Part V
$r<r_H$

Section 12.1 Continued: Metric Change Effects We Can Astronomically Observe and Observable Effects on the Geological Time Table

Introduction

Part V of this book is optional and is a continuation of the fractal $r<r_H$ solution method of the new pde of section 12.1. It provides the time evolution of the metric in that Dirac equation zitterbewegung motion and some implications of the apparent multiparticle fractalness at cosmological scales. For example inside r_H the density goes as sinhωt and so R_{22}=sinhu. Solving this equation, including also Kerr metric rotation as a perturbation, gives the time evolution of the cosmological metric. But the nontrivial electron mass implies a nearby cosmological object (called object B in chapter 23 and in general there must be an object C if this is to be a baryon). These objects provide a quantized perturbation to that time evolution. The implications are dazzling, imply an amazing amount of metric change, metric quantization consequences, that have been observed. To understand the metric quantization effects on quantum tunneling we use the Gamow equation with $1/\theta=\exp(-2\pi Z_1Z_2e^2/\hbar v)$= transmission coefficient Gamow factor. Also from section 3.3 we have $h'=h/\sqrt{\kappa_{oo}}$, $ke^2'=ke^2/\sqrt{\kappa_{oo}}$. $1/\sqrt{\kappa_{oo}}\equiv$energy of quantized metric h then is proportional to ke^2 so in the Gamow factor only speed v matters when a metric jump occurs. Thus the net effect of the metric jump event is to change the v in the Gamow factor and so the rate of radioactive decay in the earth (thus effect volcanism) and the rate of thermonuclear fusion in the sun (thus effects climate on the earth). The resulting geological time equation (i.e., earth history equation) then provides a fitting and useful end to this book. Furthermore from chapter 2 ε was larger in the early universe so v larger making the effect of the nuclear force smaller so that particles can tunnel out of its Yukawa potential easier. This pushes the maximum binding energy per nucleon back say to silicon and carbon making these binding energy per nucleaon the highest and making supernova at those times release those elements, creating a dust but still (after 350by) making a mature "early" universe.

Gravity as seen on the inside of the huge horizon (eg., by a gravitometer) r_H is what, on the next larger fractal scale, is seen as the electrostatic force and comes out of my derivative in the exact derivation of gravity in Ch.12 as the perturbative derivative component q1m1q2m2 source which replaces charge by qm. Positrons are electrons going back in time and so this information about the 2 massive qm positrons inside each proton is contained on the huge cosmological horizon at rH as sum of qm (recall all the information inside a black hole is contained on the horizon so as a source for Gauss' law$\nabla(\varepsilon E)$= information on surface=Σqm). Thus the old Gauss's law pill box (Gauss law from our old Maxwell's equations in figure 1 now contains q1m1 as the source. Note the huge mass of this object along with the dominant charge that exhibits it is what matters now. So a antiproton universe with 2 massive electrons and a positron would from this Gauss' law give a opposite qm charge on the cosmological scale. So even though gravity inside the r_H is always attractive, gravity outside this huge r_H acts like the electrostatic force and so is attractive and repulsive. That is the source of the new electrostatic field on the next higher fractal scale.

Note the scale factor =rH =2e^/mec^2 and so it also contains the charge to mass ratio.

Recall the Mandelbrot set set the 10^40 transition and so implies that the gravity force is 10^{40}X weaker than the electrostatic force on a typical electron.

1.

Chapter 22
Metric Coefficient Changes with Radius

22.1 Equation 10.2 Empty Space Expansion Corrected For *Non* Free Space

Recall from chapter 2 that case 1, ε, Δε now act as independent physical QM operators (e.g., ε=cosmological expansion, Δε= cosmological rotation) in this Dirac equation. Note also just below equation 22.5 that this smallest size $r_{initial}=20X10^6$ km is approximately 10^{41} times larger than the Planck length 10^{-32} meters. Thus this $r_{initial}$ distance is the Planck length for the M+1 sized cosmological scale. Thus even the Planck length is fractal and represents the smallest size attained in the Dirac zitterbewegung oscillation. Also note that the universe does not collapse to a point ($20X10^6$ km) and that the value of the constants ε and Δε depends on our point in time in the expansion.

Note there are three motions going on at once here. The first motion is the $r=roe^{kt}$ object A zitterbewegung expansion inside r<Compton wavelength (fractal-cosmological). This motion ends at $r=r_H$ 5trillion years commoving time. The expansion then turns into a contraction. The second motion is that 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.

Note the relatively large Δε rotational term implies small inertial frame dragging and thus a relatively 'nearby' ($\sim 10^{10}$LY) implying rotational (thus Δε is a Raman spectral rotational energy increment) and vibrational ε energy levels. A second, farther away, object (as in a proton) is creating subharmonics to that fundamental 87km/sec.

Note the universe was already 353by old at the linear extrapolation time of 13By ago (red line in so many large galaxies and their associated black holes should already have matured by that time.

22.2 Horizon, Flatness and Monopole Problems

There is a lot to say in this theory about the Horizon, Flatness and Monopole problems. It has been said that these are the "big" problems with the big bang theory. Supposedly the "inflationary model" is the only way to solve these problems, but that is just not true.

The Horizon problem is solved in this theory because the expansion rate is proportional to t^n were n>1, which is explicitly true in the cosh t and its second order t^2 term (the derivative of the sinhωt diameter for the inside observer), and this rate of expansion is enough to solve the horizon problem and long time below 300kyear red shift decoupling radius (15.38, Guidry, "Gauge field Theory"). In another context the 370 by universe gives us plenty of time for the CBR to come to thermodynamic equilibrium provides a means for thermodynamic equilibrium to be established and so give the CBR its black body and uniform character. Incidently the flatness implies, along with the sound speed in a radiation dominated plasma of $c/\sqrt{3}$, and the 300,000 ly radiation decoupling size, that there will be the l=200 dominated power spectrum implied by

boomerang and maxima and WMAP data. Inflation is not the only theory that will give this power spectrum since this theory also gives that flatness.

The flatness problem is explicitly solved here since the universe is oscillating (for the outside observer at least), so the amount of matter in the universe is *automatically* close to critical density implied also by $\sum_M H_M = 0$ in equation 4.15. Though the inside observer sees the accelerating $r = r_o \sinh \omega t$ motion.

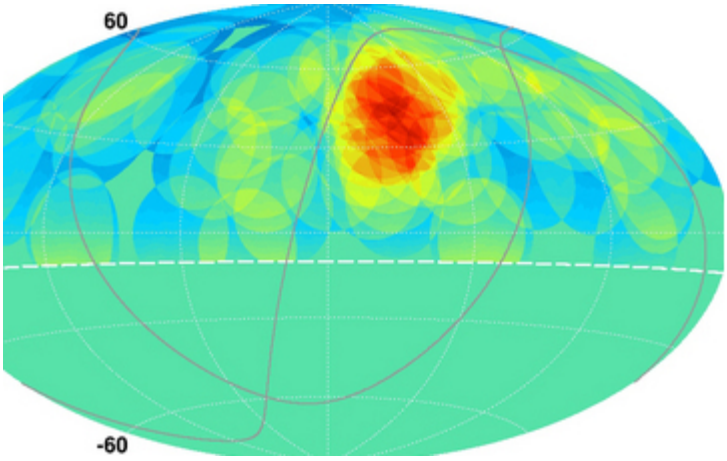
The monopole problem is solved because SU(5) GUTS (the source of the monopoles and thought to be "required" for baryogenesis) are not needed here because baryogenesis is not needed since the baryons survived from the previous oscillation (it never collapsed to a smaller size than that 63 million mile radius size implied by equation 22.6, the baryons were always here). Also this theory summarized in section 2 gives the minimal standard model (with $SU(3)XSU(2)XU(1)_L$ form) and its fields (see lower right hand side of figure) and so it doesn't say anything about these far more general GUTS with their "X" couplings, causing proton decay (where is it?). The proton is stable because for it $r = r_H$ so the metric time component κ_{oo} is zero in eq.4.1, its clock has stopped.

Note in equation 22.6 and chapter 19 the proton mass is tied to the 1 in the metric and the electron mass (and therefore charge) is tied to the $a\cos\theta$ angular momentum term. Thus the ratios of charge e to electron mass and electron mass to proton mass don't change here either according equation 22.6. Radio astronomy observations have confirmed this to at least 20 parts in a million (Christian Henkel, 2008).

22.3 Equation 22.6 Calculation of More of the Dipole Structural Details of the Center of the Universe

Note the observer is looking nearly along the polar axis with the fractal selfsimilarity with the Dirac equation implying net larger charge motion around this center because of the conservation of angular momentum, thus polarization vectors form concentric circles around the central region as occurs whenever charge currents rotate around an axis.

Hot spot for ultra high energy cosmic rays is near the center of the universe, Ursa Major region. Supposedly cosmic rays can't travel more than 200million LY. But have they ever measured the QED cross-section at a millionbillionbillion eV?



]Ultrahigh energy cosmic ray hot spot south of Ursa Major big dipper handle.

Reason Why The Center of The Universe Is Sending Out a Lot Of Ultrahigh Energy Cosmic Rays.

The mathematics that explains this is a Zeno's paradox model for the explosion.

Take a central mass M piece going speed v_1 in center of mass system and splitting a 1/3 mass M piece off. **Use the conservation of momentum** calculation:

$(2m)v_1=mv_2$ so that $2=v_2/v_1$. where v_1 comes from the initial step. Now let the COM move with this new speed. Then repeat the process, get the same relative speed and then add the new COM speed to that one.

Think of it as a multistage rocket where the lower speed first stage causes a velocity doubling of the second stage at staging. The center of mass is now moving at v_2 so we must at the second stage separation add that to the new $v_2$getting 2 v_1, etc..

Then split that smaller piece into thirds again, put the system into that new COM frame of the next smaller fragments and repeat the calculation thereby get a speed of $3v_1$ relative to ground. thus we are modeling the explosive splitting of fragments with momentum conservation constraining what happens at each step and mimicking the lessened inertia constraint of the smaller outer layers at each step. Also notice in this same calculation that the

energy *per unit mass* contributed to the fragmentation in each individual step remains the same for each smaller and smaller fragment.

This way of doing it also allows the outer pieces, which are less constrained by the inertia of the material on top of them, to end up moving faster and allows this process to continue on for even dust sized fragments.. The sequence of mass changes for the iterative mass calculation is then

m(i)=(1-((2i-1)/2i)))^2 to get half again size of piece etc, =hence Zeno and his paradox. note in a Zeno's paradox explosion there is going to a lot of left over material at the center of the explosion. In this case there would be a dis proportionally large density of galaxy superclusters left over and associated black hole jets creating a high density concentration of high energy cosmic ray sources.

Observed High Plate Energy Density For Object B

Also recall object B appears very massive because it is ultrarelativistic relative to object A so the excess black body radiation we see coming from its plate is going to make it appear much hotter than our own black body, object A. Someone has looked at the excess black body spectrum of object B (using Planck satellite spectral data) at the center of that plate and discovered that it's black body radiation is about 90X higher temperature than object A s. This is then evidence of the ultrarelativistic nature (relative to object A) of object B implying it is far more energetic and therefore hotter.

Recall in my model the proton is composed of electrons (i,e., 2 positrons and one electron). But the electron and tauon mass are both determined from the distance of object A to object B. The 2P3/2 at r=rH proton mass is about half the $2S_{1/2}$ tauon mass from that new pde calculation. So the ratio of the proton mass to electron mass is going to stay the same no matter what object B's zitterbewegung is doing with that 6by period of oscillation of its intense plate field.

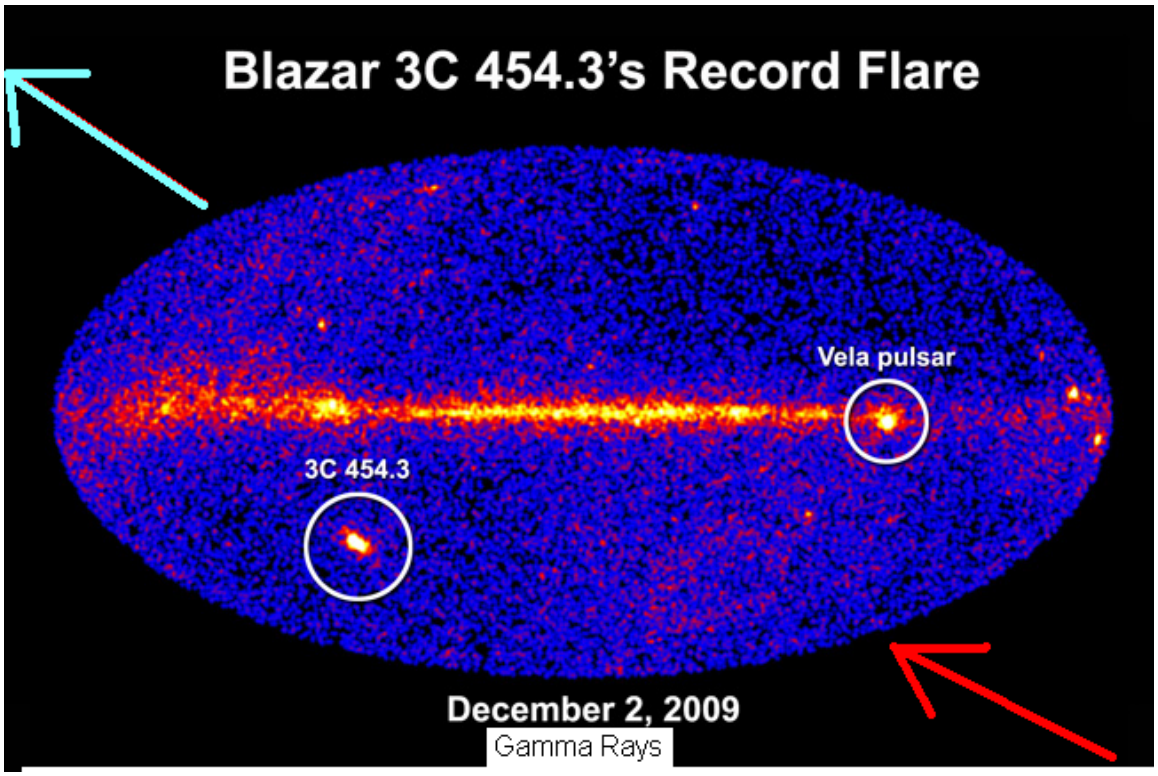


Figure 22-4

L=2 and L=3 cbr moment orientations also imply dipole. Note dipole implies the above orientation as well (blue-red arrows)..In Gamma ray image also note the same "axis of evil" spin axis. .New Scientist Sept 2009
The electron also has a spin (1/2). We are in a Fractal universe.below

22.4 The Δε Term Results in Small Left over Polarization of the Ambient Metric

A rotating universe with inertial frame dragging that gave the rotational perturbation $\Delta\varepsilon/2\sim.00058/2$ (exact from beginning of section 23.3 quantized metric calculations is $1/3450=\Delta v/c\approx\Delta\varepsilon/2$) would also give a small dipole (l=1) term in the cmb polarization power spectrum since for example the N+1 fractal scale Dirac dipole would give 100% field polarization if not for the inertial frame dragging and would decrease linearly to the present rotational perturbation $\Delta\varepsilon/2$ value. In that case a power spectrum polarization dipole (l=1) of 1 part in 3450 random polarization (equation 1.9) would be expected because of the rotation of the universe Section 21.3). Thus using this linearity we solve (at ~30Ghz, in the K band) the ratio equation $1/3450=\Delta\text{rotational}=\Delta T/2.74$ for ΔT giving $\Delta T^2=.5\mu K^2$ fluctuation of the 2.7K cmb background. Therefore we can utilize the Stokes parameters in a monitoring program (symmetrically about the galactic plane) of the cmb polarization in the upper K band for this $.5\mu K^2$ polarization temperature. Such a polarization $\pm.5\mu K^2$ temperature would be strongly suggestive of a fractal universe because it is essentially a cross check of the rotational $\Delta\varepsilon/2$ value with the other results in the previous set of applications. There is also a 1% quadropole anomaly to the CBR that would be caused by this inside fractal selfsimilarity with the electron (its spin). From Leonardo Campanelli there are studies of WMAP data.
Got to be careful about galaxy dust polarization here.

22.5 Single state Metric quantization is responsible for mass constancy (of an electron) from one region of space to another

Recall all those statements in our quantum mechanics text books about how the wave function (ψ) behaves. For example taking derivatives of (i.e., operating on) the wave function ψ gives eigenvalues, the wave function collapses at the time of observation to the value observed, $\psi^*\psi$ is the probability density etc.,. But what is lost in these statements is that the wave function is also a solution to the Dirac equation (pde), so these properties of the wave function are also a consequence of that equation. In that regard for example the S state solution (ψ) applies over all space. Thus with the r_H horizon boundary the eigenfunctions (e.g., S state) should also apply over all of space including at $r<r_H$. Thus the same energy level distribution that exists outside also exists inside r_H, at $r<r_H$. What we observe of the outside energy eigenfunction is in the metric properties and the metric we observe also has energy $E=1/\sqrt{\kappa_{oo}}$ and thusly must be a result of the (wavefunction) energy quantization (again a property resulting from this new pde). Thus the energy quantization on the outside, at $r>r_H$, continues on the inside, at $r<r_H$. Note that $E=\hbar\omega=h/T$ is the energy with T time dilated inside ($dt'^2=dt^2(1-r_H/r)$) and so observed energy levels are large but yet the energy quantization (e.g., object B rotational energy L(L+1)) is the same function of L as on the outside.
Also recall that the single particle time development operator e^{iHt} operates over the whole particle at once. Thus an observer on the inside doesn't see any metric propagation phenomena, just the changes in energy (jumps) of the metric at his position. He doesn't measure the speed of anything then. Again this property comes out of the pde. The resulting Gibbs phenomena effects then appear later to propagate away from the observer at the speed of light.

By the way there is in fact a MUNDANE but nonetheless important consequence of this metric quantization. The masses of those three particles (tauon, muon and electron) come out of that theory in the metric coefficients as we saw in section 23.5. Recall that they are derived from that fractal selfsimilarity using that Kerr metric ansatz (using the only two numerical inputs into the theory, which are the cosmological radius and angle). Now the resultant ambient metric has approximately the same form here as it does, let's say, on Pluto, so that the masses of these particles are the same here as it is there. Previously though it was in fact a mystery how these completely independent particles have the same masses from place to place. If the vacuum provides NO connection AT ALL between them why should they be the same, coincidence? What physically causes them to be the same? In fact this metric quantization of section 23.3 gives us the mass invariance, of different electrons, from place to place, which of course is a mundane result.

Modified Fluid Dynamics Equations

Recall the vorticity $\nabla XV=2\omega$ (V is velocity and w angular frequency) and the Navier Stokes equation and its Lamb-Onsteen vortex solution we have for angular velocity $u_\theta=(1-e^{-(r2/4\nu t)})\Gamma/2\pi r$ where ν=viscosity , r is radius, t is time, $ru_\theta=\Gamma/2\pi$ is a measure of the angular momentum at any given time.

Because of the viscosity ν the $u\theta$ goes down with time t. Also with or without the viscosity the speed goes down with radius r.

For metric quantization for a long axis (M87, tornado) the viscosity ν would have to be small and the Γ proportional to r. as for a long cylindrical source (but still inverse square for any given small element) using Gauss' law.

(For disk source Area= $2\pi rd$ where d is the thickness, we are outside the metric quantization "mass" when in the halo so the mass enclosed by the Gaussian pillbox is always the same regardless of r).

Anyway, the modification for metric quantization of Lamb-Onsteen is small viscosity ν and Γ proportional to r.

Nothing in the Navier Stokes equation gives the axial force that comes out of the 511kV rotator oscillator equation. This axial force would have to be a added term in the Navier Stokes equation.$\nabla XA=F$ where A is that 511kV rotator oscillator result for the acceleration, equation 3.

When Does Classical Gravity Dominate Metric Quantization?

Recall QM effects are observable when the quantities $\Delta x\Delta p$ and/or $\Delta t\Delta E$ are on the order of ~~h~~, Planck's constant where Δx could be a wavelength. But ~~h~~ has units of j*s and relativity gives changes in these space-time units and mass when gravity and relative speed are changed. By the way in that fractal scale jump dr/dt is not effected since both dr and dt become large so the speed of light remains the same, even in fractal scale dx jumps by 10^{40}X. But for a constant energy observer (e.g., joules) on the next larger fractal scale ~~h~~ becomes 10^{40}X larger since s=t jumps by 10^{40}X in those units of h. Recall in that fractal theory what the outside observer (outside the N+1 scale r_H) observes as an E field the inside observer observes to be gravity. Thus the N+1 large observer's associated E field has this accompanying h. But we see his E field as our gravitational field and thus for this field see this new much larger h. Thus we see these (gravity) metric quantization effects.

When do we see classical inverse square gravity versus metric quantization gravity.

Classical gravity dominates where the first derivative on the gravity field is the largest as you expect. The metric quantization is an energy, like a potential energy as you know. If it is nearly a constant the major force that is experienced is the classical gravity force.
Thus space craft moving around the solar system close in don't even experience the metric quantization. Gravitometers don't see it either along with those precision spacecraft measurements of gravitational changes on the surface of the planets.
Recall the derivative of the potential is the field and the field times the source mass is Newton Law of Gravity force.
If the quantized metric "potential" is nearly flat all you see is classical gravity

In Chapter 23 we see that gravity levels, i.e., the local metric perturbation, is a quantized stair step function of distance, but this changes the electron mass very little and is only detectable at very weak gravity.

Spectra In Galaxy Halos And Metric Quantization

Review: Kerr metric

$$ds^2 = \rho^2\left(\frac{dr^2}{\Delta} + d\theta^2\right) + \left(r^2 + a^2\right)\sin^2\theta d\phi^2 - c^2dt^2 + \frac{2mr}{\rho^2}\left(a\sin^2\theta d\theta - cdt\right)^2,$$

Also recall that setting my $\kappa_{oo} = g_{oo}$ where my $\kappa_{oo} = \sqrt{(1-\Delta\varepsilon)}$ where $\Delta\varepsilon$ is the electron mass and g_{oo} is the $(1-2GM/rc^2)$ Schwarzchild g_{oo} metric coefficient. Using also $mv^2/r = GMm/r^2$ gives that v=90km/sec metric quantization result.
Object B has that rotational L(L+1) energy quantization so take the square root to get vn (in $(1/2)mv^2$) quantization where n~L is an integer.

In the plane of the galaxy, where we are also given that $d\theta=0$, the Kerr metric becomes approximately the Schwarzchild metric if r is very large in $r^2d\theta^2$ term. Note the important Kerr metric contribution $(r/r^2)d\theta^2$ is close to zero then.
even though the galaxy is a disk, not a sphere, as we did above.

Thus in the hallo region of the plane of the galaxy it is okay to set $\kappa_{oo}=g_{oo}$!
Note there are three motions going on at once here. The first motion is the $r=roe^{kt}$ object A zitterbewegung expansion inside r<Compton wavelength (fractal-cosmological). This motion ends at $r=r_H$ 5trillion years commoving time. The expansion then turns into a contraction. The second motion is that 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.
Anyway this implies that you must add a imaginary wt external metric to the $g_{oo}=1-r_H/r$ for the 6by oscillation.

Recall in that 511kV rotator oscillator the metric effects are strongest along the z axis if ωdot, rdot or Vdot are large enough.
But for a static, but still rotating object (metric) such as the Milky Way galaxy's the movement away from the polar angle $\theta=90°$ (with $d\theta$ not zero) fuzzes out the metric quantization since the (independent variable) r dependence no longer cancels out to get that simple equality between v and 90km/sec and we are also left with a dependence on yet another independent variable theta

So if we were moving in and out of the plane of the galaxy the metric quantization will fuzz out slightly. If such motion occurs at 60my intervals then we should see some heating and cooling effects or additional Oort cloud instabilities at those intervals. So there should be additional, but smaller, metric quantization effects at 60my time intervals.
The 270my ε and 2.3my Δε metric quantization effects still occur with the 270my jumps being by far the largest of them all.

Note $e^2/m_ec^2=r_H$ constant on a given fractal scale and so e^2/me is a constant since c is. h is proportional to proper mass m_e in this theory (eq.1.11) so a larger m_e (for a metric jump) means a larger h.
Note the effect in the Rydberg formula for the frequency of spectra is in the $m_ee^4/h^3=(m_e^3/h^3)(e^4/m_e^2)=(m_e^3/h^3)r_H^2$ term and so the frequency of radiation being emitted doesn't change with metric quantization.
Thus you will see the same atomic spectra in galaxy halos as you see in the lab despite the effects of metric quantization in the halos.

Chapter 23

Outside r_H Object(s) Give Quantized Metric Inside $r<r_H$

23.1 Most likely Outside M+1 th scale r_H: proton (3 object, sequence pde2b)

Δε is not infinitesimally smaller than the tauon=1 2S state solution, as would be the case for an electron like M+1 th scale object in (a huge) interstellar space or in an orbit outside a nucleus on the M+1 fractal scale. This is because the inertial frame dragging due to objects external to the M+1 th fractal scale horizon is not zero. Thus our M+1 th scale cosmological object apparently is the 2P3/2 excited state of the electron inside a hadron. Thus there is a local object we shall call object B.

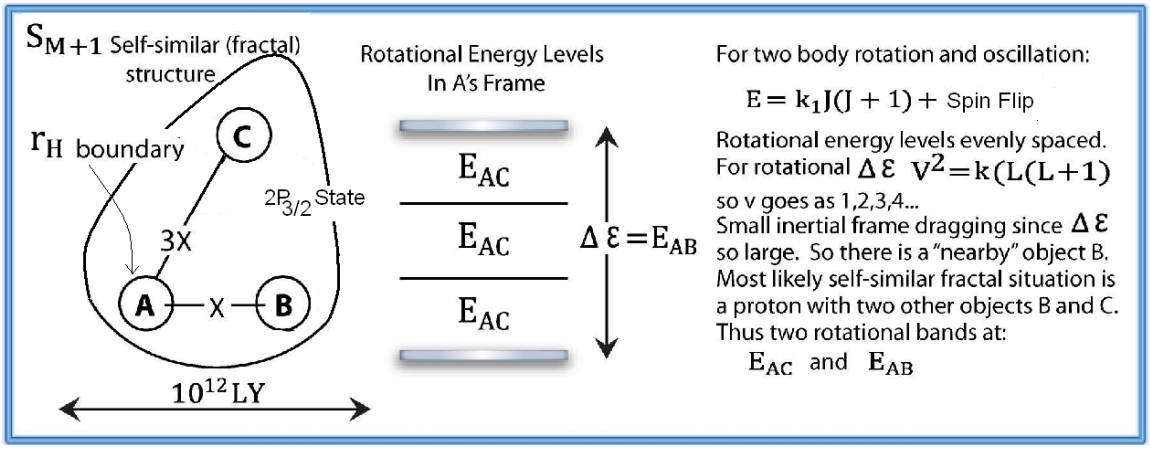


Figure 23-1 Objects Adjacent to the Object We Are Inside of

In that regard, Figure 23-1 (above) is the instantaneous relative position of the 'electrons' in the trifolium lobes of the 10^{12} light year diameter selfsimilar cosmological object with the object we are contained in called 'A' in the figure 23-1. If this is indeed a $2P_{3/2}$ baryon there is most likely a farther away object C. As mentioned earlier (bottom of section 20.3) object A and B form a Cooper pair. Object C then effects only the ε oscillatory coupling, (figure 23.11) not angular momentum as does object B. Thus over a nonzero finite time J and m split as in $|J,m> \rightarrow |J\pm\Delta J, m\pm\Delta m> \equiv |J,M>_{3N}$. This makes the energy levels E_{AC} metastable in free space ($n\Delta\varepsilon$ are then free space asymptotes) but less so inside of the microscopic r_H. The rotational Raman ω is far redshifted for the outside observer but blue shifted back as seen by the inside observer figure 2-1 part 1 so that the frequencies ω still scale approximately to the respective fractal scale change from inside to outside (see section 2.3) because of the large time uncertainty and so small energy uncertainty. But, in analogy with the baryons, the transition energies for objects A and B are far larger than the electron mass making the frequencies larger and therefore the smaller times between metric changes than the Hubble time.as indicated in FS scale change value of section 2.3. **Plasma Tube Instability**

The ∇P term in Suydam's criterion(10) for kink instability of these EXH Poynting vector equatorial plasma tubes can be related to ∇P through the MHD equation:

$$\mathbf{r}JXB = r\nabla P + r\rho g - (g/|g|)R\rho T/M$$ (the MHD equation(2)) with $A \propto F_i|\cos\theta_i|$.

from equation 1. A new electrical current j_1 is created by the tidal effects of the long period outer planets through Faraday's and Ohm's laws:

$$-BdA/dt = V = Rj_1 = kd|\cos\theta_i|/dt.$$

For the short period planets a change in this j_1 due to their planetary tides changes the B through Ampere's law[1] $\nabla XB=j_1\mu_o$ If all the other quantities (except for JXB and $\nabla P=dP/dr$) are constant in the MHD equation then $\nabla P \propto JXB$. Applying Faraday's law for the short term planets:

$$-AdB/dt = Kdj_1/dt = Rj_2 = d^2|\cos\theta_i|/dt^2.$$

So in the MHD equation the rate of change of dP/dr is proportional j_2XB. Therefore:

$$dP/dr \propto j_2XB \propto d^2(F_i|\cos\theta_i|)/dt^2 = k\delta(\cos\theta_i) = \text{delta function} \qquad (3)$$

$\cos\theta\approx 0$. dP/dr can become large negative because of that delta function spike and we then have satisfied Suydam's criteria (2) for the sausage instability and thus flaring.

Many and Varied Amplitude Dirac Deltas δ|cosθ| Metric Quantization Jumps From Many Such |cosθ|=0 Situations Gives Crackling

Let's say that one such spike in a crackling metric noise output b|Cr|Cr>| momentarily resembles a sine wave that makes the crackling in resonance with the nuclear transition: Thus from a CQED point of view we have:

$a|Nu>+b|Cr|Cr>|0> \leftrightarrow |Nu>(a|0>+b|1>)$, a half-cycle of oscillation starting with no crackling sources coherently swaps the nuclear state onto the noise field's |Cr>.

Note the two states $a|Nu>+b|Cr|Cr>|0>$ instead of the one on the other side of the ↔.

So if the momentary frequency of a give oscillation happens to be close to the frequency f associated with an alpha decay (hf=decay energy) then the number of energy states is momentarily doubled in that energy interval. There is then a doubling of the density of energy states in the Fermi Golden Rule. This then doubles the rate of transitions and so the rate of decay. This effectively then lowers the Coulomb barrier Gamow factor for nuclear decay. Note nuclear mass doesn't change, there are just more CQED states. If there is a huge increase in the rate of crackling, such as occurs in a metric quantization spike, then the rate of radioactive decay will increase.

Appendix: Cavity Quantum Electrodynamics (CQED)

If the cavity is in resonance with the atomic transition, a half-cycle of oscillation starting with no photons coherently swaps the atom qubit's state onto the cavity field's.

$(\alpha|g>+\beta|e>)|0>\leftrightarrow|g>(\alpha|0>+\beta|1>)$

CQED can be realized in a small optical cavity or inside of a small resonance LC circuit.

E.M.Purcell, Phys.Rev.**69**,681 (1946)

T.Sleator et al., Phys.Rev.Lett. **55**,1742

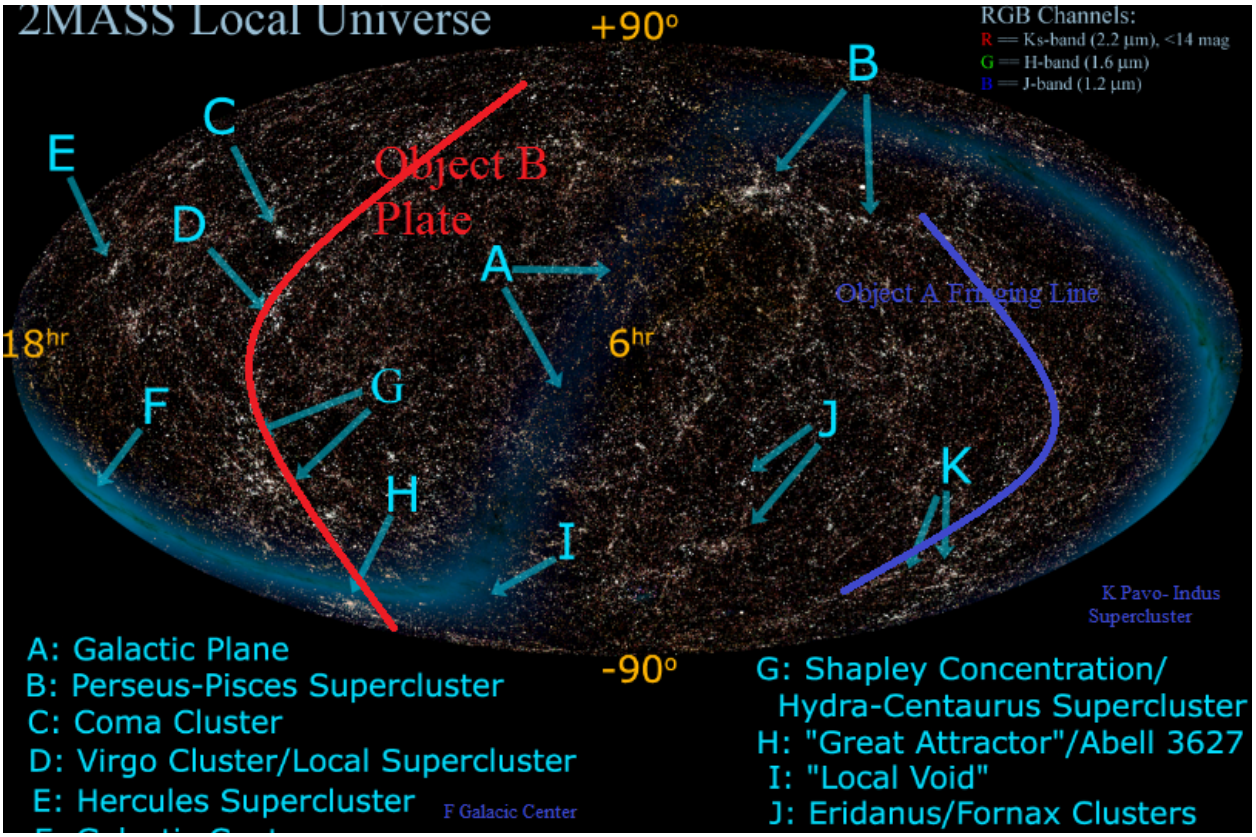
Object B and C spin flip (analogous to the 21cm line and mri mode of operation) is the lowest energy transition for the ε oscillation forcing function. This spin flip energy is the same as rotational energy transitions because here the spin flip is also a rotation. It also allows for transition between these two eigenstates. It is a virtual energy exchange between the ultrarelativistic particles that must occur (since this is the lowest energy transition and a highly perturbed state given the chaotic 3 body motion) still keeping the net spin of the (huge) nucleon constant. So the energy will be for spin up, spin down and so on thus creating a square wave $E(t)=\Sigma_n\sin((2n+1)\omega t)/(2n+1)$ contribution. The time for a spin flip is scaled by FS as in section 2.3. Recall that 2P3/2 proton had three objects in it, two positrons and one electron. The positrons are in a filled singlet state so the electron cannot annhilate with them. In that regard quantum exclusion forces like the Pauli exclusion principle are stronger inside the proton (than either the nuclear or E&M forces) than for "free" leptons because these are dipole

phenomena which are get stronger faster at small separations.. On the cosmological N+1 fractal scale we are inside one of those three objects. We could call our's object A and the other two objects B and C. The other objects decrease the inertial frame dragging in our object A, thereby endowing our nth scale electrons with mass. Recall an electron can jump through energy levels in a hydrogen atom.

Inside the horizon objects may gain energy and jump from one energy level to the next analogous to an electron jumping from one energy to the next. The sun appears to do that also due to metric change in those EUV jumps: the energy levels are already there it just gains energy as it just jumps in energy as it moves between them. So let's say the metric density is increasing over a large volume due to outside metric changes and so objects are jumping from one energy level to the next over that volume. Nothing really has moved at a high speed. It would be like spreading a huge rubber sheet out at a constant rate (individual components moving a only millimeters a second) and every time the sheet reached a certain tension over an object the object popped. Instantaneously all of the objects would "pop" at once but because the speed of light is finite an individual location would see the effect spread away from their individual point Nothing has moved superluminally at all. In fact components of the metric may be moving at snails pace.

One question naturally arises in this context. Which object are we in, one of the two positrons or the single electron in that huge proton?

It appears as if our object A is that single electron since the inertial frame dragging is small, we are not close to another large object as we would be in that single state. Also the quantum vibrational mode (ep) and L(L+1) dep rotational two body modes are all you need to explain the metric quantization data. This also explains why this core 2 positron, 1 electron state can be treated as a two body problem as in Ch.19 where that new pde really applies to just two bodies in that Frobenius series calculation. The singlet positron doublet and that separate electron act as if they are two bodies instead of three in those computations.


2MASS Local Universe
+90°
RGB Channels:
R = Ks-band (2.2 µm), <14 mag
G = H-band (1.6 µm)
B = J-band (1.2 µm)
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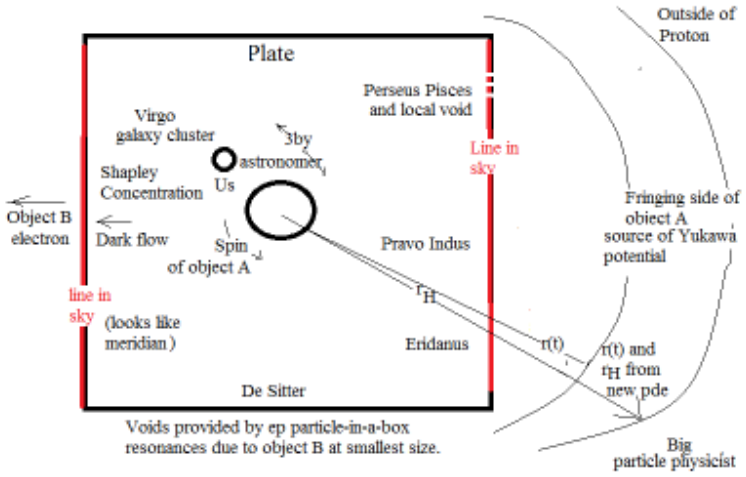
Object B
Plate
A
Object A Fringing Line
18hr
6hr
G
F
J
K
H
I
K Pavo- Indus
Supercluster
-90°
A: Galactic Plane
B: Perseus-Pisces Supercluster
C: Coma Cluster
D: Virgo Cluster/Local Supercluster
E: Hercules Supercluster
F Galacic Center
G: Shapley Concentration/
Hydra-Centaurus Supercluster
H: "Great Attractor"/Abell 3627
I: "Local Void"
J: Eridanus/Fornax Clusters


Outside of
Proton
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electron
Dark flow
Spin
of object A
Pravo Indus
Fringing side of
object A
source of Yukawa
potential
line in
sky
(looks like
meridian)
Eridanus
r(t)
r(t) and
from
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De Sitter
Voids provided by ep particle-in-a-box
resonances due to object B at smallest size.
Big
particle physicist

Superconductivity In Black Holes.

Black holes have only one proper mass. This is the result of metric quantization They gain mass simplyby having the interior objects move relativistically.

The $A(dv/dt)/v^2 = F$ pairing interaction superconductivity force derived in chapter 17 depends on a large dv/dt and A. v is limited by the speed of light c. Recall black holes in this model are de Sitter metric inside, Schwarzchild or Kerr outside.,

Recall black holes at the center of spiral galaxies have superconducting interiors and so the mass is moving ultrarelativistially around in many trajectories all meeting at the equator since the superconducting objects have zero scattering cross-section with each other.. The plates all meet at the equator thus forming a line, a beam.in the plane of the galaxy. This beam provides a gravitational force that decreases with distance r, not r^2, since it is in a plane, not a sphere. Take the usual Gaussian pillbox around $\int FdA=\rho=2\pi rh$. So $mv^2/r=kGMm/r$ instead of GMm/r^2. Cancel the r and so $\mathbf{v^2 = constant}$. Thus the speed of objects moving in the plane is one number. Recall in the galaxy halo we can set background metric $\kappa_{oo}=g_{oo}$ if we assume $mv^2/r=GMm/r^2$ so that $1-\Delta\varepsilon=1-2GM/(c^2r)$ only because of this planar force. $\Delta\varepsilon = .00058$, electron mass. Solve for v, get $\approx$100km/sec.

Orthogonal Rings

Note inverse square law gravity exists out of the plane where there is some radius that moves the same speed. If this ring has blobs that move through the plane in synchronisity with the gaps in the stars moving in the plane it is then possible for this ring to persist. Virtually all large spiral galaxies have such persistent orthogonal rings.

Quenching

But as the black hole gets bigger it becomes less dense and the dv/dt drops in the pairing interaction equation and so the superconductivity is quenched. Thus there is no more beaming at the equator of the black hole and so the galaxy goes from being in a plane as in a spiral galaxy into an elliptical galaxy that is round. The gas is less dense since it spread out over a spherical volume instead of a plane and so star formation nearly ceases.

One example of where that black hole superconductivity is being quenched at this moment is in the sombrero galaxy where you do notice the combination of elliptical galaxy and spiral galaxy all at once.

23.2 Outside Sources Cause Metric Quantization

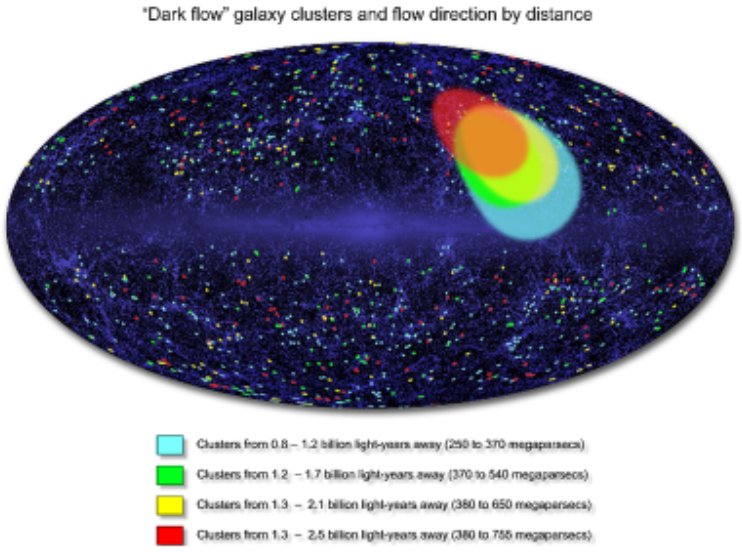


Figure 23-2

800km/s flow of (white) galaxy clusters in direction of outside object(11) at colored oval. Where the horizon vanishes. Motion of outside object itself causes these L(L+1) rotational eigenstates.inside. This oval is the actual direction of object B. Kashlinsky et al, Oct. 20 issue of the journal *Astrophysical Journal* Letters, identified streaming matter toward such a outside object in the direction of Vela-Centaurus at constant 800km/s. If object B is positively charged, given let's say object A is negative, so the effective ambient field is larger in that direction and so then the metric contribution to $\Delta\varepsilon$ and thereby e^2 in α (fine structure constant) is minutely larger in that direction.
John Wheeler sponsored a (Bosonic) "wave function of the universe" conference at Tufts U in 1990. The more recent rotational symmetry observations of WMAP (polarization symmetry) and the "axis of evil"(7) imply a particle with spin, most likely a *Dirac equation* particle, not a boson, especially given the $2P_{3/2}$ state (at $r=r_H$) implications of appendix E. The isolated nature of this cosmological object implies large inertial frame dragging causing spin effects to be almost unobservable, hence the small but observable CMBR dipole and net polarization.

Smaller inertial frame dragging due to object B (to a lesser extent object C) makes $\Delta\varepsilon$ nonzero.

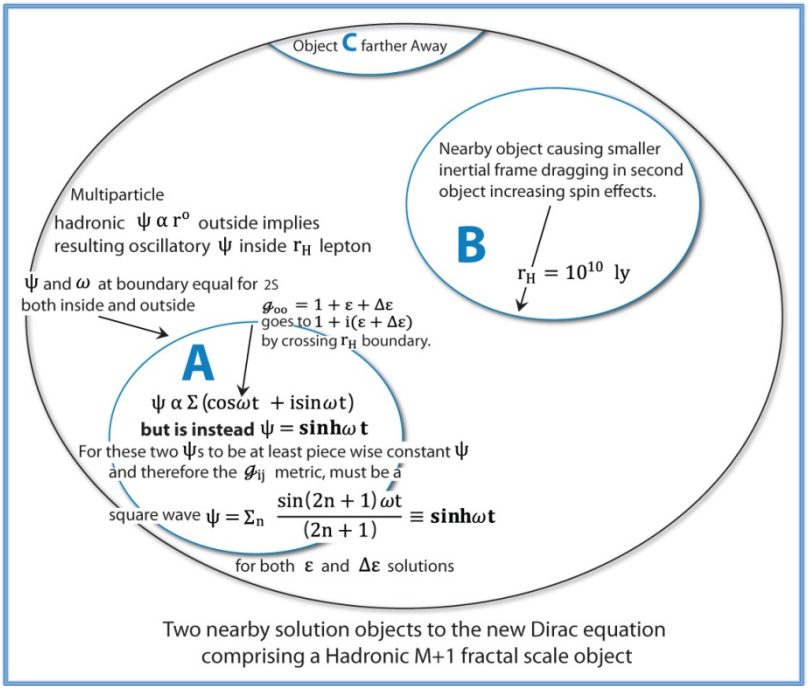


Figure 23-3
Source of Square Wave Phenomena

Here is another way of understanding the spin flip generation of that square wave. Recall from Ch. 19, in the Frobenius solution, $r \propto \psi$, and ψ is constant inside $r<k$ for $j= ½$, for N=0 solutions, the $j= ½$, $\psi \propto r^0$. Because of the fractalness (selfsimilarity of Dirac electron to the observable 'universe') we can calculate for inside the cosmological horizon $E \propto \int \psi^* H \psi d\tau$, with Fourier decomposition due to sum of states caused by perturbations beyond the horizon (that also are responsible for the nonzeroness and constancy of the $\Delta\varepsilon$ again as implied by that r_o proton solution). These give the eigenfunctions the above sine and cosine perturbations $\psi \propto K + \sum a_j e^{ikt}$ where K is that contribution of the ambient metric background from the $\psi \propto r^0$ N=0 solution equation. Thus putting this into the above integral (i.e., $E \propto \int \psi^* H \psi d\tau$), we find that $E \propto K + \sum b_j e^{ikt}$.. But we showed in the Frobenius solution section that these E s have constant eigenvalues or at worst piecewise constant, also the $j= ½$, $\psi \propto r^0$ N=0 solutions from Frobenius solutions. Thus that $\sum b_j e^{ikt}$ series must give a piecewise constant, therefore, a square wave. Using the Heisenberg equations of motion for coordinate time dependence recall that dr^2 has the same sine functionality as $\psi^*\psi$ and so $e^{\varepsilon}e^{\Delta\varepsilon} = e^{\varepsilon+\Delta\varepsilon} = (e^{\varepsilon})^*(e^{\Delta\varepsilon}) = (\psi_\varepsilon{}^*\psi_\varepsilon)^*(\psi_{\Delta\varepsilon}{}^*\psi_{\Delta\varepsilon})$.

Recall the metric component $dr'^2 = g_{rr}dr^2 = e^{\varepsilon+\Delta\varepsilon}dr^2$. Take negative square root which is consistent with square waves which also keep the metric constant as appears to the outside observer nonflat $r' = \int dr = \int -\sqrt{e^{\varepsilon} e^{\Delta\varepsilon}}\, cdt$. Thus the $i\sinh\omega t$ (out in $\psi \propto r^o$ region) goes back to $\sin\omega t$ in those perturbative summed eigenfunction solutions.

$$\int^{t}\sqrt{\left(\left(\sum\frac{\sin((2n+1)\omega_{\varepsilon}t)}{2n+1}\right)^{2}\left(\sum\frac{\sin((2n+1)\omega_{\Delta\varepsilon}t)}{2n+1}\right)^{2}\right)}cdt=$$

$$\int^{t}\left(\left|\sum\frac{\sin((2n+1)\omega_{\varepsilon}t)}{2n+1}\right|\left\|\sum\frac{\sin((2n+1)\omega_{\Delta\varepsilon}t)}{2n+1}\right|\right)cdt. \qquad (22.1)$$

$E\propto\int\sum_{n=0}\sin((2n+1)\omega t)/(2n+1)dt$ for each of ε and Δε separately. (22.2)
Note square waves exhibit Gibbs overshoot and undershoot phenomena. The epsilon changes in delta epsilon increments and stellar spectra don't change except in each spectral line being shifted from the standpoint of a distant astronomical observer.

Origin Of This Square Wave
Recall from chapter 1 that we postulate
z*z=z defining the "**unit**" real number 1 point
norm (so $z= Z^{t}Z=||Z||^{2}$) requiring a D in $Z'^{t}Z'=f(z+D')=z+(z-D')dZ'^{2}+..+(z-D')^{2}ddZ'^{2}/2+..$

with $dz^{2}= \int(\partial z^{2}/\partial C')dC' =\int dC'=0$ if $z'*z'=z+dC'$ where z', $z\approx Z_{p}$, $dC'\approx D'$,Dq,Ds,Dr,..
and z',z is not infinity. We can then do a convergent iteration $z_{n+1}^{2}-z_{n}=C$ to populate the set z,z'=Zp over interval dz.
We can then rewrite the above integral as
$dz^{2}=\int(\partial z^{2}/\partial C')dC' =\int(\partial z^{2}/\partial C')dC' = \Sigma C_{n} =D_{1}-D_{1}=\Sigma(z^{2}_{n+1} -z_{n}) =0$ (or finite) here implying also $z<\infty$.
Note in this integral even though $z_{n+1}*z_{n+1}$ is a function of C_{n} that $\mathbf{z_{n}}$ **is *not*** so you can take that partial derivative of $z_{n+1}*z_{n+1}$
as the partial derivative of $z_{n}+C_{n}$ with respect to C_{n} resulting in 1 **making the integral simply** ΣC_{n}! It's doable!!
Iteratively populating the set Zp that the path integral is done over also makes z1 a Julia set and we have an alternative to the real numbers: one that is a sum of these $z'^{2}-z=dZ$ s.
But these dZs can be written as the sum of $d\mathbf{Z}=d(s_{o}+ds_{1}+ds_{2})e^{i(\theta o+d\theta 1+d\theta 2)}$ $+C=\psi$ eigenfunction.
Note for a locally flat space the Fourier sum of these dZs have to be "square" waves! By the way along a Z plane diagonal dZ= e is zero and the time and space derivatives of dZ are orthogonal to dZ so their expectation value integrals are zero (the vacuum has zero net energy and momentum).
In a cosmological context what if there is metric L(L+1) quantization so the heights of these square wave humps jump as the local region changes energy density as in cosmological expansion? Also what if these square wave higher frequencies (in their Fourier expansion) are attenuated by galaxies for example (100kly years in diameter)? They would then be 100kly wide Gibbs overshoot and undershoot jumps!! Those ep extinction level events (every 270my aparat) would be 100ky long!

Gamow Factor Change
Note the Δε was a lot smaller so the Gamow factor was smaller in the early universe (above introduction to Ch.22) for heavy nuclei. Thus the binding energy per nucleon was a lot smaller then for the larger nuclei. This higher binding energy per nucleon for smaller nuclei meant that

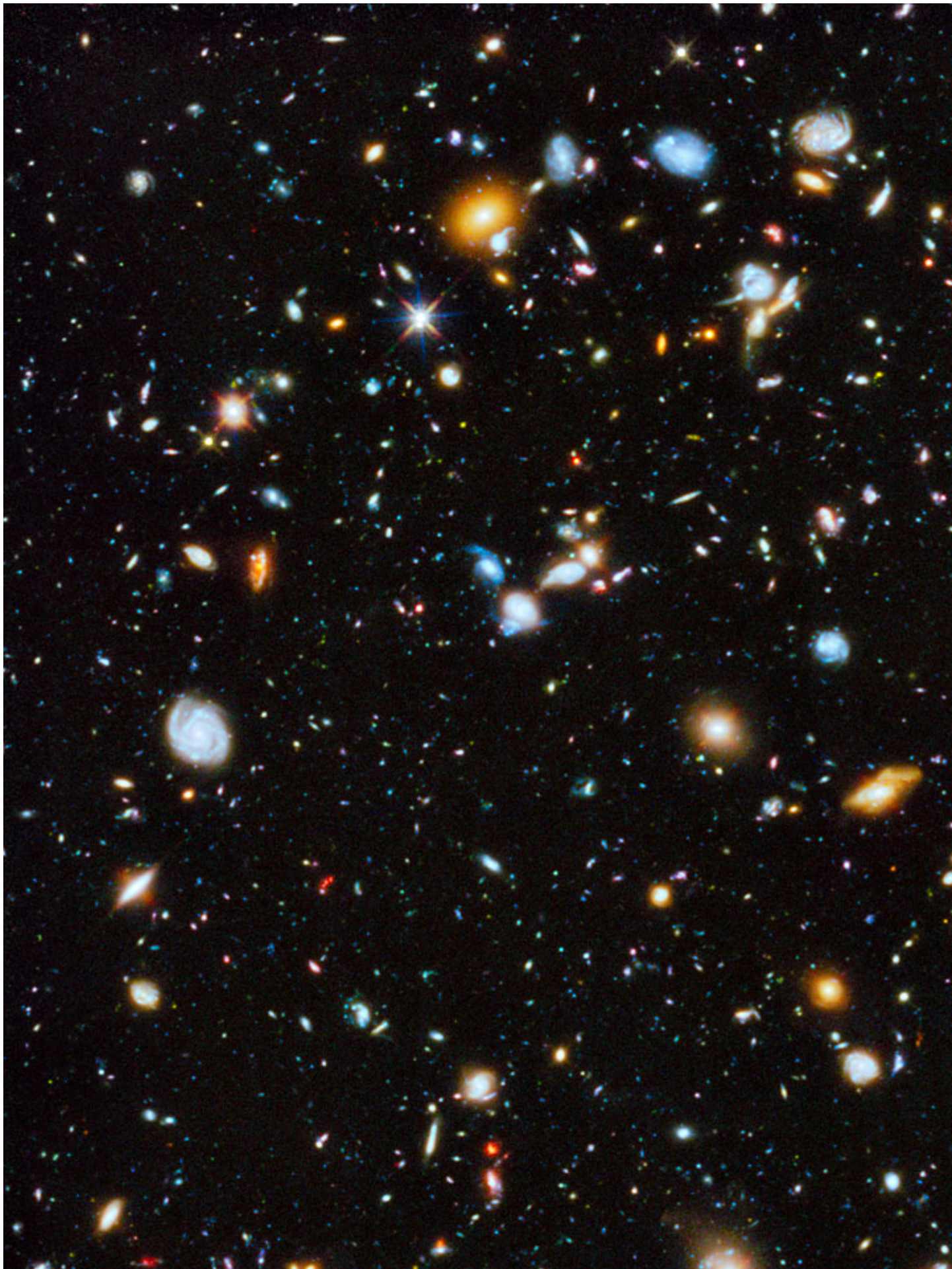
for a given mass large O,B,A stars burned hotter and thus burned hottest in the EUV instead of just the extreme blue part of the spectrum. So the HR diagram color (horizontal) axis was shifted to the right so there were far more short lived EUV stars than blue stars at this early epoch. These stars were subsequently red shifted into the blue creating a huge amount of distant faint blue galaxies in the Hubble ultra deep field (which images back to the beginning of the universe). Recall blue stars are short lived so these blue stars are short lived with many many more red stars in these galaxies too faint to be seen here. See **huge faint blue** galaxy population below. You need a blow up of this image to see these faint blue galaxies which are at least three times more numerous in these images than all the other types of galaxies combined.

Oort Cloud 20m/sec metric quantization, Kuiper belt cloud 2km/sec metric quantization orbits.

By the way beyond 2km/sec at Pluto, where we also have the Kuiper belt (2km/sec) we have the Oort cloud at 20m/sec. Haven't you wondered why the Kuiper belt cloud (2km/sec) and the Oort cloud (20m/sec) are at these two metric quantization values?

Core

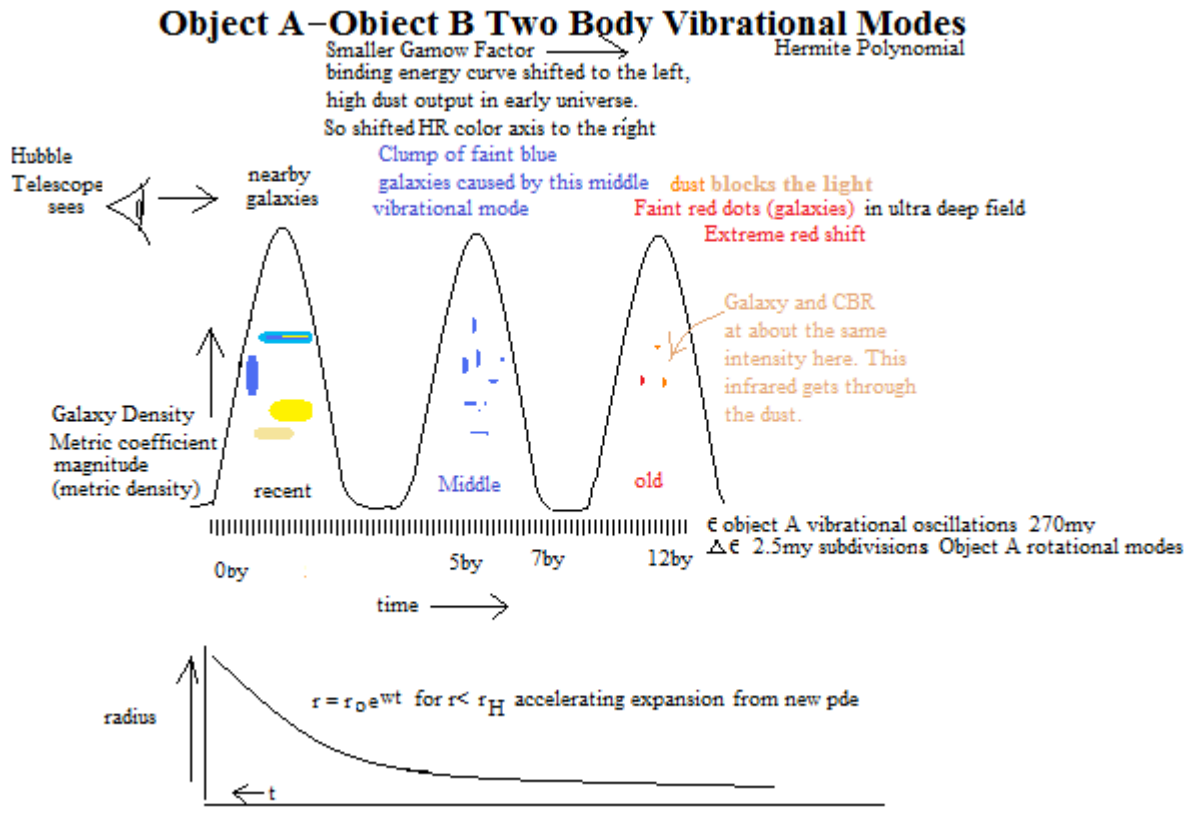
The mainstream is having trouble with the core of the earth being solid. It shouldn't be To temporarily cool the earth's core down to get it to solidify could be done by the Gibbs jump downward. The Gamow factor would rapidly increase thereby slowing down radioactive decay, dropping the temperature over a small enough time interval for the core to solidify. This degree of Gibbs jump occurs at those 270my jumps.



Also because of this shift in the binding energy per nucleon peak to the light elements supernovas did not produce iron at that time, produced mostly silicon and carbon dust. In that regard a 13 billion old star was recently discovered that had these properties.
“ However, the new observations have shown that SMSS J031300.362670839.3's composition harbors no iron pollution. Instead, the star is mostly polluted by lighter elements like carbon, ANU officials said.”
Gamow Factor Drop With Increasing Field Density Confirmed (in my view) You might have heard of the DAMA experiment under Gran Sasso Mountain in Italy. They claim to have found dark matter.
In that regard their sodium iodide detector has (a few) more quantum transitions in northern hemisphere summer (when the earth is farthest from the sun) than in winter, when it is the closest which they claim is due to a stationary Milky Way Galaxy dark matter cloud which it can't be because such a cloud would collapse on itself (dark matter would self interact gravitationally like anything else. Note in that regard that the sun's rotational speed keeps it from dropping into the center of the galaxy as well).

Instead this observational result is entirely consistent with a Gamow factor drop in winter when the (GM/r^2, r smaller) gravity gradient is larger (in general) than in summer. Recall in that previous discussion on the application of my Curved Space Heisenberg Equation Of Motion the gravity gradient was larger at 18by since the universe was more condensed. Recall one of the consequences was that the maximum binding energy per nucleon was smaller so that supernovas at the time produced (C, Si) dust and not iron.
Solar flare metric quantization jumps can temporarily (in a Dirac delta function context) drop the Gamow factor as well thereby changing rates of radioactive decay (eg., Purdue experiment). So the DAMA experiment confirmed that the Gamow factor can change!

There are two body vibrational $1/\beta=kT$ modes of object A-B that have much larger jumps in the metric quantization than ε and so more time separation. Because of the ultrarelativistic motion the field lines are contracted between objects A and B making for such a high energy oscillation. In the Hubble ultra deep field you can see hints of this vibrational mode in the faint blue galaxies that almost all have about the same luminosity (middle clump), deep field red dots (ultra red shifted galaxies) are mostly hidden by dust created by supernova. etc.



Gamow Factor Change and 350by Old Universe

The expansion radius function I derive from that Heisenberg equations of motion (given my new pde) for $r<r_H$ is $r=roe^{kt}$, If you take the derivative of this function with respect to time t that derivative is the present rate of expansion and is a slope. The line with this slope intersects the r=0 axis at t=13.7 billion years. So the rate of expansion at this time matches the rate given by the Hubble constant and so there is no contradiction with data.

Note the second derivative of $r=roe^{kt}$ is $a=ro(k^2)e^{kt}$ so that the universe is accelerating.

So I derive that acceleration; the mainstream merely mythologizes it with silliness like quintessence!??! So **even in the new standard cosmological model**, the one with the acceleration, **the universe has to be a lot older than 13.7by.**

Note this large age also explains the horizon problem since there is plenty of time for the universe to come to thermodynamic equilibrium, so the cbr then looks black body as it does.. You don't need that adhoc inflationary model to explain the horizon problem anymore, this fractal theory will do.

Recent studies of very distant galaxies, the dimmest ones in those Hubble deep field images and the ones the ones magnified by the gravitational lens of cluster Abell 2218 and the ones that are less than a billion years old appear to be mature galaxies and already very dusty. But the big bang only creates hydrogen and helium and no C and Si dust. So where did the dust come from? In my model there was plenty of time for this dust to form from those Si,C supernovas. The Gamow factor (see above introduction to Chapter 22) becomes smaller and so the nuclear binding energy per nucleon becomes smaller. Thus at some point in time supernovas are going to

put out Si,C dust and not iron. Also elements like nitrogen with its odd number of protons and odd number of neutron will become preferentially more unstable.

Origin Of Life

Another such consequence of that 370by universe is the origin of life!

Recall in chapter 2 we derived a 370by old universe from my curved space Heisenberg's equation of motion. Also my theory is 2D allowing left handed chirality to be derived, not postulated, as it is in the electroweak model (which I also derive in part 1).

Note the weak interaction is stronger at higher energies and so left handed chirality is stronger.

Initial Conditions

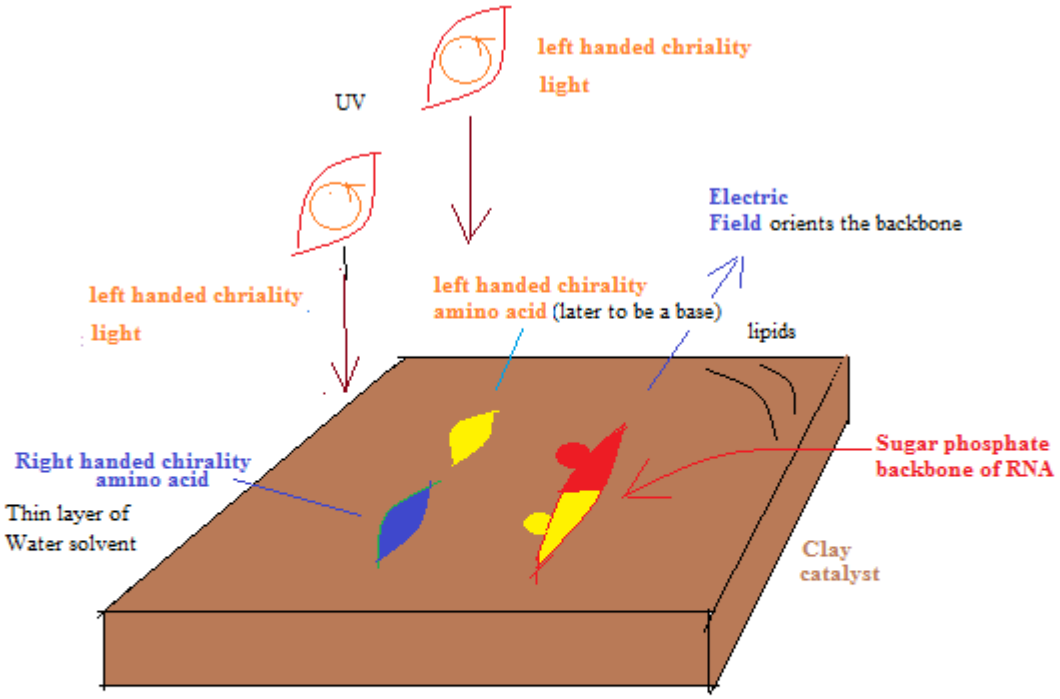
Our initial conditions are a strongly polarized Rayleigh scattered light from the atmosphere, "polarized ultraviolet light or other types of radiation from nearby stars might favor the creation of left-handed amino acids or the destruction of right-handed ones "(Steigerwald NASA). We also have 2D Montmorillonite clay catalyst of both lipid membranes and rna (James Ferris) , water solvent. The chirality, polarization rotation, is very large ~90deg for many left handed solutions let's say. The amino acids may have been created by a lightning strike in a planetary atmosphere with some ammonia content (as in the Miller-Urey experiment) and polarized light (Steigerwald).

At 18 by the Gamow factor rises to where nitrogen, with odd number of N and odd number of P, is about to become stable, making it then a bit fragile. At this time the nuclear spin orbit interaction is stronger increasing the instability of these odd spin states. Left handed chirality amino acids preferentially reflect left handed chirality light , which is more abundant at that time, due to optical activity rotation correlation back scatter. The right handed amino acids absorb the light which thereby destroys the fragile nitrogen nucleus due to this increased energy density initiating stimulated emission causing it to decay to carbon. This all occurs at a <270my Gibbs jump peak.

Shortly Thereafter Comes An Object B Caused Major Metric Quantization Drop

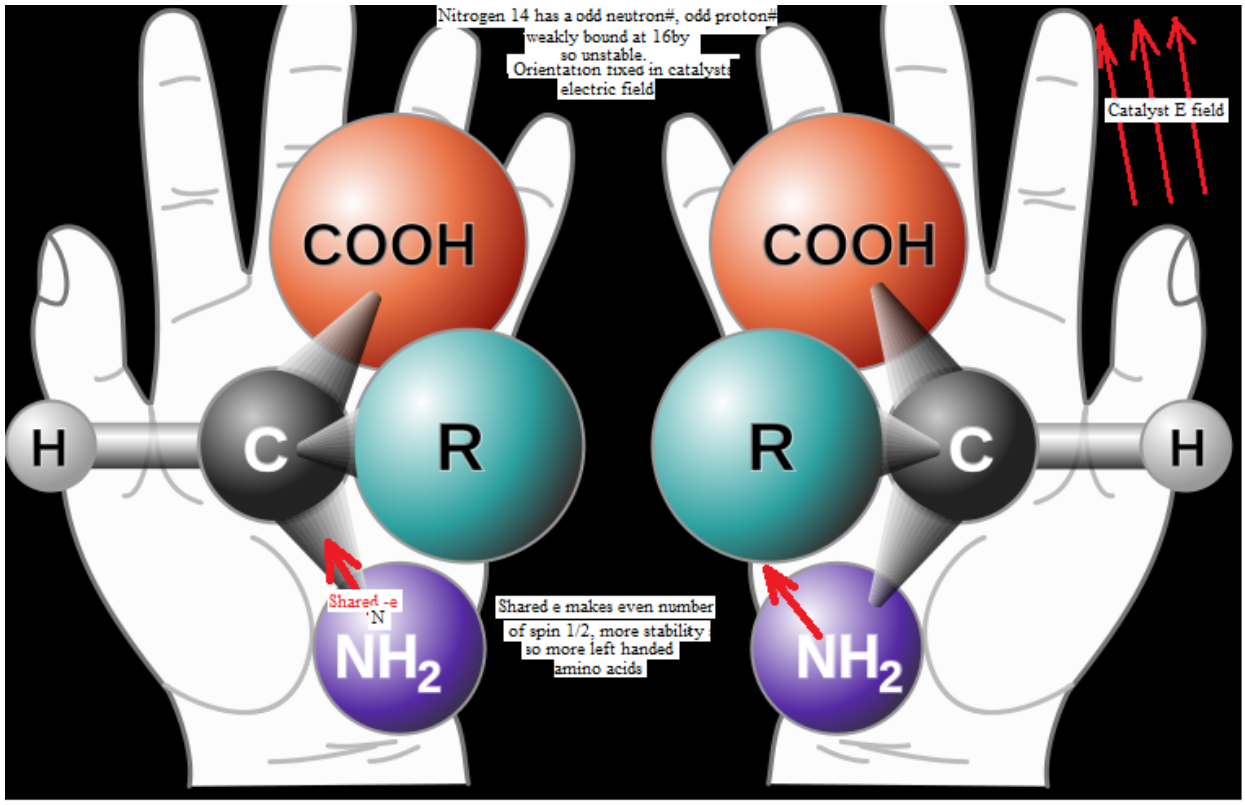
The Gibbs jump down soon occurs along with also a major object B metric quantization drop and so the Gamow factor increases dramatically until phosphorous can form in supernova at 18by also. Then on that clay catalyst we can match up all these left handed amino acids with the sugar phosphorus rna backbone in a water solvent nearly saturated with long chain lipids. " Life can't function with a mix of left- and right-handed amino acids"(Steigerwald, NASA), A random combination of left and right handed amino acids would have prevented rna from forming this way. Also "One thing that jumped out at me was that alanine and aspartic acid can crystallize differently when you have mixtures of both left-handed and right-handed molecules," said Dr. Aaron Burton, a NASA Postdoctoral Program Fellow at NASA Goddard and a co-author on the study. "This led us to find several studies where researchers have exploited the crystallization behavior of molecules like aspartic acid to get left-handed or right-handed excesses"(James Burton NASA) . The molarity doubling along followed by the resultant lipid wall budding (due to the pressure of having higher molarity inside) can then start the cell division. Thus amino acid left handed chirality creation at this precise and critical time initiated the first cell division.

Note in that regard that the oldest meteorites contain a higher ratio of left handed to right handed amino acids, as expected from what happened 18by ago. "a slight left-hand excess (no more than eight percent) for alanine, another amino acid used by life."(Steigerwald). For approximately 4by old meteorite this is not inconsistent with a ~100% left handed amino acids at 18by for a exponentialy decaying left handedness.

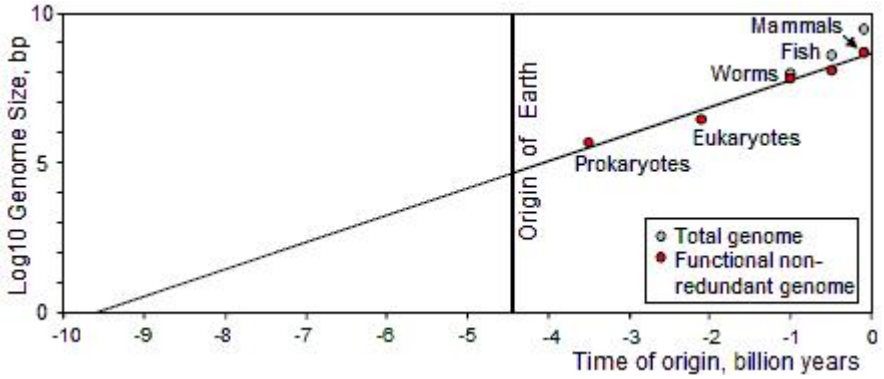


16by ago Chirality was so large that optical activity was 90deg.
The left handed chirality amino acid reflects the light without loss since both the light and the optical activity rotate in the same direction The right handed chirality amino acid absorbs the left handed light, At this time the Gamow factor is far lower ; and the unstable nitrogen (with odd #P and odd#N) in the right handed amino acid then decays into carbon. due to the stimulated emission of the energy absorption
Thus the right handed amino acids disappear at 16by.

The combination of left and right handededness would have prevented RNA from being produced.
Therefore amino acid left handed chirality creation at this precise and critical time initiated the first cell divition



2) The cbr would be bright at these early ages, even planets out in interstellar space would be bathed in this heat and light, so practically every planet anywhere could contain life at that time..
3) thus turning that 16by universe into an "incubator", a petri dish, for life: recall an incubator requires heat also. Also the formation of the key ingredients for life, RNA strands and cell –lipid membranes, is relatively easy. For example James Ferris has found that Montmorillonite clay (as catalyst) speeds up the rate of formation of lipid (cell wall) vesicles and also will catalyze the formation of RNA in water, so **one common mineral does it all** (i.e., nucleotides and cell membranes). Since relatively short RNA molecules (~50 basis') that are capable of replication have been artificially created in labs, we just need to allow time for ~50! $=10^{64}$ of the RNA amino acids basis' permutations, and all it takes is just one such moment to start life off. But in a universe with this many warm planets since CBR about 20X stronger back then and this slowly expanding so that panspermia is important (**the whole universe is then a single incubator**!) you actually have a upper limit of 10^{82} number of possibilities (after counting the number of~4nmX4nm basis units in a 1m surface depth on 10^{20} earth like planets extending over 10^{16} seconds), more than enough permutation possibilities to allow for the formation of primitive bacterial life somewhere out there. The subsequent evolution then leads to a kind of Moore's law for life. Apparently for every 350my the (genome) complexity of life doubles. Note even bacteria are incredibly complex with their organelles, fine tuned Krebs cycle, cell wall potassium pumps, mitosis morphology such as spindles, etc. so it is highly unlikely the starting point was 3.5by as is also implied by the below "Moore's law" extrapolation to before to 3.5by:



Given the inefficiencies of the panspermic process this line most likely extends much farther back, perhaps to 16by. So when those earliest supernovas started forming given the then small metric quantization Gamow factor, phosphorus (Z=15) life first formed (~16by), panspermia did the rest which there is plenty of time for in that old of a universe expanding at that slow of a rate. After the supernovas started forming copper ~13by you got photosynthetic organisms (copper ligands eg.,chlorophyll), 10 billion years old (iron ligands, e.g.,hemoglobin), etc..
After that the universe was expanding too fast and panspermia becomes less and less efficient, life became isolated inside the space like horizons.

Life can't form from a random distribution of left and right handed amino acids.
What if this random distribution problem was in fact the choke point, the hardest problem to get around, for the origin of life and this physics theory showed how to avoid this problem? You would have then found the origin of life using this new theoretical physics!
The large time duration and the associated large left handed chirality of that physics theory that far back in time in fact does all this.
Also this new theory is 2D implying a *derivation of the left handedness of the electroweak interaction from first principles*. The standard model electroweak theory(SM) just postulates the left handedness.
Therefore amino acid left handed chirality creation at this precise and critical time initiated the first cell division. Note in that regard that the oldest meteorites (~4.5by) contain a higher ratio of left handed to right handed amino acids, some as much as 15%.

Recall my curved space Heisenberg equations of motion give a 370by universe (but the present observed rate of expansion (slope) comes out of this theory anyway). Also genome complexity implies life formed way before 4.5by. Spores could have moved from place to place in asteroids. In that regard the electroweak chirality is too weak at this epoch to single out the formation left handed chirality amino acids but was 1000X stronger at 18by and at a Gibbs jump then 10000X stronger. Solar type nebula's have been seen to emit a lot of chiral, circularly polarized light. 22% of the photons in some cases.
Crystallization in water can amplify the density of a seed amount of left handed amino acids. Also some clays can catalyze the formation of both lipid membranes and rna (see reference materials below). Need 40 phosphorus-sugar back bone structures in sequence to get self replication.

My model has a 370by universe so 18by is still recent (present rate of expansion has a slope that mimics the Hubble constant).
So to initiate life we needed that Gibbs' burst of left handed chirality 18by ago!

Background and References

Another such consequence of that 370by universe is the origin of life!
Recall that in chapter 2 we derived a 370 billion year old universe from my curved space Heisenberg equations of motion.
Also my theory is 2D allowing left handed chirality to be derived, not postulated. In the standard model left handed chirality is postulated.
Here we assume that the choke point in the origin of life was getting either all left handed or all right handed amino acids in solution all at once. The rest such as forming lipid cell walls and mole doubling genetic material was a lot easier.(Some clay materials catalyze both processes).
The initial conditions occur at 18by when the left handedness in the optical activity was much stronger. Here strongly polarized Rayleigh scattered light from the atmosphere, a 2D clay catalyst template, with a water solvent, RNA back bone sugar phosphate in a chain and amino acids in solution just above it. The amino acids may have just been created by a lightning strike in a planetary atmosphere with some ammonia content. (Miller-Urey) and with other atmospheric constituents such as hydrogen sulfide.
"Dworkin found around 15 percent more left-handed amino acids within some meteorites."
http://www.space.com/6463-life-earth-left-handed.html
"Light circularly polarized one way can preferentially destroy molecules with one kind of handedness, while light circularly polarized the other way might suppress the other handedness".Kwon
"The researchers discovered that as much as 22 percent of light from the nebula was circularly polarized. This is the greatest degree of circular polarization yet seen in a star-forming region, and suggests circular polarization may be a universal feature of star- and planet-forming regions".Kwon
http://www.nature.com/news/force-of-nature-gave-life-its-asymmetry-1.15995
The researchers found that left-handed bromocamphor was just slightly more likely to react with right-handed electrons than with left-handed ones. The converse was true when they used right-handed bromocamphor molecules. At the lowest energies, the direction of the preference flipped, causing an opposite asymmetry. In all cases the asymmetry was tiny, but consistent, like flipping a not-quite-fair coin. "The scale of the asymmetry is as though we flip 20,000 coins again and again, and on average, 10,003 of them land on heads while 9,997 land on tails," says Dreiling.The low speed of the electrons was the key to why the experiment finally worked after so many years, Dreiling says. "The interaction takes longer, and it was that insight, I think, that led to our success," she says. The test offers an explanation for how a chiral excess could — at least in principle — arise, Gay says. The research was published in *Physical Review Letters*[1] on 12 September.http://www.nature.com/news/force-of-nature-gave-life-its-asymmetry-1.15995

Also crystallization can selectively select a given handedness for the structure of the crystal. This has been found to be true for some amino acids. So if a small amount of seed left handed excess is introduced into the solution then this will grow to be a large part of the crystal.
We derived the CW (left handedness) in section 3B Recall that in section 7B we derived the feedback equation $\ln (r_{M+1}/r_{bb})+2=[1/(e^{\mu}-1)-\ln[e^{\mu}-1]]2$ that leads to a 370by universe
The left handedness of the weak interaction (see eq.1.12) *would be much more pronounced* for such a smaller and so older universe. The density at 18by would be about 1000X the current density so that 11,000 would be heads and 9000 tails..10% The random combination of left and right handedness would have otherwise prevented RNA from being produced. Therefore amino acid left handed chirality creation at this precise and critical time initiated the first cell division. There is strong evidence in tact this is the mechanism that caused the left handedness. Note for example that the oldest meteorites (~4.5by) contain a higher ratio of left handed to right handed amino acids some as much as 15% also hinting there still are some primordial amino acids out there. Thus we figured out the origin of life with this knowledge of a very old, and so much more left handed universe at 18by and even our sect. 3B derivation of the left handedness.

The Observer (And The Other) In Eq.4B2I
Also note from eq.4B2I that the observer i.e., the "other", also plays a big role (In fact the observer and resulting wave function collapse are the core part of the Copenhagen interpretation of quantum mechanics, see appendix C7 where we prove it. The proof of fractalness from equation 2 fractal leakage through the branch cut is fundamental. Recall we use this fractalness to prove the new pde method of invoking the fractalness by putting an observer at $r<r_H$. (which also proves the fractalness). The two ideas of fractalness must be selfconsistent so we prove an observer exists with the fractalness.
Note both components of 4B2I (ie.,$\delta(dr+dt)=0$ or $\delta(dr-dt)=0$) must be true all at once to solve equation 4. So either component could be the observer. So there really is a "other" so solipsism (the idea that there is no 'other') is certainly not supported here because either component of 4B2I could be the "observer". Solipsism is the source of a lot of evil and so to objectively prove it wrong is a big deal. In that regard read a graphic depiction of solipsism in Dostoyevsky's "Crime and Punishment", and learn about more recent consequences of solipsism such as the holocaust ("they are not Aryan so…") and so on and so forth ad nauseum.
So in addition to $\delta\delta 1=0$ (eq.1) giving us the means to derive both theoretical physics and (re#) mathematics thereby returning logic, rationality, sanity to theoretical physics (and so to everything else), and an explanation of the origin of life (i.e., the above amino acid chirality discussion and the sect. 3B CW mechanism and feedback equation) we have yet another consequence of this theory (the proof of the invalidity of solipsism which is then) the core idea of ethics! We badly need this proof today given the drug pusher solipsists (**Only they exist** from their perspective. The money they obtain (from poisoning you) is all that matters) are taking over, drug pusher arguments are being used to legalize these poisons. They are rapidly turning our country into a nation of brain dead addicts. Also the alternative "observability"(for an "observer') fractal derivation from eq. 9 (4AI) implies a rejection of solipsism, since it implies TWO observers (part V, davidmaker.com). Solipsism has led to great evil in the world (eg.,see Dostoyevsky's "Crime and Punishment") so pulling such a core ethics result out of such a solid mathematics derivation is just plain awesome.

So the postulate of ONE ($\delta\delta 1=0$) not only leads to the origin of theoretical physics and mathematics but also to the origin of the requirement for ethical behavior, which is also the origin of the primary philosophical quest: so postulate of ONE gives you everything!

Child Developmental Motivation For The Postulate of ONE

Recall that every particle with nonzero proper mass is a new pde particle. "Astronomers are observing from the inside what particle physicists are studying from the outside", one thing, the same new pde particle, the electron, eq.9 (or eq.4B2I). From 4BIV we even see that the hyperons are composed of electrons with each electron indistinguishable from every other electron in QM. So in that case the concrete and abstract are the same. Recall also the concrete experimental result $X\pm\Delta X$ (when normalized is $1\pm\delta 1$).

In any case we can then start with the concrete (Piaget) $<z>=1$ and then jump to the abstract by defining the symbol 1 exists with 1U, the very essence of what jumping from the concrete to abstract.

Concrete $\mathbf{<1>}$ $\rightarrow$ Abstract $\mathbf{1\cup 1}$

is the core idea here. Thereafter we develop the math ($1U1\equiv 1+1\equiv 2$ giving us our re#+ etc.,) and $\delta\delta 1=0$ and then from re#+ define the 1 (in $\delta\delta 1=0$) algebraically as $z=zz$ with $z\neq 0$ and add in the $\delta 1\equiv C$ noise as in $z'=z'z'+C$. Simplify to get eq.2 and take the variation to get eq.4.So

write the postulate of 1 in algebraic form and take the variation.

That is the whole shebang.

The rest is applications.

Concrete $\mathbf{<1>}$ $\rightarrow$ Abstract $\mathbf{1\cup 1}$

Thus the key to understanding a first principles derivation of theoretical physics is to understand the infant child developmental transition from the concrete to the abstract. So the infants understood the meaning of the universe before the adults!

You need to observe infants in this developmental process: you are in fact observing the key to understanding the universe, including even those Copenhagen interpretation issues mentioned just above.

"Postulate 1 as two definitions and solve these two equations for two unknowns" is instead the whole shebang.

The results of such a "first principles derivation of both mathematics and theoretical physics" are a lot less mundane and banal than a mere divinity with a big beard sitting up on top of Mt. Olympus playing us poor saps down here like we were his puppets. Divine maybe, but boring surely!

We instead get a the standard model particle electron pde eq.4AI in this derivation (attachment) and a fractal coupling in that pde that implies that "astronomers are observing from the inside of what particle physicists are studying from outside, ONE thing", that new pde electron.

So we started with a postulate of 1 and got back 1 !! You look big, you look small, it is still one thing you are looking at. To understand how such a result comes to be is to 'understand' everything in the deepest possible sense of the word "understand": making life worth living, making it exciting, exhilarating, making your appearance in the

universe finally have meaning, if you were not alive you could know this incredibly awesome result!!!: it is simply 'divine' if you may.