

Just as teetrops whisper your name, weaving in a forlorn breeze;
Karla's demeanor is lovely to behold in sweetness and much ease.
Why do you doubt yourself, gorgeous one of heaven's sweet delight,
like a butterfly demure and petite, your prince charming is in sight?
What do you rate in your eyes view, does the goddess discriminate?
Descending the heavenly stairways, she is the beautiful one incarnate.

Boundary Parameters under Modular Duality of Quantum Relativity

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0. The Principia of the MATHIMATIA=IAMTHATIAM=YAHWHEY=95.

1.The MetaMathematics of Divisibility

Consider the maximum conditions of a system as being the inverse of the minimum conditions.
This in a nutshell is Modular Duality as discussed in QR.

Allow this LINEAR scale from minimum to maximum to RECIRCULARISE itself, so reflecting the
initialising process of something NOT describable in 'measurable' terms to THEN become measurable.

This is the Mathematics of $0=1=Infinity$ as some metaphysical ultimate Identity, which 'bounds' all
of the mensuration physics in principles of mathematics.

The major principle here is that DIVISION DOES NOT EXIST. So one cannot divide 0 nor 1 nor
Infinity.

Then the Identities $0=0$ and $1=1$ and $Infinity=Infinity$ form the SELFINTERACTION of the
UNDIVIDED system.

The link to DIVISION and partitioning of the UNITY in THREE (Circular closure symbolised by
cipher '0' ; its unfolding symbolised by cipher '1' and its multiplication symbolised by cipher '8' as
'two circles' moebian connected in inventing 3D from 2D and 1D and 0D*) then are the
ASYMPTOTES or LIMITS of the ratios $0/0=1/1=Infinity/Infinity=1$.

*[*That is 3D-Volume as locus of a surface-point around a centre is contained within a 2-Sphere, whose 2D-
Surface- Area is the locus of a circle as a 1-Sphere, rotated about the centre generating the sphere say.
Defining this centre as midway between two endpoints then defines the 0-Sphere as 1D-Line from the 0D-
Centre].*

This LIMIT must be 1, because only IF it is 1 do the Identities $0=0$ and $1=1$ and $Infinity=Infinity$
hold true in the mapped system of the MetaMathematics orOmniMathematics becoming
Mathematics, where only the Division $1/1=1$ is allowed.

One could then define $0/0=1=1/1=Infinity/Infinity$; $0/1=0$ and $0/Infinity=0^2$ for $0=Infinity$. 0^2 in $1/Infinity=0$ and $1/0=Infinity$ and $Infinity/0=Infinity^2$ for $1/0=Infinity$. Those definitions of OmniMathematics then become the limits of Mathematics.

The Division-Transformation $d_{ij}=(0,1,Infinity)$ then can be expressed in the square matrix:

$$\begin{bmatrix} 1 & Infinity & Infinity^2 \\ 0 & 1 & Infinity \\ 0^2 & 0 & 1 \end{bmatrix} = D \text{ with Determinant } \det D, \text{ where}$$

$$\det D = 1(1^2 - 0 \cdot Infinity) - Infinity(0 \cdot 1 - 0^2 \cdot Infinity) + Infinity^2(0 \cdot 0 - 1 \cdot 0^2) = 1^3 - 1 \cdot 0 \cdot Infinity - Infinity \cdot 0 \cdot 1 + (Infinity \cdot 0)^2$$

$$= 1^3 - 2 \cdot 1^2 + 1^2 = 0$$

Thus matrix D is singular and has no inverse, all cofactors being also 0. Matrix D is however symmetric in its transpose (exchanging rows i with columns j) for $\det D^T = 0$.

2. The MetaPhysics of the Boundary Parameters in QR

Call the maximum scale of the 'unfolding' the maximum Hubble-Radius R_{max} in some bounding dimensionality D_{max} . The definition in QR is $R_{max} = c/H_0 = \lambda_{ps} \cdot fps/H_0$ for specified superstring parameters $c = \lambda_{ps} \cdot fps$ and H_0 under an INVARIANCE condition symbolised by constant c, also rendering $H_0 = \text{constant}$ as boundary condition for a subsequent change in the 'finestructure' of the invariant 'c', (say as yet undefined 'velocity').

The Inverse Minimum is $1/R_{max}$, which under Modular Duality also describes the same mensuration unit as the maximum, say if $R_{max} = 1.596 \cdot 10^{26}$ metres, then the modular dual would be $R_{min} = 6.265 \cdot 10^{-27}$ metres.

This arbitrary scale 'as distance' definition is the 'unfolding' of a circular multidimensional continuum, with the 'cutting of the circle' representing an arbitrary 'point' on the 'circle's' perimeter, where the 'cut' is made. The two generated 'endpoints' of the 'unfolded' circle now become the R_{max} and R_{min} boundary conditions in linearity.

Now introduce a parameter of linearisation, called TIME to 'change' any one of the endpoints under Modular Duality.

This then becomes the 'Oscillation' of the Boundary Conditions and allows new degrees of freedom to 'be born'.

We define the degrees of freedom as translational in 3D following the linearisation of the circular as rotational in 3D (following the 3D generation from 2D from 1D from 0D).

Thus the QR-cosmology becomes 6D-Rotational enfolded in 3D-Translational.

The 'oscillation' of the boundary conditions now allow a 9D-Vibrational cosmology, embedded in a 6D-rotational universe encompassed by a 3D-translational one.

Specifically the invariant 'c' can now become a 'velocity' as the ratio of displacement/TIME and the TIME can become 'differentiable' and bounded by H_0 .

The QR-definition is $dn/dt = H_0$ where $n = \text{TIME}$ as dimensionless ratio between the minimum/maximum conditions.

Then TIME could become defined in $R_{min}/R_{max}=1/R_{max}^2$ dimensionless (under Modular Duality); but this describes a 6-dimensional cosmology without the oscillation degrees requiring a 9D-continuum.

It is thus the 'finestructuring' of the invariant 'c' as a velocity product of wavelengthxfrequency, which introduces the dimensional extension for the QR cosmology from 6 dimensions to 9 embedded in 3.

The QR definition for TIME then introduces the QUANTUM OSCILLATION as the the 6D- R_{min} mapped onto the 9D- λ_{ps} and using the definition for invariant c in superbrane parameters (it is called heterotic supermembrane HE(8x8)).

Subsequently: DIMENSIONLESS QUANTUM-TIME

$$TIME=\lambda_{ps}/R_{max}=\eta_{ps}=c/(f_{ps}.R_{max})=R_{max}.Ho/(f_{ps}.R_{max})=Ho/f_{ps}.$$

TIME as the Connector-Dimensionality, then maps the Minimum/Maximum Scale/Displacement ratio in inverse proportion unto the Maximum/Minimum Frequency ratio under Modular Duality in Invariant $c=\lambda_{ps}.f_{ps}=R_{max}.Ho$.

This describes a 9-dimensional quantum cosmology in Quantum Relativity for a specified boundary condition given in a particular superstring $E_{ps}E_{ss}=(Class\ HE(8x8))$, with ss defining the Modular Duality to ps (say as primary sourcesink and secondary sinksorce). The modular dual to $\lambda_{ps}=10^{-22}/2\pi$ metres, thus is $\lambda_{ss}=2\pi.10^{22}$ metres in relating the microquantum to the macroquantum.

Now there is not one, but five classes of superstrings under modular duality bounded above in the Planck-Scale and below by the ps-ss-scale.

Henceforth, the minimum/maximum scenario given in the 9D-Identity: $c=\lambda_{ps}.f_{ps}=R_{max}.Ho$ requires extension in dimensionality to encompass $R_{min}=6.265..x10^{-27}$ metres and $R_{max}=1.596..x10^{26}$ metres in the ps-ss modular duality.

We use the Time-Connector Dimensions of LINEARITY to CLOSE the 9D-universum in 12 Dimensions and introduce the Degrees of Freedom for Quantisation as the Principle of Holography under Modular Duality.

The 4th dimension so becomes REAL in connecting LineSpace of 3D to HyperSpace of 6D in translation encompassing rotation and in say rendering a 3D-Volume mathematically equivalent to a 5D-Volume under transformation/projections of a 3D-Surface being the inside-out 5D-Surface under 4D-HyperTime. A 4D-Volume universe described in toroidal parameter $2\pi^2$, then dimensionally reduces to a 3D-Surface $6\pi^2$ in HyperTime and the information contained within a 5D-HyperVolume and be described as the 4D-Surface mapping from HyperSpace to LineSpace.

In terms of mathematical physics, this becomes the modelling of the information contained within a 'Black Holed' Volume in 3D being mapped onto its Surface-Area in 2D as the 'Event Horizon', bounded necessarily in the scaled maxima of the parameters.

Because the 'inside' area is TIME-Connected to the 'outside' area, the time-connector dimensions alsoconnect the freedom degrees described as translation, rotation, oscillation and quantisation.

The 7th dimension connects 6D-HyperSpace to 9D-QuantumSpace in 7D-QuantumTime and the 10th dimension connects 9D-QuantumSpace to 12D-OmniSpace in 10D-OmniTime.

But 4D-HyperTime of Rotation is congruent with 7D-QuantumTime of Vibration is congruent with 10D-OmniTime of Quantisation. This then must close the continuum in 1D-LineTime as the 13D-Time of reconnecting the quantising freedom degrees in the simple 3D-Envelope of 4D-SpaceTime.

This rigorously defines OmniSpace dimensions 10,11 and 12 as becoming the Boundary Dimensions for our 9D-Space-Extension for the oscillations and the rotations superposed onto the translational freedom degrees.

The entire continuum defined in maximum/minimum parameters under modular duality then superposes the Time-Dimensions onto the Space-Dimensions and allows a nesting within nesting (or fractalisation) of the evolution of the initial conditions under the freedom degrees.

Thus an archetypical minimum/maximum 'seedling' is defined in 9D-QuantumSpace and specified in the R_{max} (Hubble-Radius) parameter. Superposing the linearised Time-Parameter of 4D-SpaceTime of Special Relativity then results in a 10D universe defined in Riemann's HyperSphere as the 'cosmic envelope' of translation.

A 4D-HyperSpaceTime of Rotation then is congruent with the 4D-Seedling of Translation and also congruent with a 4D-QuantumSpaceTime of Oscillation, rendering the 'conifolded/enfolded/collapsed' dimensions of the HyperQuantisation as a 6D-Calabi-Yau 'Conifoldment' of Toroidal Topology.

This can be described in a 10D-superstring theory of five classes in the metrics of General Relativity OR this can be greatly simplified in mathematical concept in extension to the 12D-OmniSpaceTime of demetricated Quantum Relativity.

QR uses the described dimensional congruency in mapping the congruent volume-dimensions, area-dimensions and line-dimensions onto the 10D-'seedling' of the Riemann-Einstein-Poincare-Hypersphere which equates the 4D toroidal volume as a 3D surface, then becoming the 2D 'event horizon' of say a Bekenstein-Hawking Black Hole and the basic Schwarzschild Solution of the basic Einstein Tensor/Metric in General Relativity.

This requires the Hubble-Radius to be considered demetricated as a macroquantum and unity; which is the case as the maximum boundary condition in 10D, now described as the 4D-Hypersphere of maximum volume $2\pi^2.R_{max}^3$. And maximum surface area $6\pi^2.R^2$.

This Volume in 4D then is also a HyperVolume in 7D, a QuantumVolume in 10D and an OmniVolume in 13D, with the latter being a LineVolume of OmniPhysics in 1D, which MANIFESTS as the Volume of 4D SpaceTime, thus closing the continuum.

3. The Physics of the Boundary Parameters in QR

The 10D Universe in OmniSpace so represents a demetricated equivalent and macroquantum for the 4D SpaceTime of the standard cosmology of Riemann-Einstein metrics and Minkowskian 4D-SpaceTime.

The 'inside-out' topology of the differential geometry in OmniSpace is simply the higher-D mapping of the 0D-1D-2D-3D geometry of say a dimensionless mathematical point generating displacement in equidistant extension to define a 1D-diameter, about which a 2D area can then become self-generated in rotation.

Repeating the rotation in 2D then generates the 3D volume in an exact copying of the Translation-Rotation-Vibration-Quantisation of degrees of freedom previously discussed.

The completion of a 9D continuum in 'space', then introduces an extension in oscillation by quantising the generating dimensional parameters in 'time'; a process which recircularises a 12D-continuum in 3D.

The physical 4D-SpaceTime of measurement and observation is so a multidimensional universe of boundary conditions, the latter which manifest as 'elementary particles' of gauge and interaction; all however seeded on the minimum/maximum conditions of the cosmogenesis.

Conservation Laws in regards to the parameters based on the dimensionless definition of NOW-TIME become applied and relate the concepts of interaction in terms of the laws of nature and the mathematical equations describing them. Those laws are a consequence of the initiatory OmniMathematical definition process; say in the definition of what numbers are in their generation from the Trinity of the $0=1=Infinity$.

Certain algorithms then generate 'invariants' like 'c' and other 'fundamental constants' from the same OmniMathematics, which selfgenerates and extends itself under application of fundamental principles derived from the selfiterative process itself.

The most important constants defining the nestings of the minimum/maximum conditions are the dimensionless constants of the 'finestructures' and combinations of 'invariants' to result in dimensionless 'master constants' such as the electromagnetic finestructure constant Alpha and its gravitational interaction partner G-Alpha resulting in the Planck-Mass under Unitisation.

$Alpha = 60\pi \cdot e^2/h$ or $e^2/(2\epsilon_0 hc)$ and $G-Alpha = 2\pi \cdot G \cdot m_{Planck}^2/hc = 1$ defines $m_{Planck} = \sqrt{hc/(2\pi G)} = \sqrt{Mac\gamma \cdot hc/2\pi}$.

Subsequently the Planck-Mass must define a Planck-Length r_{Planck} (via $E=mc^2=hf=hc/l$ and $l=2\pi r$ for $r_{Planck} = h/(2\pi \cdot m_{Planck} \cdot c) = \sqrt{Gh/(2\pi c^3)} = \sqrt{h/(2\pi \cdot Mac\gamma \cdot c^3)}$).

So this Planck-Length must define the upper limit for the said superstring classes in 10D being superbranes in 11D and being supervolumars in 12D as the OmniSpaceTime.

This in standard physics becomes the Planck-Boson (or superstring class I) with associated Planck-Scale-Parameters, derived from the dimensionless unification of the finestructures relating electromagnetic interactions to the gravitational ones via the MacGamma ($Mac\gamma$) as the inversion proportionality parameter for the Modular Duality between Coulombic Charge quantum 'e' and the elementary particle masses limited by the Planck-Mass.

We can now define the LIMIT for the displacement scale under 9D-oscillation freedom degrees as the oscillation of the Planck-Length itself, using its definition in constants c, h, $Mac\gamma$ and π .

QR derives this as a dimensionless unification in the MacGamma proportionality, which relates the proportionality constant for the Planck-Length Oscillation as being the SquareRoot of the electromagnetic Alpha and thus relating charge quantum 'e' directly to the Planck-Length and subsequently to the Planck-Mass and the Planck-Scale as the upper limit for the cosmogenesis.

The formulation becomes: Planck-Length-Oscillation=PLO= $r_{Planck} \cdot \sqrt{Alpha} = [e/c^2]$ dimensionless.

In terms of physical measurement then, the Planck-Length reduces by a factor of about 11.7 in its oscillation about the upper boundary linearly defined in the Planck-Length and a value given as about 1.78×10^{-36} metres.

This corresponds to an increase in the Planck-Mass by the same factor to about 1.98×10^{-7} kilograms and which must represent the maximum mass for a microquantum Black Hole particle equivalent.

The Modular Duality of 4D is bounded in $R_{max}=1.596..x10^{26}$ metres without the PLO and mirrors itself in the wavelength $\lambda_{ps}=10^{-22}$ metres to describe a linearly TIMELESS universe situated in dimensionless NOW-TIME.

The Modular Duality of 7D is also bounded in R_{max} , but without the oscillation freedom degrees, the modular mirror is at $R_{min}=6.265..10^{-27}$ metres, that is in between the 10D-mirror and the Planck-Length-Mirror.

The Modular Duality of 10D then closes the superbrane realm in positioning the modular mirror for R_{max} at the Planck-Length $r_{Planck}=2.08x10^{-35}$ metres.

One so finds the following Modular Duality Pairings, which allow the oscillated nestings or 'phase-jumps' between the 'mirrors'.

13D-Minimum=PLO= $1.78x10^{-36}$ metres.....13D-Maximum= $1/PLO=5.62x10^{35}$ metres
(13D/0D OmniSpace)

10D-Minimum= $r_{Planck}=2.08x10^{-35}$ metres.....10D-Maximum= $1/r_{Planck}=4.81x10^{34}$ metres
(12/3-D OmniQuantumSpace)

7D-Minimum= $R_{min}=6.265x10^{-27}$ metres.....7D-Maximum= $R_{max}=1.596x10^{26}$ metres
(11/2-D OmniHyperSpace)

4D-Minimum= $r_{ps}=\lambda_{ps}/2\pi=1.59x10^{-23}$ metres.....4D-Maximum= $2\pi.\lambda_{ss}=6.28.x10^{22}$ metres
(10/1-D OmniLineSpace)

1D-Minimum=1D-Maximum=Quantisation of r_{ps} via r_{Planck} in R_e to reconstruct OmniSpace as 0D/13D of the original 9D 'space' of timelessness.

This minimum/maximum scaling parameter is known as the Classical Electron-Radius $R_e=Mac\gamma.e^2/(m_e.c^2)=2.77x10^{-15}$ metres, with m_e the effective electronmass.

In terms of superbrane parameters it is defined independent from the electronmass as:
 $R_e=10^{10}.\lambda_{ps}/360$, that is as a direct proportionality to the lower bounding superstring realm.

The quantum angular momentum $h/2\pi$ of circularity is linearised in superbrane scale $r_{ps}=\lambda_{ps}/2\pi=(360/2\pi).R_e/10^{10}$, that is precisely 10 Billion superbrane perimeters fit into 1 ElectronRadius, scaled as a Radian.

Then the independence of the angular displacement from the scale of the radius sets 360 degrees = $2\pi =$ Unity in OmniSpace, manifesting as the classical electron scale in the 4D SpaceTime.

The quantum geometry of QR's cosmology is now evident.

There is a macroquantum realm bounded in R_{max} , which transmutes the 10D-Maximum to the 7D-Maximum and compensates in a microquantum 1D-Maximum defined in R_e as the mapping for the 4D-Maximum (known as the Sarkar Scale for the entire cosmic architecture and supercluster gravitational limit).

Then all 'elementary particles' become macroquantised superstrings bounded in size by R_e , the R_e -scale of quantum physics then becoming the modular building block for the Sarkar bound of the superclusters as macroquantised supersuperstrings of electronic radii, also describing the atomic nuclei.

The R_{max} of the macrocosmos then forms the envelope for the superclusters, mapped as the electron configured atoms of chemistry.

A corresponding transmutation of the 7D-Minimum to the 10D-Minimum defines a mass-limit of so 3.35×10^{-16} kilograms or 1.88×10^{20} electronvolt. This is acknowledged universally as the HECR=High-EnergyCosmicRay limit NOT explicable by the standard models of cosmology.

In QR the HECR-events are a natural manifestation of the superbrane monopole spectra bounded in R_{min} above from below and superstring class IIB as upper limit for the Magnetic Monopole of energy 2.7×10^{25} electronvolt from above.

The superbrane epoch ends at the Instanton for Time and the Inflaton for Space at the ps-ss parameters, encompassing the five superstring classes and beginning with the Planck-Boson.

So both the 7D-Minimum and the 7D-Maximum of Modular Duality describe the QR-Cosmology fully supported by experiment.

The 4D-Maximum describes the 'Sarkar Black Hole' as the 'Seedling' $M_0 = \sqrt{E} \cdot m_{Planck} \cdot mc / m_e$, where E is a spacequanta counter related to the definition of $R_{max} = c/H_0$, and mc is a nucleonic protomass derived from a superbrane class (HO(32)).

The Sarkar-Radius $R_{Sarkar} = G_0 M_0 / c^2 = \Lambda(n_{ps}) \cdot R_{max} / \lambda_{deBroglie}$ describes a Black Hole Maximum as macroquantised supersuperstring and the supercluster scale for gravitational interaction, after which the universe can be said to obey the cosmological principle of homogenous distribution of energy parameters. Λ is the Einstein acceleration/quintessence as a function of cycletime n at the instanton, when a de Broglie matter wave hyperaccelerated the 4D-cosmos to manifest the 7D-maximum as R_{max} and $G_0 = 1/M_{ac} \gamma$ as the superbraned gravitational constant equal to $4\pi\epsilon_0 = 4\pi/c^2 \mu_0$ for electric permittivity ϵ_0 and magnetic permeability μ_0 .

The 7D-Maximum describes the 'Infinity' Black Hole of critical density ($M_{critical}$) for an overall Euclidean flat cosmos from the Einstein Field Equations of General Relativity.

The Ratio $M_0/M_{critical}$ describes Omega, the ratio of actual 'seeded' and critical density for the flat universe. It also is twice the deceleration parameter, which renders the Sarkar-Radius proportional to the Schwarzschild Radius in a factor of 2, i.e. $2R_{Sarkar} = 4.478 \cdot 10^{24}$ metres and $2R_{Sarkar}/R_{max} = \Omega = 2q_0$ (deceleration parameter) = 0.0281...

We can now fully describe the cosmic evolution of the universe with the introduction of the Black Body Planck-Radiator spectrum provided by mass-seedling M_0 as a function of the Luminosity in terms of the Surface Area $6\pi^2 \cdot R(n)^3$, with $R(n)$ the demetricated scalefactor of General Relativity given in the Schwarzschild evolution of the univerrse as a Black Hole bounded in R_{max} .

In 10D, this demetricated scalefactor derives from the definition of the natural exponent 'e' as $\text{Limit}[n \rightarrow \text{Infinity}] \{1 + 1/n\}^n = 1 + 1/1! + 1/2! + 1/3! + \dots + 1/n!$ and is related to the Euler Harmonic of summing $1/R$ from 1 to Infinity (n) and then subtracting the natural logarithm ($\ln(n)$) from this sum as Euler's Constant (~ 0.5772).

The QR demetricated scale factor of curvature R_c in General Relativity is $R(n) = R_{max}(n/(n+1))$.

This describes the asymptotic approach of the universe's expansion from the ps-ss parametrisation of General Relativity to R_{max} and in terms of the Black Body Luminosity Spectrum.

In terms of mass-seedling M_0 then, the universe will have a finite temperature after an infinite

(linear) time elapse, bounded by R_{max} .

This temperature can be calculated through the following formulation:

$6\pi^2 R(n)^2 \sigma T^4 = 3H_0 M_{oc}^2 / (550n)$, which for $n=1$ and Stefan's Constant σ becomes
 $T(1) \sim \text{Fourth Root}(18.4 \times 4) \sim 2.929$ degrees Kelvin.

This, amongst many other things, indicates, that the asymptotic evolution of the 10D universe is encompassed in a 11D-envelope which oscillates between nodal values of integral n for the macroquantisation of R_{max} and as defined in the inflaton of $\lambda_{ps}/2\pi$ to R_{max} in 'timeinstantenuity'.

As the present 10D-temperature can be calculated as 2.747..Kelvin*, which is reduced in a 11D-temperature of 2.680..Kelvin* for a 11D-Volume 7.56 times greater than the 10D-Volume (and defining the Dark Matter in the baryon-seed critical seed ratio)) the Omnispace intersects itself with 11D M-Space the boundary surface between the 'inner' 10D C-Space and the 'outer' 12D F-Space.

{We term OmniSpace as the dimensionalities C=Child, M=Mother, F=Father after M-Theory nomenclature}.

The major consequence for this dimensional superpositioning of the 'self-generating' dimensions is however the description of the cosmology as a Schwarzschild Evolution of Cyclicity.

The boundary conditions of R_{max}/R_{min} and the boundary conditions for $r_{ps}/(2\pi\lambda_{ss})$ MUST encompass the Sarkar Black Hole boundary conditions (because 1.596×10^{26} metres $>$ $R_{Sarkar} = 2.239 \times 10^{24}$ metres $>$ 6.28×10^{22} metres).

In terms of cosmology then, the Sarkar-Limit becomes upper bounded in the maximum size of the universe in 10D and lower bounded in the wormhole radius describing the perimeter of the Weyl-Geodesic as encompassing a Centre of prevacuum or subquantum space.

This is termed Wolford-Centre in QR and describes the Penrose Weyl-Tensor Nullification Condition as the boundary between the metrics of General Relativity as the 'outside' and the demetricated Quantum Relativity as the 'inside' under the Modular Duality of the scales.

The Sarkar Black Hole has a Schwarzschild mass $M_0 = R_{Sarkar} \cdot c^2 / G = M_{ac} \cdot c^2 \cdot R_{Sarkar}$ for the cosmic architecture scale of $2R_{Sarkar}$ of so 473.4 Million lightyears and corresponding to a cosmological redshift of 7.477.

As M_0 represents the mass-seedling (baryonic) for the universe and R_{Sarkar} represents the scale for cosmological homogeneity; we can model the cosmology for constant M_0 with maximum Black Hole scale the Sarkar limit on an oscillation of the Schwarzschild Radius $R_S = 2GM/c^2$ between the minimum $r_{ps} = \lambda_{ps}/2\pi$ and the maximum R_{Sarkar} modulated in $R_{min} = 1/R_{max}$ and $r_{ss} = 2\pi \cdot \lambda_{ss}$ in an encompassment of 10D/11D OmniSpace which is the aim of 11D-M-Theory.

Exceeding the 'Boundary Conditions' of the effective 6D-Calabi-Yau SpaceTime spanning HyperSpace and QuantumSpace from 4D-9D, then renders the 12D-Omnispace 'outside/above' as the 10D-Omnispace 'inside/below' with the 11D-Omnispace the dimensional 'divide'.

The 'cosmic architecture' became defined 236.7 Million years after the Quantum Big Bang, which tunnelled a 'false vacuum' of a scalar temperature gradient by
 $\Lambda(n_{ps}) / \text{adeBroglie} = \{G_0 M_0 / \lambda_{ps}^2\} / \{R_{max} \cdot f_{ps}^2\} = \{2.01 \dots \times 10^{85}\} / \{1.43 \dots \times 10^{87}\} = 0.01405 = q_0 = \Omega / 2$.

At that LineSpaceTime (in metricated 4D), the Sarkar Radius specified a Black Hole Universe of mass precisely equal to the mass-seedling M_0 .

This is experimentally confirmed in the data, say WMAP, which indicates the Universe beginning to form its 'first stars' at that scale.

QR simply predicts this from the boundary condition rendering the universe meeting its Sarkar Boundary of cosmic architecture at redshift 7.477.

Further Black Body evolution now exceeds R_{Sarkar} and the Black Hole evolution is replaced with galactic and stellar cycles of a preset scenario of quantum scalings based on nucleosynthesis and ylemic neutron- (or protostar) generation; details of which have been discussed extensively in the forums and are found in the QR archives.

The cyclicity of the 11D-universe can be said to be a steady-state cosmology based on Mach's Principle and the 'Relativity of Inertia' (as Einstein described this).

This 'steady-state' uses the 10D-boundary of node 1 as its basic parameter of oscillation in a Hubble-Oscillation of nodal frequencies H_0 and f_{ps} .

This means that the Hubble-Law of standard cosmology is only valid at the odd nodes of $n=1,3,5,\dots$, where the Hubble-Constant is about 58.04 Hubble-Units.

At the even nodes of $n=0,2,4,6,\dots$, the Hubble-Constant is the superbrane frequency $f_{ps}=3 \times 10^{30}$ 1/s and corresponding to the 'infinite' redshift of the standard Big Bang cosmology (before inflation).

Presently, it can be shown, that the extrapolated Hubble-'Constant' must be 66.9 Hubble Units for a 'measured' universal age of 14.7 billion years. This Hubble-Constant will increase for the next 14.7 billion years after which it will decrease and increase in nodal cycles of 16.9 billion years, bounded in frequencies H_0 and f_{ps} .

{Because a Hubble-Constant of about 72 Hubble-Units is used in the standards, this true projected age reduces to 13.7 billion years.}

If we now allow the Schwarzschild Radius to evolve through this cyclicity from r_{ps} to R_{Sarkar} , we can describe the galactic and stellar evolutions in terms of a cyclicity which avoids the so called 'heat death' of the universe in an ever increasing entropy setting.

Set $R_S = 2G_0 M_0 \cdot \text{Sqrt}\{X^n\}/c^2$, with $G(n) = G_0 \cdot X^n$ describing the evolution of the MacGamma $= 1/G_0$ as function of cycletime $n = \text{Hot}$; then $R_S = 2R_{Sarkar}$ for $n = 2 \log\{R_{Sarkar} \cdot c^2 / G_0 M_0\} / \log X \sim 0$ that is the limit of $n_{ps} = \lambda_{ps} / R_{max} = 6.26 \cdot 10^{-49}$ and we now use the linearised wormhole scaled in $R(n_{ps}) = R_{max} \cdot \{n_{ps} / (1 + n_{ps})\} = R_{max} \cdot \{\lambda_{ps} / R_{max}\} = \lambda_{ps}$ for $R_S = \lambda_{ps}$ for $n = 2 \log\{\lambda_{ps} \cdot c^2 / (2G_0 M_0)\} / \log X \sim 446.45$. X is a 'Dark Matter Factor' which keeps the G-Alpha product $G_m m_j = \text{constant}$ for all cycletimes n in a gradual decrease in the gravitational constant $G(n) = G_0 \cdot X^n$ over linear time, however compensated in an increase of the masses in $m_i \cdot \text{Sqrt}\{Y^n\} \cdot m_j \cdot \text{Sqrt}\{Y^n\}$. Thus the mass-seedling M_0 evolves as $M(n) = M_0 \cdot \text{Sqrt}\{Y^n\}$ per unitmass (say the Planck-Mass m_{Planck}) $m \cdot \text{Sqrt}\{Y^n\}$ with the identity $\{X \cdot Y\}^n = 1$ for all n .

Since $n=1$ implies 16.9 billion years, $n=446.45$ imply about 7.54 trillion years, coinciding with the 'burning out' of the stellar and galactic generations due to the depletion of the nuclear fuel.

So QR predicts the following scenario:

The universe expands asymptotically and decelerates in a very predictable fashion given in the demetricated scale factor $R(n)$ as a function of cycletime $n = \text{Hot}$ dimensionless with linearised time t . This deceleration decreases in velocity from invariant light-speed c at the time instanton to 0

after an infinite time in 10D spacetime bounded in R_{max} . The scaled velocity is given in $(v/c)=1/(n+1)^2$ and the scaled acceleration is given in Milgrom parameter $a_0=-2cH_0/(n+1)^3$.

The architectural seed for this 10D-scenario is given in the Sarkar parameters.

The 10D-seeded parameters describe a hyperbolic curvature and a topologically open universe which as the 'inside' become mirrored in the 11D-universe of positive curvature in topological closure and as given by R_{max} being the asymptotic 11D boundary of Infinity for the 10D expansion. The 'outside' image then describes a negative curvature as holographic image of the 'inside' in 12D.

The linearity of asymptotic deceleration of the 10D universe is now subjected to their Hubble-Cyclicity as the 'Black Holed' heart-beat of the QR-cosmology. Since the 11D-expansion never slows down under invariant c , 'new' higher dimensional space is continually created yet superposed onto the congruency of the higher dimensions with the lower ones under the mappings of the freedom degrees.

Thus the 11D-Universe can be shown to be 19.11 billion years old, superposed with a 10D-11D intersection of the respective Riemannian hyperspheres. This intersection could be called the 'Electromagnetic Return' of the c -invariance bouncing backwards and forwards between even and odd nodes defined in the boundary frequencies H_0 and f_{ps} , separated in halfcycles of so 16.9 billion years.

The asymptotic 10D cosmology is given in a harmonious dance between a gravitational Omega defined as the gravity of a mass-seedling M_0 and a quintessential Lambda defined as the difference between the baryonic mass-seed M_0 and a critical mass $M_{critical}$, the latter which renders the universe perfectly Euclidean flat and as specified in the asymptotical boundary R_{max} .

The 11D-cosmology then balances the 'dark matter' component for the 10D-cosmology in superposing the higher dimensional flatness onto the lower dimensional openness in its closure of the 12D image of the 10D-expansion.

The 11D-cosmology so represents a cyclic quasi-contraction of the c -invariant electromagnetic universe without mass-parameters only.

It however projects an apparent universal acceleration for the linear time-intervals from the odd-to-even nodes in 11D-OmniTime. This coincides with a steady increase in the measured Hubble-'Constant' from its base value of 58.04 km/(Mpc.s).

After 7.54 trillion years the asymptotic boundary represents (446.45/447.45) or 99.7765% of the asymptotic limit of R_{max} and the initialising Sarkar architecture, responsible for the scalings of the superclusters, has reversed its own forward cycle of 236.7 million years in returning to the instanton of time and the inflaton of space in the 'beginning of time and space' relative to the 10D universe of measurable 4D SpaceTime.

This 'Black Hole' evolution is modelled on Strominger Branes, that is the Sarkar Black Hole of mass M_0 'evaporates' and shrinks to 0 mass, corresponding to the superbrane boundary conditions of $m_{ps}=hf_{ps}/c^2=2.22 \cdot 10^{-20}$ kg and the associated Black Hole maximum temperature of $T_{ps}=E_{ps}/k=1.4167 \cdot 10^{20}$ Kelvin.

Modular Duality however has specified the limit for any Black Hole mass as $1.98 \cdot 10^{-7}$ kg in the PLO and the Schwarzschild Mass for r_{ps} is $M_S=r_{ps} \cdot c^2/(2G_0)=6445.775$ kg and reduced to 2.537..kg for $R_{min}=1/R_{max}$; as the initial mass of '5 pounds' proposed in the inflation models for the Big Bang cosmologies begun with Alan Guth (MIT).

In QR then the '5 pounds' of Guth-Inflation become the M_0 mass-seedling.

Allowing the Schwarzschild Radius to be R_{max} , must clearly give
 $M_{critical} = R_{max} \cdot c^2 / (2G_0) = 6.463 \cdot 10^{52} \text{ kg} = \rho_{critical} \cdot V_{max} = 3H_0 \cdot V_{max} / 8\pi G$ for
a 3D-Volume < 4D-Volume increasing by a factor ($\delta_{max} = 3\pi/2 = \text{Feigenbaum Chaos Delta Maximum}$).

The Black Hole evolution in terms of the Hawking-Bekenstein model of the inverse proportionality between mass M and temperature T is discussed elsewhere; the higher the temperature, the smaller the mass of the Black Hole with the Hawking-Gibbons (HG) bound given in the formulation Hawking Modulus $HM = M_0 \cdot THG$ (or $M_{critical}$) and
 $THG = HM / M_0 = hc^3 \cdot \text{Sqrt}(Y^n) / (4\pi G_0 M_0 k) = 5.034 \cdot 10^{-28} \text{ Kelvin}$ (for M_0).

The superstring classes are upper bounded in the PLO-Mass of $2.0 \cdot 10^{-7} \text{ kg}$ and lower bounded in the m_{ps} -mass of $2.2 \cdot 10^{-20} \text{ kg}$.

The lower bound m_{ps} indicates, that all 'particle conglomerations' below that mass, say heavy atoms or molecules, can be considered to represent micro Black Holes, characterised in Compton Radii $R_{Compton} = R_e / \text{Alpha}$ of characteristic de Broglie matter wavelengths, given in $\lambda_{deBroglie} = h / mc$ with m the particle mass, say from the electron's m_e to multiples of the mc as protonucleon mass evolving as a unitmass analogous to $m_{Planck} \cdot \text{Sqrt}(Y^n)$.

{There is lower mass in the Tauon (anti-neutrino) of 3.00 eV and as discussed in the neutrino posts, but as a scale relation to m_e }.

The cosmic evolution then effectively 'recharges' in cycles of 7.54 trillion years in a reinitialisation of the $M_0 / M_{critical}$ mass-seed ratio; which so resets the evolution of the ps-ss superbrane boundary to evolve towards its modular boundary of the Sarkar Radius, representing a Mother Black Hole of mass M_0 defining an open and mass-deficient universe, bounded however in critical mass $M_{critical}$ of a critical density ensuring a perfectly harmonious and Euclidean flat cosmology.

This then ensures, that the linear depletion of the nuclear fuel to energise the galactic and stellar generations are replenished in a recharge cyclicity of 7.54 trillion years as indicated.

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