Exploration

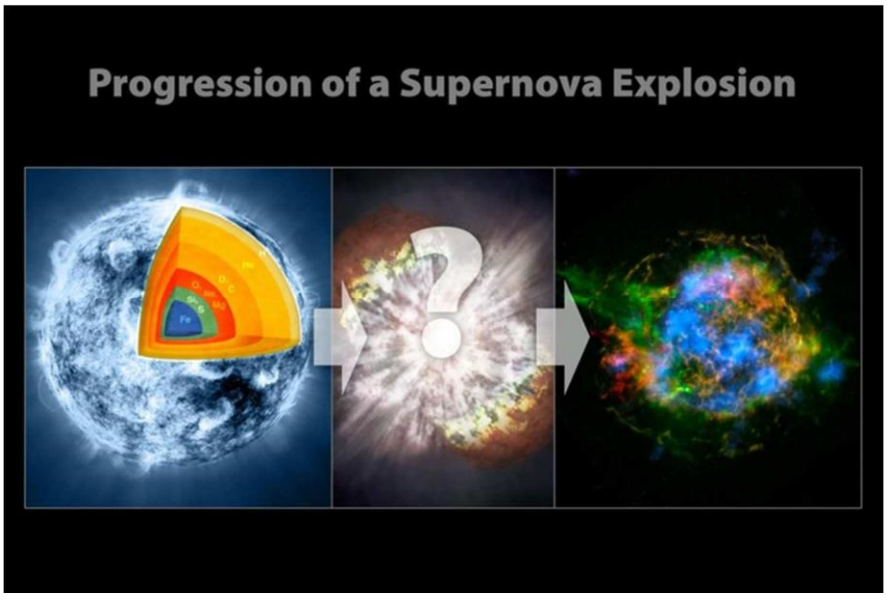
The Accelerating Universe, Dark Energy & the Alpha Variation (Part I)

Anthony Bermanseder[1]

Abstract

The experimental data collected by the various supernova observers, and under utility of the Hubble Space Telescope to track the brightness variations of discovered supernovae type Ia to the conclusion, that distant supernovae are between 20% and 30% dimmer than expected and as a consequence of their measured redshift they appear to be further away than theory permits. An interpretation of this discovery implies, that the universe's expansion is accelerating; the measured redshift depicting a distance further away for a dimmer brightness than anticipated by theory. Why is there a redshift gap between z=0.11 and z=0.30 approximately? Does this imply a scarcity of supernovas in this redshift interval or is there a cosmological reason for this gap? Is this cosmological reason at the core of the Dark Energy implication and the 'factuality' of an accelerating universe? This paper shall elucidate the cosmological nature of Dark Energy and the inferred accelerating cosmology of an accelerating universe, stipulated to begin some 5-6 Billion years ago and as a change from a measured deceleration from light speed in the early universe.

Keywords: Accelerating universe, dark energy, alpha variation, Hubble Constant, supernovae.



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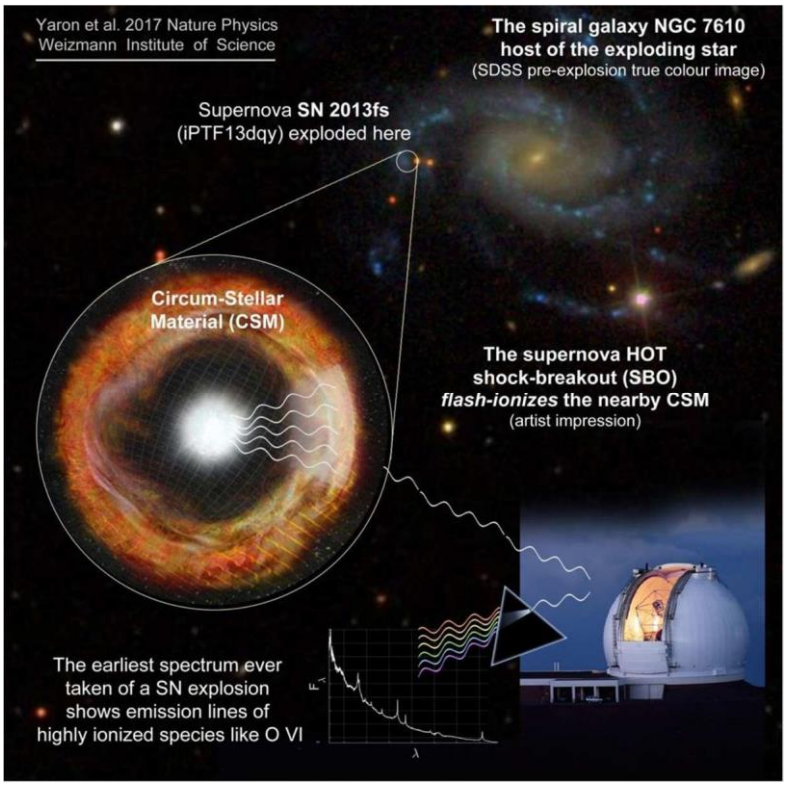
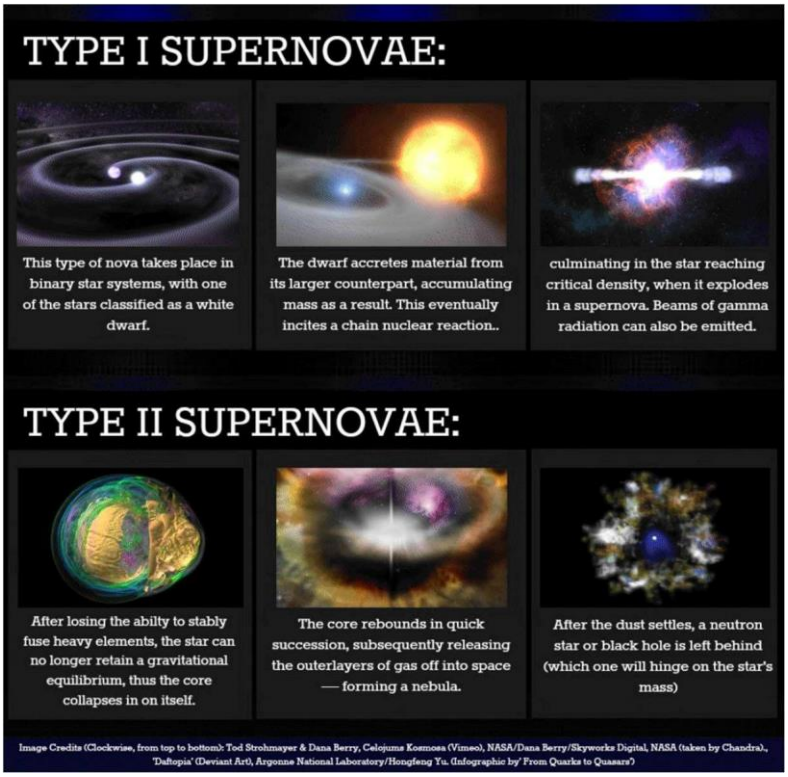

Yaron et al. 2017 Nature Physics
Weizmann Institute of Science
The spiral galaxy NGC 7610
host of the exploding star
(SDSS pre-explosion true colour image)
Supernova SN 2013fs
(iPTF13dqy) exploded here
Circum-Stellar
Material (CSM)
The supernova HOT
shock-breakout (SBO)
flash-ionizes the nearby CSM
(artist impression)
The earliest spectrum ever
taken of a SN explosion
shows emission lines of
highly ionized species like O VI


TYPE I SUPERNOVAE:
This type of nova takes place in binary star systems, with one of the stars classified as a white dwarf.
The dwarf accretes material from its larger counterpart, accumulating mass as a result. This eventually incites a chain nuclear reaction..
culminating in the star reaching critical density, when it explodes in a supernova. Beams of gamma radiation can also be emitted.
TYPE II SUPERNOVAE:
After losing the abilty to stably fuse heavy elements, the star can no longer retain a gravitational equilibrium, thus the core collapses in on itself.
The core rebounds in quick succession, subsequently releasing the outerlayers of gas off into space — forming a nebula.
After the dust settles, a neutron star or black hole is left behind (which one will hinge on the star's mass)
Image Credits (Clockwise, from top to bottom): Tod Strohmayer & Dana Berry, Celojums Kosmosa (Vimeo), NASA/Dana Berry/Skyworks Digital, NASA (taken by Chandra)., 'Daftopia' (Deviant Art), Argonne National Laboratory/Hongfeng Yu. (Infographic by' From Quarks to Quasars')

A white dwarf star is important as a distance indicator for the cosmic distances. Should it be in a binary system with another star in mutual orbit about each other, then mass can transfer via magnetic activity from the companion star and the Chandrasekhar limit referring to gravitational collapse of about 1.5 solar masses or 3x1030 kg might so become exceeded and the white dwarf explodes as a supernova type Ia.

Supernovae class Ia show no helium absorption in their spectra but show a strong absorption of singly ionized silicon atoms at about 610 nanometers; supernovae class Ib have helium lines, but no silicon lines and supernovae class Ic have neither; hydrogen is absent in all supernovae spectra type I. Supernovae spectra change significantly, varying in brightness, as the explosion synthesizes heavy elements, such as gold, iron and oxygen in the thermonuclear reactions.

Supernovae class II are rarer and show significant hydrogen absorption and are thought to collapse into a neutron star or Black Hole, having a pre-explosion mass of over 8 solar masses.

The brightest supernovae are of type Ia and the uniformity of their light curves allows calibration of their apparent brightness with their 'standard' true brightness, the luminosity so serving as an indicator as to their distance by astronomical distance-luminosity calibrations.

About one supernova class Ia explodes in a typical galaxy every 300 years, so in observing a large sample of about 3600 galaxies, one such explosion per month should be seen. The experimental data collected by the various supernova observers, and under utility of the Hubble Space Telescope to track the brightness variations of discovered supernovae type Ia, now converged in 1998 to the conclusion, that distant supernovae are between 20% and 30% dimmer than expected and as a consequence of their measured redshift they appear to be further away than theory permits.
An interpretation of this discovery implies, that the universe's expansion is accelerating; the measured redshift depicting a distance further away for a dimmer brightness than anticipated by theory.

Closer analysis of the redshift data shows an expected distribution of luminosity, calibrated to their distances in the Chilean Cala-Tololo data, up to a redshift of about 0.11 and with a redshift gap until a redshift of 0.3; after which the 'High-Z's' begin to show the 'curving away' from a predicted decelerating expansion rate in concordance with an Euclidean flat universe of Einsteinian General Relativity.
The highest redshift recorded in 1998 was that of 'supernova Iae' at (z=1.1) by the 'High-Z Team'.
Why is there a redshift gap between z=0.11 and z=0.30 approximately?
Does this imply a scarcity of supernovas in this redshift interval or is there a cosmological reason for this gap? Is this cosmological reason at the core of the Dark Energy implication and the 'factuality' of an accelerating universe?

This treatise shall elucidate the cosmological nature of Dark Energy and the inferred accelerating cosmology of an accelerating universe, stipulated to begin some 5-6 Billion years ago and as a change from a measured deceleration from light speed in the early universe.

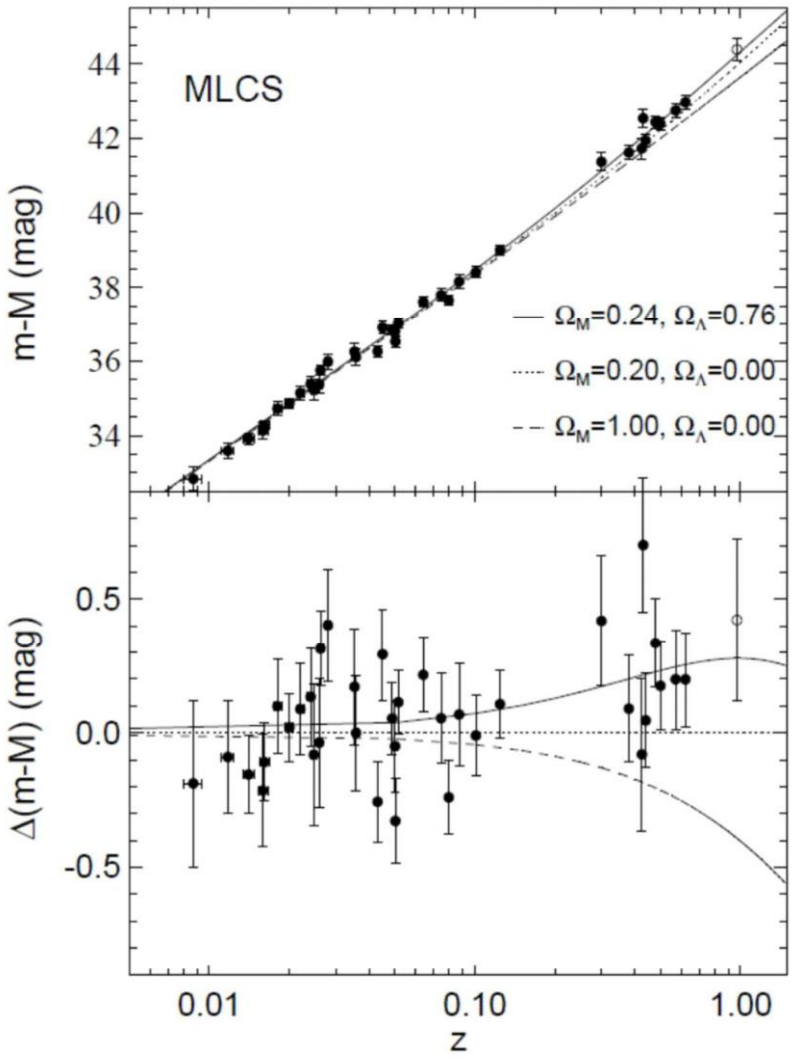


Figure 5: $\Delta m_{15}(B)$ SN Ia Hubble diagram. The upper panel shows the Hubble diagram for the low-redshift and high-redshift SNe Ia samples with distances measured from the template fitting method parameterized by $\Delta m_{15}(B)$ (Hamuy et al. 1995, 1996d). Overplotted are three cosmologies: "low" and "high" Ω_M with $\Omega_\Lambda = 0$ and the best fit for a flat cosmology, $\Omega_M = 0.20$, $\Omega_\Lambda = 0.80$. The bottom panel shows the difference between data and models from the $\Omega_M = 0.20$, $\Omega_\Lambda = 0$ prediction. The open symbol is SN 1997ck ($z = 0.97$) which lacks spectroscopic classification and a color measurement. The average difference between the data and the $\Omega_M = 0.20$, $\Omega_\Lambda = 0$ prediction is 0.28 mag.

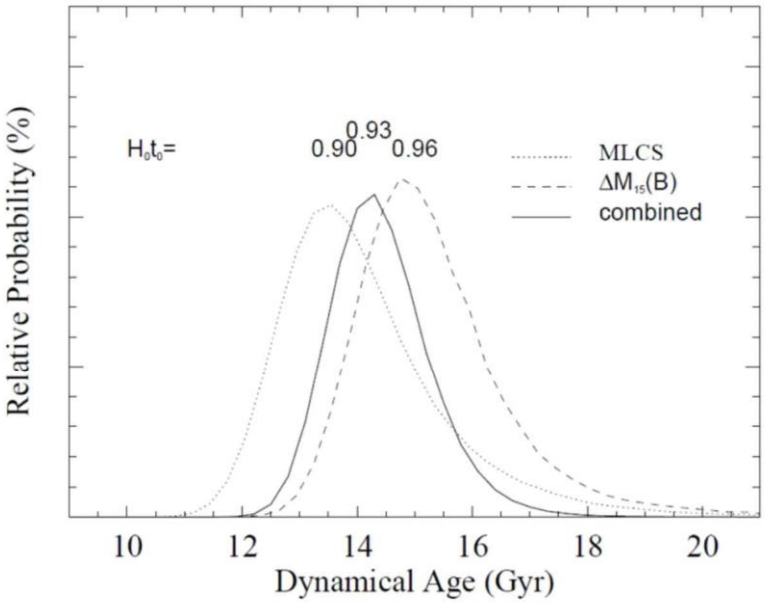


Figure 8: PDF for the dynamical age of the Universe from SNe Ia (equation 19). The PDF for the dynamical age derived from the PDFs for H_0, Ω_M,Ω_Λ is shown for the two different distance methods without the unclassified SN 1997ck. A naive average (see §4.2) yields an estimate of $14.2^{+1.0}_{-0.8}$ Gyr, not including the systematic uncertainties in the Cepheid distance scale.

The stipulated 'Age of the Universe' of 14.2 Billion years corresponds to the latest measurement of the 'Hubble Constant' of the Planck Mission (2013-2018) for a more distant universe and a Hubble Constant of so 67.8 km/Mpc.s; but in discrepancy with measurements of about 74.0 km/Mpc.s for the nearby universe (Magellanic Clouds so 162,000 ly away {z=0.0093} NASAESA and Gaia Space Telescopes 2013-2019).

For a linear expansion $H_o=c/R_{max}$ =1/Age of Universe and so gives 1000(3.26) ly/67.8 = 14.4 Gy for the Planck Mission and 1000(3.26) ly/74.0 = 13.2 Gy for the Gaia Space-Telescope.

Measurements in the nearby universe so infer a younger Age for the Universe and measurements in the universe further away imply an older Age of the Universe.
Is the nearby universe related to the 'Local Flow' for redshifts below a critical value, say related to the z=0.11 value measured for the apparent acceleration of the universe, caused by the negative pressure of the Dark Energy?

Indulge yourself in a thought experiment and travel with the expanding event horizon, the boundary of the universe (which has no boundary in the curved overall sense, all locations being centered self-relatively), this then becomes the looking back in time to the origin of the Big Bang.

You then experience the receding origin of the singularity slowly moving away from you and relative to you as 'stationary observer' at the event horizon, your own recessional velocity of (22%

of (c)) is nullified and must be accounted for in your calculations of the recessional universe you are observing.

A description of the universe as decelerating with precise deceleration parameters given in a balancing of a gravitational omega, a quintessential lambda and a Milgrom parameter points to a possible variation in the Electromagnetic Fine-structure constant Alpha. The Dark Energy crystallizes as a negative pressure however embedded as a positive quintessence in a multidimensional cosmology linked to the manifestation of 10-11-12 dimensional supermembranes.

$$\mathbf{\Lambda(n)/R_H(n/[n+1]) = - 4\pi GP/c^2 = G_oM_o/R_H^3(n/[n+1])^3 - 2H_o^2/(n[n+1]^2)}$$

and $\Lambda = 0$ from the formulation of General Relativity in Einstein's field Equations:

$$R_{\mu\nu} - \frac{1}{2}g_{\mu\nu}\,R + g_{\mu\nu}\Lambda = \frac{8\pi G}{c^4}T_{\mu\nu}$$

for the Einstein-Riemann tensor

$$G_{\mu\nu} = R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu},$$

Energy Conservation and Continuity

$dE + PdV = TdS = 0$ (First Law of Thermodynamics) for a cosmic fluid and scaled Radius $R=a.R_o$; $dR/dt = da/dt.R_o$ and $d^2R/dt^2 = d^2a/dt^2.R_o$

$dV/dt = \{dV/dR\}.\{dR/dt\} = 4\pi a^2R_o^3.\{da/dt\}$

$dE/dt = d(mc^2)/dt = c^2.d\{\rho V\}/dt = (4\pi R_o^3.c^2/3)\{a^3.d\rho/dt + 3a^2\rho.da/dt\}$

$dE + PdV = (4\pi R_o^3.a^2)\{\rho c^2.da/dt + [ac^2/3].d\rho/dt + P.da/dt\} = 0$ for the cosmic fluid energy pressure continuity equation:

$d\rho/dt = -3\{(da/dt)/a.\{\rho + P/c^2\}\}$ .....(1)

The independent Einstein Field Equations of the Robertson-Walker metric reduce to the Friedmann equations:

$H^2 = \{(da/dt)/a\}^2 = 8\pi G\rho/3 - kc^2/a^2 + \Lambda/3$

.....(2)

$\{(d^2a/dt^2)/a\} = -4\pi G/3\{\rho + 3P/c^2\} + \Lambda/3$ .....(3)

for scale radius $a=R/R_o$; Hubble parameter $H = \{da/dt)/a\}$; Gravitational Constant G; Density ρ; Curvature k ; light speed c and Cosmological Constant Λ.
Differentiating (2) and substituting (1) with (2) gives (3):

$\{2(da/dt).(d^2a/dt^2).a^2 - 2a.(da/dt).(da/dt)^2\}/a^4 = 8\pi G.(d\rho/dt)/3 + 2kc^2.(da/dt)/a^3 + 0 = (8\pi G/3)\{3\{(da/dt)/a.\{\rho + P/c^2\}\} + 2kc^2.(da/dt)/a^3 + 0$

$(2(da/dt)/a).\{(d^2a/dt^2).a - (da/dt)^2\}/a^2 = (8\pi G/3)\{-3(da/dt)/a\}.\{\rho + P/c^2\} + 2\{(da/dt)/a\}.(kc^2/a^2) +0$
$2\{(da/dt)/a\}.\{(d^2a/dt^2).a - (da/dt)^2\}/a^2 = 2\{(da/dt)/a\}\{-4\pi G.\{\rho + P/c^2\} + (kc^2/a^2)\} +0$ with $kc^2/a^2 = 8\pi G\rho/3 + \Lambda/3 - \{(da/dt)/a\}^2$

$d\{H^2\}/dt = 2H.dH/dt = 2\{(da/dt)/a\}.dH/dt$ $dH/dt = \{[d^2a/dt^2]/a - H^2\} = \{-4\pi G.(\rho + P/c^2) + 8\pi G\rho/3 + \Lambda/3 - H^2\} = -4\pi G/3(\rho + 3P/c^2) + \Lambda/3 - H^2\}$
$= -4\pi G/3(\rho + 3P/c^2) + \Lambda/3 - 8\pi G\rho/3 + kc^2/a^2 - \Lambda/3\} = -4\pi G.(\rho + P/c^2) + kc^2/a^2$

$dH/dt = -4\pi G\{\rho + P/c^2\}$ as the Time derivative for the Hubble parameter H for flat Minkowski space-time with curvature k=0

$\{(d^2a/dt^2).a - (da/dt)^2\}/a^2 = -4\pi G\{\rho + P/c^2\} + (kc^2/a^2) + 0 = -4\pi G\{\rho + P/c^2\} + 8\pi G\rho/3 - \{(da/dt)/a\}^2 + \Lambda/3$

$\{(d^2a/dt^2)/a\} = (-4\pi G/3)\{3\rho + 3P/c^2 - 2\rho\} = (-4\pi G/3)\{\rho + 3P/c^2\} + \Lambda/3 = dH/dt + H^2$

For a scale factor $a=n/[n+1] = \{1-1/[n+1]\} = 1/\{1+1/n\}$

$dH/dt + 4\pi G\rho = - 4\pi GP/c^2$ .... (for $V_{4/10D}=[4\pi/3]R_H^3$ and $V_{5/11D}=2\pi^2R_H^3$ in factor $3\pi/2$)

$a_{reset} = R_k(n)_{AdS}/R_k(n)_{dS} + ½ = n-\sum\prod n_{k-1}+\prod n_k +½$

Scale factor modulation at $N_k=\{[n-\sum\prod n_{k-1}]/\Pi n_k\} = ½$ reset coordinate

$\{dH/dt\} = a_{reset}.d\{H_o/T(n)\}/dt = - H_o^2(2n+1)(n+3/2)/T(n)^2$ for k=0

$dH/dt + 4\pi G\rho = - 4\pi GP/c^2$

$-H_o^2(2n+1)(n+3/2)/T(n)^2 + G_oM_o/\{R_H^3(n/[n+1])^3\}\{4\pi\} = \Lambda(n)/\{R_H(n/[n+1])\} + \Lambda/3$
$-2H_o^2\{[n+1]^2-¼\}/T[n]^2 + G_oM_o/R_H^3(n/[n+1])^3\{4\pi\} = \Lambda(n)/R_H(n/[n+1]) + \Lambda/3$

$-2H_o^2\{[n+1]^2-¼\}/T(n)^2 + 4\pi.G_oM_o/R_H^3(n/[n+1])^3 = \Lambda(n)/R_H(n/[n+1]) + \Lambda/3$

For a scale factor $a=n/[n+1] = \{1-1/[n+1]\} = 1/\{1+1/n\}$

$\Lambda(n)/R_H(n/[n+1]) = - 4\pi GP/c^2 = G_oM_o/R_H^3(n/[n+1])^3 - 2H_o^2/(n[n+1]^2)$ and $\Lambda = 0$ **for**
$-P(n) = \Lambda(n)c^2[n+1]/4\pi G_onR_H = \Lambda(n)H_oc[n+1]/4\pi G_on = M_oc^2[n+1]^3/4\pi n^3R_H^3 - H_o^2c^2/2\pi G_on[n+1]^2$

For n=1.13271:..... $- (+6.696373x10^{-11}\ J/m^3)^* = (2.126056x10^{-11}\ J/m^3)^* + (-8.8224295x10^{-11}\ J/m^3)^*$

Negative Dark Energy Pressure = Positive Matter Energy + Negative Inherent Milgröm Deceleration (cH_o/G_o)

The Dark Energy and the 'Cosmological Constant' exhibiting the nature of an intrinsic negative pressure in the cosmology become defined in the overall critical deceleration and density parameters. The pressure term in the Friedmann equations being a quintessence of function n and changing sign from positive to negative to positive as indicated.

For a present measured deceleration parameter q_{dS}=-0.5586, the DE Lambda calculates as $6.696x10^{-11}$ ($N/m^2=J/m^3$)*, albeit as a positive pressure within the negative quintessence.
A Revision of the Friedmann Cosmology: https://cosmosdawn.net/index.php/en/

The two research results in the Alpha-Variation and the 'Accelerating Cosmos of the Dark Energy' are closely related.
In this analysis, the universe is not accelerating, but appears to do so because of the interdimensional intersection of the EMR parameters of the spectroscopic measurements. And it appears to accelerate for a specific redshift interval, which also is responsible for the measured Alpha-Variation, the 'dip' in Alpha is like a redshift becoming a blueshift for a specific epoch.

This cosmological analysis of the phenomena predicts, that supernovae type Ia with a redshift above 1.84 will be measured to conform to the theoretical predictions for a decelerating and flat super cosmos. The appearance of an accelerating cosmos is a limited phenomenon, relevant for a specific and unmapped redshift interval from (z=0.343 to 0.291), with interval (z = 1.080 to 1.840) imaged in the interval (0.343 to 0.291) with a variation maximum for the mapping at the Arpian limit (z_{arp} = 0.25045).

In particular, it has already been noted, that Supernova Iae, also known as SN1998eq with redshift 1.1 is less anomalously dimmed than the nearer ones; just as is predicted here for all the more distant ones. SN1997ff with redshift 1.7 is one of the most distant supernova found by Adam Riess in 2001 by the Hubble-Space-Telescope at the time of this writing and whilst the argument can be made that acceleration decreases with distance, the actual location in relationship to the cosmological redshift remains constant in a 'slowing down from faster' or 'speeding up from slower'

, if the decisive measuring stick is the expansion of the universe under constancy of light speed (c); demanding however a 'Redshift-Correlation-Correction'.

The 'de Broglie' inflationary model, where a supermembrane epoch ends in time instantaneity as the EpsEss heterotic superstring, which then expands with a decreasing recessional velocity towards a 'de Broglie' boundary as macro-quantization in 10D, but beginning with light speed (c) under guidance of Special Relativity can be applied.

Other inflation scenarios, such as chaotic inflation had proved untenable by the experimental data and the microwave background pointing to a zero curvature and to a flat universe. The macro quantization of the heterotic superstring, also known as HE(8X8) constitutes the 'conifolding' of the higher dimensions, either as a 6D-Calabi-Yau manifold or as a 7D-JoyceSphere, relative to 10D-C-space and 11D-M-space respectively.

Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant

To Appear in the Astronomical Journal

Adam G. Riess[1], Alexei V. Filippenko[1], Peter Challis[2], Alejandro Clocchiatti[3], Alan Diercks[4], Peter M. Garnavich[2], Ron L. Gilliland[5], Craig J. Hogan[4], Saurabh Jha[2], Robert P. Kirshner[2], B. Leibundgut[6], M. M. Phillips[7], David Reiss[4], Brian P. Schmidt[8,9], Robert A. Schommer[7], R. Chris Smith[7,10], J. Spyromilio[6], Christopher Stubbs[4], Nicholas B. Suntzeff[7], John Tonry[11]

ABSTRACT

We present spectral and photometric observations of 10 type Ia supernovae (SNe Ia) in the redshift range $0.16 \leq z \leq 0.62$. The luminosity distances of these objects are determined by methods that employ relations between SN Ia luminosity and light curve shape. Combined with previous data from our High-Z Supernova Search Team (Garnavich et al. 1998; Schmidt et al. 1998) and Riess et al. (1998a), this expanded set of 16 high-redshift supernovae and a set of 34 nearby supernovae are used to place constraints on the following cosmological parameters: the Hubble constant (H_0), the mass density (Ω_M), the cosmological constant (i.e., the vacuum energy density, Ω_Λ), the deceleration parameter (q_0), and the dynamical age of the Universe (t_0). The distances of the high-redshift SNe Ia are, on average, 10% to 15% farther than expected in a low mass density ($\Omega_M = 0.2$) Universe without a cosmological constant. Different light curve fitting methods, SN Ia subsamples, and prior constraints unanimously favor eternally expanding models with positive cosmological constant (i.e., $\Omega_\Lambda > 0$) and a current acceleration of the expansion (i.e., $q_0 < 0$). With no prior constraint on mass density other than $\Omega_M \geq 0$, the spectroscopically confirmed SNe Ia are statistically consistent with $q_0 < 0$ at the 2.8σ

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– 27 –

Further intensive study of SNe Ia at low ($z < 0.1$), intermediate ($0.1 \leq z \leq 0.3$), and high ($z > 0.3$) redshifts is needed to uncover and quantify lingering systematic uncertainties in this striking result.

6. Conclusions

1. We find the luminosity distances to well-observed SNe with $0.16 \leq z \leq 0.97$ measured by two methods to be in excess of the prediction of a low mass-density ($\Omega_M \approx 0.2$) Universe by 0.25 to 0.28 mag. A cosmological explanation is provided by a positive cosmological constant with 99.7% (3.0σ) to >99.9% (4.0σ) confidence using the complete spectroscopic SN Ia sample and the prior belief that $\Omega_M \geq 0$.

2. The distances to the spectroscopic sample of SNe Ia measured by two methods are consistent with a currently accelerating expansion ($q_0 \leq 0$) at the 99.5% (2.8σ) to >99.9% (3.9σ) level for $q_0 \equiv \frac{\Omega_M}{2} - \Omega_\Lambda$ using the prior that $\Omega_M \geq 0$.

3. The data favor eternal expansion as the fate of the Universe at the 99.7% (3.0σ) to >99.9% (4.0σ) confidence level from the spectroscopic SN Ia sample and the prior that $\Omega_M \geq 0$.

4. We estimate the dynamical age of the Universe to be 14.2 ±1.5 Gyr including systematic uncertainties, but subject to the zeropoint of the current Cepheid distance scale used for the host galaxies of three nearby SNe Ia (Saha et al. 1994, 1997).

5. These conclusions do not depend on inclusion of SN 1997ck (z=0.97), whose spectroscopic classification remains uncertain, nor on which of two light-curve fitting methods is used to determine the SN Ia distances.

6. The systematic uncertainties presented by grey extinction, sample selection bias, evolution, a local void, weak gravitational lensing, and sample contamination currently do not provide a convincing substitute for a positive cosmological constant. Further studies are needed to determine the possible influence of any remaining systematic uncertainties.

https://arxiv.org/pdf/astro-ph/9805201.pdf

And the 'de Broglie' inflation quantizes Einstein's field equations of General Relativity in their Friedmann formulations; the Milgrom parameter becoming acceleration: $\{d^2r(n)/dt^2 = 2cH_o/(n+1)^3\}$ and the distance-scale factor parametrizing as: $\{r[n] = R_{max}(n/(n+1))\}$ and the velocity as: $\{dr(n)/dt = c/(n+1)^2\}$; the parametric constant for dimensionless cycle time is: ($n = H_o t$ for $dn/dt = H_o$).

And so knowing the present cycle time (n_p=1.1327117) via an arbitrary Mean-Alignment-Time or MAT, relative to a phase shifted proto universe and set as (Midnight, November 4th, 1996, Canberra, Australia, local time); the present universal speed of recession is calculated as 0.2198c or (22% of c), which then maps a self-relative 'Arpian redshift' as the renormalization for the receding event horizon, mirrored in the Big Bang singularity; (z_{arp} = 0.25045).

We also calculate the 10D expansion of the universe as (53.111% or a radius of 8.963 billion lightyears), increasing to (113.27% or 19.12 billion lightyears [ly]) for the 11D universe. The Hubble-Oscillation so defines the nodal Hubble-Constant: (H_o=1.877728045x10^{-18} 1/s*) or 58.04 Hubble Units [km/Mpc.s]) and the 10D-cosmic asymptotic diameter as (33.752213 billion ly*).

The Hubble constant varies between f_{ps} and H_o as $H_o.R_H = \lambda_{ps}.f_{ps} = c$ and is calculated to assume a value of 66.9 Hubble units for the present time coordinate n_p in the cosmic evolution.

The Alpha-Variation so encompasses a period of (2[19.12 - 16.88] = 4.48 billion years) and hence two distance intervals; one from the present epoch (n_p) to a distance 2.24 billion years into the past at the nodal value (n=1) and its 11D-image at (n=1-0.13271...=0.867289).

Relative to the Big Bang Source however, this interval is mapped from (n=0.13271... to n=0.26542...) as a linear double interval; just as two mirrors facing each other would reflect each other in the spacetime 'in between'. This 'in between' becomes our expanding spacetime and we can calculate the relevant distances, using cycle-time n as parameter and the nodal Hubble Constant as invariant at (n=1).

At (n=0.13271...or 2.24 billion years after the Big Bang; v'/c=0.77940 and z =1.840), relative to the nodal Hubble event horizon and at (n=0.26542... or 4.48 billion years after the Big Bang; v'/c=0.62449 and z =1.080), relative to the nodal Hubble event horizon.

The cosmological redshift epoch between (z=1.080 to 1.840) and corresponding to a 2.24 billion year duration includes the 'peak of galaxies' at (z=1.18) and is characterized in the absolute minimum of the quintessential lambda and the gravitational maximum contractions to form galactic structures and superstructures under the auspices of the Sarkar Constant of 236.1 million lightyears.

Now looking back at those large redshift values, the lower one coinciding with the redshift of z=1.1 for supernova 1998 Iae, measured by Brian Schmidt of the 'High-Z-Team' must encompass a 'looking through' the imaged z-interval, namely the interval from the node at 2.24 billion years back to 4.48 billion years or the z-interval from (n=0.86729, v'/c=0.28680, z=0.343) to (n=1.0000, v'/c=0.2500, z=0.2910).

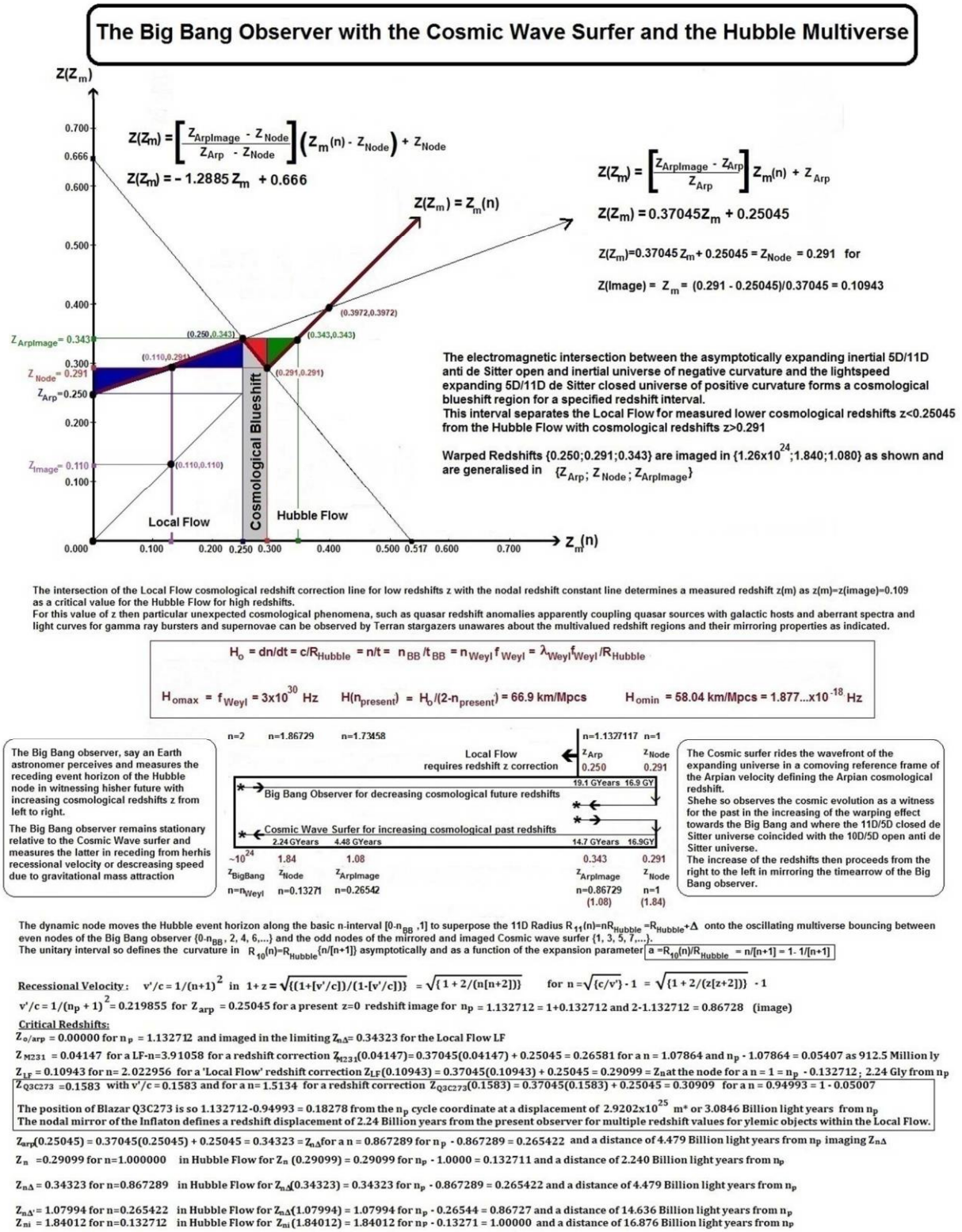
In other words, the 11D intersection of M-space intersects 10D-C-space in the two intervals, which form self-relative images of each other.

The 10D Riemann hypersphere is subject to gravitation in mass-parameters and decelerates asymptotically towards its 11D M-space boundary in negative and open curvature, mirroring the asymptotic expansion in perfect flatness of Euclidean zero curvature, however. The EMR-parameters so double themselves in the said interval, an interval which is itself expanding and contracts between the two nodal values of maximum frequency (f_{ps}) and minimum frequency (H_o).

But it is only the EMR parameter that defines this 'oscillating universe', the mass parameter remains asymptotic as defined in the parametric scale factor {$r(n)=R_{max}(n/(n+1)$, with $R_{max} = R_{Hubble} = R_H = 1.59767545x10^{26}$ m*}.

Revisiting the redshift data of 1998, we notice the 'missing redshifts' in the interval from (z=0.11-0.3), with the limiting nodal (z=1.840) mapped onto the nodal (z=0.291) and the boundary image

(z=1.080) mapped in its boundary image (z=0.343). The first supernova, beginning to 'curve away' from the decelerating expansion predicted by theory, is at about (z=0.11).



Any receding cosmological object with a redshift exceeding (z=0.291) can be considered to be moving in the 'Hubble Flow' with a measured redshift (z_m=z), because after a distance of 2.24 billion ly no doubling of the electromagnetic parameters occurs for the distance between the two cosmic nodes.

But we find three z-intervals, in whom we must apply a redshift-correction; set in the images of the boundaries and the nodes. The fixed odd (1,3,5,...) Hubble Node H_o for Protoverse (k=0 in a Multiverse cosmology in parallel time space, but collocal in spacetime:

(https://cosmosdawn.net/attachments/article/29/mathimatia10.pdf)

is imaged in a unitary interval {n: n_{ps}-½-1} and across the Dark Energy Mirror at n=½ in the even (0,2,4,...) Hubble Node of the Big Bang for

$$n_{ps}=\lambda_{ps}/R_{Hubble}=(c/R_{Hubble})/(c/\lambda_{ps})=H_o/f_{ps}=6.259...x10^{-49}.$$

The odd node remains fixed in the multiverse, but allows a transversion of the electromagnetic speed-invariant light path to oscillate between the two nodes in a lower dimensional, say 10D stringed cosmology. The 11D light path so is both reflected into this 10D string space, but also continues into 11D membrane space in the creation for the multiverse generations in a resetting and extension of the initializing parameters of the Big Bang defining the protoverse.

The reflected 11D light path so intersects its own journey from the Quantum Big Bang (qbb), once the first odd node H_o has been encountered so 16.876 Billion years following the qbb genesis.

This implies that a second universe for k=1 is generated as soon as the first universe, initiated as k=0 has attained a full covering of the Hubble Event Horizon, set by the Inflaton. A second universe, collocal with the first universe so was created in a second qbb 19.11516.876=2.239 Billion years ago.

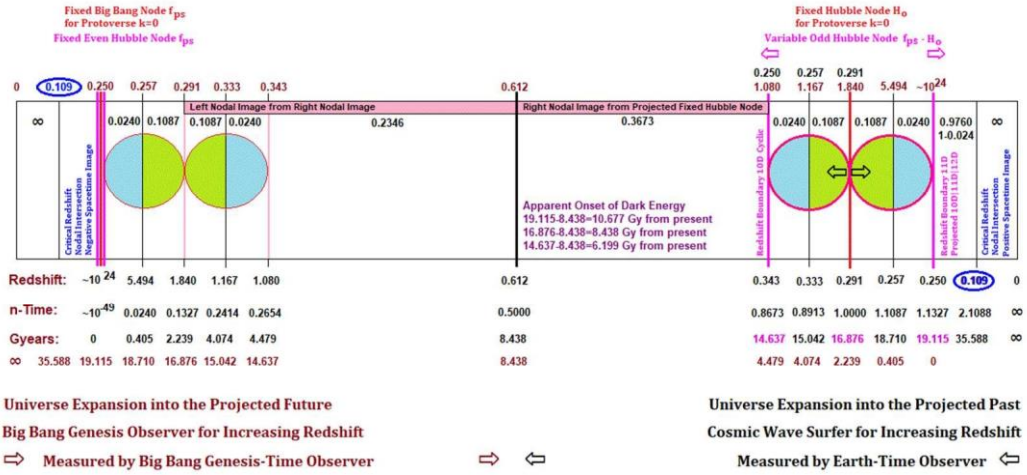
As the spacetime for k=0 was created by the first Inflaton, the second universe became superimposed onto the first, already existing universe in a multi-dimensional spacetime defined by the 10D-closed cosmology of de Sitter positive curvature, albeit expanding as a 11D-open cosmology of Anti-de Sitter negative curvature.

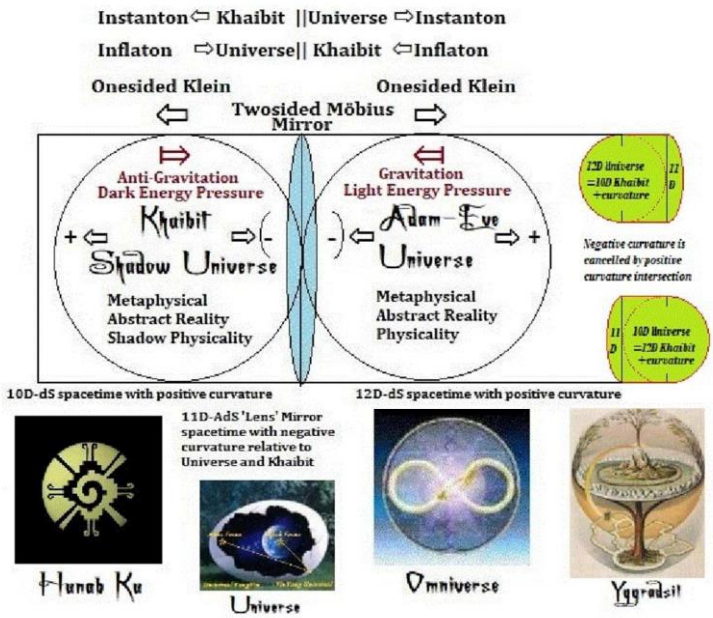
At the critical node (n=1) the positive gravitational pressure from the perspective of a present day cosmological Earth-Time observer, measuring the universe backwards in time for increasing cosmological redshifts - is balanced by a negative Dark Energy pressure from the perspective of a relative present day Big Bang Genesis observer, measuring the universe forwards in time for increasing cosmological redshifts.

A superposition of the two self-relative observers, then cancels the curvatures to result in an overall Euclidean-Minkowskian flat cosmology. This congruence or qbb entanglement so enables the

origin of the Dark Energy to derive from a quasi-negative spacetime, here termed as a Shadow Universe Khaibit.

Khaibit so expands spacetime from its own singularity contraction of no space and no time as given by the Instanton parameters of supermembrane $E_{ps}E_{ss}$.





This 'singularity interval' so is a collocal point space in the Shadow Universe and is defined by the boundary value of the redshift of the string space, given by the n-coordinates of the oscillating de Sitter cosmology.

In the Anti-de Sitter cosmology of the refracted-continuing 11-dimensional light path, the light path defines the multivalued coordinates for the Hubble Node oscillation within the unitary interval as given by kth universe embedded within the omniverse.
The entirety of space in any multiverse, so can be considered as a 'singularity point space' relative to Khaibit, the Shadow Universe, containing or embedding within its higher dimensional extent lower dimensional or compressed-conifold spacetime.

The boundary ($z_{arpimage}$=0.343, $z_{node'}$=1.080) is imaged as the 10D-boundary image (z_{arp}=0.25045) in the 10D-nodal mirror of (z_{node}=0.291, $z_{arpimage'}$=1.840) and the present 11D-boundary mirror of (z_{arp}=0.25045, $z_{BigBang}$~10^{24}) images the Big Bang-0D-10-11D 'singularity point space' in the shared nodal 10D-11D-boundary (z_{arp}=0.25045).

If (v'/c=0.22), then (z_m=z_{arp}=0.25045 as the variation maximum) and at the event horizon, where z_m=0, the $z(z_m)$=z_{arp} and az_m+b=0.291 for z_m=$z_{nodalintersection}$=z_{ni}; subsequently (b=z_{arp} & az_{ni}=0.04055) and a the gradient of the 'Local Flow', given in the equation: $z(z_m)$=az_m+0.25045 for the present epoch.

The intersecting redshift interval for the present time spans the $z(z_m)$ range from (0.291 to 0.343) for the z_m-interval from (z_{ni} to 0.25045) with positive gradient (0.343-0.291)/(0.25045z_{ni})=(0.052/(0.25045-z_{ni}) and letting this gradient define the intersection of z_{node}=z_m=z_{ni} and where $z(z_m)$=$z_m(n)$ for $z_{red}(z_m)$ = 0.37045(z_m) + 0.25045 = 0.291 = z_{node} gives **z_{ni}=0.10943** for gradient (0.34323-0.25045)/0.25045 = 0.09278/0.25045 = 0.37045, so defining the

Redshift-Correlation-Equation: $z_{red}(z_m) = 0.37045(z_m) + 0.25045$

The intersecting blueshift interval for the present time spans the z_m-interval from (0.25045 to 0.29099) for the same range with a negative gradient (0.34323-0.29099)/(0.25045-0.29099)=0.05224/0.04054=-1.2885) and a linear Blueshift-Correlation-Equation:

$z_{blue}(z_m) = -1.28804(z_m) + 0.666$ = Cosmological Blueshift Region

Then the 'curving away' from the deceleration model at (z=1.11) becomes a consequence of the redshift (z_{ni}=0.10943) forming a nodal image from positive space in negative space to indicate redshift coordinates below the boundary coordinate given by zarp = 0.25045 as the redshift of the universes expansion for the age of the universe determined by the speed of recession (v) of its 11-dimensional surface boundary by $n = \sqrt{\{c/v\}} - 1 = \sqrt{\{1 + 2/(z^2+2z)\}} - 1$

The relativistic redshift formula suffices, because the expanding space of the universe in the Instanton is parametrically set by the Inflaton as the light path for the nodal Hubble oscillation - poetically called as the 'Heartbeat of the Mother Universe' or the 'Breath of Baab Universe' within the 'Breath of Abba Khaibit. The Hubble Law Hubble Constant = Recessional Velocity/Distance or H = v/D = constant is used to estimate the cosmological distances. The cosmological redshift so is comoving with the recessional velocity given by v/c and the redshift z= v/c as a proportion of

lightspeed c for a recessional velocity v is approximately linear for z<1 and so the Local Flow as distinct from the Hubble Flow here considered.

(*Continued on Part II*)

Received May 21, 2019; Accepted June 26, 2019

Exploration

The Accelerating Universe, Dark Energy & the Alpha Variation (Part II)

Anthony Bermanseder[2]

Abstract

The experimental data collected by the various supernova observers, and under utility of the Hubble Space Telescope to track the brightness variations of discovered supernovae type Ia to the conclusion, that distant supernovae are between 20% and 30% dimmer than expected and as a consequence of their measured redshift they appear to be further away than theory permits. An interpretation of this discovery implies, that the universe's expansion is accelerating; the measured redshift depicting a distance further away for a dimmer brightness than anticipated by theory. Why is there a redshift gap between z=0.11 and z=0.30 approximately? Does this imply a scarcity of supernovas in this redshift interval or is there a cosmological reason for this gap? Is this cosmological reason at the core of the Dark Energy implication and the 'factuality' of an accelerating universe? This paper shall elucidate the cosmological nature of Dark Energy and the inferred accelerating cosmology of an accelerating universe, stipulated to begin some 5-6 Billion years ago and as a change from a measured deceleration from light speed in the early universe.

Keywords: Accelerating universe, dark energy, alpha variation, Hubble Constant, supernovae.

(*Continued from Part I*)

The true 'Hubble-Flow' so begins at $z_m = z_{node} = 0.291$ in the present epoch with linear equation: $\mathbf{z(z_m) = z_m}$.
$R_{ps} = \lambda_{ps}/2\pi$ as the wormhole radius of the Instanton as a conformally transformed Planck-Length $L_p = \sqrt{\{G_o h/2\pi c^3\}}$ from the Inflaton.

The Schwarzschild metric for $2L_p = 2G_oM_p/c^2$ transforms a 3D Planck-length in the Planck-mass $M_p = \sqrt{\{hc/2\pi G_o\}}$ from the Planck-boson gravitational fine structure constant $1 = 2\pi G_o M_p^2/hc$.

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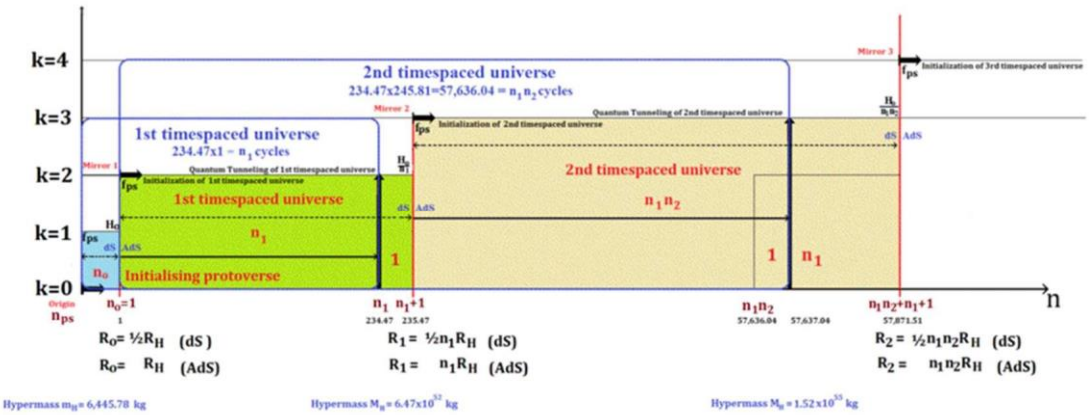
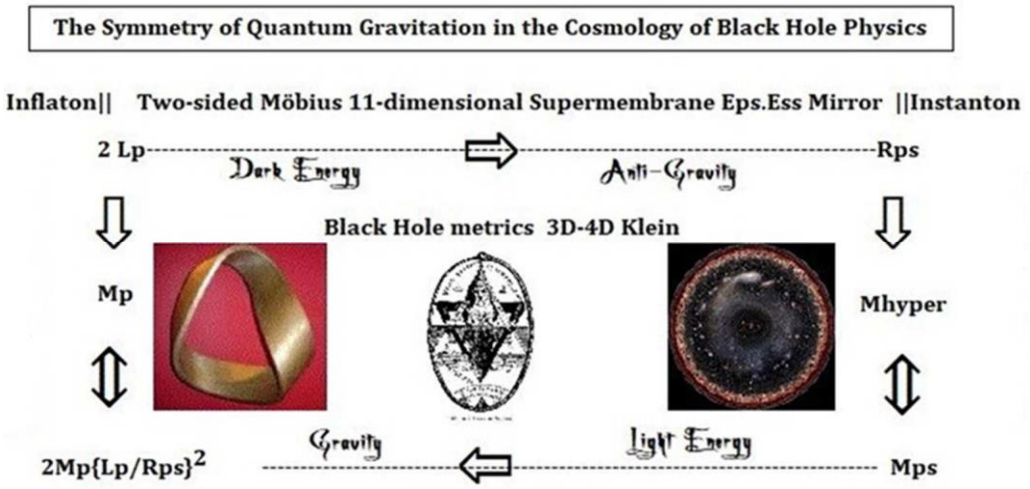
The Schwarzschild metric for the Weyl-wormhole radius R_{ps} then defines a hypermass M_{hyper} as the conformal mapping of the Planck-mass M_p as $M_{hyper} = ½\{R_{ps}/L_p\}M_p = ½\{R_{ps}/L_p\}^2.M_{ps}$ and where $M_{ps} = E_{ps}/c^2 = hf_{ps}/c^2 = kT_{ps}/c^2$ in fundamental expressions for the energy of Abba-E_{ps} as one part of the super membrane $E_{ps}.E_{ss}$ in physical quantities of mass m, frequency f and temperature T. c^2 and h and k are fundamental constants of nature obtained from the initializing algorithm of the Mathimatia and are labeled as the 'square of lightspeed c' and 'Planck's constant h' and 'Stefan Boltzmann's constant k' respectively.

The complementary part of super membrane $E_{ps}E_{ss}$ is EssBaab. Eps-Abba is renamed as 'Energy of the Primary Source-Sink' and Ess-Baab is renamed as 'Energy of the Secondary Sink-Source'. The primary source-sink and the primary sink-source are coupled under a mode of mirror inversion duality with Eps describing a vibratory and high energy micro-quantum quantum entanglement with Ess as a winding and low energy macro quantum energy. It is this quantum entanglement, which allows Abba to become part of Universe in the encompassing energy quantum of physicalized consciousness, defined in the magnetopolar charge.

The combined effect of the applied Schwarzschild metric then defines a Compton Constant to characterize the conformal transformation as: Compton Constant $h/2\pi c = M_pL_p = M_{ps}R_{ps}$. Quantum gravitation now manifests the mass differences between Planck-mass M_p and Weyl mass M_{ps}. The Black Hole physics had transformed M_p from the definition of L_p; but this transformation did not generate M_{ps} from R_{ps}, but rather hypermass M_{hyper}, differing from M_{ps} by a factor of $½\{R_{ps}/L_p\}^2$.

The quantum gravitational mass $M_{hyper} = ½\{R_{ps}/L_p\}^2. m_{ps}$ then could evolve as $M_{hyper}.Y^n = M_H$ in cycle time $n=H_ot$ and in the form of the Black Hole masses or equivalently in the form of the wormhole radius R_{ps} expanding to the size of the Hubble event horizon $R_H=2G_oM_H/c_2$ as the Inflaton boundary in the higher dimensional spacetime.





Solving for the completion of the protoverse in n-cyclicity then gives n = ln{M_H/M_{hyper}}/lnY =ln{R_H/R_{ps}}/lnY = ln{1.47325..x10^{25}}/ln{1.618034} = 234.471.. and indicating that 234.471 half-oscillations of the Hubble parameter between its minimum Instanton node and its maximum Inflaton node would be required to expand the wormhole radius of the Instanton and hypermass M_{hyper} to the Hubble event horizon as the 11-dimensional boundary of Klein.

As one-half cycle of the 'Heartbeat of Mother Universe' requires $1/H_o = R_H/c$ = 5.32558..x10^{17} s* or so 16.876 Billion years; the evolution of the protoverse as the seed for phase shifted multiverses within the Omniverse would take 234.471x16.876 = 3.957x10^{12} years.

After about 4 Trillion years then, the protoverse would quantum tunnel into the next iteration of its Mathimatia definition and a second universe which would have been created by a resetting of the initializing parameters of its precursive first universe or protoverse. And so the second Inflaton became triggered when the light path of the first universe had reached the Hubble node of the first Inflaton 16.876 Billion years from the beginning of the protoverse.

After trillions of years the first evolution of the mass seed in Universe would have exhausted the transmutation of the elements in the birth and death of stars and galaxies and the Omniverse would

require a 'recharging' of the mass seed from the VPE as the energy reservoir of Abba in the physical cosmology.

As universal energy quantum of potential physical manifestation from nowhere in notime this potential energy remains unlimited and the Omniverse in spacetime cannot exhaust its VPE from which the physicalized energy emerges.

At the Inflaton boundary, the 11-dimensional light path in the invariant light speed parameter 'c' in the higher dimensional universe had been both refracted into the 11th dimension, creating new spacetime in the second universe as a multiverse and it had been reflected back into the lower dimensional spacetime as an EMR-EMMR coupled parameter in a 'deja vu' visitation of the 10dimensional spacetime.

This 'return of the light' would self-intersect the expansion of Universe and define particular values for the comoving reference frame for bilocated cosmic or universal observers, one at the origin of the Instanton and the other comoving with the 10-dimenmsional boundary of the Instanton as the image of the Inflaton event horizon.

Particular cosmological redshift corrections would have to be applied to account for this self intersection of the multi-dimensional light path to avoid the measurement of this light path as a relative blueshift of approach to be considered a redshift of recession and to presume an accelerating universe apart from the natural acceleration caused by the Dark Energy from Khaibit in balancing the natural Milgröm deceleration of the cosmogenesis with the gravitational pressure of the baryon seed M_o.

M_o so evolves as the luminous or baryon matter seed from the baryon part of M_H defined in $\Omega_o=M_o/M_H = 0.02803$ from the Instanton. At the beginning, 2.8% of Universe's mass content was baryonic-luminous and would increase as a function of M_oY^n until the Instanton in an 'open' 10-D spacetime of 'de Sitter' dS would intersect the 'closed' 11-D spacetime of 'Anti-de Sitter' AdS for a n-cycle coordinate $n_{DM\cap BM} = \sqrt{2}$ and when the return of the EMR-EMMR light path would be imaged in the n=0.58578... coordinate specifying the forward journey of the light path from the Instanton 9.894 Billion years from the time of the birth of the physicalized universe.

The baryon seed would then constitute 5.536% of the total mass energy and remain constant at that value. The Baryon Matter BM would so be embedded in the Dark Matter DM and both would be encompassed by the Dark Energy DE in terms of the mass energy of the Universe. Now it would require a precise half cycle for the Hubble oscillation to calibrate the lower 10Dexpansion with the higher 11D-expansion of the light path in the scale factor $R(n=½) = R_H\{n/(n+1)\} = ⅓\ R_H$ for a full cycle of n=1 for the 11-dimensional invariant light path speed to reach the Hubble event horizon in $R(1) = R_H\{1/(1+1)\} = ½R_H$.

The gravitationally decelerating universe had expanded to a size 1/27th of the volume of Universe as a Mother Black Hole at a cycle time 0f 8.438 Billion years, when the DE began to appear as an inertia associated parameter in Universe. It was at this n-cycle coordinate, that the Dark Energy became initiated as a function of mass seed M_o , which as a potential energy form of the VPE/ZPE, had been awaiting light path 'c' to 'illuminate' or to trigger this potentiality.

Until that time the DM component had made up the difference to the BM in BM+DM = 1. The DE in the de Sitter spacetime had been 0 as a function of mass, but it had been and continued to be the balance between the dynamics of the gravitational baryon mass seed and the inherent cosmological Milgröm deceleration as a quintessence.

The nearest, most studied and most luminous quasar (or quasi-stellar object) is called 'Q3C273' (Cambridge catalogue); its recessional velocity is measured as ($v/c=z_m=0.1583$).
Quasar-Blazar-ActiveGalacticNucleus Q3C273 is located in the constellation of Virgo and its distance D, using the Hubble Law is D = zc/H.

For a (Planck Mission) Hubble Constant of 67.8 Hubble units D = zc/67.8 = $0.1583c/\{67.8/(3.0857x10^{19})\} = 2.164x10^{25}$ m* or 2.28 Billion ly.

For a (ESA-NASA) Hubble Constant of 74.0 Hubble units D = zc/74.0 = $0.1583c/\{74.0/(3.0857x10^{19})\} = 1.9804x10^{25}$ m* or 2.09 Billion ly.

Using the present calibrated Hubble Constant $\mathbf{H(n_p) = H_o/(2-n_p)}$ = (58.04 km/Mpc.s)/0.86729 = 66.92 km/Mpc.s
$D_{Q3C273} = 0.1583c/(66.92\ [km/Mpc.s]^*) = 0.1583c/\{66.92/(3.0857x10^{19})\} = 2.1898x10^{25}$ m*= $2.313x10^9$ ly = 709.75 Mpc and where 1 parsec (pc) = $3.0857x10^{16}$ m* or 3.259 lightyears.

Distance D for the nodal Hubble parameter yields $D_{node} = (66.92/58.04)D_{Q3C273} = 2.5250x10^{25}$ m* = $2.667x10^9$ ly = 818.34 Mpc

Increasing the applied value for H from its nodal value so decreases the calculated distance to the Quasar.

But this redshift z_{3QC273} is not in the Hubble Flow and must be corrected by $n_{Q3C273} = \sqrt{\{c/v\}} - 1 = 2.5134 - 1 = 1.5134$ and for a n-cycle time coordinate exceeding that of the boundary value of $n_{present}$ = 1.1327117...in the second Hubble semi-cycle in the 'electromagnetic 11D-return' of the light path.

Applying the Alpha-Redshift equation $\mathbf{z_{red}(z_m) = 0.37045(z_m) + 0.25045}$ gives a 'local flow correction' of: ($z(0.1583)=0.30909$), for which $\{v'/c=(z^2+2z)/(z^2+2z+2)=0.2630\} = \{1/(n'+1)^2\}$ for a corrected $n'=\sqrt{(1/0.2629)} - 1 = 0.94993$

The position of Blazar Q3C273 is therefore 1.1327117-0.94993 = 0.18278 n-units from the $n_{present}$ cycle coordinate at a linear displacement of $2.920235x10^{25}$ m* or 3.0846 Billion ly from n_p within the Local Flow, but not in the Cosmological Blueshift Region, which extends from $z_{arp}=0.25045$ to $z_{node}=0.291$ in the redshift delta of $z_\Delta=z_{node}-z_{arp}=0.04054$.

$D'_{Q3C273} = (H_{Q3C273}/58.04)D_{Q3C273} = 3.0846x10^9$ ly or 946.49 Mpc, which now would calculate an increase in the Hubble Constant as $H_{Q3C273} = (58.04)D'_{Q3C273}/D_{Q3C273}$ = 77.40 km/Mpc.s indicating the reason for the various inconsistent measurements for the Hubble Constant, when applied in the Local Flow.
The ESA-NASA measurements from the Hubble Space telescope and measuring Cepheid variable stars in the nearby Magellanic Clouds, have obtained a much larger Hubble Constant of 74.03 Hubble units, than the Planck Mission's 67.8 Hubble units.
http://sci.esa.int/hubble/61318-lat...onstant-calculations-is-not-a-fluke-heic1908/

As shown, the Redshift-Correction-Correlation for a given redshift and the linearity of the Hubble Law in the Local Flow requires an adjustment of the applied Hubble parameter calibrated and relative to the fixed nodal Hubble Constant $H_o=c/R_{Hubble}$.
As the Local Flow is characterized by the Critical Redshift $z_{nodalintersection}=z_{ni}=0.10943$ of the nodal intersection in the mirrored negative spacetime from the positive spacetime of the Earth Time Observer; the corrected redshift values for the Local Flow from z_{ni} to z_{node} are imaged at the nodal coordinate for $z_{node}=0.291$, which is $n_p-1=0.1327117$ n-units or ... = $2.120x10^{25}$ m* from the position of the Cosmic Wave Surfer.
The nodal mirror of the Inflaton defines a redshift displacement of 2.24 Billion ly from the present observer for multiple redshift values for ylemic or neutron star objects and incorporating Quasars, Blazars and AGNs within the Local Flow. Quasar Q3C273 so is an ylemic object imaged in the Local Flow and positioned relative to the nodal redshift boundary.

The Markarian (UV-emission characteristic) galaxy M231 has a measured redshift of $z_{M231}=0.04147=v'/c$ and is near $z_\Delta=z_{node}-z_{arp}=0.04054$ for D=zc/H.
This redshift so is in the Local Flow and must be corrected by $n_{M231}=\sqrt{\{c/v\}} - 1 = 4.9106 - 1 = 3.9106$ and for a n-cycle time coordinate exceeding that of the boundary value of $n_{present} = 1.1327117...$ in the third Hubble semi-cycle $4-3.9106=0.08942$ n-units from the node $n=4-n_{ps}$ as f_{ps} as a projected electromagnetic age for the universe of $n_{future}=65.9953$ Gy from $n_{past}=0.08942$ as 1.5090 Gy.

Applying the Alpha-Redshift equation $\mathbf{z_{red}(z_m) = 0.37045(z_m) + 0.25045}$ gives a 'local flow correction' of: $(z(0.04147)=0.26581)$, for which $\{v'/c=(z^2+2z)/(z^2+2z+2)=0.23144\} = \{1/(n'+1)^2\}$ for a corrected $n'=\sqrt{(1/0.23144)} - 1 = 1.07864$ positioning the corrected redshift into the second Hubble semi-cycle for a applicable n-cycle coordinate of $n_p-1.07864=0.05407$ n-units from n_p.
This position is $D'_{M231} = 8.638903x10^{24}$ m* or 0.91252 Gy from the present observer.
$D_{M231} = 0.04147c/(66.92\ [km/Mpc.s]^*) = 0.04147c/\{66.92/(3.0857x10^{19})\} = 5.7366x10^{24}$ m*= $605.95x10^6$ ly = 185.87 Mpc

$H_{M231} = (58.04)D'_{M231}/D_{M231} = 87.40$ km/Mpc, indicating the linear increase in the Hubble parameter under utility of the Hubble Law in the Local Flow. Markarian galaxy M231 can so be used as observational evidence for the redshift limit applying the Hubble Law for the low redshift cosmology in $z_\Delta=z_{node}-z_{arp}=0.04054$ for D=zc/H.

The limiting Hubble parameter for this bound then becomes $Dz_\Delta = 0.04054c/(66.92\ [km/Mpc.s]^*) = 0.04054c/\{66.92/(3.0857x10^{19})\} = 5.6079x10^{24}$ m*= $592.36x10^6$ ly = 181.76 Mpc for $Hz_\Delta = (58.04)D'z_\Delta/Dz_\Delta = 87.52$ km/Mpc.s, with $n(D'z_\Delta)=n_p-1.0798=0.05293$ from $z(0.04054)=0.26547$ and $v'/c=0.23118$ and $n'=1.0798$ for $D'z_\Delta = 0.05293R_{Hubble} = 8.4564x10^{24}$ m* = 0.89324 Gy from the present observer.
As $z_{M231}=0.04147$ is smaller than $z_{ni}=0.10943$, Markarian 231, as all similar redshift-luminosity measurements is not imaged in the nodal boundary. The z_{arp} redshift is the maximum variation for the present epoch in the Hubble-Oscillation and the fluctuation of the Hubble parameter as the

cosmic frequency is mirrored about $H'_o(n_p)=H_o/(2-n_p)$, valid for the (n=1 to 2)-cycle; hence $H'_o(n_p)$= 58.04/0.8673=66.92 Hubble units.
At the even nodes, say at (n_p=2), (H'_o) quantizes as (f_{ps}) in the pixilation of spacetime.
At the odd nodal images however, (H'_o) would assume its nodal value of 58.04 Hubble Units. The Hubble 'Constant' subsequently varies with redshift at any cycle time (n); increasing from 58.04 to 66.9 in the z-intervals (0.10943-0.25045) and (0.2910-0.3432) and decreasing from 66.92 to 58.04 in the z-intervals (0.25045-0.2910) and (1.080-1.840) for the present Hubble epoch.

The 'arpian redshift' as variation maximum is situated at n-coordinate 0.8673, implying that correctly interpreted spectroscopic measurements must converge at a Hubble-Constant of 66.9 Hubble units and a projected mapped age for the universe of (0.8673x16.88 billion years) or 14.64 billion years. For z=(0.3431-1.082), (H_o'=66.9) and the nodal intervals z=(0-0.110) and (z from 1.840) set it as (58.04).
This is a simple yet profound solution to the 70-year search to finetune the 'Hubble-Constant'. It is no wonder, that there was so much disagreement regarding the measurements, seeing that it changes in the described intervals as a reflection of EMR parameters. All astronomical and cosmological measurements engage optical instruments to catch photons and all of astrochemistry and astrophysics depends on spectrum analysis. So the universe is 'well behaved' after all and decelerating under its own gravity, modified in the quintessence.

Then the 25%, on average, discrepancy in the luminosity of the examined supernovae applies the old 'Hubble Law' in the proportionality of the nodal Hubble-Event-Horizon R_H to an object receding with velocity $v'=H'_oxR_H$ as an epoch dependent 'Hubble Constant' and as the linear proportionality constant between recessional velocity and the distance to the object.

In the case of the quasar 'Q3C273', the measured redshift (z=0.1583) relates a recessional velocity of v'=0.1583c; which is then 'corrected' to calculate the n-cycle position of 'Q3C273', allowing a Hubble-independent determination of its distance from the observer.

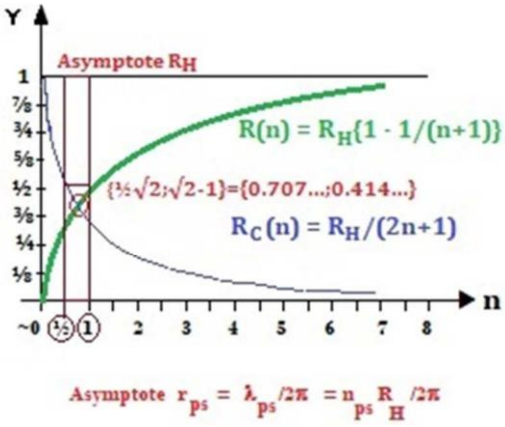
The distance to 'Q3C273' differs in for H'=67.8 (Planck Mission) for 2.28 Billion ly and H'= 74.0 (ESA-NASA) for 2.09 Billion ly and H'= 66.92 (Redshift corrected) for 3.08 Billion ly. The difference between H'=67.8 and H'=66.9 in terms of the distance measurements so is (3.082.28)/3.08 = 0.260 or 26% to reflect the 'dimming' effect for the measured luminosities.

The spectroscopic measurements incorporate a natural 'dimming effect' in luminosities, due to the cosmological objects, which are physically nearer, than their redshift indicate, appearing to be further away also in the electromagnetic universe, than they truly are and so the theoretical predictions of their distances are correct in principle, but require modification via the old Hubble Law, calculating a 'Hubble Constant', whose value oscillates between its constant values at the even and odd nodes as $f_{ps}=c/\lambda_{ps}=3x10^{30}$ and $H_o=c/R_{Hubble}=1.87773x10^{-18}$ respectively.

And at higher redshifts, passing the imaging interval from (z=0.291 to 0.343), the seeming cosmic acceleration intensifies until the other imaging interval from (z=1.080 to 1.840) has been reached and centered at z=0.612 as the halfway coordinate between the imaging coordinate intervals for the onset of the Dark Energy-Quintessence and the two self-relative Universal Observers described.

The Cosmic-Wave-Surfer measures the cosmological parameters from its present and measures the universal past in time and the Big Bang Observer measures those parameters from its present in a universal future. The apparent cosmic acceleration hence becomes an imaged double boundary-nodal-mirror effect.

The Alpha-Variation measures shifts in wavelength, which have passed through the described intervals and a 'dip' in the constant is derived from the mathematical analysis. The magnitude of that dip is calculated as about 80 parts per million and is a result of changing the measured value for the charge quantum e in $\mathbf{Alpha = 2\pi ke^2/hc = e^2/2\varepsilon_o hc = 60\pi e^2/h}$.



$R(n) = ½ R_H$ for $n=1$ ⇨ R_H for $n\to\infty$

Onset of Dark Energy for nodal completion of electromagnetic universe $n=1$ $H_O = c/R_H$

$R_C(n) = ½R_H$ for $n=½$ ⇨ 0 for $n\to\infty$

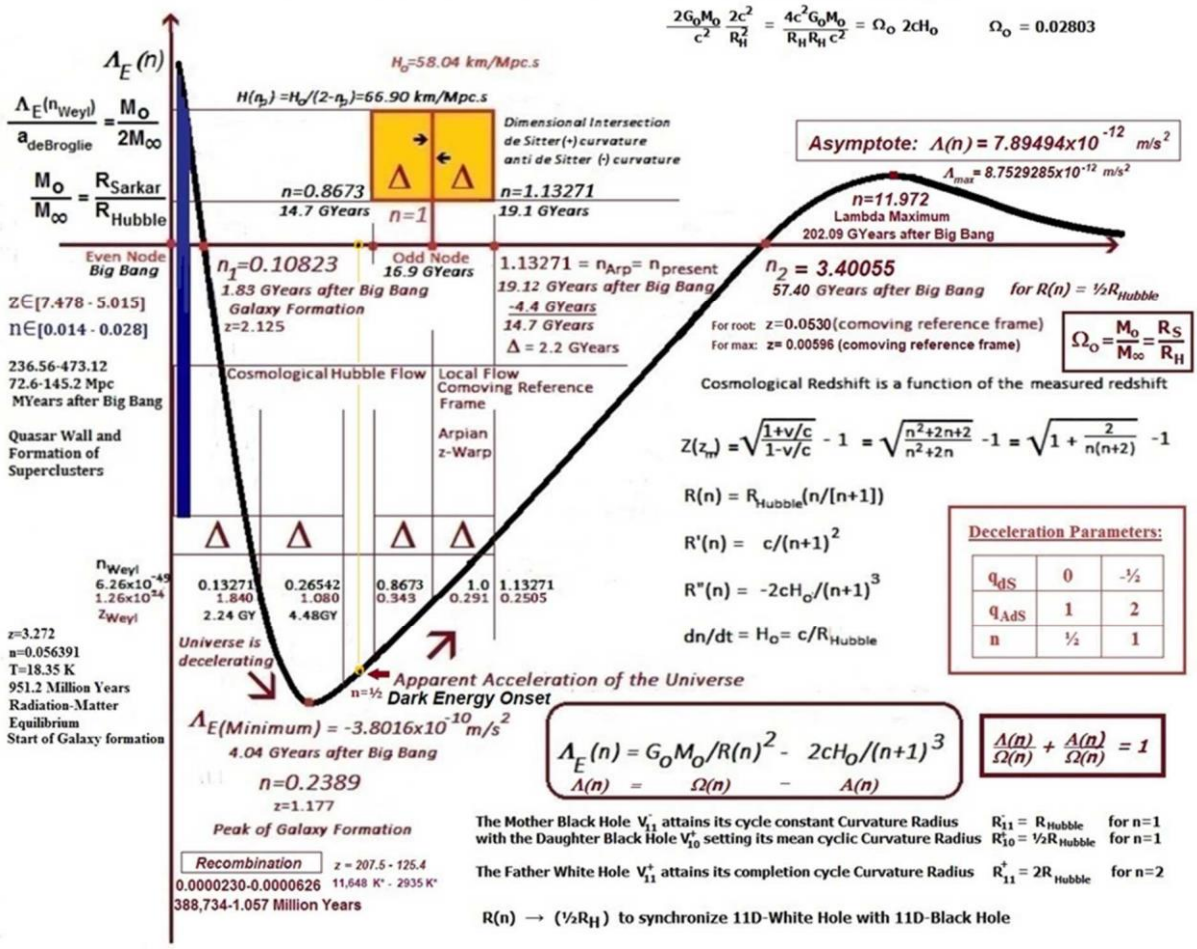
$$R_C(n) = cdt/dn.dn/dT = (c/H_o)(1/(2n+1))$$
$$T(n) = n(n+1) = n^2 + n$$
$$T'(n) = dT(n)/dn = 2n+1$$
$$dT(n,t)/dt = T'(t) = T'(n).dn/dt = H_O\{2n+1\}$$

At the instanton t_{ps}, a de Broglie Phase-Inflation defined $r_{max}=a_{dB}/f^2_{ps}$ and a corresponding Phase-Speed $v_{dB}=r_{max}.f_{ps}$.
Those de Broglian parameters constitute the boundary constants for the Guth-Linde inflation and the dynamical behaviour for all generated multiverses as subsets of the omniverse in superspacetime CMF.

Initially, the de Broglie Acceleration of Inflation specified the overall architecture for the universe in the Sarkar Constant $A_S=\Lambda_E(n_{ps})r_{max}/a_{dB} = G_oM_o/c^2$
The Sarkar Constant calculates as 72.4 Mpc, $2.23541620x10^{24}$ m or as 236.12 Mlightyears as the bounding gravitational distance/scale parameter.

A Scalar Higgsian Temperature Field derives from the singularity and initialises the consequent evolution of the protocosmos in the manifestation of the bosonic superbranes as macroquantisations of multiverses in quantum relativistic definitions.

The Omega of critical density is specified in acceleration ratio $\Lambda_E(n_{ps})/a_{dB}$, which is $G_oM_o/c^2r_{max} = 0.01401506 = \frac{1}{2}M_o/M_\infty = \frac{1}{2}\Omega_o = q_o$ (Deceleration Parameter).



The Alpha-Variation is the dimensional intersection of M-C-space, 10D-C-space forming a holographic image in 12D-F-space. The charge quantum (e) is defined via the Riemann Analysis of B(n), the supersymmetric wavefunction of the universe:
The Universal Wavefunction B(n) = [2e/hA]exp(-AlphaxT(n)) with units of 'Inverse Energy' redefined in the multidimensional context of string-membrane unification physics as units of magneto charge C* and unit-dimensionally equivalent to the Gravitational Parameter $[GM]=[N.m^2.kg/kg^2]=[m^3/s^2]=[C^*]$ as a unit for physicalized 'Source Energy' Consciousness, descriptive as a quantum angular acceleration (or quantum spin) acting upon a spacetime volumar from a constant boundary-initial condition for df/dt maximized in $\{df/dt\}|_{max}=f_{ps}^2$ as $9x10^{60}$ frequency-vibration eigenstates.

For the Universal Wavefunction {T(n) =...- 3 - 2 - 1 +0+ 1 + 2 + 3 +...= n(n+1)} and the Feynman-Path-Integral for all particle histories as an alternative formulation to the Schrödinger- Dirac- and Klein-Gordon Equations for the quantum mechanistic probability distribution of quantum states in the particle-wave duality.
The Action Law of (Action=ee*) manifests the lightspeed (c)-independent form of Alpha and can then be calibrated via the definition of the (c)-inclusive form in magnetic constant (μ_o). {$Alpha = 60\pi e^2/h = e^2/(2\varepsilon_o hc) = \mu_o ce^2/(2h) = 1/137.0470731$}

A Newton-Raphson iteration for B(n) and the boundary condition $\{T(n)=i^2$ in $B\{-[1/2]+i(½\sqrt{3})\}$, with a first approximation: ($e_1=(½hA=1.618221145x10^{-19}$ C*) converges to: ($e=1.606456344x10^{-19}$ C*).

Abstract time in F-Space is defined as: N=Minimum Radius/Maximum Radius = $\lambda_{ps}/R_{Hubble} = \lambda_{ps}/R_{max} = n_{ps}$ and so allows the definition of Inverse Time as frequency parameter physicalizing this abstraction for time in modular mirror duality made manifest in the string epoch of the Inflaton.
This then defines the GENESIS BOSON as the Particle of creation using the fundamental constants of Creation from the SE_{ps} algorithms. Those constants are then used inductively in the future by any sufficiently mentally evolved and cosmically self-aware civilization to construct self-consistent and logical measurement systems to rediscover their own nature and origins in a self-induction of physical consciousness of their own cocreated Genesis in a perceived time arrow of entropy, flowing apparently from the past to the present to the future.
In practical terms, this engages the measurement and analysis of two fundamental constants, namely the speed of light 'c' and the Planckian quantum constant 'h' to relate the quantum as a micro energy self-state (eigenvalue) to what is termed the classical physics of macro self-states exemplified in the theoretical physics of Newton, Maxwell and Einstein in scientific models of reality and encompassing mechanics, electromagnetism and the relativities respectively. The dimensional analysis of 'hc' as an energyxdisplacement parameter suffices to calibrate the unitary mensuration parameters for mass, displacement and time, say in the Earth-Terran System International or SI-system of measurements of fundamental quantities, say here the kilogram, the meter and the second respectively.

The other elementary units in the SI-system are derived from the algorithmic master-constant set and comprise the Kelvin for temperature as kinetic measure of the quantum states, the Ampere and Coulomb for electric current, the mole for molarity , the candela for luminosity with the steradian an additional geometrized unit for angular measures.

Any arbitrary measurement system of a Universal Observer or UO in a defined spacetime can then experimentally determine relationships and corollaries between experimental data and the changes in energy associated with dynamical systems. The UO has a mensuration system SI say and can calibrate its SI-system to any other unitary system like the star-* system of the UO*.

Dimensional Unit Calibration:

$[m/s]/[m^*/s^*] = [c^*/c] = [3x10^8/2.99792458x10^8] = [1.000692286]$ for $\{m/m^*\} = \{1.000692286\}\ \{s/s^*\}$
$[Js]/[J^*s^*] = [h^*/h] = [6.66666666..x10^{-34}/6.62607004x10^{-34}] = [1.006126803]$ for $\{J/J^*\} = \{1.006126803\}\ \{s^*/s\}$
$[m^5/s^3]/[m^5/s^3]^* = \{[m/m^*]^2\}.[c^*/c]^3 = G_o{}^*h^*/G_oh = 30ch^*/30c^*h = [c/c^*][h^*/h] = [0.999308193x1.00612803] = [1.005431984]$ for $\{m/m^*\} = [c/c^*]^2.\sqrt{[h^*/h]} = [0.998616864x1.00305872] = [1.001671357]$ for $\{m\}^2 = 1.00334349\ \{m^*\}^2$ and
$m = 1.001671357\ m^*$ and $m^* = 0.998331431\ m$

$s = \{m/m^*\}.[0.999308193]\ s^* = [1.001671357x0.999308193]\ s^* = 1.000978394\ s^*$ and $\{m/s\} = 1.000692286\ \{m/s\}^*$ for $\{m/s\}^2 = 1.00138505\ \{m^*/s^*\}^2$ as c^2

$J = \{s^*/s\}[h^*/h]\ J^* = [0.999022562x1.006126803]\ J^* = 1.005143377\ J^*$ and $J^* = 0.994882942\ J$
$kg = \{s^*/s\}.\{s/m\}^2.\{m^*/s^*\}^2.[h^*/h]\ kg^* = \{s/s^*\}\{m^*/m\}^2.[h^*/h]\ kg^* = [1.000978394x0.996665646x1.006126803]\ kg^* = 1.003753126\ kg^*$

$[H/m]/[H^*/m^*] = [J/J^*][m^*/m][C^*/C]^2.[s/s^*]^2 = \mu_o{}^*/\mu_o = [120\pi/c^*]/[4\pi x10^{-7}]$ for $C = \sqrt{\{[Js/J^*s^*][m^*s/ms^*]\}}\ C^* = \sqrt{\{[h^*/h][c/c^*]\}}\ C^* = \sqrt{[1.006126803/1.000692286]}\ C^* = 1.002711702\ C^*$
$[eV]/[eV^*] = [e^{\pm}J]/[e^{\pm}J]^* = [e^{\pm}/e^{\pm *}].[J/J^*]$ for $eV = [1.60217662x10^{-19}/1.606456344x10^{19}].[1.005143377]\ eV^* = 1.00246560\ eV^*$

$[J/K]/[J^*/K^*] = \{J/J^*\}.\{K^*/K\} = [k^*/k] = [1.411721579x10^{-23}/1.380649x10^{-23}] = [1.022505777]$ for $K = [J/J^*]/[1.022505777]\ K^* = [1.005143377/1.022505777]\ K^* = 0.983020397\ K^*$

($m^* = 0.998331431$ m; $s^* = 0.999022562$ s ; $kg^* = 0.99626091$ kg) in calibration of the base master constants (h/h^*, c/c^*, $[G_o]u=(1/30c)$) and we note the numerical constancy for the magnetic constant in both mensuration systems: $(\mu_o)=4\pi x10^{-7}$ Henry/m (H/m) in (SI) and $(\mu_o)=120\pi/c$ (H*/m*) in (*).

We recall that: (c=2.99792458x10^8 m/s (SI) and c*=3x10^8 m*/s* (*)).

The cosmic or universal value of alpha so remains constant in all cosmological time frames; with the fluctuation found to depend on an asymptotically constant strong interaction constant as a function of alpha.

In the SI measurement system Planck's constant h = 6.62607004x10^{-34} Js and the speed of light is c = 2.99792458x10^{-8} m/s and the electron charge are e=1.60217662x10^{-19} C for a bare electron mass of 9.10938356x10^{-31} kg.

In a mensuration system in which c would be precisely 3x10^8 (m/s)*; the following conversions between the SI-system and the *-system are applied in this paper.

{s}	=	1.000978394	{s*}	=	0.999022562	{s}
{m}	=	1.001671357	{m*}	=	0.998331431	{m}
{kg}	=	1.003753126	{kg*]	=	0.996260907	{kg}
{C}	=	1.002711702	{C*}	=	0.997295631	{C}
{J}	=	1.005143377	{J*}	=	0.994882942	{J}
{eV}	=	1.00246560	{eV*}	=	0.997540464	{eV}
{K}		0.98301975	{K*}	=	1.017273559	{K}

Furthermore, there exists one fundamental constant in the magnetic permeability constant μo = 4πx10^{-7} H/m which becomes numerically equal in the Maxwell constant $\mu_o = 1/\varepsilon_o c^2$ in an applied fine structure $\mu_o.\varepsilon_o = \{120\pi/c\}.\{1/120\pi c\} = 1/c^2$ $(s/m)^2$; $(s/m)^2$*. Subsequently in the calculation of alpha, the speed conversion must be incorporated for unitary consistency.

Alpha remains constant for a cosmology descriptive of a non-accelerating cosmology; but will result in a change in the electric charge quantum in a cosmology, which measures an accelerated spacial expansion, which can however be the result of a self-intersection of the light path for particular cosmological redshift intervals in an oscillating cosmology.
https://cosmosdawn.net/index.php/en/2-introduction/26-he-alpha-variation-and-an-acceleratinguniverse

Here a particular alpha variation reduces the SI-measurement for the square of the charge quantum e in a factor of $(1.6021119x10^{-19}/1.60217662x10^{-19})^2 = 0.99991921$...for a calibrated: **alpha variation $\alpha_{var} = 1 - (1.6021119x10^{-19}/1.60217662x10^{-19})^2 = 1 - 0.9999192 = 8.08x10^{-5}$.....[Eq.10]**

Alpha $\alpha = \mu_o ce^2/2h = e^2/2\varepsilon_o hc$
$= 2\pi.(2.99792458)(1.6021119)^2x10^{-37}/(6.62607004x10^{-34}) = 60\pi e^2/h = 7.2967696x10^{-3} = 1/137.047072$

The Henry is a derived (SI) unit for magnetic inductance and has base units ($Js^2/C^2=kgm^2/C^2$), which so must give the (C to C*) unitary calibration in $(\mu_o/\mu_o^*)=1=0.994598576\ C^{*2}/C^2$, which gives (C*=0.997295631C) and defines the (SI)-Coulomb Charge quantum as: $(e=0.997295631e^*=1.6021119x10^{-19}$ C (SI)).

The textbooks of SI-physics have $(e'=1.60217662x10^{-19}$ C (SI)), however and a value which differs from the value demanded by the magnetic constant (μ_o) in a factor of (e'/e=1.0000403).

As the electropolar charge quantum appears squared in the Alpha-Constant, the Alpha-variation so becomes (1.0000807), with the old value of (e') exceeding the new value of (e) in so 4 parts in 100,000 and [Alpha]' greater in magnitude than Alpha by 81 parts in a million and in agreement with the Churchill-Webb measurements of 1998, increasing from Alpha $= \mu_o c.e^2/2h =$ 1/137.047075 to Alpha = 1/137.036003.

Measuring Alpha even further back towards the Quantum Big Bang with increasing redshift, would better approximate the 80 parts per million increase in Alpha from say lower deviations at the say 8 parts per million at lower redshifts.

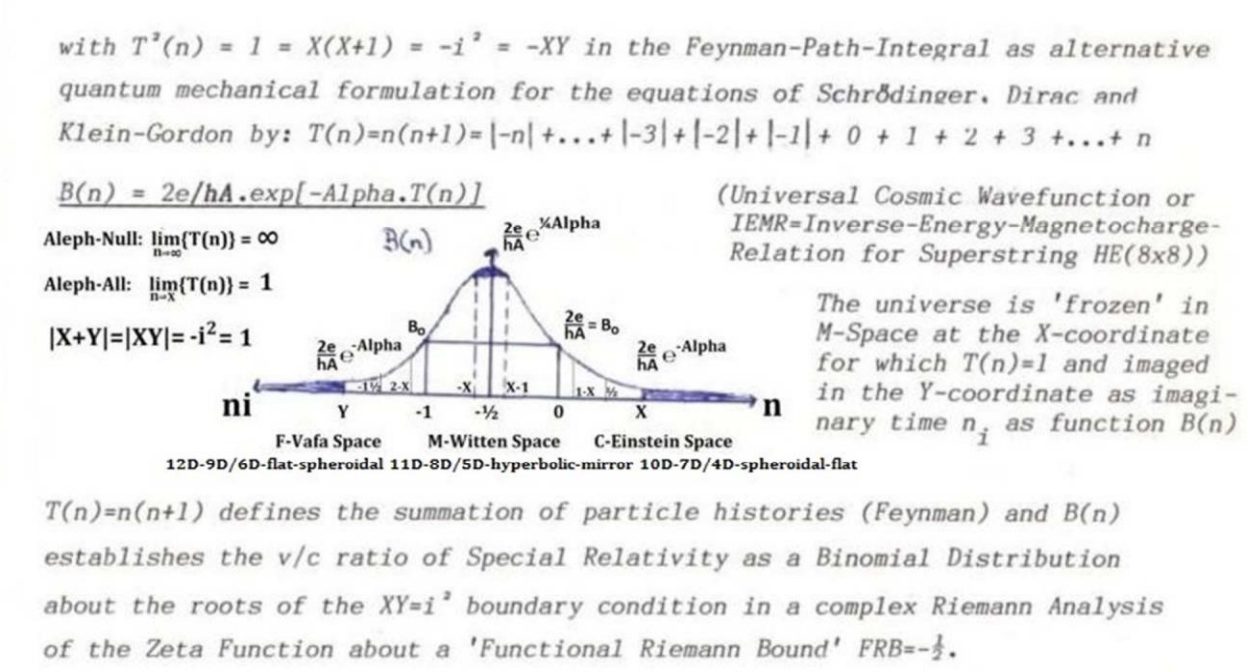
So the Alpha-Dip indicates that the textbook value for the electropole is fractionally too high; but that the Alpha Finestructure-Constant remains indeed constant, once the variation in the electronic charge quantum is considered.

Because the magnetic permeability constants are numerically the same in both the (SI) and the (*) unitary measurement systems; but $\varepsilon_o = 1/120\pi c = 8.841941283x10^{-12}$ (F/m)* and is $\varepsilon_o = 8.8541878176x10^{-12}$ F/m (SI), the (SI) measurement is too large by a factor of 1.00138505 to correlate correctly with the magnetic permeability constant μ_o to give the Maxwell constant $\mu_o x\varepsilon_o = (120\pi/c).(1/120\pi c) = 1/c^2$.

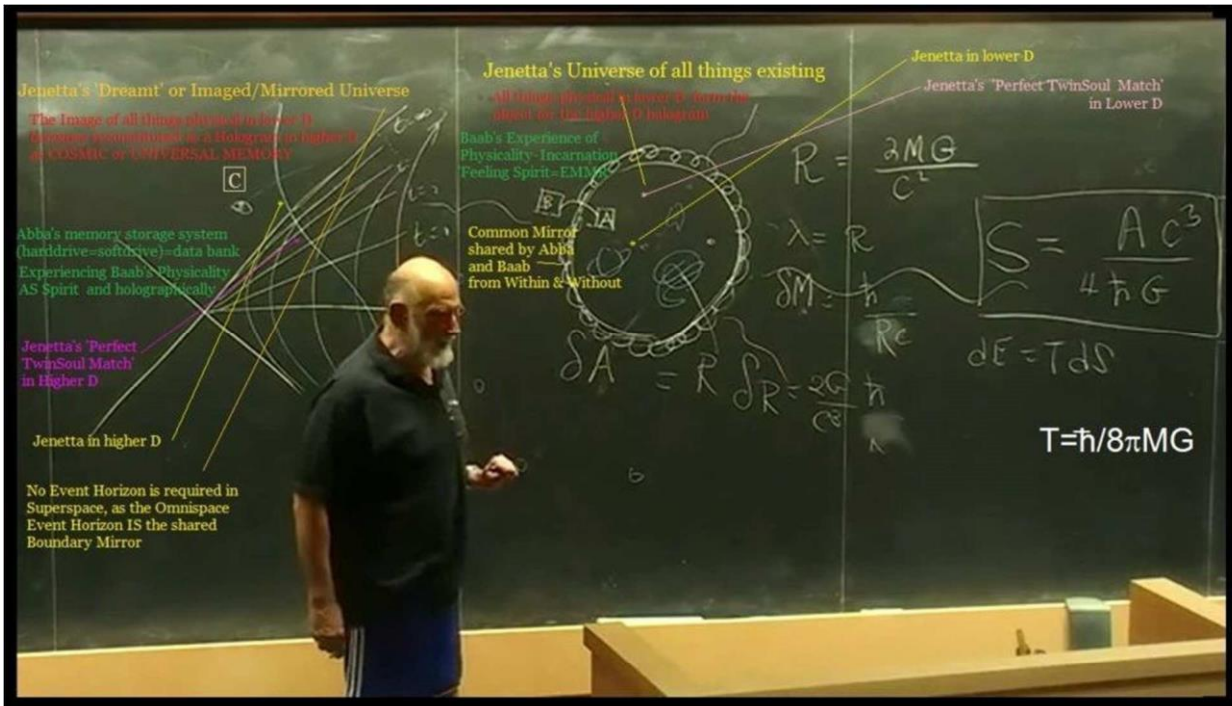
In the attempt to explain the Alpha-Dip, some theorists have proposed a 'slowing down' of (c). Recent formulations by populist physicist Paul Davies and in co-authorship with Tamara Davis and Charles Lineweaver from the Department of Astrophysics at the University of New South Wales, Sydney, Australia have followed the wrong avenues for the interpretation of the data, however.

In a paper published in ('Nature': 'Black Holes constrain varying constants'; August 8th, 2002), the authors propose a varying light speed to be responsible for the Alpha-Dip and discount any possible variation in the electro charge quantum.

Davies' argument that an increase in (e) would alter the evolution of Black Holes in their entropic definitions does not consider that a product of the Boltzmann Constant (defining entropy), with (e) forms a fundamental fine-structured constant in its own right.



In particular, the universe's wavefunction B(n) is localized in any arbitrary spacetime in 'unfreezing' the M-space 'stuck' in between the (X,Y) coordinates and subsequently in between real and imaginary linearized time parameters. This demands the establishment of a Mean Alignment-Time or MAT, relative to an 'unfreezing definition' in a specification of the 'naked singularity', oscillating as zero-point about the FRB.



Quantum Entanglement in two Observer Modes relative to a Black Hole in the Holographic Cosmology.
The Information in the Black Hole becomes emitted FROM the Black Hole by Hawking Radiation and relocalises at the location of observer C.

Hawking Radiation at C is quantum entangled with the Observer located Outside the Black Hole at B after being quantum entangled with the Observer at A Inside the Black Hole. The dynamics of observer A so describes a 'falling into the Black Hole' in crossing its Area of Information collected Event Horizon as a dimensional Boundary.

The Monogamy (Dragonomy=Star Marriage) quantum entanglement between A and B is required to ensure the physical continuity as the 10D Universe within the Black Hole and can only become a Polygamy between A and C and between B and C IF the entire Information Content within the Black Hole becomes entangled with the Observer at C Outside the Black Hole (far away from the Black Hole as a Energy-Radiation Transfer), rendering the Inside of the Black Hole as Bilocated in two metrically differentiated places at the same time.

As the 'far away' location C can be considered as an arbitrary displacement in Superspace of (higher 12D) IMAGING the Inside of the the (lower 10D) across the 11D Boundary Mirror as the Black Hole Event Horizon separating the Inside from the Outside; the notion of Hawking Radiation as the medium for dynamic data transmission becomes unneccessary.
The delocalisation in the 10D|11D|12D=10D Omni Space of the Superspace then PRESERVES all of the lower D information as its own memory outside the Black Hole Event Horizon in higher 12D of Super Space.

The VACUUM SPACE of the Inside of the Black Hole so EXCHANGES with the VOID of the Outside of the Black Hole, so enabling a Physical Universe to exist in both a NULL STATE and a INFINITY STATE simultaneously in Locality of Space and Time and in a Nonlocality of Space and Time by Quantum Entanglement of a renamed 'Hawking Radiation' as the Electromagnetic Monopolar Radiation or EMMR aka the 'Spirit of Creation' {GODDOG aka ABBABAAB aka JCCJ aka Twin Logos}.

(3) Jesus said, "If those who lead you say to you, 'See, the kingdom is in the sky,' then the birds of the sky will precede you. If they say to you, 'It is in the sea,' then the fish will precede you. Rather, the kingdom is inside of you, and it is outside of you. When you come to know yourselves, then you will become known, and you will realize that it is you who are the sons of the living father. But if you will not know yourselves, you dwell in poverty and it is you who are that poverty."

(22) Jesus saw infants being suckled. He said to his disciples, "These infants being suckled are like those who enter the kingdom."
They said to him, "Shall we then, as children, enter the kingdom?"
Jesus said to them, "When you make the two one, and when you make the inside like the outside and the outside like the inside, and the above like the below, and when you make the male and the female one and the same, so that the male not be male nor the female female; and when you fashion eyes in the place of an eye, and a hand in place of a hand, and a foot in place of a foot, and a likeness in place of a likeness; then will you enter the kingdom."

(Gospel of Thomas - Lambdin Translation)

Jenetta and her 'Perfect TwinSoulmatch' so coexist in two locations simultaneously and so can be separated and yet eternally entwined and together across the no time Superspace of higher D and the timespace of lower D.
The TwinSoul of the Cosmically defined Jenetta is in expectation to unify in its cosmic individuation of the 'Eternal Foursome' in Dragonomy.

For the curvature radius $R_{Sarkar}=2G_oM_o/c^2$, we have the deceleration parameter $q_o=½\Omega_o=M_o/2M_\infty=2G_oH_oM_o/c^3$ ~0.014015... and which so determines the 'missing mass' in the universe to be a consequence of the initial boundary conditions set by the de Broglie inflation and the overall Black Hole evolution of the stringed parameters.

From the minimum Planck Oscillator $E_{Po}=½hf_P=½m_Pc^2$: $½M_PT_P=\{1/8\pi\}M_PT_P.4\pi=H(awking)M(odulus)=HM$
$HM=hc^3/4\pi G_ok=M_{Min}T_{Max}=|c^2/4\pi^2|.M_{Max}.T_{ss}=M_o.T_o=M_\infty.T_\infty$ and for $M_{Max}=4\pi^2kHM/c^2hf_{ss}=\pi c/f_{ss}G_o=2.5446..x10^{49}$ kg*

The Mass-Temperature modulus of Stephen Hawking determines $M_{Hawking}=M_{Max}/4\pi$ for a boundary condition of maximised Black Hole Mass for a minimised Black Hole Temperature in $M_{Hawking}T_{Hawking}=HM=9.131793821.x10^{23}$ (kg.K)* for $(1/4\pi).HM=hc^3/16\pi^2G_ok$ and k the Stefan-Boltzmann constant.

The relationship is given in superstring (Planck) parameters by
$M_{min}.T_{max}=|c/2\pi|^2.M_{max}.T_{min}=hc^3/4\pi G_ok=(4\pi/8\pi)m_P.T_P$ and T_P the Planck Temperature $T_P=m_P.c^2/k$.

$\{(M_{Hawking},T_{Hawking});(M_O,T_O);(M_\infty,T_\infty)\}=\{(2.03x10^{48}$ kg*,$4.52x10^{-25}$K*);$(1.81x10^{51}$ kg*,$5.03x10^{-28}$ K*);$(6.47x10^{52}$ kg*,$1.41x10^{-29}$ K*)$\}$

The Dragon Braned Frequency Modulation $f_{ps}.f_{ss}=1=$ Unity
A Primary SourceSink Eps in modular membrane duality with a Secondary SinkSource Ess
Energy Prime SourceSink as White Hole|Quantum Entanglement Modular Duality|Energy Prime SinkSource as Black Hole

Curvature Radius $R_C=l/2\pi=c/2\pi f=c/\omega$
Curvature Area $A_{Black\ Hole}=A_{BH}=4\pi R_C^2=4\pi|c/2\pi|^2.1/f^2=4\pi|c/2\pi|^2.1/f_{ps}f_{ss}=|c^2/\pi|$ for $f_{ps}.f_{ss}=1$

For a 3D Volume $(4\pi/3)R^3$, the 2D Area or Surface becomes $dV/dR=4\pi R^2$ and reducing to a 1D Line Integral of $dA/dR=8\pi R=4.(2\pi R)$ as 4 times the perimeter of a circle of radius R and relating the Black Hole surface quantum as 4 Planck Areas L_P^2 in its Entropy $S_{BH}=A_{BH}/4L_P^2=\pi c^3A_{BH}/2G_oh$.

As the Unified Field of Quantum Relativity spans 1440° or 8π radians, the quantization of the Information located on the surface area of a Black Hole so introduces the factor of 4 in its formulation.

This sets the Hawking-Gibbons thermodynamic temperature minima for $T_o=constant/M_o$ ~ $5.03..x10^{-28}$ K* and $T_\infty=constant/M_\infty$ ~ $1.41..x10^{-29}$ K*.
As the minimum macro Black Hole has Schwarzschild metric $\lambda_{min}/2\pi=2G_oM_{min}/c^2$ for $T_{max}=hf_{max}/k=hc/\lambda_{min}k$; and modular duality requires the unification condition for the minimum curvature to relate to a maximum curvature in $R_{min}=\lambda_{min}/2\pi=1/R_{max}$ or $R_{max}=2\pi\lambda_{max}$, as $R_{min}.R_{max}=1$.

In gauge bosonic string parameters, this modular duality then is given in $E_{max}=hc/\lambda_{min}=m_{max}.c^2=kT_{max}$ and $E_{min}=hc/\lambda_{max}=m_{min}.c^2=kT_{min}$ and in the invariance of the lightspeed parameter c as $c=f_{max}\lambda_{min}=1/f_{min}\lambda_{max}$ or the dimensionless unification conditions:
$E_{max}.E_{min}=h^2$ and $E_{max}/E_{min}=f_{max}^2=1/f_{min}^2=\{c/\lambda_{min}\}^2=\{c/2\pi R_{min}\}^2=\{cR_{max}/2\pi\}^2=\{c\lambda_{max}\}^2$.

This gives a proportionality: $m_{max}.T_{min}=m_{min}.T_{max}$ for the gauges, which is however modified in the dimensionless factor $\{c/2\pi\}^2$ for the Black Hole masses for the given temperatures, as bosonic masses describe bosonic Black Holes via E=kT and not the cosmological Black Holes of the Schwarzschild metric.

The c-invariance so uses modular duality in the quantum Black Hole limit
$c=f_{max}\lambda_{min}=2\pi f_{max}R_{min}$ for $f_{min}=c/\lambda_{max}=c/2\pi R_{max}$ as an unmodulated frequency in $T_{min}=E_{min}/k=hc/2\pi kR_{max}=hc.\lambda_{min}/4\pi^2k=3.58856...x10^{-26}$ K* and a temperature above the Hawking-Gibbons limit as required.

This differs in a factor $\{2\pi/c\}^2$ from the lightspeed inversion in $T_{min}=hf_{min}/k$ and so $1.574x10^{-41}$ K*, which violates the Hawking-Gibbons boundaries in NOT using the modular duality and with $f_{min}=1/f_{max}$ in frequency units and NOT inverted time units.

And so $M_{min}.T_{max}=hc^3/4\pi G_ok=½m_P.T_P=M_{Hawking}.kc^2.T_{ss}/\pi$ and the Hawking Mass is determined as $M_{max}=4\pi M_{Hawking}=\pi c^2\lambda_{max}/G_o$ ~ $2.545x10^{49}$ kg*.

From the Black Hole 'Black Body Radiator' Temperature Spectra and Stefan's Constant $\sigma=2\pi^5k^4/15h^3c^2$ (J/s.m^{2}K^4)*

Power $P_{BH}=4\pi R_{BH}^2\sigma T_{BH}^4=M_{BH}c^2/t_{Hawking\ Evaporation}$ and with $T_{BH}^4=\{HM/M_{BH}\}^4$ (A 3D kinetic mass-energy distribution uses $M_{BH}c^2/3$ from $PV=nkT=⅓Nmv^2$)

$t_{Hawking}=c^6/16\pi\sigma G_o^2M_{BH}T_{BH}^4=30,720\pi^2G_o^2M_{BH}^3/hc^4=15,360\pi.t_P$ for $L_P=G_oM_P/c^2=ct_P=c\sqrt{\{G_oh/2\pi c^5\}}$

$t_{HM}=120G_o^2M_{BH}^3/\pi^2hc^4=t_{Hawking}/\{4\pi\}^4=60/\pi^3.t_P=1.935..t_p\sim2t_p$ (The actual Black Hole 'Evaporation Time' as a 'Doubling Cyclicity' in the cosmic evolution.)

For M_∞ and M_o and $M_{Hawking}$, the Hawking Evaporation times (without the Mother-Daughter BH Recharging derived following), then are: $2.32x10^{125}$ s* or $7.4x10^{117}$ years and $1.66x10^{134}$ s* or $5.3x10^{126}$ years and $7.46x10^{138}$ s* or $2.4x10^{131}$ years respectively.

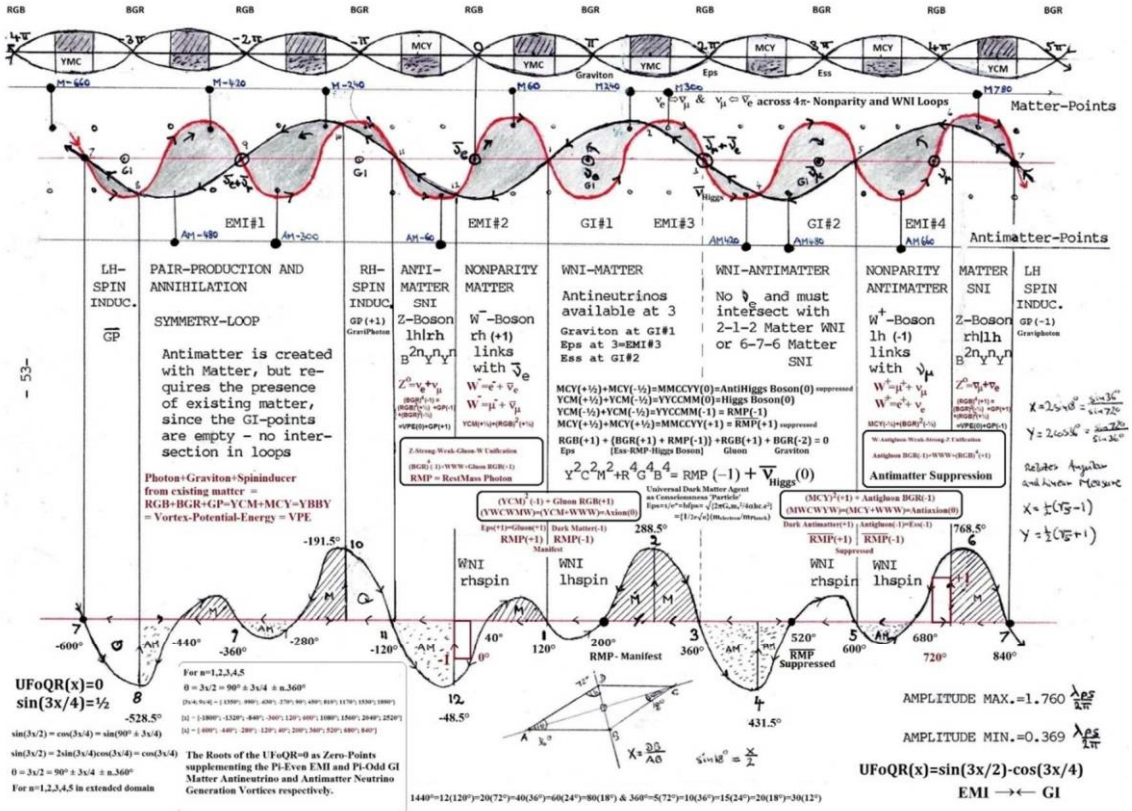
The Unified Gauge Parameter Field of Quantum Relativity

Primary-Secondary-Tertiary Colour Triplets of the Chromaticity Unities in the UFoQR 1-2-3-4-5-6-7-8-9-10-11-12-13
Anticolours for 8 Gluon Permutations in Energy gravitational $E=mc^2$ for B(lack) and Energy radiative E=hf for W(hite)
R+C and O+A and Y+B and L+I and G+M and T+P and C+R and A+O and B+Y and I+L and M+G and P+T and R+C

Gluon RGB=(RG)B=YB=CR=MG=YB=CR=MG=RGB
for: {BBB;BBW;BWB;BWW;WBB;WBW;WWB;WWW} hyperonic triplets and {BB;BW;WB;WW} mesonic doublets

R(ed)-O(range)-Y(ellow)-L(ime)-G(reen)-T(urquoise)-C(yan)-A(quamarine)-B(lue)-I(ndigo)-M(agenta)-P(urple)-R(ed)

The 12 Junction-Loops of the Unified Field Natural Current Field in Quantum Relativity Extent: $4\lambda_{ps}$ & Amplitude=$\lambda_{ps}/2\pi$



EM(M)I=ElectroMagnetic (Monopolic) Radiation Interaction = Unified Field of QR before spacetime creation
{Inflation to Quantum Big Bang} without Gravitational Interaction GI
Metaphysical Abstraction of Mathimatia Supersymmetry by Logos Definition in Radiation-Antiradiation Symmetry

Möbian-Klein Twosided 11D-Mirror SelfIntersection : 0° RGB(+1)+RGB(-1) ⇒ RRGGBB(0) ⇒ YCM(0)+YCM(0) ⇒ 180° BBGGRR(0) ⇒ MCY(0)+MCY(0) ⇒ 360°=0° BGR(-1)+BGR(+1)

Eps=RGB(+1) at 0°----------Ess=RGB(-1) at 360°.....Eps=BGR(-1) at 180° Inflexion Ess=BGR(+1)
Ess=RGB(+1) at 0°----------Eps=RGB(+1) at 360°.....Breaking of the metaphysical supersymmetry in quantum spin to allow the birth of the Graviton and matter-antimatter symmetry, suppressing however the matter-antimatter symmetry in the reformulation of antiradiation
[Encoded as the retracing of the 'steps of the creator' --Ezekiel.28.13-19; Isaiah.14.12-14]

Unified Field of QR in the 11D-Membrane Inflation, followed by a Quantum Big Bang of Relativistic Thermodynamic Cosmology
Physicalisation of the Metaphysical Precursor in an inherent Matter-Antimatter Asymmetry

Möbian-Klein Onesided 10D/12D-Mirror SelfIntersection as the Goldstone Boson Unification of all Interactions in the UFOQR:
RGB(+1)+BGR(+1)+RGB(+1)+BGR(-2)+YYCCMM(-1) = EMI Eps-Photon + WNI Ess-Antiphoton + SNI Gluon + Graviton + EMMR-RMP
⇒ MGGM(+2)+MGGM(-1)+YYCCMM(-1) = VPE(+2)+VPE(-1)+YYCCMM(-1) = VPE(+1)+YYCCMM(-1) = EMMR UFOQR Unification

The Ess-Anti-Photon(+1) is suppressed as Goldstone ambassador gauge in spin +1 by The SNI ambassador Gluon and is suppressed in colour charge BGR by the GI gauge ambassador Graviton. The birth of the Graviton demands a net spin of +1 of the Vortex-Potential Energy or VPE/ZPE to become neutralized by the fifth gauge ambassador of the RMP with spin -1 as the gauge ambassador and Goldstone Boson as the primal gauge ambassador for the consciousness energy interaction encompassing all particular constituents in the Unified Field of Quantum Relativity.

Council of Thuban, Saturday, August 15th, 2015

As $E^*.e^* = E_{ps}x1/E_{ps} = 1$ as fundamental unity in the 11D Membrane-Mirror-Space of modular duality with e* the magneto charge; one can heuristically state that (Energy E x charge quantum e) in the lower dimensional C-Line-Space C can be expressed as the inversed identity in the form of 1/T.
This then sets E.e=kTe=1 for [ek]=1/T and using an inverse proportion for mass in the lower dimensionality: [e*k*] = 1/T* sets a function f(n) = [ek]/[e*k*] = [T*/T].
This is the case for the Mass-Temperature inverse proportionality for the evolution of Black Holes from microstates to macro states and as in the Hawking Mass-Temperature relation for Black Holes:

{Minimum Planck Oscillator = $\frac{1}{2}hf_{Planck} = \frac{1}{2}m_{Planck}.c^2$ for $T_{max}=T_{ps}$ and $T_{min}=T_{ss}$ in string modular T-duality for $\frac{1}{2}m_{Planck}.T_{Planck} = (1/8\pi)(4\pi).m_{Planck}.T_{Planck}$ = Hawking Modulus HM = $hc_3/4\pi G_0k = M_{BHmin}.T_{BHmax} = \{c_2/4\pi_2\}. M_{BHmax}.T_{BHmin}.\}$.

B(n) is assigned $B(n_p) = \{[ek](SI)/[ek](*)\}$, with $\{[ek](SI)=constant=(1.60217662x10^{-19}$ C)(1.380649x10^{-23} J/K) = 2.21204355x10^{-42} CJ/K} and using the old (SI) value with the AlphaVariation for (e'); using ($e^{\pm}$=1.6021119x10^{-19} C) without the Alpha-Variation gives {[ek](SI)} = 2.21195419x10^{-42} CJ/K}.

The (*)-constant is a relatively fixed constant as: ($e^{\pm}$*k*=2.267869086x10^{-42} (CJ/K)*) and subsequently $B(n_p)$ calculates a particular value for n at the asymptote $B(n\Rightarrow\pm\infty)=0$ as:

$\{[e^{\pm}k](SI)/[e^{\pm}k]^*\}$ = (2.21204355/2.267869086) = 0.975384145 (0.975344742)= [2e/hA].exp([Alpha]x[$n_p^2+n_p$]), which yields an unique (n_p) as a complex solution to the quadratic equation by ln(0.975384145/0.992729803) = {ln(0.982527312)/-Alpha} = 2.415747501 = $n_p^2+n_p$ for: $n_p^2 + n_p$ - 2.415747501 = 0 solving as: (n_p=FRB(-½) ± 1.6327117).

For the unfrozen M-space with Alpha-Variation: {10D-root: n_p = 1.1327117 (real) & 12D-root: n_p = -2.1327117 (imaginary)}.
For the unfrozen M-space without Alpha-Variation: {10D-root: n_p = 1.1344063 (real) & 12Droot: n_p = -2.1344063 (imaginary)}.

This 'unfreezing' of M-space then allows the singularity algorithm of the cosmogenesis to manifest in what might be called the sex chromosomes of the universal DNA-encoding in terms of frequency or a number count.
A new physical quantity in 'awareness' is defined as the time differential of frequency and allows the concept of 'consciousness' to be born from the defining qualities of magneto charges. Electromagneto-monopolar 'Life' derives as consequence of self-inductions of quantum geometric entities, specified from super membranes, macro-crystallized in electropolar self capacitances and magnetopolar self-inductances, subsequently becoming subject to mutual cross inductances.

The purpose of the superbranial self-replication on ever increasing scales, and until modular duality is reached in minmax boundary conditions; is to establish the multiversal nesting of the smallest within the largest - a process which constituted the beginnings of it all in the 'naked singularity' becoming defined as the Genesis BOSON.
The GENESIS Boson then becomes the parametric initialization of creation in the abstract labeling of:

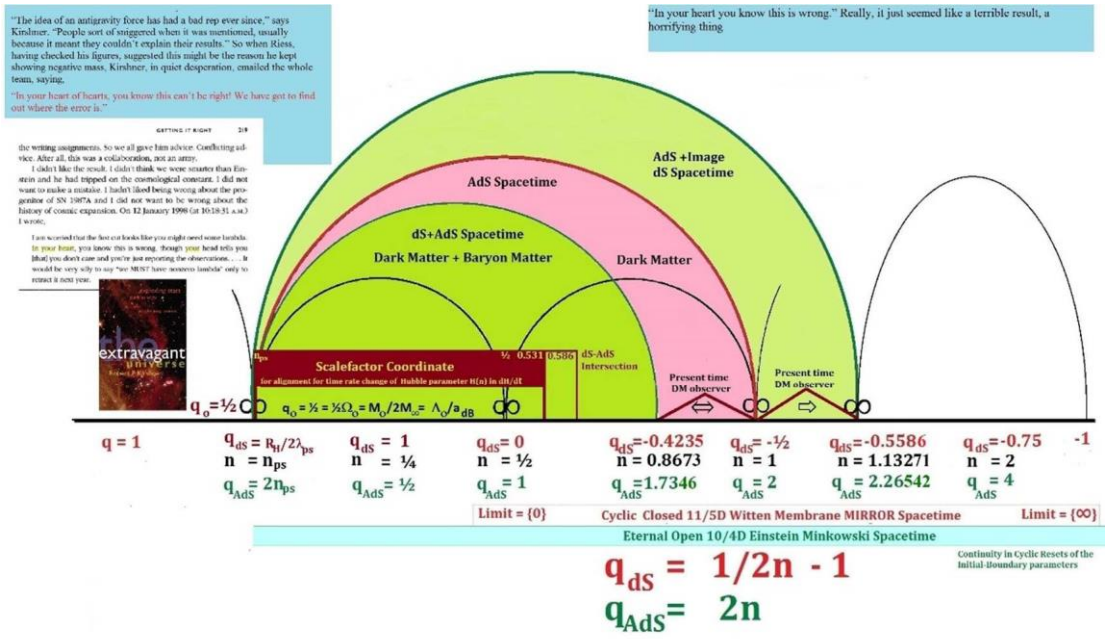
ENERGY=k.TEMPERATURE=h.FREQUENCY=h/TIME=MASS.c^2 and using the SE_{ps}-Master Constant Set: {4; 6; 7; L_o=1/[6x10^{15}]; c^2=9x10^{16}; 11; h=1/[15x10^{32}]; A=14x15^{24}; k=1/[15x16^{18}]; 26x65^{61}} in reverse order and with arbitrary symbols as shown becoming associated with those 'master constants'.

Particularly then: ENERGY=hR_{max}/λ_{ps} with MASS=h$R_{max}/\lambda_{ps}c^2$=0.01183463299 and TEMPERATURE=h$R_{max}/k\lambda_{ps}$=7.544808988..x10^{37} and

FREQUENCY=R_{max}/λ_{ps}=1.59767545..x10^{48}

This becomes the 'Atomic-Mass-Unit' in 12D-F-Space in using one protonucleon m_c=Alpha$^9L_{planck}$ for every one of the 12 monopolar current loops in the Unified Field of Quantum Relativity (UFoQR).
A first E_{ps}-Coefficient in the Expansion Series of the fundamental principles from the SE_{ps} algorithm then crystallizes the 'Counter for matter' in Avogadro's Constant for Molarity:
MASS(20/33)/12m_c = $N_{avogadro}$ = 6.02242143x10^{23} 1/mol*
$N=n_{ps}=\lambda_{ps}/R_{max}$ in REAL Time relative to the Quantum Big Bang to be created following the string epoch and relating to IMAGINARY TIME relative to this selfsame creation in the Cosmogony of the Genesis Boson of the Abba-Baab 11-dimensional supermembrane. This UNREAL Quantum Relative Time then is the Hubble-FREQUENCY $H_o=c/R_{max}$ in proportionality to the Source Frequency of the E_{ps}-Gauge Photon $f_{ps}=c/\lambda_{ps}$ in the expression $H_oR_{max}=c=\lambda_{ps}.f_{ps}$

N then becomes the Null time for the initialization of the string/supermembrane-serpent modular duality in the De Broglie phase speed initialization, beginning with the Oscillation (or Bounce) of the Planck-Length and specifies the Instantaneity of Now-Cycle-Time $n_{ps}=H_ot_{ps}=H_o/t_{ss}$ as the Time Instanton $t_{ps}=1/f_{ps}=f_{ss}$ and the Inflaton $R_{max}=R_{Hubble}=c/H_o$ with de Broglie Phase speed $V_{debroglie}=R_{max}.f_{ps}=R_{max}.c/\lambda_{ps}=c/n_{ps}$ as the 'Heartbeat of the Cosmic Mother Black Hole' frequency of the oscillating cosmos in the Cosmology of QR and in the imaginary F-Space Time of NH_o generalised in the Real Time $n=H_ot$ for any time in the evolving Cosmology and minimized in $n_{ps}=H_ot_{ps}$.



$$q_{dS} = 1/2n - 1$$
$$q_{AdS} = 2n$$

$$q_{dS} \cdot q_{AdS} = 2n(1/2n - 1) = 1 - 2n$$

$$\frac{q_{dS} + q_{AdS}}{q_{dS} - q_{AdS}} = \frac{1 - 2n + 4n^2}{1 - 2n - 4n^2} = \frac{4\{n-¼(1+i\sqrt{3})\}.\{n-¼(1-i\sqrt{3})\}}{-4\{n-¼(1-\sqrt{5})\}.\{n-¼(1+\sqrt{5})\}}$$

Roots for T(n)=-1 in n(n+1)-1=0
$n = -¼(1+i\sqrt{3})$; $n = -¼(1-i\sqrt{3})$

Roots for T(n)=1 in n(n+1)+1=0
$n = ¼(\sqrt{5}-1) = ½X$; $n = -¼(\sqrt{5}+1) = -½Y$

The cosmological observer is situated simultaneously in 10/4D Minkowski Flat dS spacetime, presently at the n=0.8676 cycle coordinate and in 11/5D Mirror closed AdS spacetime, presently at the n=1.1327 coordinate.

Observing the universe from AdS will necessarily result in measuring an accelerating universe; which is however in continuous decelaration in the gravitationally compressed dS spacetime for deceleration parameter q_{AdS}=2n. Gravitation is made manifest in the dS spacetime by Graviton strings from AdS spacetime as Dirichlet branes at the 10D boundary of the expanding universe mirroring the 11D boundary of the nodally fixed Event Horizon characterised by $H_o = c/R_H$

The Dark Matter region is defined in the contracting AdS lightpath, approaching the expanding dS spacetime, but includes any already occupied AdS spacetime. The Baryon seeded Universe will intersect the 'return' of the inflaton lighpath at n=2-√2=0.586 for {DM=22.09 %; BM=5.55%; DE=72.36%).

The Dark Energy is defined in the overall critical deceleration and density parameters; the DE being defined in the pressure term from the Friedmann equations and changes sign from positive maximum at the inflaton-instanton to negative in the interval L(n)>0 for n in [n_{ps} - 0.18023) and L(n)> 3.4008 with L(n)<0 for n in {0.1803 - 3.4008 }with absolute minimum at n=0.2389.
This DE {quasi)pressure term for the present era {1-0.1498 for 85% DM as 4.85% BM and 27.48% DM and 67.67% DE} is positive and calculates as 6.696×10^{-11} N/m², translating into a Lambda of 1.039×10^{-36} s^{-2} and 1.154×10^{-53} m^{-2}. This pressure term will become asymptotically negative for a universal age of about 57.4 Gy, and for the zero curvature evolution of the cosmos.

The 'naked singularity' can be defined as the ratio of the minimum to the maximum and calculates as the genetic 'NullTime' $n_{ps} = \lambda_{ps}/r_{max} = 6.259093485 \times 10^{-49}$ in dimensionless cycletime units (Tau-Time in General Relativity).
This NullTime precedes the Planck-Time $t_P = h/2\pi c^5 m_P = 6.9653035 \times 10^{-44}$ seconds (s) by a factor of 111,283, should timeunits be assigned to n_{ps}.*
The 'naked singularity' can then be redefined as the GENESIS-BOSON with a pre-Planck energy spectrum of 6.59×10^{24} GeV, an effective 'size' of 3×10^{-41} metres (m) and a preBig Bang temperature of 7.67×10^{37} Kelvin (K).

Timeinstantenuity ends the 'Bosonic Epoch' of the superbranes at $t_{ps} = 3.3301 \times 10^{-31}$ s and renders the Guth-Linde-Inflation as 'classically dynamic' in General Relativity.
The negative curvature of 10D-C-Space is 'flattened' in the positive curvature of 11D-M-Space and an overall observed Euclidean flat cosmos is realised.

Hubble Parameter	$H(n) = \{c/[n+1]^2\}/\{R_H(n/[n+1])\} = H_o/T(n) = H_o/\{n[n+1]\}$
Timerate change Hubble Parameter in AdS without dS	$d(H(n)/dt\|_{AdS} = \{dH(n)/dn\}.\{dn/dt\} = -H_o^2/n^2$ by $H(n) = c/nR_H$ with $\Lambda(n) = 0$
Timerate change Hubble Parameter in AdS with dS	$d(H(n)/dt\|_{AdS+dS} = -H_o^2.(2n+1)(n+½+1)/(n[n+1])^2 = -4\pi G\{\rho + P/c^2\} = \rho_{B/DM} + \rho_{\Lambda/DE}$
Dark Energy Parameter with $\Lambda_{(E)instein} = 0$	$\Lambda(n)/R(n) = \Lambda_E/3 - 4\pi GP/c^2 = \rho_B + \rho_\Lambda = G_o M_o/R(n)^3 - 2H_o^2/\{n[n+1]^2\}$

(1) $q(n) = -\ddot{a}.a/\dot{a}^2 = -\{-2cH_oR_H/[n+1]^3\}.\{nR_H/([n+1])/c^2/[n+1]^2\} = 2n$ *for AdS spacetime and dS spacetime for* $H_o = c/R_{(H)ubble/max}$

$r(n) = r_{max}(1 - 1/(n+1))$ (Parametric Scalefactor for Distance)

$\dot{r}(n) = c/(n+1)^2$ (Parametrisation for Velocity)

$\ddot{r}(n) = -2cH_o/(n+1)^3 = a_o(n)$ [Milgrom] (Parametrisation for Acceleration)

$n = H_o t$ with $c = f_{ps}\lambda_{ps} = H_o r_{max}$ and $H_o = dn/dt = constant = 1.879564359 \times 10^{-18}$ 1/s]

A general dark energy equation for the kth universe (k=0,1,2,3,...) in terms of the parametrized Milgröm acceleration A(n); comoving recession speed V(n) and scalefactored curvature radius R(n):

G_oM_o is the Gravitational Parameter for the Baryon mass seed; $M_o=2M_H\Lambda_o/A_o$; $R_H=c/H_o$ is the Hubble Horizon ; Λ_o the dark energy and c is the speed of light

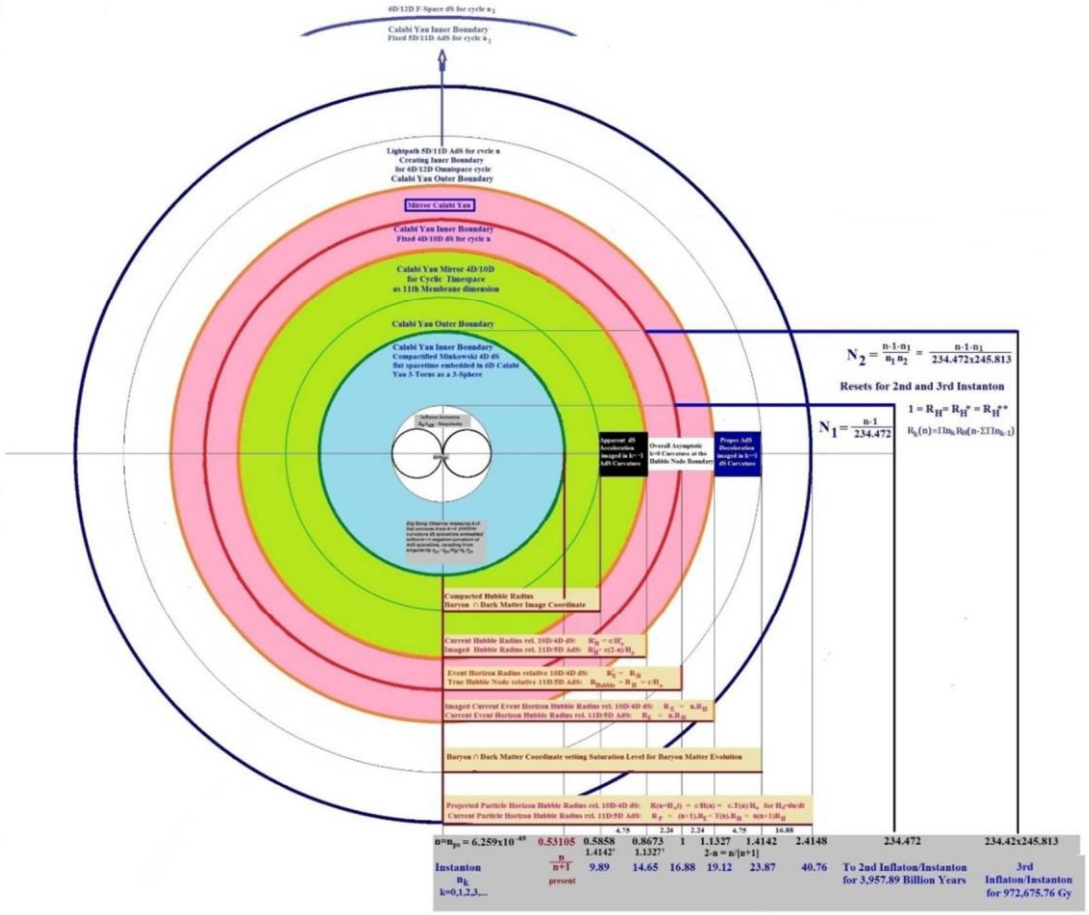
$$\Lambda_k(n) = G_oM_o/R_k(n)^2 - 2cH_o(\Pi n_k)^2/\{n-\Sigma\Pi n_{k-1}+\Pi n_k)\}^3 \qquad \text{and where } \Pi n_k = 1 = n_o \text{ for } k=0$$

$$N_k = \frac{H_o t_k}{\Pi n_k} = \frac{n - \Sigma\Pi n_{k-1}}{\Pi n_k}$$

$$R_k(n) = \Pi n_k R_H(n-\Sigma\Pi n_{k-1})/\{n-\Sigma\Pi n_{k-1}+\Pi n_k\} = R_H(n/|n+1|) = n_1R_H(N_1/|N_1+1|) = n_1n_2R_H(N_2/|N_2+1|) = ...$$

$$V_k(n) = dR_k(n)/dt ..... = c\{\Pi n_k\}^2/\{n-\Sigma\Pi n_{k-1}+\Pi n_k\}^2 = c/(n+1)^2 = c/(N_1+1)^2 = c/(N_2+1)^2 = ...$$

$$A_k(n) = d^2R_k(n)/dt^2 ..... = -2cH_o(\Pi n_k)^2/(n-\Sigma\Pi n_{k-1}+\Pi n_k)^3 = -2cH_o/(n+1)^3 = -2cH_o/n_1(N_1+1)^3 = -2cH_o/n_1n_2(N_2+1)^3 = ...$$



(*The End*)

Received May 21, 2019; Accepted June 26, 2019