PartIIIA

11.1 metric quantization from bridging condition $\kappa_{oo}=g_{00}$.

Review from partI: Summary: Postulate0->Newpde

Concept: Ultimate Occam's razor theory postulate(0) implies ultimate math-physics theory.

Introduction All QM physicists know about *Lorentz* covariant(9) Dirac equation *real* eigenvalues. All mathematicians know that the limit of a Cauchy sequence of rational numbers is a Cauchy *real* number. So here we simply **postulated** "z=zz+C eq1 implies *real*#0" (C constant so $\delta C=0$, z=zz needed for the multiplicative properties of 0. See math* appendix M3) implying a rational Cauchy *sequence* with limit 0 thereby doubling as an *iteration* of eq1 in $\delta C=0$ that gives the (fractal)Mandelbrot set. Also plugging eq1 directly into $\delta C=0$ gives the Dirac eq. and so fractal(scales$10^{40N}XCM_{N=0}$, fig1) *real* eigenvalues of a *generally* covariant Dirac Newpde that does not require gauges: clearly a major discovery as shown in fig2.

* Plugging 1≡1+0 consecutively into 1=1X1 thereby *defines* ring relation 0X1=0 and 0X0=0 so list 1X1-**define** symbol **z=zz** gives the *multiplicative properties of* ***0*** such as 1X**0**=0 **+C** is needed for the *addition* of constants (so $\delta C=0$) in the ring-field such as 1=1+**0** in **z=zz+C** eq1. The rest of list number-**define** symbol replacement of ring-field axioms with single simple axiom postulateo is in appendix M3.

Summary: So **postulate0** (ie "z=zz+C eq1 implies *real*#0") also derives mathematics so we can plug z=1+δz into eq1 and get δz+δzδz=C (3) so that $\frac{-1\pm\sqrt{1^2+4C}}{2}$=δz=dr±**i**dt (4) for C<-¼. So C is complex. But the definition of real0 ≡z_o implies that Cauchy sequence "iteration" so requires

I **Plug**ging the **eq1** rel *iteration* ($z_{N+1}-z_Nz_N=C$) into **δC=0** implies $\delta C=\delta(z_{N+1}-z_Nz_N)=\delta(\infty-\infty)\neq0$ for some C. The Cs that result instead in finite z_∞s (so δC=0) define the **Mandelbrot set** in fig1 whose lemniscate continuity (11) along dr≈dR is required by the derivative in $\delta C\equiv(\partial C/\partial R)dR=0$ with its max extremum jump at C_M =-1.75 (at http://www.youtube.com/watch?v=0jGaio87u3A) where there is the (new Mandelbrot set lemniscate fractal scale fig1 shapes $C=C_M10^{xN}$ with C_M that postulated constant) $0=(\partial C/\partial r)(dr)=dC_M10^{40N}$ largest x given that elsewhere x<40 (M5). Eg for huge Nth fractal scale |δz| >>**1**/4. So extreme-**¼**,-1.75 solveδC=0.Thus our rational Cauchy sequence is iteration $z_{N+1}-z_Nz_N$ =C= **-¼**,-3/16,-55/256,..**0**. So **0** is a real number QED.

II **Plugging eq1** directly **into δC=0** is also required. So given eq1 and thus equations 3,4
$\delta C=\delta(\delta z+\delta z\delta z)=\delta\delta z(1)+2(\delta z\delta z)$□**z**$\approx\delta(\delta z\delta z)=\delta((dr+idt)^2)=\delta[(dr^2-dt^2)+i(drdt+dtdr)]$ =**0** = (5)
Minkowski metric +Clifford algebra≡**Dirac equation** (See eq7a γ^μ derivation from eq5.). But (N=0, 2D) δδz1 must be small but not zero so it *automatically* provides 2 extra degrees of freedom for the (N=1 2D) independent Dirac dr implying 2D Dirac+2D Mandelbrot=4D Dirac **Newpde**$\equiv\gamma^\mu(\sqrt{\kappa_{\mu\mu}})\partial\psi/\partial x_\mu=(\omega/c)\psi$ for *ν*,e; $\kappa_{00}=e^{i(2\Delta\varepsilon/(1-2\varepsilon))}-r_H/r$, $\kappa_{rr}=1/(1+2\Delta\varepsilon-r_H/r)$; $r_H=C_M/\xi=e^2X10^{40\mathbf{N}}/m$ (fractal jumps **N**=. -1,0,1.,) $\Delta\varepsilon\equiv m_e$, e=m are zero if no object B (appendix B, C).

Metric Quantization

Unified field

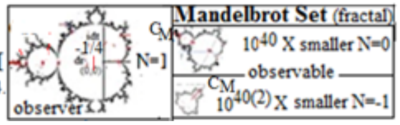
If the universe is fractal then the quantization on the subatomic scale should repeat on the cosmological scale, hence the (N=1 (and N=-1) fractal scale gravity fig1)) metric quantization. Mathematically we get this 10^{40N} fractalness from the Mandelbrot set (fig1 at C_M) coming directly out of our postulate0.

Single field but observed from different frames of reference

These fields on the different fractal scales **are really all the same** field but seen from the different frames of reference motion created by the different fractal 10^{40N}X jump mass contributions of the zitterbewegung frequency oscillation frames of reference of the Newpde.So there has to be a transition (frame of reference) between these two scales:

fig1

C_M =-1.4



lemniscate http://www.youtube.com/watch?v=0jGaio87u3A

Bridging these fractal N scales in fig1 is possible for a unified field if both observers are in the same frame of reference at least along some coordinate direction such as a central force azimuth angle ϕ.Thus we can state N=1 fractal scale $\mathbf{g_{oo}=\kappa_{00}}$ N=0 fractal scale along a galaxy (or other local source) central force azimuth ϕ in the halo which then connects, "bridges", N=0 to N=1 thereby showing this is a true "unified field".

For example in the halo N=1, $g_{oo}=1-2GM/(c^2r)$ (ϕ direction motion so $mv^2/r=GMm/r^2$,) then has to transition into the asymptotic component of N=0, $\kappa_{00}=1-(2\Delta\varepsilon/(1-2\varepsilon))^2/2$ (eq A10) since these fields in the same coordinate system so are the same. They have to transition one into the other if the observer is on the same coordinate system of both. We are not oscillating with high frequency zitterbewegung anymore in the halo and yet see the N=0 assymptote and yet are in the N=1 frame of reference. So in the galaxy halo (N=1) $g_{oo}=\kappa_{00}$ (N=0).

Black hole, galaxy evolution dynamics

Ultrarelativistic superconductor motion inside of the central black hole is possible because of my $F=A(dv/dt)/v^2$ pairing interaction (see C4). This ultrarelativistic SC motion will result in a beaming on a plate that is equatorial thereby holding the spiral galaxy together creating a cylindrical symmetry $KMm/r=mv^2/r$ and so $Km=v^2$ and so the r dependence cancels as we see in $g_{oo}=\kappa_{oo}$. So *we still preserve Kepler's laws* by modifying them relativistically in writing $g_{oo}=\kappa_{oo}$. When the black hole gets too big dv/dt get's small and so the pairing interaction gets small and the superconductivity ceases and so spherical symmetry returns and the spiral galaxy turns into an elliptical galaxy as is happening right now in the Whirlpool galaxy (NGC5194). For metric quantization we require a grand canonical ensemble with nonzero chemical potential.

11.2 Introduction to the asymptotic implications of κ_{oo} in the galactic plane

Recall eq.4.13 $\mathbf{\kappa_{00}\approx e^{i\Delta\varepsilon/(1-2\varepsilon)}}-r_H/r$ which is the same κ_{oo} that gave us the Lamb shift. Here is another application of eq.4.13 but for $r\to\infty$. In galaxy halos the N=0 asymptote meets the N=1 asymptote, the one transitions into the other using $g_{00}=\kappa_{oo}$ (eq.4.13) with resulting Metric Quantization N=1 (eg.,replacing the need for dark matter). Note we have yet to use the $e^{i(\Delta\varepsilon/(1-2\varepsilon))}$ in $\kappa_{00}=e^{i(\Delta\varepsilon/(1-2\varepsilon))}-r_H/r$ of equation 4.13. $mv^2/r=GMm/r^2$ is always true (eg.,globulars orbiting out of plane) but $g_{oo}=\kappa_{00}$ ***in the plane*** of a flattened galaxy (rotating central black hole planar effect sect.11.4). That $g_{oo}=\kappa_{oo}$ in the *halo of the galaxies* is the fundamental equation of metric quantization. So again for all angles $mv^2/r=GMm/r^2$ so $GM/r=v^2$ COM in the galaxy halo(circular orbits) but in the plane of the galaxy also $\kappa_{00}=e^{i(\Delta\varepsilon/((21-2\varepsilon))}$ from κ_{00} in 4.13)

Pure state $\Delta\varepsilon$ (ε *excited* $1S_{1/2}$ state of ground state $\Delta\varepsilon$, so ε not the same state as $\Delta\varepsilon$). So in the plane: $\text{Rel}\kappa_{oo}=\text{Rel}e^{i\Delta\varepsilon/(1-2\varepsilon))}=\cos(\Delta\varepsilon/(1-2\varepsilon))\approx1-(\Delta\varepsilon/(1-2\varepsilon))^2/2$ from $r\to\infty$ in 4.13 so $\text{rel}\kappa_{00}.=g_{oo}$

Case1 $(1-(\Delta\varepsilon/(1-2\varepsilon))^2/2=1-2GM/(c^2r)$ (11.1)

So $1-2(v/c)^2=1-(\Delta\varepsilon/(1-2\varepsilon))^2/2$ so $v=(\Delta\varepsilon/(1-2\varepsilon))c/2=$ (11.1a)

$=[.00058/(1-(.06)2)](3X10^8)$ =99km/sec ≈100km/sec (Mixed Δε,ε, states classically here are grand canonical ensembles with nonzero chemical potential.). For ringed (not hub) galaxies the radial value becomes 100/2=50km/sec.
Also from eq. 11a v/c =constant (11.1b)
Mixed state εΔε (Again $GM/r=v^2$ so $2GM/(c^2r)=2(v/c)^2$.)
Case 2 $g_{oo}=1-2GM/(c^2r)=\mathrm{Rel}\kappa_{oo}=\cos[\Delta\varepsilon+\varepsilon]=1-[\Delta\varepsilon+\varepsilon]^2/2=1-[(\Delta\varepsilon+\varepsilon)^2/(\Delta\varepsilon+\varepsilon)]^2/2=$
$1-[(\Delta\varepsilon^2+\varepsilon^2+2\varepsilon\Delta\varepsilon)/(\Delta\varepsilon+\varepsilon)]^2$
The $\Delta\varepsilon^2$ is just the above first case (Case 1) 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. So there can't be a single v in the large gradient 2nd case so in the equation just above we can take $v_N=[\Delta\varepsilon^{N+1}/(2\varepsilon^N)]c$. (11.2)
$(\Delta\varepsilon)^N$ is the operator $\Delta\varepsilon^m\psi=-\frac{i^m\partial^m}{\partial t^m}\psi_{N=1}=H^m\psi_{N=1}$ so each term in this expansion is an independent QM operator so with independent speed=v eigenvalues relative to COM
From eq. 11.2 for example $v=m100^N$km/sec. m=2,N=1 here (Local arm). In fig.2 we list hundreds of examples of 11.2 in fig.4: (sun1,2km/sec, galaxy halos m100km/sec). The linear mixed state subdivision by this ubiquitous ~100 scale change factor in r_{bb} (due to above object B zitterbewegung spherical Bessel function resonance boundary conditions resulting in nodes) created the voids. Same process for N-1 (so 100X smaller) antinodes get galaxies, 100Xsmaller: globular clusters, 100Xsmaller solar systems, etc., So these smaller objects were also created by mixed state metric quantization (eq.11.2) resonance oscillation inside initial radius r_{bb}.
We include the effects of that object B drop in inertial frame dragging on the inertial term m in the Gamow factor and so lower Z nuclear synthesis at earlier epochs (t>18by)BCE.
The resulting theory is vastly more explanatory of those high stellar speed halo phenomena than any of those theories including MOND and those many many insane dark matter theories.
That $g_{oo}=\kappa_{oo}$ relation really *does clinch halo velocitie*s and so disposes of the need for dark matter completely. That is not an exaggeration. For example my $\kappa_{oo}=e^{iN\Delta\varepsilon}$ is my background *quantized* ambient metric (as the asymptotic value of my κ_{oo} used in the rest of the paper where we must normalize out the ε contribution* with $\Delta\varepsilon/((1-2\varepsilon)2c)=v$ where dep is the fractional mass of the electron relative to the tauon= .00058 (actually NX that where N is an integer) out in the galaxy halo where we had to normalize. But way out there Schwarzschild $g_{oo}=1-2GM/(rc^2)$ should also equal the $r\to\infty$ asymptotic $e^{i\Delta\varepsilon}=\kappa_{oo}$.
So $\mathbf{g_{oo}=\kappa_{oo}}$.
Also we have the usual centripetal force for circular motion around the galaxy: $mv^2/r=GMm/r^2$. So $GM/r=v^2$. So after taking the real part (cos) of $e^{i\Delta\varepsilon}$ $(=1-\Delta\varepsilon^2/2)$ we get from all these equations after doing the algebra (i.e., cancel the m,r, get $GM/r=v^2$ and plug into $\mathrm{real}g_{oo}=\mathrm{real}\kappa_{oo}$ so that $1-(2GM/rc^2)=1-(\Delta\varepsilon/(2(1-2\varepsilon))^2/2$ so $2v^2/c^2=(\Delta\varepsilon/(2(1-2\varepsilon))^2/2$, $v=c\Delta\varepsilon/(2(1-2\varepsilon))$ (11.3)
Also $v=(\Delta\varepsilon/(1-2\varepsilon))c/2$ so v/c=constant. (11.3a)
v=N100km/sec.
It is amazing that we get a quantized speed for halo velocities t*hat is also the correct one which* neither MOND **nor any** dark matter theory can account for. These other theories are light years from explaining this result!!!
Example N100 halo speeds:
Milky way 200km/sec
M31 300km/sec
NGC3351 V=200km/sec

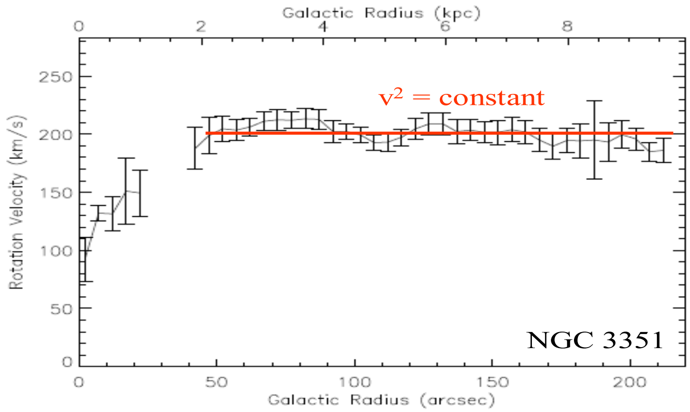


fig.3

NGC 3031 rotation curve is consistent with 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 cases). ε cannot be normalized out inside a proton giving us our **Newpde** composite 3e particle physics. Note in the two cases (of charge and neutral in partII) the ε is not normalized out. PartII (half my book) is on this subject

11.3 From eq.4.13 In halo $\kappa_{oo}=g_{oo}$ For outside r_H.

For a grand canonical ensemble with nonzero chemical potential, as occurs in the halo of the galaxy, section 11.1 metric quantization implies that $g_{oo}=\kappa_{oo}$ holds. From equation 4.13 also because of object B $\kappa_{oo}=e^{i(me+mu)}=e^{i(\Delta\varepsilon+\varepsilon)}$, $\Delta\varepsilon=m_e=.000058$ is the electron mass (as a fraction of the Tauon mass eq.18.) which is the component in the resulting me, mu operator sequence.

review

From equation D9 $\kappa_{oo}=e^{i(\Delta\varepsilon+\varepsilon)}$ in the halo of the galaxy. Also for r big the charged ε gets normalized out since there are infrequent (big) ε jumps in those regions so $\kappa_{oo}=e^{i(\Delta\varepsilon+\varepsilon)/(1-2\varepsilon)}$ (but (but more rapid jumps in high gradient regions). Recall also from equation 4.13 that in the halo of the galaxy also: $g_{oo}=\kappa_{oo}$.

So in the halo of the galaxy $e^{i(\Delta\varepsilon+\varepsilon)/(1-2\varepsilon)}=\kappa_{00}=g_{00}=1-2GM/(c^2r)=\text{Rel}\kappa_{00}=\cos[\Delta\varepsilon+\varepsilon]=1-[\Delta\varepsilon+\varepsilon]^2/2=1-[(\Delta\varepsilon+\varepsilon)^2/(\Delta\varepsilon+\Delta\varepsilon)]^2/2=1-[(\Delta\varepsilon^2+\varepsilon^2+2\varepsilon\Delta\varepsilon)/(\Delta\varepsilon+\varepsilon)]^2/2$. The $\Delta\varepsilon^2$ is small so just take the mixed state cross term $v=c[\varepsilon\Delta\varepsilon/(\varepsilon+\Delta\varepsilon)]/2=c[\Delta\varepsilon/(1+\Delta\varepsilon/\varepsilon))]/2=c[\Delta\varepsilon+\Delta\varepsilon^2/\varepsilon+\ldots\Delta\varepsilon^{N+1}/\varepsilon^N+..]/2=\Sigma v_N$. Note each term in this expansion is itself a (mixed state) operator and we assume that division of each of these terms by 1-2ε as above. So there isn't just one v in the large gradient 2nd case so in equation 1 just above we can take $v_N=[\Delta\varepsilon^{N+1}/(2\varepsilon^N)]c=(.00058^{N+1})/(2(.06)^N)c$ (11.2)

$v_N=\ldots$1mm/sec(N=4), 10cm/sec(N=3), 10m/sec(N=2),1km/sec(N=1), 100km/sec(N=0)..

So these speeds arise from mixed metric quantization states εΔε operating on the Newpde ψ. In classical thermodynamics they are Grand Canonical ensembles with nonzero chemical potential (1). If there is zero mixing, so zero chemical potential, these mixed states εΔε do not exist and so these v s do not apply (so classical ballistic trajectories then apply). Recall also that metric quantization equation $g_{oo}=\kappa_{oo}$ implies that in equation 11.2 Δε (=.000058=e) gives a speed of n100km/sec (for N=0 in eq.11.2) and ε=.06=μ is a speed of 20,000km/sec which is our rotation speed around the center of the universe. $1=\tau$ gives a rotation speed of c at the time of the mercuron (with very low radial velocity)

Note the N=0 case in eq.11.2: $v=n\Delta\varepsilon c/(2(1-2\varepsilon)) = n(.00058)3X10^8/[2(1-2(.06))] = n98{,}860m/sec$ $=nX(98.86)km/sec \approx n100km/sec$. So in the galaxy halos we have v=100km/sec, 200km/sec., thereby replacing the need for dark matter (to explain these high speeds).

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 an integer multiple of 50km/sec.

(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, a notion that is close to this fractal Newpde idea.

For metric quantization we require a grand canonical ensemble with nonzero chemical potential. 10^7 km/sec with 100 antinodes across the Mercuron, 320 around the circumference seen in CBR.

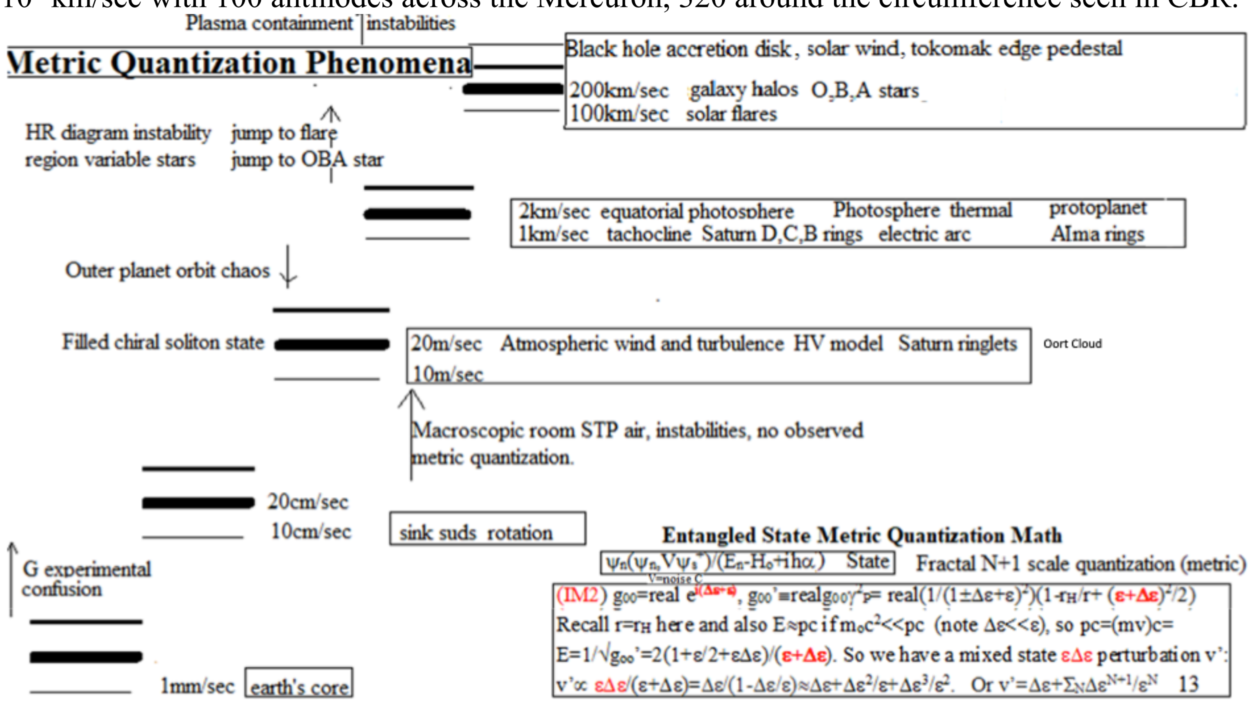


Fig.4

Solar flare model for the Big Bang (Mercuron expansion)

Recall the 100X metric quantization jump from 1km/sec at the photosphere to 100km/sec at the top of the chromosphere given its large enough energy density as with the Mercuron with its own high energy density and so Hamiltonian H. Therefore we have n=0 in the Ch.9 Frobenius expansion $F_{groundstate}=\sum a_n r^n = a_0 r^{-0}$ (because it is the ground state n=0 for the Mercuron, given it is the smallest r in eq.9.8) of the Newpde H. Therefore inside is an isotropic and homogenous space-time. Thus given the huge energy density (as at the top of the chromosphere) inside we have 100 antinodes across the Mercuron (analogous to Saturn's ringlets) and so about 360 clumps around the circumference (giving us the individual CBR clumps that are a degree wide). Given these antinode clumps this becomes a Rayleigh Taylor instability explosion and so strongly resembling the crab nebula (M1) supernova explosion with its filamentary texture and whose filament intersections are just those expanded CBR clumps.

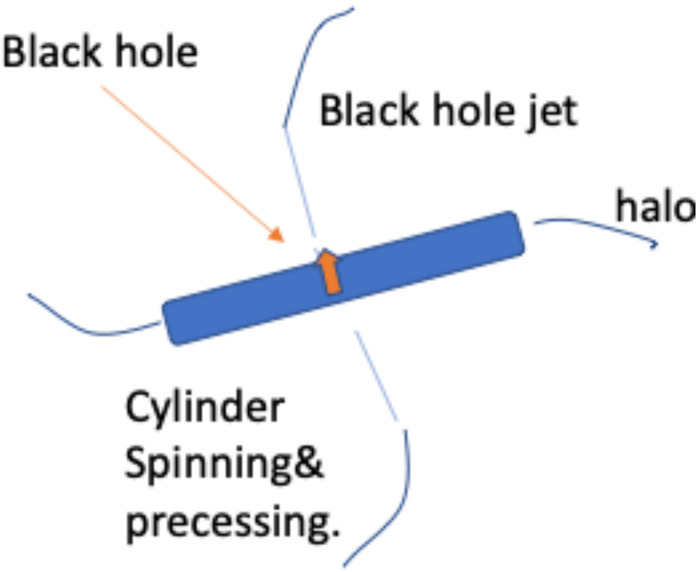
Rayleigh Taylor Instability Paradigm M1

11.3 Oscillation of $\delta z(\equiv\psi)$ on a given fractal scale

From Newpde (eg., eq.1.13 Bjorken and Drell) $i\hbar\frac{\partial\psi}{\partial t}=\frac{\hbar c}{i}\left(\alpha_1\frac{\partial\psi}{\partial x^1}+\alpha_2\frac{\partial\psi}{\partial x^2}+\alpha_3\frac{\partial\psi}{\partial x^3}\right)+\beta mc^2\psi=H\psi$. For electron at rest: $i\hbar\frac{\partial\psi}{\partial t}=\beta mc^2\psi$ so: $\delta z=\psi_r=w^r(0)e^{-i\varepsilon_r\frac{mc^2}{\hbar}t}$ ε_r=+1, r=1,2; ε_r=-1, r=3,4.): This implies an oscillation frequency of $\omega=mc^2/\hbar$. which is fractal here. So the eq.12 the 45° line has this ω oscillation as a (that eq.7-9 δz variation) rotation. On our own fractal cosmological scale we are in the expansion stage of one such oscillation. Thus the fractalness of the Newpde explains cosmology. The next higher cosmological scale is independent (but still connected by superposition of speeds implying a separation of variables result: $i\hbar\frac{\partial\psi}{\partial t}=\beta\sum_N(10^{40N}(\omega t)_{\varepsilon+\Delta\varepsilon})\psi\ =\beta\sum_N(10^{40N}m_{\varepsilon+\Delta\varepsilon}\,c^2/\hbar)\psi$). By the way fractal scale N=1 the 45° small Mandelbulb chord ε (Fig6) is now, given this ω, getting smaller with time so t α ε. So cosmologically for stationary N=1 $\delta z=\sqrt{\kappa_{oo}}dt=e^{-i\varepsilon_r\frac{mc^2}{\hbar}t}\rightarrow e^{i(\varepsilon+\Delta\varepsilon)}$ (11.4)
With (from fig6) for electron Δε=.00058 (11.5)

11.4 This is merely continuation of Chapter 3 on $g_{oo}=\kappa_{oo}$ metric quantization

They are compressed to rigid r_H and spins all point one way with the equatorial ultrarelativistic motion creating flat plate field outside geometry needed for $g_{oo}=\kappa_{oo}$ to hold ($Gmm/r^2\rightarrow Gmk/r$ from Gauss' law). But if these objects gain too much mass so $r=2GM/c^2$ gets too big the outer stable horizon moves out from the object so there is then instability and the spins cease to be parallel so the plate and so the flat spiral galaxy structure must disappear giving a spherical shape (ellipticals) with their yellowish population II stars. This is the fundamental mechanism of galactic evolution. So to recap we start with a cylinder spinning and precessing:



Note solid cylinder moving as unit **side view**

X ray through radio wave Image of galaxy Centaurus A

Fig.1 The Milky Way 13by ago also formed the “thick” disk at 6oooLY thick because 100km/sec, then a galaxy collision occurred making the galaxy heavier forming the “thin” disk 2kly thick since then halo speeds were at 200km/sec. (March 2022 “Nature”, Maosheng Xiang)

and end up with an elliptical galaxy. Eg.,the Whirlpool galaxy M51 is in transition between these two states. The two bends are where the 300km/sec ends and transitions to 200kn/sec, given a recent orientation of this galaxy due to a recent collision that also caused the increased activity.

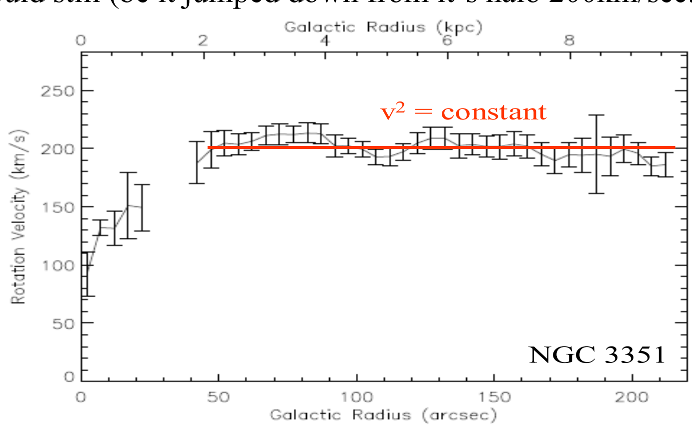
Metric jump effects
Also the $\kappa_{oo}=1-r^2/r_H^2$ in sect.3.1 (instead of the external observer $\kappa_{oo}=1-r_H/r$) in $E=1/\sqrt{\kappa_{oo}}$ in looking outward (internal observer) at the cosmological oscillation from the inside ($r<r_H$) implies that higher mass for N=2 fractal scale so smaller wavelength and larger energy so larger effect. So metric jumps with longer the wavelength on our scale imply higher energy cosmological effects that N=2 sees what we see. So on N=1 fractal scale small wavelength cosmological oscillations (eg., object C $\Delta\varepsilon$ Period=2.5My) have much smaller effects than the larger wavelength oscillations (eg., ε Period=270My).

Is metric quantization possible? So does it have a Hamiltonian?
Recall eq.4.12 object B generation in the Kerr metric $((a/r)\sin\theta)^2=\Delta\varepsilon$ with outside object B r_H $\kappa_{00}=\varepsilon^{i\Delta\varepsilon}$ with inside $\kappa_{00}=1-\Delta\varepsilon$. Finally in the composite 3e frame of reference $\Delta\varepsilon\rightarrow\Delta\varepsilon+\varepsilon$ for both in Eg., $\kappa_{oo}=e^{i(\varepsilon+\Delta\varepsilon)}$ outside object B.
Also recall the fractal separation of variables in the universe wave function Ψ solution to the **Newpde**:
From seperation of variables sect.1: $\Psi=\Pi\psi_N=..\bullet\psi_{-1}\bullet\psi_0\bullet\psi_1\bullet\ldots$
N is the fractal scale. Not also that New pde $\Delta\varepsilon\equiv H_{\Delta\varepsilon}$ or $\varepsilon\equiv H_\varepsilon$ $r>r_H$ have nothing to do with each other (like H_{SHM}&H_J) so $\Delta\varepsilon\varepsilon\psi_N=E\psi_N$ is undefined (just as $H_{SHM}*H_J$ is undefined). In contrast for $r_{(\varepsilon,\Delta\varepsilon)}e^{kt}=\psi_{N+1}$ from new pde cosmological $r_H>r$ there is a common time t=t' in

$$-i\frac{\partial\left(-i\frac{\partial\psi_{N+1}}{\partial t'}\right)}{\partial t}=\varepsilon\Delta\varepsilon\psi_{N+1}$$

on the zitterbewegung cloud radius expansion (see fig.6) $r_{\Delta\varepsilon\varepsilon}e^{kt}\equiv\psi_{N+1}$ so that $\varepsilon\Delta\varepsilon\psi_{N+1}$ is defined. So $\langle i|\varepsilon\Delta\varepsilon|i\rangle$ (from $\varepsilon\Delta\varepsilon\psi_{N+1}$) is observable and $\langle i|\varepsilon\Delta\varepsilon|i\rangle$ (from $\varepsilon\Delta\varepsilon\psi_N$) is not observable.

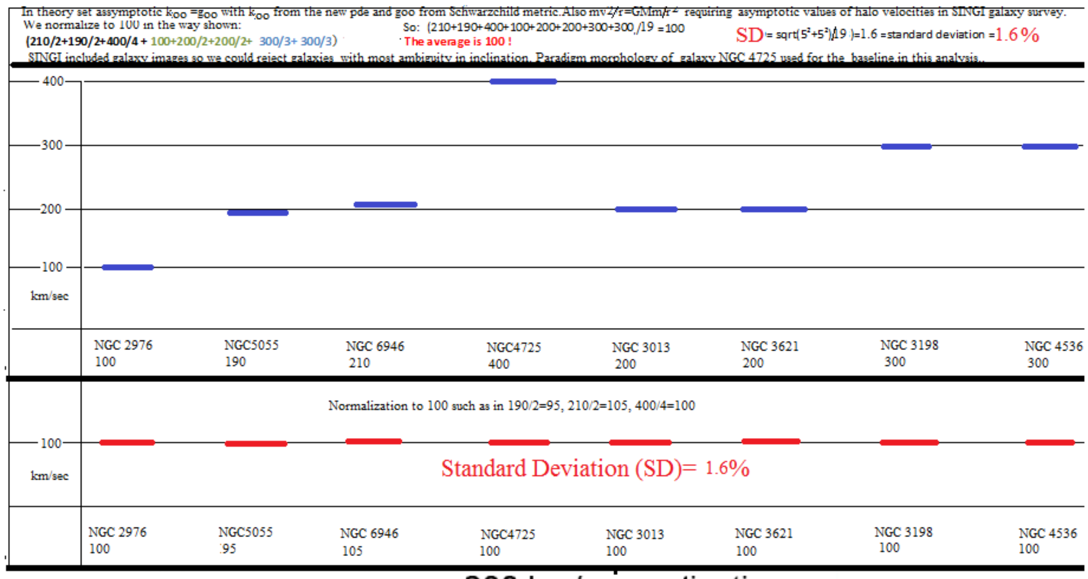
11.5 Examples Of Case I $g_{oo}=\kappa_{oo}$
Still in the hub means the curve is still trending up or down. So do not count NGC 925 and NGC 2976 (still in hub). IC2574 not counted since Things didn't show its rotation curve. NGC 4736 don't count still in the hub, DD154 still in hub. NGC2366 not include since no rotation curve given. Since some error bars include 100+100/2 NGC 2403 might not 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.)



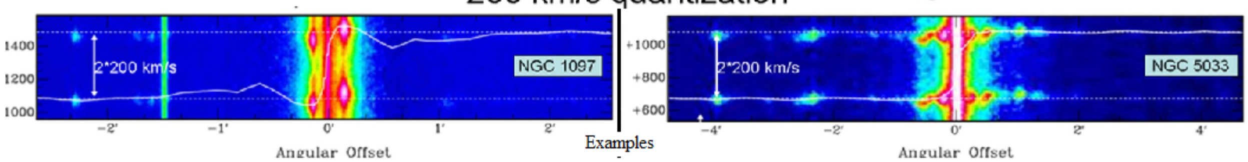
Stellar halo speed at ~200km/sec Fig.2

Metric quantization is exact.

Halo Velocity Differences From SINGI



200 km/s quantization



Examples

Two examples of galaxy rotation rate vs distance from center. Must take into account aspect angle.

The differential rotation is first created (jump started) by metric quantization coming out of a new generally covariant generalization of the Dirac equation that does not require gauges (Appendix C). Metric quantization also requires that there exist a grand canonical ensemble (thus a chemical potential exchange of energy between physical systems) at some point in the formation of the system for the conservation of energy to also hold. Here we present observational evidence of velocity quantization obtained from Doppler measurements of stellar motion in the halos of galaxies and equatorial stellar velocities illustrating 100km/s=Δv quantization with most at 200km/sec. Figure A1 is a compilation of average halo velocities for various nearby galaxies showing an unambiguous metric quantization.

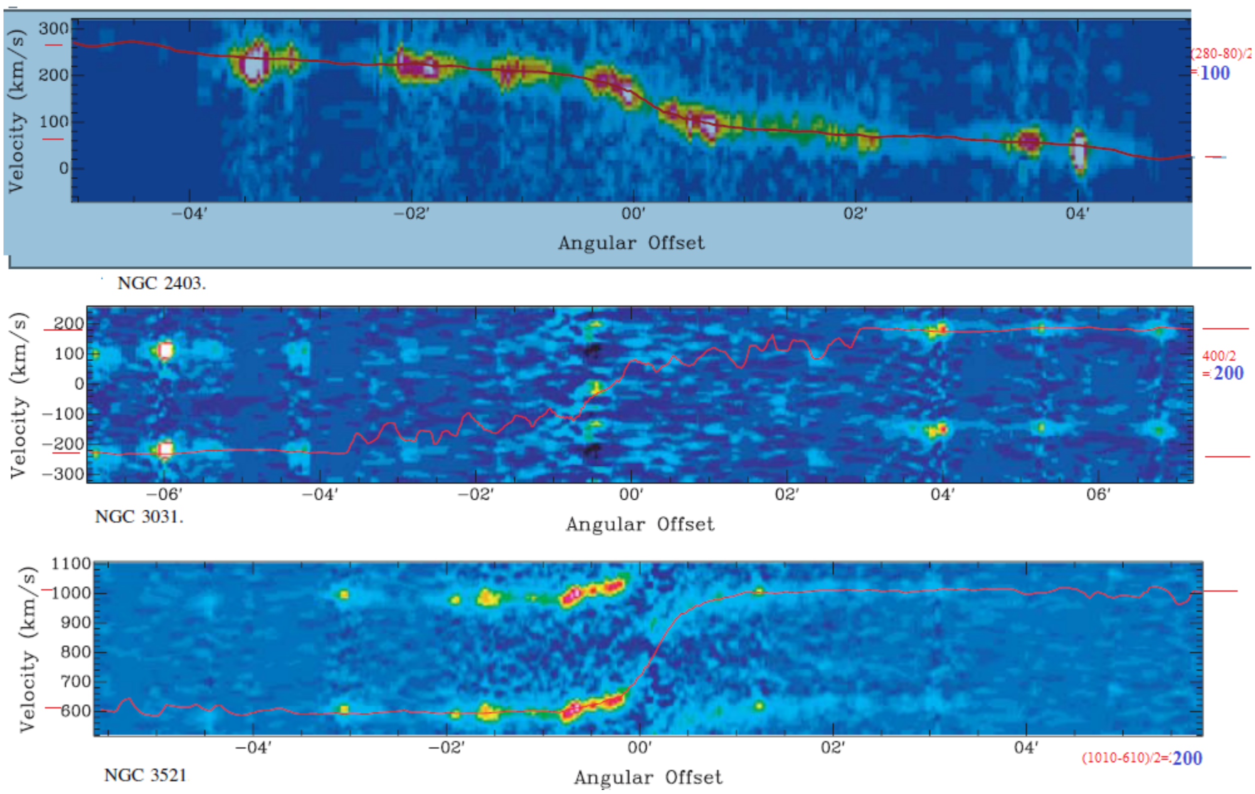


Figure A1 Velocity quantization In the Halos Of Nearby Galaxies (mostly 200km/sec)

Figure A2 is a compilation of average stellar equatorial velocities for main sequence stars also showing an unambiguous metric quantization at 200km/sec.

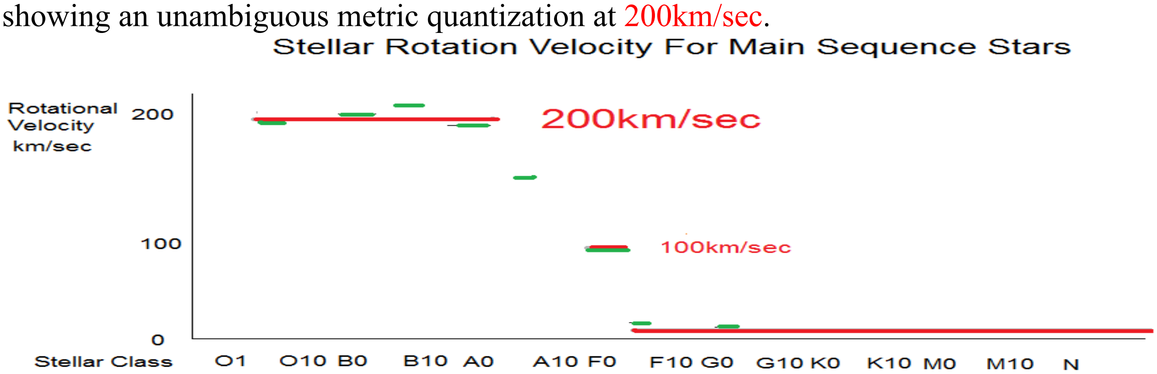
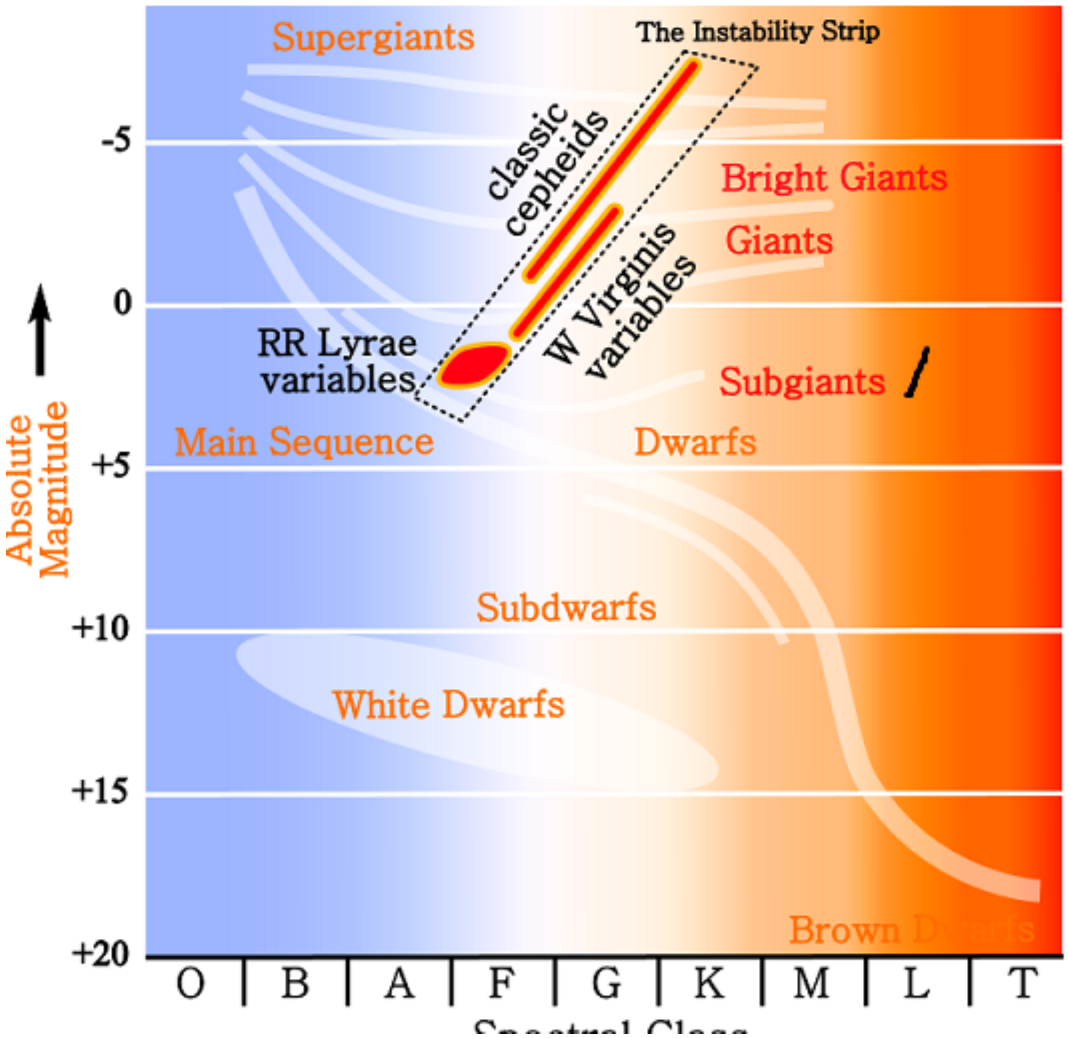


Figure A2 Velocity Quantization in O,B,A stars (mostly 200km/sec)

Note the same 200km/sec metric quantization of stellar equatorial velocities for O, B, A stars in Figure A2 so this *metric quantization is ubiquitous* (recall also figure A1 in that regard). See appendix C for theoretical derivation of these velocity quantization values.
Recall metric quantization results in stability, Here for O, B A and G K M stars. This implies that the intermediate classes of stars should be unstable. This is the instability region of the HR diagram, see below.



Hand waving arguments about the opacity of Hell is the usual explanation for this instability. The metric quantization is clearly the reason as we see above.

There is a lower velocity metric quantization for main sequence stars F→M at about 2km/sec on the right side of the figure A2 which is what actually starts out the Δv=1km/sec differential rotation of the sun relative to the 1km tachocline rotation. The B field component we stated was responsible for the differential rotation is instead actually then *derived* from this metric quantization effect. The motion relative to that nonhomogenous ambipolar diffusion charge layer (aka Bierman's battery) already must exist for the B field to effect the co-moving convection zone plasma. The sun is so sensitive to planetary perturbations of my double Faraday flare model because it exists in the metric quantization instability zone

Mercuron equation 4.3a:

$\ln(r_{M+1}/r_{bb})+2=[1/(e^{\mu}-1)-\ln[e^{\mu}-1]]2$ (4.3a)

I have graphed the Mercuron eq. radial distance vs time (i.e.,muon mass). From my Mercuron equation most of that distance was traversed in the last half of the $13.7X10^{9}$year observed time. So the universe expanded very little in the earlier 360By allowing enough time for CBR thermalization. So acceleration =Distance/(time/2)^2=

$(13.7X10^9X5.8X10^{12}X1600)/((13.7/2)X(10^9)365.25X24X3600)^2=(1.27X10^{26})/((4.3/2)X10^{17})^2=$ $1.7X10^{-10}m/s^2$ is approximately $1A/s^2$.
So ambient minimal radial acceleration all around us should lead to some physical effects which is what Milgram writes about.
$dr'^2=g_{rr}dr^2=(1/(1-r_H/r))dr^2$. so dr' is very big when we are close to r_H, which is where we are right now. But the object B 6by period zitterbewegung oscillations fuzz out r_H by about 1 part in 10^5, so $10^{-5}=\Delta r_H/r_H$. So we can move to the outside of r_H since we are expanding and r_H is stationary ($r_H= 2GM/c^2$ is invariant.) We are still just inside r_H and so the Mercuron equation still holds (It used a Laplace-Beltrami -sinhu source for R_{22}.)

11.7 Transition Matrix Elements Of Metric Quantization Mixed States

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.5 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 (ch.2) in a grand canonical ensemble with nonzero chemical potential. Note in section 11.2 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 5.8 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.5.11 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 5.8 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 <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$\frac{\oiint_C ((\nabla X v)*dS)}{C} = \oint_C\ v * ds.$ =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 $E=1/\sqrt{\kappa_{oo}}$ (eq.5.6) 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 $\Delta\varepsilon=\omega_o$,. ε/Δε=nωo=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).

11.8a Gamow factor G

G=exp(-2Z)
Z=sqrt(2m(U-E))/hbar
The Gamow factor represents the probability of tunneling through a potential barrier.
I can derive G using the WKB approximation which I am very familiar with (ie People use G mostly for calculating alpha particle tunneling in large atomic nuclei.
Alpha particle tunneling and resulting nuclear decays are sources of nuclear energy release activity in the sun (and even in the earth in radioactive decay) for example.

In my work 'm' (in the above Z equation) is the inertial term that varies with metric "density" which varies as the universe expands (Gm^2 is the constant.).
So the Gamow factor changes and so does solar activity (implying climate change on earth) and even radioactive decay (eg.,alpha decay) heating in the earth (eg., implying volcanism).
The periodic metric jumps at 2.5My and 245My provide Gibbs function overshoots with the 2.5My the (volcanic) puffs of the Pacific volcanic island chains and the 245Mybce Permian-Jurassic mass extinction and massive periodic (500My) continental breakups.
More generally from the WKB approximation

$G = \int_R^{R'} \frac{(2m(V(r)-E_0))^{1/2}}{\hbar} dr$. R is the radius of the nucleus of mass number Z, R_0 is the radius at which the α particle escapes, m is the mass of the α particle, $V(r)=2(Z-2)e^2/4\pi\varepsilon_0 r \equiv B/r$ is the Coulomb potential, and E_0 is the energy release in the decay. The α particle escapes the nucleus when $r=R_0$. Hence, the potential $V(R_0) = E$. If R<<R'. $G \approx \left(\frac{2m}{E_0}\right)^{1/2} \frac{B}{\hbar}\frac{\pi}{2}$ **m is the inertial term**.
Since GM is a constant here if $mv^2/r=GMm/r^2$ if m goes down the orbital radius does not change and on balance scales if m decreases for all masses m is not observed to change. In $GMm/r^2 = mg$ g doesn't change either if m changes. The earth from perihelion to aphelion changes in speed by 2km/sec so there should be a respective change in the inertial mass term in the Gamow factor.
The **metric quantization** change changes the inertial m and so changes the Gamow factor.
A way of writing the Gamow factor for transmission for the nucleus is
$T=\exp(-2\pi\alpha(ke^{-kr}))/\beta)$ k α G
with β=v/c, α=fine structure constant, and r≈0, (i.e., nuclear force analogous to thin 'glue' layer).
Thus with m going down G =Gamow factor goes down so the strength of the nuclear force goes down and tunneling increases and so half lives shorten since more particles are leaving the potential well. The interior of planets heats up (more volcanism) and stars (more luminosity).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. That "low clustering" implied by that early low Gamow factor bigger m smaller transmission coefficient, more frequent supernova (those red dots, even Gs could go) so more radiation repulsion so less clustering (Gravity Gm^2 was invariant).
So we also had longer light curves for early type1a supernova so z estimation that is too big so slower expansion but yet more rapid acceleration (my own work) so a rate of acceleration that could be slowing down at this epoch.

11.9 Metric Quantization States Are Fermionic

In the equation 11.2 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.4.13) 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, which 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 quantization state at 4 (eg. 400km/sec which has been seen in Tokomaks)

Also note our own Milky Way halo **2 level** of figure 3 (i.e., 2X100km/sec) background metric quantization for the Δε electron lends itself to the N.N.Bogdiubov quasiparticle transformation (two electron) pairing interaction discussed at the end of sect.ch.5.3. 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 and spacecraft 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 a mixed state (eq. 11.3)). .It does not apply to a single ballistic trajectory.

Slingshot exchange of energy effect

11.3 . From eq.11.1a then $v=(\Delta\varepsilon/(1-2\varepsilon))c/2$ so v/c=constant (part3, davidmaker.com)
Recall our mixed metric quantization εΔε states classically require a grand canonical ensemble with nonzero chemical potential, ie. Exchange in energy.
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 nonzero chemical potential as in Saturn's rings or that spark gap? A spacecraft 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 (fig7, attachment, bottom level), anomalous speed difference from the predicted one?

The Galileo spacecraft slingshot earth flyby got an anomalous 3.92mm/sec boost and the NEAR spacecraft flyby got a 13mm/sec boost.
Also from the mainstream:
"Anomaly appears to be dependent on the ratio between the spacecraft's radial velocity and the speed of light, " i.e., v/c=constant.
eq.11.3 is a derivation of this result. Note from eq.11a then $v=(\Delta\varepsilon/(1-2\varepsilon))c/2$ so indeed v/c=constant.
There is maximal chemical potential (exchange of energy) for the radial motion., let's say from the planet the slingshot is occurring at.

Earth aphelion-perihelion metric quantized speed difference
Also the difference between the aphelion and perihelion speeds of the earth is 2km/sec making the earth's orbit stable because of metric quantization. If it was not for this orbital stability of the earth there could not have been enough time to have evolved in the goldilocks zone to be human beings. Metric quantization is responsible for the human race!!! That is because the planets perturb each other's orbits continuously and the time it takes for this to lead to chaotic orbits is the (relatively short) Lyapunov limit (if not for metric quantization).
From the mainstream:

"In 1989, Jacques Laskar demonstrated that the Lyapunov timescale for the terrestrial planets was only a few million years (Myr)."

But the solar system is billions of years old!! Anyway, the existence of the human race depends on metric quantization.

Spatial and temporal metric quantization jumps sect.1.1

From that δC=0 result of section 1 we found that one of the extremum is $\frac{\partial C}{\partial r} = 0,\ dt = constant$ so C is uniform over space at time t. So it gives simultaneous metric jump over all space (within r_H) for Newpde jumps. But the effect is that the E&M is transmitted back at us at the speed of light. So for example we see the Permian Jurassic event now happening at CfA2. Note breakup of supercontinents correlate to these metric jump times.

ε jumps are 270 MY apart created Permian Mesozoic event and the Pangea split.

The 250My big enchilada ε metric quantization jumps actually split the earth in two, create fissures that stretch from pole to pole (eg.,midAtlantic ridge). Dates below are of the creation of a given supercontinent, and so of a splitting of the earth.

1.8by Columba, Rodina 1.3by, Pannotia 750My, Pangea 240My

Note ~500My time separation between these events..

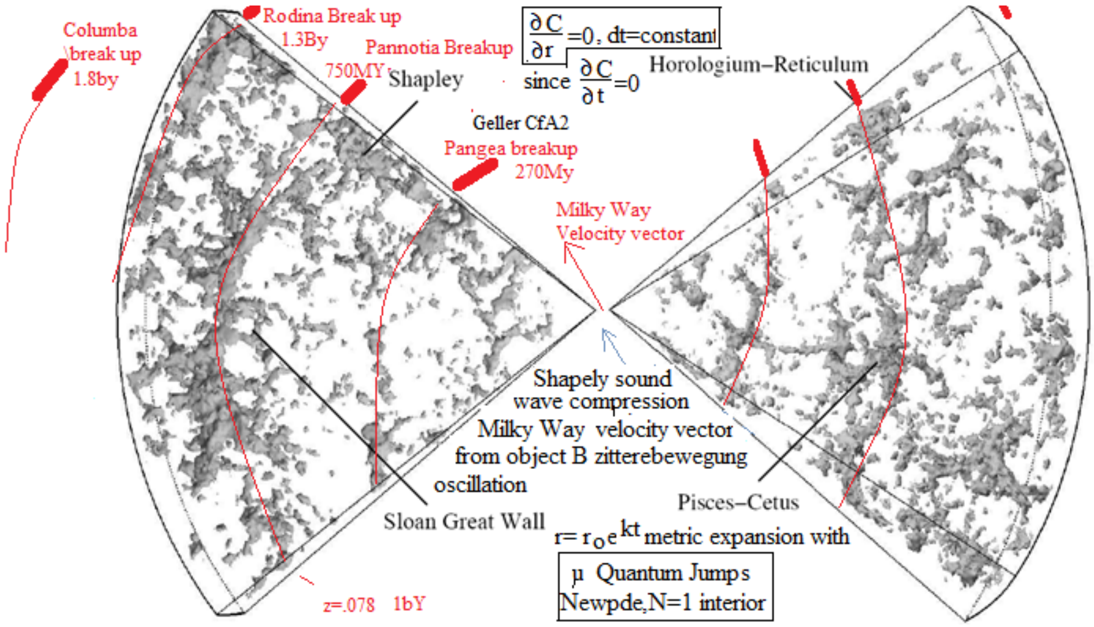
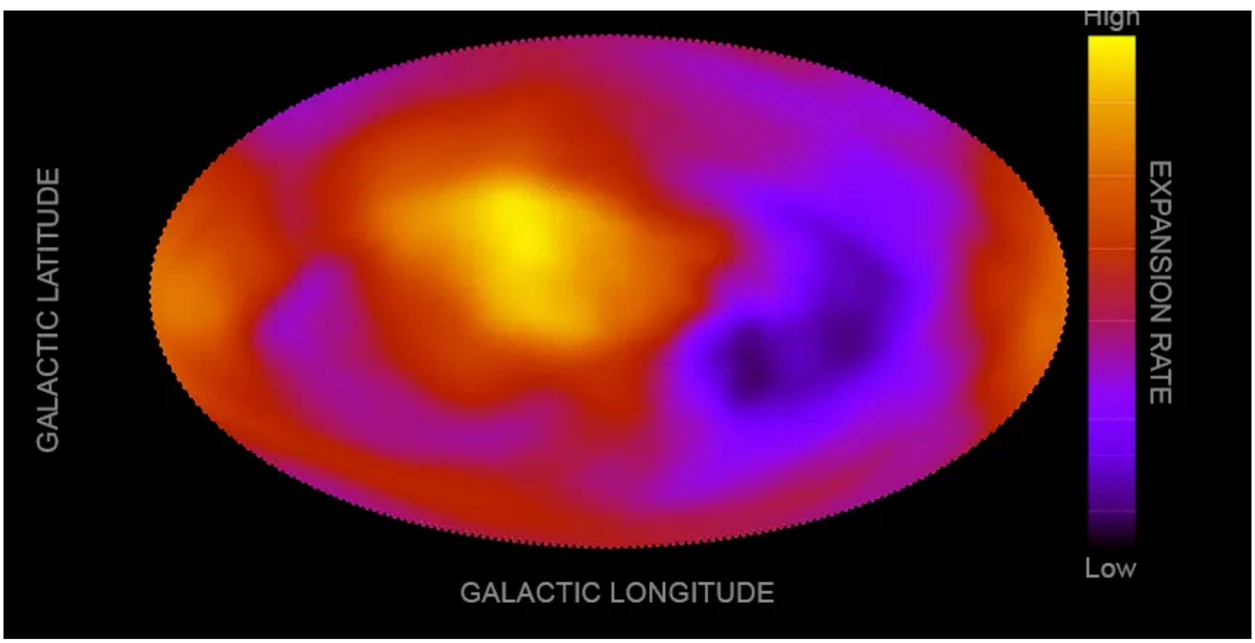


Fig1

Above are the ∂C/∂r, dt constant N=2 (observable internal QMS jumps in fig 1). A QMS (quantum mechanical system) state region jumps all at once as seen by the outside fractal larger observer so it should do that for the inside (r_H) observer as well. Because of that the disturbance appears to propagate from any given point at speed c even though it actually happened simultaneously everywhere at once in the QMS. Thus we see these Sloan and Margaret Geller Great Walls that appear to be centered on our own position (corrected for our own galaxy's proper motion). But they really aren't centered here. It's just that the jump(s) occur all at once over the entire QMS.



Expansion rate difference over 180deg: implying we are not at the center of the expansion so for us it is NONisotropic.