous gyromagnetic ratios of the **proton 2.8 and neutron -1.9** that come out of eq.2 (attachment) sure as heck are ***not*** coincidences(I nailed them!). Using the Frobenius series solution gives multiplets at each of the three chi. r_H (=2X10^-15 m) is hard shell so the

Van der Waals equation of state should hold so at ~**100Gev COM energies we should have a liquid equation of state** (again at 21TeV). I derived this result long before Brookhaven found it experimentally.
3e in equation 2, $2P_{3/2}$, at $r=r_H$ is a trifolium shaped psi*psi so the electron **e** spends 1/3 time in each lobe (fractional charge), lobes can't leave (asymptotic freedom), P wave scattering (jets), 6 P states (6flavors udscbt) **explaining the major properties of quarks** *without the quarks*.

P-P COM s cross-section peak at 21Tev predicted (sect.10.6).
The eq.2 *four* rotations e,v at each of the *4* axis' extremum give the *four* Z,+W,-W,gamma, the particles of the standard electroweak model. This is the mother of all reality checks. The **left handedness** comes out of a **2D isotropic homogenous space time** contribution that also gives **neutrino masses that vary with (*non*homogenous) gravitational gradient** (section 3.3). The mainstream Mexican hat **phi^4** potential (sect.6.8) is **derived from** the ultrarelativistic nature of **object B**, the nearest N+1 th fractal scale (cosmological) object to ours and is the main source of our inertia.
Two 3e are ultrarelativistic and so contracted each to points in the reference frame at rH separation from a central electron. So a **simple electric field potential energy (at r_H) can be used to calculate binding energy** and the 1D vibration of the two 3es implies SHM. By including as a perturbation the rotation, the resulting 3D SHM version then gives SU(3) symmetry (So we have just **derived the origin of the QCD** gauge alternative). This is our deuteron and we **calculate the correct binding energy** and use the equipartition of energy between PE, rotation and SHM to build the Shell model levels. We have thereby derived the shell model from first principles. **By fully understanding the deuteron we finally fully understand nuclear physics.**

k_{oo} Substitutions From Equation 2
Recall the Fiegenbaum point C_M Mandelbrot set mapping $C_M=mC$ to **Postulate of** 1 z=zz+C defines charge C_M and mass chi=m defining a metric coefficient $k_{oo}=1-(C_M/m)/r$ with **3 free leptons (tau,ep,dep)with one stable** inside m (sect.1.4, z=0 solution to eq.1).
These 3 free lepton solutions to equation 2 when put into eq.2 E=energy in eq.6.12.1 gives **Lamb shift** for dep ($=m_e$) but *without* the infinities and higher order diagrams. Also there is **NO Dirac sea** (sect.4.9), **no Klein paradox** (sect.4.11) and no running coupling constants in this theory. See section 4.11. The 3rd invariant and eq.2 derive the core of quantum mechanics. We **derived the Feynman path integral and the Everett theory** from our eq.1 C noise Markov chains(sect.4.7, B5), the Copenhagen interpretation from our 2+2 metric (in eq.1.11, given the two objects are labeled observer and object.). So we **derived Quantum mechanics** here from our postulate of 1, from first principles.
Plugging eq.2 **k_{oo} (in eq.1) into the geodesics gives the Lorentz force** plus another force (low temp only): **the pairing interaction force of superconductivity**(sect.4.5). We thereby derived the otherwise adhoc Chern-Simons term. This is the reason for that electron-phonon interaction that BCS could only postulate in its pair creation operators. So we found the true origin of superconductivity
etc., Since that worked we can use that
k_{oo} pulsed substitution into Kerr from Nth fractal scale koo gives new pulse rotation oscillation propulsion technology that changes z=1 r_H to z=0 r_H.(sect.1.1). In that regard the N+1th substitution, same math, **gives the rotating black hole jet physics**.

Note we predict periodic oscillation of those jets.

4) **Next fractal scale** Fiegenbaum point Fractal universe $10^{\wedge 40}$X scale cosmological separation and $10^{\wedge 82}$ constituents given by fractal equation 2. See zoom.

Zitterbewegung accelerating expansion stage $r<r_C$ for eq.2 **predicts expansion stage** for the fractal universe.

The comoving internal frame of reference results in the **370by year old universe** (eq.7.8.1) prediction gives all kinds of results that people are scratching their heads over (eg.,mature galaxies, supermassive black holes at 13by, etc.,) including my own particle called the mercuron, the smallest size (~50million km radius) of our universe that also neatly fits all the baryons at r_H, so no need of baryogenesis and no big bang from a point smaller than a proton. We do have a big bang but from the mercuron radius instead. 370by is plenty of time for the thermalization of the CBR. Don't need the "inflationary" model for that.

Eq.2(from 1.11) gives **spin of this fractal universe** as well (Kerr metric from inside), so a dipole.

The universe appears to have a dipole, like it is spinning (eg.,axis of evil), more evidence for a fractal universe.

CP violation is a direct consequence of the fractalness (dϕdt) in Kerr metric (spin) gives non T invariance so from CPT **we have CP violation**).

Comoving frame of reference precision **derivation of Newton's gravitational constant** value7.4.5, takes into account the *non*simultaniety of the Hubble constant measurement.

5) Given the fractalness: if quantization is on the subatomic scale then it should also exist on the cosmological scale, hence **the metric quantization**. Those 3 lepton m are mixed in eq.1.16 giving a thermalized (mixed state) metric quantization, our present topic. This results in all kinds of metric quantization speed phenomena (after thermalization) in PartIII that people discover and then ignore: **MOND is a special case** (200km/sec). The high galaxy halo speeds are provided by the metric quantization. **No need for dark matter** to explain that.

Because of metric quantization the metric increases in jumps as a result of those fractal 3 chi masses (tau,ep,dep, sect.1.4) , one 2.5MY dep apart (dep), the other 270My (mu=ep) apart the 3rd 6by apart (tau) of fractal object B. The **effect of the 270MY is to create those 'great walls'** (seen in red shift surveys, sect.6.5) and associated discontinuities (extinctions, partIII) in the geological record and zitterbewegung waves emanating from object B (which is in the direction of the Shapely concentration). **The Shapely concentration is the compressional peak of the 6by wave and the great void of Eridanus the rarefaction dipole repeller of that same wave** (so are peak and trough of the wave). **The 270My ep oscillations are the smaller voids. The 2.5My oscillations are the key to understanding the scale of galaxy formation in the void boundaries.**

Hubble constant metric quantization (since the Hubble constant is also a speed) that people have recently discovered comes from the 2.5My dep metric quantization, sect.7.5.

The gravitational constant measurements with moving torsion pendulums are **metric quantized, giving the G measurements *huge percent errors*** since that is not taken into account. This a hint that if the gravitational constant was measured with no moving parts this error would go away.

Solar can-can metric quantization is the reason for the plasma tube and solar dynamo. Upper chromosphere 100km/sec jump in speed metric quantization gives flares with K-H instability kinks magnetically recombining releasing lots of energy as flares. **Using this metric**

quantization and Abraham Lorentz back reaction force with Faraday's law we **found a way to predict solar activity** including solar flares **on a hour by hour basis** 1 hour ahead as accurately as 100 years ahead, which is to say very accurately.