Exploration

Micro Black Holes in the Three Minute Cosmology

Anthony P. Bermanseder*

Abstract

There are times in the evolutionary unfolding of a scientifically and technologically informed society, when old ideas and paradigms in regard to the addressed civilization require structural modifications and refinements for this civilization to advance from its status of modus operandi towards a more inclusive and philosophically evolved disposition of adaptation. Such a nexus in time has eventuated in the scenario of a terrestrial culture, which despite its scientific knowledge of applying scientific principles to its industry and technology has shown itself, from an extraterrestrial perspective, to be unable to integrate itself into a grander universal context of scientific endeavor and principled application. This paper explores a science for a cosmology built on a universal foundation not restricted to the present understanding of a planetary civilization in peril of self-destruction due to its self-imposed exile from the greater cosmos and its collective sense of separateness and isolation. The focus of this paper is to show, in a cosmological context, that this collective appearance of separation disappears in the logistical form of quantum mechanics in its foundation of quantum entanglement between structures of the microcosm, yet being unified within the cosmology of an thermodynamically expanding universe as part of the macrocosmic physical reality.

Keywords: Black Hole, cosmology, civilization, unity, quantum entanglement, microcosm, expanding universe.

The Theory of General Relativity of Albert Einstein was constructed upon the mathematical principles and premises of the Principia of Isaac Newton (*1687);* whose scientific insights were founded upon the works of Galileo Galilei, often called the father of observational astronomy and an originator of classical scientific endeavor.

Isaac Newton, as a founder of the principles of mechanics built upon the scientific insights of his predecessors dating to the antiquities of ancient Egypt, Mesopotamia and Greece and then refined the knowledge of his predecessors to firmly integrate the gnosis and nous of his time as the foundation of scientific research and development of the present time.

His holistic worldview regarding the intelligent design of the universe and its laws of nature incorporated the notion of absolute time and absolute space with an potentially infinite application of 'forces acting from a distance' and a concept which became rigorously refined and displaced by the Theory of Special Relativity of Albert Einstein.

* Correspondence: Anthony P. Bermanseder, Independent Researcher. E-mail: omniphysics@cosmosdawn.net

Einstein is often called the last of the classical physicists and scientific philosophers in his rejection of the 'spookiness' of quantum mechanics, then founded by his contemporaries including:

James C. Maxwell (June 13, 1831- November 5, 1879);
Max Planck (April 23, 1858 – October 4, 1947);
Max Born (December 11, 1882 – January 5, 1970);
Niels Bohr (October 7, 1885 – November 18, 1962);
Erwin Schrödinger (August 12, 1887 – January 4, 1961);
Wolfgang Pauli (April 25, 1900 – December 15, 1958);
Enrico Fermi (September 29, 1901-November 28, 1954);
Werner Heisenberg (December 5, 1901 – February 1, 1976); and
Paul M. Dirac (August 8, 1902 – October 20, 1984).

But Einsteinian relativity of space and time can be said to resurrect Newton's 'action at a distance' with its eternal aspect of absoluteness in the concept of quantum entanglement. The notion of the infinite potential displacement transforming into a concept of a microcosm of the very small constituents of space and time becoming scale independent in their communication with themselves in the form of a radius independent quantum-spin acceleration.

This self-entanglement subsequently enables subatomic constituent systems to communicate and share information with holo-fractalized and self-similar subsystems increasing and emerging in scope, potential dynamical interaction and extent towards macrocosmic sizes.

This treatise then presents a Newtonian cosmology in the framework of a holistic overview of a quantum entangled cosmogenesis which forms a theoretical foundation a 'first word of creation' based on the intelligent design of Isaac Newton's 'raison de etre', the purpose of creation from a philosophical and theoretical perspective built upon mathematical principles and a logic of reason.

A statement of 'machina ex 'deux' becomes a counterargument to the statement 'deux ex machina' with the 'deux' of this treatise being the 'Old One' of the universe, whose mind for the reason and how-to of creation Einstein thought to discover and the 'deux' as a creative intelligence the aforementioned scientific philosophers and contemporaries of Albert Einstein shared to a large extent.

> *No one must think that Newton's great creation can be overthrown in any real sense by this or by any other theory. His clear and wide ideas will forever retain their significance as the foundation on which our modern conceptions of physics have been built. { My Theory: by Albert Einstein; From The Times (28 Nov 1919)}*

> "*Die Quantenmechanik ist sehr achtung-gebietend. Aber eine innere Stimme sagt mir, daß das doch nicht der wahre Jakob ist. Die Theorie liefert viel, aber dem Geheimnis des Alten bringt sie uns kaum näher. Jedenfalls bin ich überzeugt, daß der nicht würfelt."*
> *"Quantum mechanics is certainly imposing. But an inner voice tells me that it is not yet the real thing. The theory says a lot, but does not really bring us any closer to the secret of the "old one." I, at any rate, am convinced that He does not throw dice." {{Einstein's letter to Max Born; December 4th, 1926}*
>
> *Max Born*: *Einstein's verdict on quantum mechanics came as a hard blow to me. He rejected it not for any definite reason, but rather by referring to an "inner voice." This rejection plays an important part in later letters. It was based on a basic difference of philosophical attitude, which separated Einstein from the younger generation to which I felt that I belonged, although I was only a few years younger than Einstein.*

Albert Einstein once remarked:

"The greatest trouble in the world is the idea of a personal God!"

And so, one might agree with the de-personification of Albert Einstein's 'God,' whom he rather affectionately called: "*The Old One"* and of whom he also said: *"God does not play dice with the world,"* referring to his rejection of the idea that life and nature's processes are intrinsically arbitrary in a universe defined by chance and random events.

He thought of 'God' as being the intelligence behind the natural laws of nature, as found in the sciences and the mathematics which he studied and he believed that nature had to be based in geometrical principles, rather than in probabilities defined in statistics and stochastic matrices.

And there were others before and after him; Plato and Aristotle, upon whose dialogues this treatise is based; Pythagoras, the Greek geometers and Niels Bohr, Max Planck and Werner Heisenberg, all contemporaries of Albert Einstein with Paul Dirac, Max Born and Wolfgang Pauli in their contributions to the birth of quantum mechanics.

The symmetries in nature, numbers and sequences and fundamental constants; all seem fine-tuned and set into relationships with one another to create the universe and all the cosmological entities within it.

Cosmology is easier correlated with such a holistic overall model, as it, like the physics of black holes, lacks in a multitude of physical parameters to describe the detailed physical dynamic of interaction, describing the physical phenomena.

A Newtonian cosmology, without complexification in advanced tensor mathematics and the 'expert' nomenclature understood by the few and not the many describing the universe is more amenable and digestible by the non-expert, yet scientifically literate reader and adept.

This paper explores a foundation for a new scientific paradigm and will be followed by a second, third and many more 'words' composed and added to by many participators and coworkers, who like as in this dedication towards the past; will formulate and ground a renewed understanding of the cosmos and the universe in their collective endeavors to understand and discover the ontology and cosmogony for the cosmology.

1. Introduction

Many questions raised in the avenues of astrophysics and cosmology engage the quantum physics of the early universe following the QBBS. When did the first stars and galaxies form from their black hole seeds and how did the dark matter cosmology change its nature from a decelerating universe into a universe apparently dominated by dark energy, responsible for an apparent acceleration of the universe, beginning about halfway through the age of the universe in its thermodynamic evolution?

The question of a 'missing mass' content of the universe to account for its measured flatness is raised in conjunction with a quest to explain the theoretical reasons for the dark energy is answered in showing that the dark matter directly relates to the evolution of black holes as primordial energy vortices defined by their temperature and independent of their mass as dark matter or Gamow ylem stars.

The primordial dark matter star so becomes a function of the CBBR temperature as a plasma energy vortex following the temperature evolution of the thermodynamic expansion of the universe from the creation event at 10^{36} Kelvin at a temperature which quantum tunneled from timespace into spacetime across a Higgs Vacuum from a (pre)-Planck parameter epoch.

The quantum tunneled temperature of the Quantum Big Bang Singularity or QBBS cooled for a bosonic unification at 10^{20} Kelvin to enable subatomic particles to manifest in quantum geometric structures and to then individuate at a time of electroweak decoupling at a temperature of 10^{15} Kelvin. The temperature gradient for the universal cosmology then quantum entangles the energy vortices in a coupling between the ylemic dark matter and the baryonic matter of a baryon seedling $M_o=N_{baryon}.m_c$.

$$\mathbf{2G_oM_{DM}T_{DM}/c^2 = T_{ylem}.R_{ylem} = hc/2\pi k_B = R_{Hawking}.T_{CBBR} = 2G_oM_{BH}T_{CBBR}/c^2}\mathbf{.....[Eq.1]}$$

A Weinberg time marker of three minutes at $8.1x10^{11}$ Kelvin is coupled to a Hawking curvature radius identical to the scale of the classical electron R_e = $2.8x10^{-15}$ metres and becomes quantum entangled with a dark matter temperature of $4.8x10^{-8}$ Kelvin which subsequently partitions the mass seedling M_o in $1.9x10^{31}$ kg as 9.6 solar masses. The corresponding dark matter radius for the ylem vortex was 47.4 km*.

The Hawking modulus HM = $M_{BH}T_{BH}$ = $hc^3/4\pi k_B G_o$ = $9.132x10^{23}$ [kgK]* for a Weinberg temperature of $8.1x10^{11}$ Kelvin implies a black hole mass of $1.13x10^{12}$ kg* as the mass of a Hawking micro black hole MBH. The dark matter ylemic black hole of 9.6 solar masses so manifests a seedling energy particularization from the baryonic mass seed M_o as a Hawking MBH of a mass of $1.13x10^{12}$ kg* to manifest as baryonic matter in the quantum entanglement between dark ylemic and baryonic matter.

The dark matter temperature increases for a reducing mass for the dark matter black hole in the Hawking modulus as inversion dynamic for a decreasing CBBR temperature for an increasing baryonic mass for the Hawking BH.

A Compton nexus at a time of 2.4 hours for a universal T_{CBBR} = $4.5x10^{10}$ Kelvin followed the Weinberg nexus quantum entangling a dark matter temperature of $2.02x10^{-7}$ K* with a Hawking MBH mass of $2.0x10^{13}$ kg*. The Chandrasekhar nexus is defined in the intersection of the curvature temperature of a Hawking micro-BH corresponding to the inversion scale of the universe becoming the curvature radius for a Hawking MBH then of a temperature T_{MBH} equal to the CBBR temperature. This intersection so relates the increasing dark matter temperature with the decreasing CBBR temperature in inverse proportionality to their respective black hole masses via the Hawking modulus.

At this Compton temperature a neutron star mass of 2.25 solar masses as $4.5x10^{30}$ kg* became seeded as a dark matter ylem vortex in the expansion of the classical electron radius R_e in the Compton radius for the electron as R_e/α and for the electromagnetic fine structure constant alpha $\alpha = 2\pi k_e/hc = 1/137.04$.

This Compton radius is defined as an inversion scale for the size of the universe, meaning that the radius of the universe was α/R_e = $2.63x10^{12}$ m* or 8760 seconds or 146 light minutes as 2.4 light hours for this time coordinate. The corresponding dark matter radius for the Compton T_{CBBR} was 11.2 km* as a characteristic size for manifested neutron stars emerging as a Hawking MBH from the baryon seedling M_o.

The Compton radius as a Hawking radius quantum entangles a dark matter temperature of $5.6x10^{-7}$ K* with a CBBR temperature of $5.9x10^9$ K* at a time coordinate of 1.5 days for a Hawking MBH mass of $1.5x10^{14}$ kg* and with a seedling BH mass of $1.42x10^{30}$ kg* as 0.71 solar masses and a ylem radius of 3.51 km*.

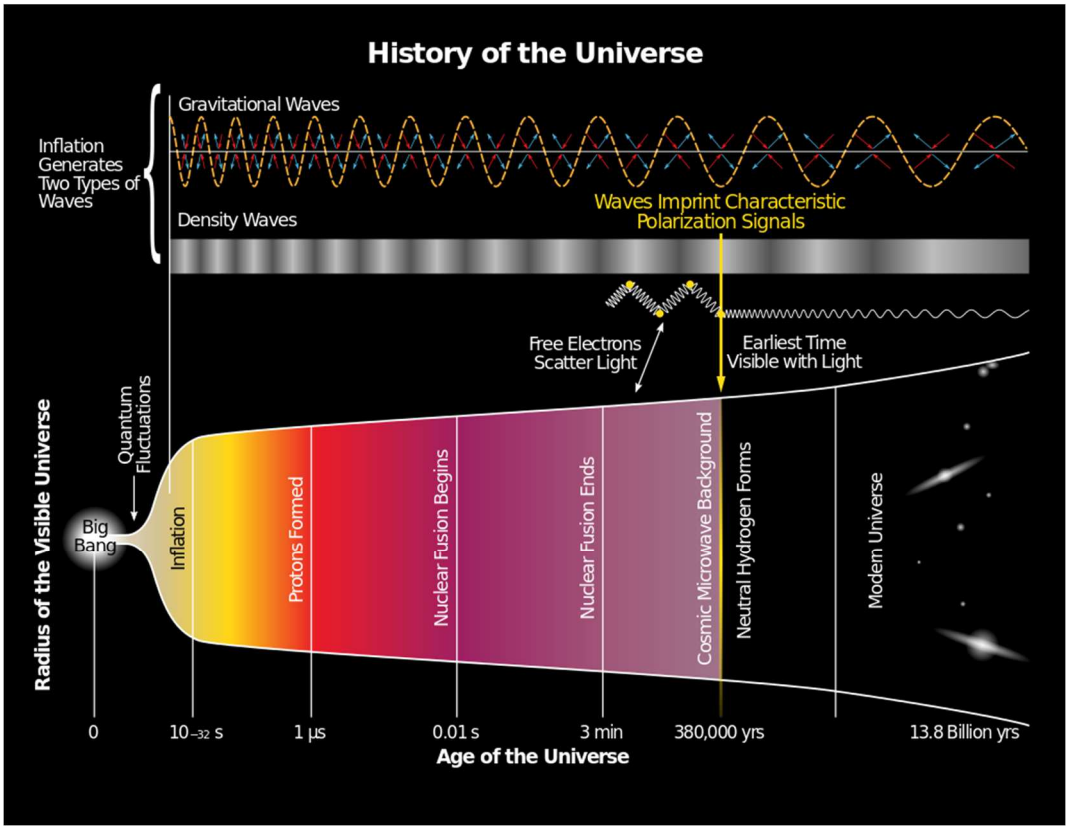
Then the inversion radius for the classical electron $1/R_e$ = $3.6x10^{14}$ m* sets a time marker in the Lightpath of the universal expansion at 13.9 light days as an important focus coordinate in the thermodynamic evolution in the universe.

A dark matter temperature of $1.3x10^{-6}$ K* became quantum entangled with a CBBR temperature of $1.1x10^9$ K* enabling fusion reactions within stars to forge the primordial elements in the table of the atomic elements. The seedling BH mass was $7x10^{29}$ kg* as 0.36

solar masses for a dark matter ylem radius of 1.76 km* and a Hawking curvature mass of $8.3x10^{14}$ kg*.

The answers are found in the timespace definitions to provide the initial boundary conditions for the spacetime instantaneity defined in the instanton-inflaton coupling. The timespace defined five superstring classes, which defined the Zero-Point Planck Harmonic Oscillator from the undefined timespace to the five superstring classes in the timespace to be then mirrored by the Dirac monopole at the QBBS singularity as a double-sided Möbius-Klein supermembrane into spacetime.

From the Dirac singularity, the point particular nature became 'stringed' with the Weyl-Eps boson forming the physicalized manifestation of the Planck boson string for the initializing definition by the universal Logos Mathimatia. The Planck Harmonic Zero-Point Oscillator became the Weyl-Harmonic Zero-Point Oscillator in a conformal mapping of the timespace onto the QBBS supermembrane and then manifesting the five superstring classes of the timespace in the spacetime



2. The mass independent Gamow Ylem Radius of Dark Matter

The stability of stars is a function of the equilibrium condition, which balances the inward pull of gravity with the outward pressure of the thermodynamic energy or enthalpy of the star (H = PV+U).

The Jeans Mass M_J and the Jeans Length R_J a used to describe the stability conditions for collapsing molecular hydrogen clouds to form stars say, are well known in the scientific data base, say in formulations such as:

$$M_J = 3k_BTR/2Gm \text{ for a Jeans Length of } R_J = \sqrt{\{15k_BT/(4\pi\rho Gm)\}} = R_J = \sqrt{(k_BT/Gnm^2)}.$$

Now the Ideal Gas Law of basic thermodynamics states that the internal pressure P and Volume of such an ideal gas are given by $PV = nRT = Nk_BT$ for n moles of substance being the Number N of molecules (say) divided by Avogadro's Constant L in n = N/L .

Since the Ideal Gas Constant R is divided by Avogadro's Constant L and defines Boltzmann's Constant k = R/L. The statistical analysis of kinetic energy KE of particles in motion in a gas (say) gives a root-mean-square velocity (rms) and the familiar $2.KE = mv^2(rms)$ from the distribution of individual velocities v in such a system.

It was found that PV = (2/3)N.KE as a total system described by the v(rms). Setting the KE equal to the Gravitational PE = GMm/R for a spherical gas cloud gives the Jeans Mass $(3/2N).(Nk_BT) = GMm/R$ with m the mass of a nucleon or Hydrogen atom and $M = M_J = 3k_BTR/2Gm$ as stated.

The Jeans' Length is the critical radius of a cloud (typically a cloud of interstellar dust) where thermal energy, which causes the cloud to expand, is counter acted by gravity, which causes the cloud to collapse. It is named after the British astronomer Sir James Jeans, who first derived the quantity; where k_B is Boltzmann Constant, T is the temperature of the cloud, R is the radius of the cloud, m is the mass per particle in the cloud, G is the Gravitational Constant and ρ is the cloud's mass density (i.e., the cloud's mass divided by the cloud's volume).

Shortly after the Big Bang, there were of course no gas clouds in the early expanding universe and the Jeans formulations are not applicable to the mass seedling M_o; in the manner of the Jeans formulations as given. However, the universe's dynamics is in the form of the expansion parameter of General Relativity and so as $R(n) = R_{max}(n/(n+1))$ with the scale factor of Quantum Relativity.

Expressing the Jeans radius in the form of the Hawking radius of primordial micro black holes with a fixed nuclear density defined by subatomic parameters of the timespace made manifest in the QBBS, then allows analysis of the thermodynamic universe expansion as a function of temperature, independent on the distribution of the mass seedling M_o as the Gamow-Hawking protostars matching the universal temperature background as potential vortex energies given by the Hawking masses.

The thermal internal energy or ITE = H is the outward pressure in equilibrium with the gravitational potential energy of GPE = Ω. The nuclear density in terms of the super brane parameters is $\rho_{critical} = m_c/V_{critical}$ with m_c a base-nucleon mass for an 'ylemic neutron'.

$V_{critical} = 4\pi R_e^3/3$ or the volume for the ylemic neutron as given by the classical electron radius

$$R_e = 10^{10}\lambda_{ps}/360 = \{e^*/2c^2\}_{mod}.$$

$H = (\text{molarity})k_BT$ for molar volume as $N = (R/R_e)^3$ for $dH = 3k_BTR^2/R_e^3$

The gravitational potential energy is $\Omega(R) = -\int G_oMdm/R$

$$= -4\pi\rho G_o\int\{4\pi\rho R^3/3\}\{R^2/R\}dR$$

$$= -\{16\pi^2\rho^2G_o/3\}\int R^4dR = -\{16\pi^2\rho^2G_o/15\}\{R^5\}$$

$d\Omega/dR = -\{16\pi^2\rho^2G_o/3\}\{R^4\} = -3G_om_c^2R^4/R_e^6$ for $dM/dR = d(\rho V)/dR = 4\pi\rho R^2$ and for $\rho = M/V = 3m_c/4\pi R_e^3$

For equilibrium, the requirement is that $dH = d\Omega$ in the minimum condition $dH+d\Omega = 0$.

This gives $dH+d\Omega = 3k_BTR^2/R_e^3 - 3G_om_c^2R^4/R_e^6 = 0$ and the ylemic radius as a Gamow Ylemic dineutronic radius for Black Hole Temperature evolution:

$$\mathbf{R_{ylem} = \sqrt{\{k_BTR_e/G_om_c^2\}}} \text{ ....[Eq.2]}$$

as the Jeans-Length precursor or progenitor for subsequent stellar and galactic generation.

The ylemic (Jeans) radii are all independent of the mass of the star as a function of its nuclear generated temperature.

Applied to the proto stars of the vortex neutron matter or ylem, the radii are all neutron star radii and define a specific range of radii for the gravitational collapse of the electron degenerate matter.

This spans from the 'First Three Minutes' scenario of the cosmogenesis to 1.1 million seconds (or about 13 days) and encompasses the standard beta decay of the neutron, underpinning radioactivity.

The upper limit defines a trillion-degree temperature and a radius of over 40 km; the trivial Schwarzschild solution gives a typical ylem radius of about 7.4 kilometers and the lower limit defines the 'mysterious' planetesimal limit as 1.8 km.

For long a cosmological conundrum, it could not be modelled just how the molecular and electromagnetic forces applicable to conglomerate matter distributions (say gaseous hydrogen as cosmic dust) on the quantum scale of molecules could become strong enough to form say 1 km mass concentrations, required for 'ordinary' gravity to assume control.

The ylem radii's lower limit is defined in the cosmology as the Dirac monopole wavelength modulation at the 1.0 – 1.2 billion Kelvin degree marking the temperature of the universe in its defining Hawking-Gamow micro-mass black holes, which apply the Jeans formulation of hydrogen clouds to the primordial ylemic dineutron scenario. The stellar evolution from the ylemic (di-neutronic) templates is well established in QR and confirms most of the Standard Model's ideas of nucleosynthesis and the general cosmology for a thermodynamically expanding universe.

Hawking's micro black holes play a decisive role in the universal cosmology, as they modulate the quantum gravitational universe of the creation event with the classical gravitation of the spacetime geometry. In particular the micro black holes form the energy centers within encompassing vortices of potential energy modelled on the Jeans length applied to the general temperature evolution of the universe.

As the universe grows in size and scale in the parallel Lightpath evolution of the EMMI higher dimensional and EMI lower dimensional thermodynamic evolution; the inversion scale of the Lightpath defines the curvature radius for a Hawking Micro-Black Hole MBH.

This MBH then forms a thermodynamic coupling to the Cosmic-Black-Body-Radiation background CBBR by the Hawking Modulus HM applied to the Planck timespace temperature for the minimum Planck harmonic oscillator in HM = $hc^3/4\pi G_o k_B$ = $½m_pT_p$ = $½m_p\{m_pc^2/k_B\}$ = $(m_pc)^2/2k_B$ = $(hc/2\pi G_o)(c^2/2k_B)$.

The critical intersection for the decreasing CBBR temperature and the increasing ylemic temperature of the Hawking MBH then crystallizes the Chandrasekhar limit for an electron degenerate neutron star as the temperature equilibrium between radial scale of the expanding universe with its inversion of a shrinking curvature radius of the Hawking MBH.

The cycle time for this event is $n_{chandra}$=5.23722x10^{-14} for a time of 27,891.7 seconds* or 7.75 hours from the creation event. The hypermass Hawking micro black hole HM_{MBH} then became identical to the inversion MBH of the Lightpath expansion descriptive for the encompassing black hole Strominger brane cosmology defined in the inflaton of the QBBs as the creation event for the protoverse with an oscillating Hubble node for the multiverse.

As the hypermass MBH increases in mass with the Lightpath, whilst the scale inversion MBH decreases for the same cosmological dynamic, there will be two time coordinates for which the respective MBH parameters define a boundary for the evaporation time for the MBH's as

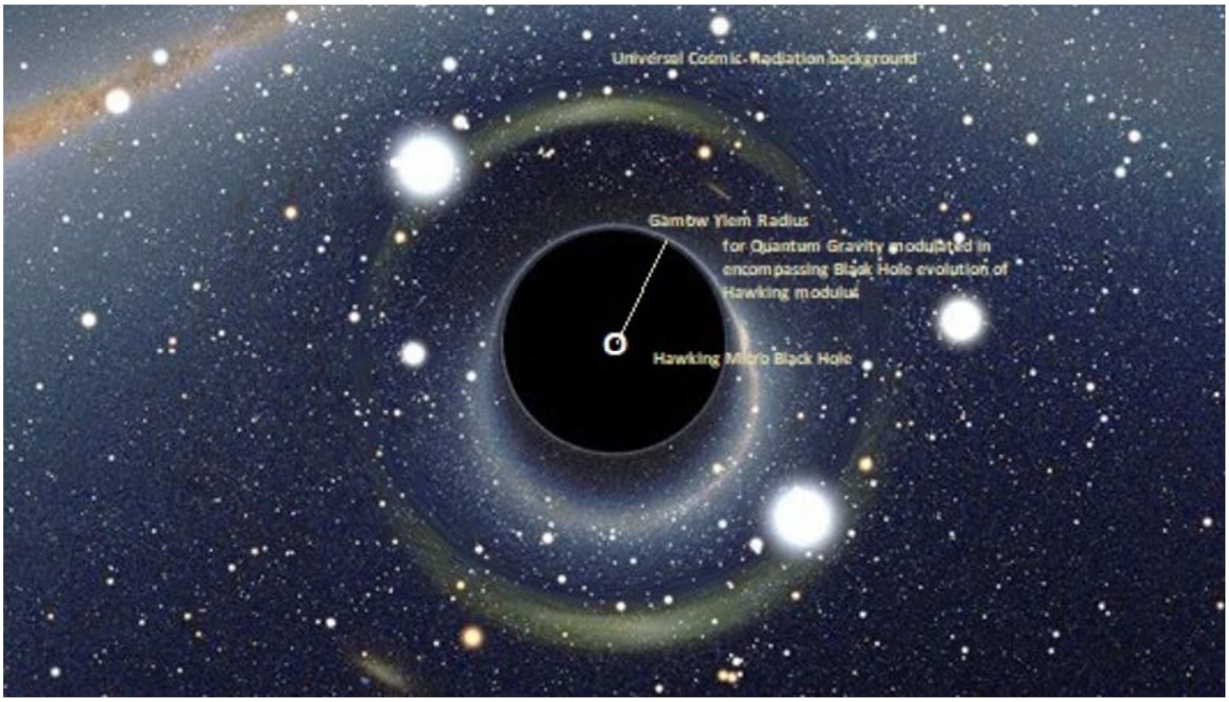
projected onto the present n-cycle time coordinate $n_{present}=H_o t_{present}$. The first time coordinate is at 620.8 seconds or 10.35 minutes following the QBBS and before the Chandrasekhar time and the second time coordinate is at 5.603 days from the instanton and after the Chandrasekhar nexus identification at the 7.75 hour marker.

The universe then had a radial size of $8.369x10^{12}$ m* at a CBBR temperature of $1.8866x10^{10}$ Kelvin* for a corresponding ylemic vortex radius of 7219.9 m* as a typical scale radius for a neutron star with a Chandrasekhar curvature mass of $M_{ylem} = R_{ylem}c^2/2G_o = 2.92x10^{30}$ kg* describing the parameters of a materialized sub-atomically electron-nucleon degenerate stellar-black hole equivalence manifesting later in the genesis of the evolution of the universe.

The inversion Compton scale of $R_{MBH} = 1.19488x10^{-13}$ m* then sets the curvature radius for the corresponding micro-BH mass in $M_{MBH} = R_{MBH}c^2/2G_o = 4.839x10^{13}$ kg* for a micro-BH temperature identical to the temperature of the CBBR in $T_{MBH} = HM/M_{MBH} = 1.887x10^{10}$ K*.

Cycle time $n=H_o t$ Cosmological comoving redshift $z+1=\sqrt{\{1+2/n[n+2]\}}$	**Scale Radius m* $R(n)=R_H\{n/[n+1]\}$ $M_{BH}\uparrow$**	**MQB Inversion $1/R(n)$ m* for Micro-BH scale$\downarrow$ $c^2/2G_oR(n)$ kg* $M_{MBH}\downarrow$ $T_{MBH}\uparrow$ $HM=hc^3/4\pi k_BG_o$ Projected**	**$R_{ylem} = R_{DM} = R_c$ m* Ylem Vortex scale for HM projection $\sqrt{\{k_BR_e^3T_{CBBR}/G_om_c^2\}} = (R_e/\alpha^9)\sqrt{(R_e/R_c)}$ $M_{ylem}=R_{ylem}c^2/2G_o$ Hypermass kg* $HM_{MBH}=HM/TCBBR\uparrow$**	**T_{CBBR} K* $\sqrt[4]{\{18.2(n+1)^2/n^3\}}$ $T_{CBBR}+T_{ylem}$ T_{ylem} = TDM K* $hc/2\pi k_BR_c$ $hc^3/4\pi G_ok_BT_{ylem}$ T_{MBH}/T_{CBBR}**	**Boson Energy J*/GeV* $[E=k_BT_{CBBR}]$ $[E=hc/\lambda_{compton}]$ until EW-Unification**
$n_{Eevap}=9.091x10^{-13}$ 5.603 days 1,048,802.6	$R_{ev}=1.452x10^{14}$	$1/R_{ev}=6.885x10^{-15}$ $M_{MBH}=2.789x10^{12}$ $T_{MBH}=3.274x10^{11}$	$R_{ylem}=2476.57$ $M_{ylem}=1.00x10^{30}=0.50M_{sun}$ $HM_{MBH}=4.12x10^{14}$ $R_{Hawking}=1.02x10^{-12}$	$2.2185x10^9$ $2.2185x10^9$ $T_{ylem}=9.11x10^{-7}$ 147.58	$[3.13x10^{-14}$ J*/195.01 keV*] $M_{MBH}=2.7885x10^{12}$ $6.0324x10^{17}=t_{present}$ Micro-BH's below $2.79x10^{12}$ kg* have decayed for the present time $t_{present}$ for $t_{evap}=120G_o^2M_{BH}^3/\pi$

					$^{2}hc^{4}$
$n_{chandra}$= $5.23722x10^{-14}$ $t_{chandra}$= 27,891.7 s* 7.75 hours n_{E}= $4.3697x10^{6}$	$8.369x10^{12}$ Hawking MBH scale for R_e-R_E calibration for neutron stars $3.6x10^{14}/R_e$ R(n) =1/R(n)	$1.194875x10^{-13}$ M_{MBH}= $4.839x10^{13}$ T_{MBH}= $1.887x10^{10}$	R_{ylem}= 7219.89 M_{ylem}= $2.92x10^{30}$ $=1.462M_{sun}$ = $M_{chandrasekhar}$ HM_{MBH}= $4.84x10^{13}$ $R_{Hawking}$= $1.20x10^{-13}$	$1.8866x10^{10}$ $1.8866x10^{10}$ T_{ylem}=$3.12x10^{-7}$ 1	[$2.66x10^{-13}$ J*/1.66 MeV*] Decreasing CBBR temperature is equal to the increasing Hawking micro black hole temperature of curvature scale radius $R(n)=2G_oM_{MBH}/c^2$ Nuclear density neutron star low electron degeneracy $\rho_{nuc}=3m_cY^n/4\pi\{R_e\}^3$ $(1.105\text{-}1.907)x10^{16}$ [kg/m^3]*
n= $1.166x10^{-15}$ t=620.8 s* =10.35 min $2.9285x10^{7}$	$1.863x10^{11}$	$5.3679x10^{-12}$ M_{MBH}= $2.174x10^{15}$ T_{MBH}= $4.200x10^{8}$	R_{ylem}= 30,090.42 M_{ylem}= $1.2187x10^{31}$ $=6.09M_{sun}$ HM_{BH}= $2.789x10^{12}$ $R_{Hawking}$= $6.88x10^{-15}$	$3.2748x10^{11}$ $3.2748x10^{11}$ T_{ylem}=$7.49x10^{-8}$ $1.283x10^{-3}$	[$4.62x10^{-12}$ J*/28.79 MeV*] HM_{MBH}=$2.7885x10^{12}$ $6.0324x10^{17}$=$t_{present}$ Micro-BH's below $2.79x10^{12}$ kg* have decayed for the present time $t_{present}$ for $t_{evap}=120G_o^2M_{BH}^3/\pi^2hc^4$



The nuclear density parameter for the ylemic radius became set at the Chandrasekhar time coordinate in calibrating the radius of the classical electron in upper and lower bounds for neutron degeneracy transforming an electron degenerate neutron star into a neutron degenerate quark star in shrinking the size of the classical electron R_e in the charge radius of the proton R_{proton} = ½XR_e and the general nucleonic quantum geometry.

185 seconds or 3 minutes after the Instanton, the universe was so 110 Million km across, when its ylemic 'concentrated' VPE-Temperature was so 812 Billion K* and the Hawking radius was the same as the radius of the classical electron for a micro black hole mass of $1.1x10^{12}$ kg* and an ylem radius of 47.4 km* indicating a future black hole macro-mass of $1.9x10^{31}$ kg* as 9.6 M_{sun} as a limiting quark gluon-plasma star.

Weinberg, Steven (18 August 1993). The First Three Minutes: A Modern View of the Origin of the Universe -- by Steven Weinberg.

The number of baryons for the creation event is $N_{baryon} = M_o/m_c = 1.8275x10^{78}$ representing a potential mass distribution for the baryon mass seedling M_o as 2.808 % of the closure mass M_H of the inflaton defined Hubble node.

The energy contained in the baryon seed then is identical to the number of wormhole quanta given in the Weyl-Eps gauge photon of energy hf_{ps}=0.002 J* or $1.245x10^4$ TeV* and therefore shifted by the temperature gradient from $T_{ps} = 2.94x10^{36}$ K* at $t_{ps} = 3.33x10^{-31}$ s* to $1.42x10^{20}$ K* at $t_{BU}=2x10^{-9}$ s*. This number $N_{\gamma ps} = M_oc^2/hf_{ps} = 8.1663x10^{70}$ to define a primordial initializing

baryon/photon ratio in eta $\eta_{ps} = N_{baryon}/ N_{\gamma ps} = E_{ps}/m_c c^2 = m_{ps}/m_c = 2.24x10^7$ for the wormhole frequency shifted from the QBBS to bosonic unification time.

As $N_\gamma = \{4\sigma/c\}T^4/E_\gamma$ defines the number of photons per unit volumar for a particular bosonic energy for photons of energy $E_\gamma = hf_\gamma$, $\{4\sigma/c\}T_{BU}{}^4/N_{\gamma ps} = hf_\gamma$ calculates a photon frequency $f_\gamma = 5.197x10^{27}$ Hz* for the bosonic unification time of two nanoseconds from the inflaton-instanton. For the temperature gradient $N_{\gamma ps}* = \{4\sigma/c\}T_{ps}{}^4/hf_{ps} = 3.027x10^{133}$ and indicates the googolplex frequency and energy eigenstate for the timespace to spacetime transition.

The standard cosmology is revised in the size scale of the universe corresponding to the temperature evolution incorporating the inflation dynamics and the dark matter halo given by the temperature gradient. Steven Weinberg's three minutes define a Hawking radius equivalent to the size of the classical electron for a CBBR temperature of $8.11x10^{11}$ K* and a Lightpath expansion and universal scale of $5.55x10^{10}$ m*.

The CBBR temperature then defines a vortex potential ylemic intermediate black hole in a ylem radius of 47.3 km* in a black hole of 9.6 solar masses for a ylem temperature of $4.76x10^{-8}$ K*. The divergence of the standard inflationary cosmology from the quantum relativistic QR cosmology stems from the timespace to spacetime transition, placing the Planck epoch into timespace prior to the QBBS in the QR cosmology, but following the instanton in the standard old cosmology.

The inflaton defines the size of the higher dimensional universe in the Hubble node of $R_H = 1.5977x10^{26}$ m* in a de Broglie matter wave expansion of hyper-speed $v_{dB}=R_Hf_{ps}$ and its superluminal hyper-acceleration $a_{dB} = R_Hf_{ps}{}^2$.

Alan Guth's 'grapefruit' sized universe at 10^{-32} seconds and expanding to a size of 10 lightyears or $9.5x10^{16}$ meters in one second from the Big Bang for the neutrino background and a CBBR temperature of so 10^{10} Kelvin for a bosonic particle energy of 1 MeV describes the temperature gradient as being superimposed onto the size of the universe in a conventional Lightpath expansion of c seconds as 9.51 years.

The tachyon Lightpath image from the QBBS T_{ps} temperature of $2.94x10^{36}$ K* then describes a much cooler universe at $1.8x10^7$ K* for a boson energy of 1.6 keV*. Nucleosynthesis of atomic nuclei completes the dark matter halo evolution as a fractalized electron configuration shell manifesto.

The quark epoch of the old cosmology, supposedly occurring between 10^{-12} to 10^{-5} seconds for temperatures of 10^{12} to 10^{15} Kelvin so crystallizes the electroweak unification at $1.66x10^{15}$ K*, but manifests later at about 0.007 seconds* for a particle energy of 146 GeV*for an ylemic halo radius of $2.14x10^6$ m* encompassing the thermodynamically expanding universe..

The hadron epoch of the old cosmology, supposedly occurring between 10^{-5} to 1 seconds for temperatures of 10^{10} to 10^{12} Kelvin then emerges in the Weinberg temperature of $8.1x10^{11}$

Kelvin at the 3 minute marker to indicate the stellar black hole intermediary vortices of potential ylemic quark- and neutron stars for a particle energy of 71.4 MeV* with an ylemic halo radius of $5.6x10^{10}$ m* encompassing the universe of that size.

45 seconds following the Weinberg nexus, primordial neutron decay began at $6.9x10^{11}$ Kelvin, as the Higgs boson template bifurcated into a righthanded colorless spin-1 graviphoton coupled to a lefthanded spin-1 RMP to manifest the individuated particle blueprint of dark matter at an energy of 60.6 MeV* and a dark matter halo of $6.9x10^{10}$ m*.

880 seconds or 14.7 minutes later, the primordial neutron decay ended in a 40.4 second period at CBBR temperatures of $(2.12\text{-}2.06)x10^{11}$ Kelvin for bosonic particle energies from 18.60-18.12 MeV* corresponding to the F'GF googolplex space quanta counters as base values for the baryon-photon ratio as toroidal summations of the wormhole quanta. The ylemic radial universe expanded from $3.33x10^{11}$ m* to $3.45x10^{11}$ m* in this 40.4 second period.

The lepton epoch of the old cosmology, supposedly occurring between 1 to 10 seconds for temperatures of 10^9 to 10^{10} Kelvin then emerges in the Compton temperature of $5.9x10^9$ Kelvin at the 1.5 day marker to indicate the extended classical electron radius from the ylem core in the Hawking-Compton electron R_e/α and characterized by an electron degenerate surface for the ylemic neutron stars as intermediate stellar black holes. The particle energy for this time marker is 520.6 keV* for a ylem halo radius of $3.9x10^{13}$ m*. The thermodynamic universe then was about 1.5 light days across.

The nucleon epoch of the old cosmology, supposedly occurring between 10 to 1000 seconds for temperatures of 10^7 to 10^9 Kelvin then emerges in the dark matter halo completion for a temperature of $1.8x10^7$ Kelvin at the 9.51 year marker and triggers the nucleosynthesis of atomic nuclei from the electron degenerate marker of the Compton temperature. The particle energy for this time marker is 1.6 keV*.

The densities of the 10D-C-Space and 11D-M-Space multiverses are a function of restmass seedling M_o/m_c and so relate to the Eta-photon-Baryon ratio proportionality.

At the G-F n-cycle coordinate, 12 hydrogen nuclei form an ylemic dark matter WNI-current with one alpha helium-4 particle to give an initial 75% to 25% ratio between hydrogen H and Helium He as nucleonic states for Nucleosynthesis in 8 protons with 10 free electrons for H and 2 protons and 2 neutrons with 2 bound electrons for He for a 18:6 = 3:1 ratio.

The ratio F/G = 1.05358 defines an 'overlap' of the Riemann sphere volumars and redistributes $(V_F - V_G)/V_F$ = 5.0853 % from the H-He inialization.
1.271% of alpha particles setting Helium at 25% - 1.271% = 23.729% in the nesting algorithm specifying the isotopes.

For 26 Bosonic Superstring Dimensions, the application of the primary SE_{ps} algorithm is based on seven fundamental principles (reflecting in the seven basic mensuration units) and supplemented by 2 principles without antiprinciples (compared with the Radian and Steradian in geometrical measurement).
The principles can be semanticised as the order: 1.Identity/Antiidentity; 2.Expansion/Contraction; 3.Order/(Chaos,Entropy); 4.Symmetry/(Nonparity,Distortion); 5.(Infinity,Divergence)/(Limit,Convergence); 6.Inversion/Constancy; 7.Reflection/Absorption and then 8.Relativity and 9.Quantisation to form a NEW Identity which incorporates all the Antiprinciples as Antistate within itself.

We use the Identity-Series for n=1 for 26 Bosonic Eigenstates/Dimensions (and coded in One-to-One correspondences, i.e. in the LOVEUSE symmetry 5445 in the Maria-Matrix) and the Helium-Distribution-Percentage of 1.271%.

[30] Isotopic-Percentage-Generator; $IPG = 1.271\%.(7k-6).e^{*2-k-j}.10/[33(27-k)]$

Abundance-Ratios for stable isotopes are then:
Hydrogen/Helium = (75%)/(23.729%) with remainder 1.271% and k=1 for Isotopes of Hydrogen; k=2 for Helium; k=3 for Lithium etc. until k=26 for Iron.
k=1; j=1,2,3 gives: 0.01481%; $2.963x10^{-5}$%; $5.925x10^{-8}$%
k=2; j=1,2,3 gives: $2.465x10^{-4}$%; $4.930x10^{-7}$%; $9.860x10^{-10}$%
k=3; j=1,2,3 gives: $9.629x10^{-7}$%; $1.926x10^{-9}$%; $3.852x10^{-12}$%

The isotopic ratios are decreasing within a series of multiples of the E_{ps}-quantum and are weighted relative to natural abundances in nested perturbation of the elements.
At k=3, Lithium-6 occurs at say 7.4% and Lithium-7 at 92.6%; this mixes j=1 with j=2 in $7.125x10^{-8}$% and $1.783x10^{-9}$% respectively for a Lithium-Arithmetic-Mean of $3.652x10^{-8}$% or a Lithium-Geometric-Mean of $1.127x10^{-8}$%.

Deuterium-Abundance is naturally bounded in 0.01481% and reduced in radioactive j-isotopes like Tritium in perturbative Beta-Minus-Decay.
Helium-3 is bounded in $2.465x10^{-4}$% and subject to a 3:1 Hydrogen/Helium ratio for the remainder of 1.271%, i.e. the ratio 0.953/0.318, which adds to the primary elements.

Until BOSONIC UNIFICATION (BU) at $1.90x10^{-9}$ s* with $T_{BU}=T_{ps}=E_{ps}/k=1.4167x10^{20}$ K*; the superstring epoch defines the density in the multiverse as Boson-Gluon-Photon-Plasma.
At the instanton, the temperature is $T_{nps}=2.94x10^{36}$ K* (from [19]); restmass seed M_o so manifesting as VPE^{2n}=YCM+MCY=RGB+BGR=$R^2G^2B^2+B^2G^2R^2=B^2YY=B^4Y^2Y^2$-Pair-Production/Annihilation (J8-J10 in UFoQR) in forms of Matter/Antimatter, Photon/Gluon and Neutrino/Antineutrino.

Cycle time $n=H_ot$ Cosmological comoving redshift $z+1=\sqrt{\{1+2/n[n+2]\}}$	Scale Radius m* $R(n)=R_H\{n/[n+1]\}$ $M_{BH}\uparrow$	MQB Inversion $1/R(n)$ m* for Micro-BH scale$\downarrow$ $c^2/2G_oR(n)$ kg* $M_{MBH}\downarrow$ $T_{MBH}\uparrow$ $HM=hc^3/4\pi k_BG_o$ Projected	$R_{ylem}=R_{DM}=R_c$ m* Ylem Vortex scale for HM projection $\sqrt{\{k_BR_e^3T_{CBBR}/G_om_c^2\}}=(R_e/\alpha^9)\sqrt{(R_e/R_c)}$ $M_{ylem}=R_{ylem}c^2/2G_o$ Hypermass kg* $HM_{MBH}=HM/T_{CBBR}\uparrow$	T_{CBBR} K* $\sqrt[4]{\{18.2(n+1)^2/n^3\}}$ $T_{CBBR}+T_{ylem}$ $T_{ylem}=T_{DM}$ K* $hc/2\pi k_BR_c$ $hc^3/4\pi G_ok_BT_{ylem}$ T_{MBH}/T_{CBBR}	Boson Energy J*/GeV* $[E=k_BT_{CBBR}]$ $[E=hc/\lambda_{compton}]$ until EW-Unification
$n\lambda_{ss}=6.259x10^{-5}$	$r_{ss}/2\pi=\lambda_{ss}=1/\lambda_{ps}=10^{22}$	$2\pi/r_{ss}=\lambda_{ps}=10^{-22}$	$R_{ylem}=2.8486$	2935.13 2935.13	$[4.14x10^{-20}$

$t\lambda_{ss}$=1.06 My z=125.40		M_{MBH}= 40,500 T_{MBH}= $2.256x10^{19}$	M_{ylem}= $1.15x10^{27}$ =0.0005768M_{sun} HM_{MBH}= $3.11x10^{20}$ $R_{Hawking}$= $7.68x10^{-7}$	T_{ylem}=0.000792 $7.687x10^{15}$	J*/0.258 eV*]
$n\lambda_{ss}$– attenuation =$2.3026x10^{-5}$ $t\lambda_{ss}/e$ =$1.226x10^{13}$ s* 388,587.8 y z=207.40	$r_{ss}/2\pi e$= λ_{ss}/e =$1/e\lambda_{ps}$ =$10^{22}/e$ = $3.679x10^{21}$	$2\pi e/r_{ss}$= $e\lambda_{ps}$= $2.718x10^{-22}$ M_{MBH}= 110,090.55 T_{MBH}= $8.300x10^{18}$	R_{ylem}= 4.1448 M_{ylem}= $1.68x10^{27}$ =0.0008393M_{sun} HM_{MBH}= $1.47x10^{20}$ $R_{Hawking}$= $3.63x10^{-7}$	6213.91 6213.91 T_{ylem}=0.000792 $1.336x10^{15}$	[$8.77x10^{-20}$ J*/0.546 eV*] Recombination in the birth of the first hydrogen atoms and photon decoupling universe becomes transparent in CBBR from its previous opaqueness
$n = H_oc = c^2/R_H$ quantized in c^2/r_{ps} $n_{ps} = H_o/f_{ps} = \lambda_{ps}/R_H = 2\pi r_{ps}/R_H$ $5.625x10^{-10}$ t = c s* = 9.51 years z = 42,132.1	R(n) = $9.008x10^{16}$ ~c^2 $c^2/r_{ps} = 2\pi f_{ps}c = \omega_{ps}c$ $c^2\|_{mod}$= Modulated angular inflaton acceleration for ylemic	$1/c^2$= $1.110x10^{-17}$ $1/2G_o$= $½k_e\|_{mod}$ M_{MBH}= $4.500x10^{9}$ T_{MBH}= $2.029x10^{14}$	R_{ylem}= 223.46 M_{ylem}= $9.04x10^{28}$ =0.0452M_{sun} HM_{MBH}= $5.10x10^{16}$ wave matter image for minimum star formation	$1.79x10^7$ $1.79x10^7$ T_{ylem}=$1.01x10^{-5}$ $1.134x10^7$	[$2.52x10^{-16}$ J*/1.569 keV*] QBBS tachyon Lightpath image in c^2 m* Nucleosynthesis

	maximized DM/RMP halo radius		$0.045M_{sun}$ $R_{Hawking}=1.26x10^{-10}$		of atomic nuclei completes the dark matter halo evolution as a fractalized electron configuration shell manifesto
$n_E=2.45458x10^{-13}$ 1.513 days $2.0184x10^{6}$	$3.922x10^{13}$	Compton HM_{BH} $R_{Cl}=2.550x10^{-14}$ $M_{MBH}=1.033x10^{13}$ $T_{MBH}=8.848x10^{10}$	$R_{ylem}=4046.58$ $M_{ylem}=1.64x10^{30}=0.819M_{sun}$ $HM_{MBH}=1.54x10^{14}$ $R_{Hawking}=R_e/\alpha=3.80x10^{-13}$	$5.9229x10^{9}$ $5.9229x10^{9}$ $T_{ylem}=5.58x10^{-7}$ 14.938	$[8.36x10^{-14}$ J*/520.64 keV*] Electron degenerate surface for Hawking radius R_e/α for neutron stars
$n_{nd}=2.160x10^{-15}$ 1150.36 s* 19.173 min $2.15163x10^{7}$ ½(F-G)=9.92 s* =½(1150.36-1130.52)	$R_F=\sqrt[3]{F(\lambda_{weyl}/2\pi)}=3.451x10^{11}$ $R_{HBupper}=R_eR_F/R_E=2.790x10^{-18}$ m*	$1/R_F=2.898x10^{-12}$ $M_{MBH}=1.174x10^{15}$ $T_{MBH}=7.786x10^{8}$	$R_{ylem}=23,865.56$ $M_{ylem}=9.67x10^{30}=4.83M_{sun}$ $HM_{BH}=4.433x10^{12}$ $R_{Hawking}=1.09x10^{-14}$	$2.0614x10^{11}$ $2.0614x10^{11}$ $T_{ylem}=9.43x10^{-8}$ $3.777x10^{-3}$	$[2.91x10^{-12}$ J*/18.12 MeV*] $m_{HBLower}=h/2\pi cR_{HB\,upper}=1.2677x10^{-25}$ kg*/71.020 GeV* (71.020Y $^{np}=122.4$

					91 GeV*)
n_{nd}= $2.123x10^{-15}$ 1130.52 s* 18.842 min $2.17042x10^{7}$ ½(G-F')=10.28 s* =½(1130.52-1109.96)	$R_G=\sqrt[3]{G(\lambda_{weyl}/2\pi)}$ $=3.392x10^{11}$ $R_{HBmean}=R_eR_G/R_E$ $=2.742x10^{-18}$ m*	$1/R_G=$ $2.948x10^{-12}$ $M_{MBH}=$ $1.194x10^{15}$ $T_{MBH}=$ $7.652x10^{8}$	$R_{ylem}=$ 24,021.92 $M_{ylem}=$ $9.73x10^{30}$ $=4.87M_{sun}$ $HM_{BH}=$ $4.375x10^{12}$ $R_{Hawking}=$ $1.08x10^{-14}$	$2.0885x10^{11}$ $2.088x10^{11}$ $T_{ylem}=9.37x10^{-8}$ $3.664x10^{-3}$	[$2.95x10^{-12}$ J*/18.35 MeV*] $m_{HBmean}=h/2\pi cR_{HBmean}$ $=1.2899x10^{-25}$ kg*/72.266 GeV* (72.266Y $^{np}=$ 124.640 GeV*)
$n_{nd}=$ $2.084x10^{-15}$ t_{nd}=1109.96 s* 18.499 min $2.19044x10^{7}$ (1109.96-229.82) =880.14 s*	$R_{F'}=\sqrt[3]{F'}(\lambda_{weyl}/2\pi)$ $=3.330x10^{11}$ $R_{HBlower}=R_eR_{F'}/R_E$ $=2.692x10^{-18}$ m*	$1/R_{F'}=$ $3.003x10^{-12}$ $M_{MBH}=$ $1.216x10^{15}$ $T_{MBH}=$ $7.513x10^{8}$	$R_{ylem}=$ 24,195.5 $M_{ylem}=$ $9.80x10^{30}$ $=4.90M_{sun}$ $HM_{BH}=$ $4.315x10^{12}$ $R_{Hawking}=$ $1.07x10^{-14}$	$2.1175x10^{11}$ $2.1175x10^{11}$ $T_{ylem}=9.30x10^{-8}$ $3.548x10^{-3}$	[$2.99x10^{-12}$ J*/18.61 MeV*] Primordial neutron decay: $\lambda_{F'}-2\pi\lambda_{RMP}$(1109.96-229.82)= 880.14 (s*/879.28s) from Higgs Boson with RMP template for Neutron decay mass loss:

					8.844/4.900= 1.805. Increases $M_{chandra}$ to $1.805M_{chandra}$= 2.708 M_{sun} as upper TOV-limit for neutron stars $m_{HBupper}$= $h/2\pi cR_{HBlower}$ =$1.31381x10^{-25}$ kg*/73.605 GeV* (73.605Y ^{np}= 126.950 GeV*)
n_{nd}= $4.315x10^{-16}$ t_{nd}= 229.82 s* 3.83 min $4.814x10^{7}$	$R_{neutrondecay}$ =$6.897x10^{10}$	$1.450x10^{-11}$ M_{MBH}= $5.874x10^{15}$ T_{MBH}= $1.556x10^{8}$	R_{ylem}= 43,672.5 M_{ylem}= $1.77x10^{31}$ =$8.844M_{sun}$ HM_{BH}= $1.325x10^{12}$ $R_{Hawking}$= $3.27x10^{-15}$	$6.8987x10^{11}$ $6.8987x10^{11}$ T_{ylem}=$5.15x10^{-8}$ $2.255x10^{-4}$	[$9.74x10^{-12}$ J*/60.62 MeV*] Beginning of neutron decay from Higgs Boson with RMP template

n_{wein}= $3.4739x10^{-16}$ t_{wein}= 185.01 s* 3.08 min $5.365x10^{7}$	$R_{weinberg}$ $=5.550x10^{10}$	$1/R_{weinberg}$ $=1.802x10^{-11}$ M_{MBH}= $7.297x10^{15}$ T_{MBH}= $1.251x10^{8}$	R_{ylem}= 47,372.2 M_{ylem}= $1.92x10^{31}$ $=9.59M_{sun}$ HM_{BH}= $1.125x10^{12}$ $R_{Hawking}$= $R_e=2.78x10^{-15}$	$8.1172x10^{11}$ $8.1172x10^{11}$ $T_{ylem}=4.76x10^{-8}$ $1.541x10^{-4}$	[$1.15x10^{-11}$ J*/71.35 MeV*] Intermediate stellar black hole in Hawking radius $R_{Hawking}$= R_e Nuclear density for Hawking radius R_e ρ_{nuc}= $3m_cY^n/4\pi\{R_e\}^3$ (0.234-0.405-1.105-1.907)x10^{16} [kg/m^3]* in vortex PE ($x1/\delta_F=2/3\pi$) $R_{ylem}=\sqrt{\{3k_BT/4\pi G_o m_c\rho_{nuc}\}}$ for 1.5 M_{Sun} $M=\Sigma m_{ss}=\Sigma hf_{ss}/c^2$ mass quantization for space

					quanta count $M/\Sigma m_{ss}= h/m_{ss}c^2= hf_{ps}/h=f_{ps}\mid_{mod}=3x10^{30}$ as $M_{chandra}=1.50\ M_{Sun}$
$n_{EW}=1.340x10^{-20}$ $t_{EW}=1/140=0.007137$ s* $z=8.6382x10^{9}$	$R_{EW}=2.141x10^{6}$ Dark matter universe is illuminated as the EMI light path intersects the dark matter haloed ylemic universe	$1/R_{EW}=4.670x10^{-7}$ $M_{MBH}=1.892x10^{20}$ $T_{MBH}=4.831x10^{3}$	$R_{ylem}=2.1411x10^{6}$ $M_{ylem}=8.672x10^{32}=433.58M_{sun}$ $HM_{BH}=5.510x10^{8}$ Ylemic radius shrinks as the radial universe expands with the separation of the short range nuclear weakon interaction from the long-range electromagnetic interaction $R_{Hawking}=1.36x10^{-18}$	$1.65825x10^{15}$ $1.65825x10^{15}$ $T_{ylem}=1.0537x10^{-9}$ $2.913x10^{-12}$	$[2.34x10^{-8}$ J*/146 GeV*] $[1.49x10^{-32}$ J*/9.26x 10^{-14} eV*] Electroweak Unification $T_{EW}=E/k_B=2x10^{15}$ K* (146-251)GeV * for $\{W^-+W^++Z^o\}$ R_{ylem} = R(n) as size of the universe Dark matter halo defined as a quark-lepton geometri

					c kernel-ring structure crystallizing the ylem neutrons from the Higgs Boson and RMP template
$6.958x10^{-22}$ $3.706x10^{-4}$ $3.791x10^{10}$	111,173.6	$8.995x10^{-6}$ $M_{MBH}=$ $3.643x10^{21}$ $T_{MBH}=$ 250.66	$R_{ylem}=$ $6.492x10^{6}$ $M_{ylem}=$ $2.629x10^{33}$ $=1314.70M_{sun}$ $HM_{BH}=$ $5.990x10^{7}$ $\alpha^2R_e=$ $1.479x10^{-19}$	$1.5246x10^{16}$ $1.5246x10^{16}$ $T_{ylem}=3.475x10^{-10}$ $1.644x10^{-14}$	[$2.15x10^{-7}$ J*/1338 GeV*]
$n_{BU}=$ $3.562x10^{-27}$ $t_{BU}=$ $1.897x10^{-9}$ $z=1.676x10^{12}$	$R_{BU}=0.569$ universe is 1.1382 meters across encompassed by a ylem dark matter halo of radius $6.2584x10^{8}$ m* in the inflaton EMMI universe	$1/R_{BU}=$ 1.757185 $M_{MBH}=$ $7.116x10^{26}$ $T_{MBH}=$ $1.284x10^{-3}$	$R_{ylem}=$ $6.258x10^{8}$ $M_{ylem}=$ $2.534x10^{35}$ $=1.267x10^{4}M_{sun}$ $HM_{BH}=$ 6445.78 $r_{ps}=1.59x10^{-23}$	$T_{ps}=1.4167x10^{20}$ $1.4167x10^{20}$ $T_{ylem}=3.605x10^{-12}$ $8.934x10^{-24}$ Ylemic universe is manifested in the primordial MBH defining the DM ylemic halo	[0.002 J*/12,449.8 TeV*] [$5.593x10^{-26}$ J*/$3.4817x10^{-7}$ eV*] Bosonic temperature unification $T(n)=\sqrt[4]{\{\{H_o^3M_o/1100\pi^2\sigma\}.(n+1)^2/n^3\}}=\sqrt[4]{\{18.2(n+1)^2/n^3\}}=T_{ps}=1.41$

					$67x10^{20}$ K* $R_{ylem}=R_{curv}$ for $M_{ylem}=2.53x10^{35}$ kg*
$n_{ps}=\lambda_{ps}/R_H=H_o/f_{ps}=H_o t_{ps}$ $6.259x10^{-49}$ $t_{ps}=$ $3.333x10^{-31}$ s* $1.264x10^{24}$	$R_{ps}=\lambda_{ps}=2\pi r_{ps}=1.0x10^{-22}$	$\lambda_{ss}=1/\lambda_{ps}=10^{22}$ $M_{MBH}=4.050x10^{48}$ $T_{MBH}=2.255x10^{-25}$	$R_{ylem}=9.008x10^{16}$ $M_{ylem}=3.647x10^{43}=1.82x10^{13}M_{sun}$ $HM_{BH}=3.112x10^{-13}$ $R_{Hawking}=7.68x10^{-40}$	$T_{nps}=2.9352x10^{36}$ [$T_{ps}=1.4167x10^{20}$] $T_{ylem}=9.628x10^{-12}$] $T_{ylem}=2.498x10^{-20}$ $7.683x10^{-62}$	[$3.24x10^{13}$ J*/$2.02x10^{20}$ TeV*] [0.002 J*/12,449.76 TeV*] superposed T_{ps} quark plasma Wormhole $T_{ps}<T_{CBBR}$

The EMR-Radiation density is related to the Bosonic-Matter density by the Vortex-Potential-Energy (VPE) in E_{ps}-$\rho_{VPE} = hf_{ps}/2\pi^2 r_{ps}^3 = 4\pi E_{ps}/\lambda_{ps}^3$ for Stefan-Boltzmann constant

$$\sigma = 2\pi^5 k^4/15h^3c^2 = 6.0776x10^{-8}\ [W/m^2K^4]^*$$

$$\rho_{EMR} = \{8\pi^5 k^4/15h^3c^3\}T_{boson}^4 = \{m_{boson}c^2/2\pi^2 l_{boson}^3\}[\lim 0\text{-}\infty]\int u^3 du/(e^u\text{-}1) = (E/V)_{boson}\ .2\Gamma(4)\zeta(4).$$

$$\rho_{EMR}/\rho_{VPE} = 2\Gamma(4)\zeta(4)\ k_B^4T^4/E_{ps}^4 = 2\pi^4 k_B^4T^4/15E_{ps}^4 = \{4\sigma/c\}\{\lambda_{ps}^3/4\pi E_{ps}\}$$

The Planck EMR density is $\rho_{planck} = \{4\sigma T_{planck}^4/c\} = \pi^2 E_{planck}/15l_{planck}^3 = 2\pi^3 c^7/hG_o^2 = 1.6478x10^{114}$ $[J/m^3]^*$

The VPE ratio between photons and baryons (based on $m_c = m_{planck}\alpha^9$ and quark configuration K.KIR.K) is determined in the G-F googol interval as Eta-inner = G/E = 1/1039802245=$9.617213x10^{-9}$ and Eta-outer = F/E = 1/986925478 = $1.013248x10^{-9}$ as space quanta counters. The black body energy for cycle time $n_{present}=H_o t_{present}$ is given by $T_{2.7} = hf_{2.7}/k_B$ for $f_{2.7} = 5.82x10^{10}$ Hz*.

The natural exponent e is defined in the inversion of scale parameter 1/a = {1+1/n}

$e = \lim_{n\to\infty} \{1+1/n\}^n$ **for** $e = \{1+1/n\}$ **for x=1=hf/kT in Planck's Radiation Law for a Black Body**

$e\text{-}1=1/n$ **for** $n=1/[e\text{-}1] = 1/Y^{n'} = X^{n'}$

n' = ln{e-1}/lnY = 1.12492010.. for a time coordinate 0.0075 or about 126.58 Million years ago

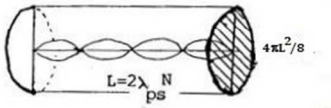
$$e^{\frac{hf}{kT}} = 1 + \frac{1}{n} \quad \text{for } n(f,T) = \frac{1}{e^{hf/kT} - 1} \qquad \text{(Eq.\#26)}$$

Now consider the universe as a Black Body or a particle in a quantum box, the box being of course the quantumspace boundary r_{max}, itself bounded by omnispace as the 11-dimensional supermembrane, with 28 7-spheres relating to 26 bosonic dimensions via the quantization of Prime numbers as encountered.

The U-Field is quantized into 12-intersecting unified current loops and the extent is $4\lambda_{ps}=4x10^{-22}$ m*.

We so consider the frequency interval $2\lambda_{ps}N$ and the "volume" of the black box is quantized

$N = L/2\lambda = Lf/2c$ **with** $dN = L.df/2c$ **for** $N^2 dN = (L^3 f^2/8c^3)\, df$



Surface Area of a sphere as octant of a cubic box volume L^3

Now the "volume" of the box is $L^3/8$ and our dimensionless volume becomes the Number of FREQUENCY STATES for a black body with frequencies in the interval df. Since the temperature for a given frequency interval determines the distribution of the radiation spectrum, we determine the spectral distribution dE/df via

As a photon has two quantum polarization spin momenta, the Frequency States are doubled.

Frequency States $2x\,4\pi N^2 dN = 8\pi L^3 f^2/8c^3\, df$

The number of photons in df: $\frac{8\pi f^2(V)}{c^3} x \frac{1}{e^{hf/kT} - 1}\, df = dP$

$dE = hf\, dP = \frac{8\pi h.V}{c^3} \cdot \frac{f^3}{e^{hf/kT} - 1}\, df$

and the total energy in the cubic black box is: $E = \int_0^\infty dE = \frac{8\pi hV}{c^3} \int_0^\infty \frac{f^3}{e^{hf/kT} - 1}\, df$ (Eq.\#27)

Since we evaluate for a given T, we set u=hf/kT and du=(h/kT)df

and we need to evaluate the proportionality constant via the integral $\int_0^\infty \frac{u^3}{e^u - 1}\, du$

This can be written as: $\int_0^\infty \frac{u^3}{e^u - 1}\, du = \Gamma(3+1)\zeta(3+1)$

The GAMMA function $\Gamma(x)$ satisfies the form: $x = \frac{\Gamma(x+1)}{\Gamma(x)}$ as analogue to our $\frac{n+1}{n} = 1 + \frac{1}{n}$

generally $\Gamma(x) = \int_0^\infty t^{x-1} e^{-t}\, dt$ and for n a positive integer then $\Gamma(n+1) = n!.\Gamma(1) = n!$

The ZETA function of Riemann is defined as $\zeta(z) = \sum_{n=1}^{\infty} 1/(n^z)$

We require $\Gamma(4).\zeta(4) = 3! \cdot \sum_{n=1}^{\infty} 1/n^4 = 3! \cdot (1/1 + 1/2^4 + 1/3^4 + \ldots + 1/n^4 \ldots)$.

This we derive via the function $f(x)=x^4$ and the application of Fourier Series in cos(nx)

$f(x)=x^4$ with period 2π, then $a_n = \frac{1}{\pi}\int_0^{2\pi} x^4.\cos(nx)\,dx = \frac{1}{\pi}\left(\frac{4x^3}{n^2} - \frac{24x}{n^4}\right)\Big|_0^{2\pi} = \frac{32\pi^2}{n^2} - \frac{48}{n^4}$

for n=0, $a_0 = \frac{1}{\pi}\int_0^{2\pi} x^4\, dx = \frac{32\pi^4}{5}$

$f(x)=x^4 = \frac{1}{2}a_0 + \sum_{n=1}^{\infty} a_n.\cos(nx) = \frac{16\pi^4}{5} + \sum_{n=1}^{\infty}\left(\frac{32\pi^2}{n^2} - \frac{48}{n^4}\right).\cos(nx)$

$f(0)=f(2\pi)=\frac{1}{2}(0+16\pi^4)= 8\pi^4$ (Dirichlet Condition) and we use the result $\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$

and obtained similarly in setting $f(x)=x^2$.

Then for f(0), we have $\frac{24\pi^4}{5} = 32\pi^2.\frac{\pi^2}{6} - 48\sum_{n=1}^{\infty}\frac{1}{n^4}$ and $\sum_{n=1}^{\infty}\frac{1}{n^4} = \frac{\pi^4}{90}$

Total Energy $E = \frac{3!\,\pi^4 V.8\pi k^4 T^4}{90h^3c^3} = \frac{4V}{c}\left[\frac{2\pi^5 k^4}{15h^3c^2}\right]T^4 = \frac{4\sigma V T^4}{c}$

Stefan-Boltzmann Constant σ

$\frac{\text{Radiation Energy}}{\text{Matter Energy}} = \frac{4\sigma T^4}{m_c Y^n c^3}$ **for Radiation Pressure = Matter Pressure**
Early Universe Later Universe

$T_{Equilibrium} = \sqrt[4]{18.20\,\frac{(n+1)^2}{n^3}} = \sqrt[4]{\frac{m_c Y^n c^3}{4\sigma}}$ $\qquad \frac{n^3 Y^n}{n^2+2n+1} = \frac{72.80\sigma}{m_c c^3} = (1.65107x10^{-4})\,(K^4/V)^*$

A Cosmic Background temperature of 18.35 Kelvin* for a cycle coordinate of 0.056391 and as 0.056391(16.88 Gy) or 951.2 Million Years after the Instanton to begin the birthing of galaxies

The number of photons per unit volume is N_γ, with photon density varying in intensity $I(x,\mu)$ from a central source and attenuation $I/I_o = 1/e$ for Lightpath $x=1/\mu$ and $N_\gamma e = \{4\sigma/c\}T^4/hf$ for a generalised photon energy per unit volume of $8.10x10^{-16}$ [J/m^3]* or 5.04 [keV/m^3]*

The microwave background for $n_{present}$ then becomes about 418 million photons per cubic meter at 2.7 K* at a wavelength of 5.20 mm* and $f_{2.7} = 5.82x10^{10}$ Hz*.

The refractive 11-dimensional volume of the Riemann hypersphere is different from the reflective form of the Riemann geometry describing universe embedded as a 3-dimensional surface volumar both in the volume of a horn torus and its spherical volume equivalent.

The refractive hypersphere extending the higher dimensional universe from the outer boundary of the Hubble event horizon in radius nR_H for a volume $2\pi^2n^3R_H^3$ differs from the reflective hypersphere in the oscillating nR_H radius which remains in the lower dimensional universe at the inside of the 11-dimensional Witten membrane mirror for a volume $2\pi^2nR_H^3$.

This difference defines a DIM-factor in $DIM = V_{11reflective}/V_{10} = n/(n/[n+1])^3 = (n+1)^3/n^2 = 7.56$ for the present time $t_p = H_o/n_p$ for the lower dimensional and asymptotically expanding de Sitter universe of volume $V_{10}(n) = 2\pi^2R_H^3(n/[n+1])^3$ embedded in 10 string dimensions.

The present C-space density $\rho_{10}(n_p) = M_oY^{np}/\{2\pi^2R_H^3n_p^3/[n_p+1]^3\} = 2.5938x10^{-28}$ [kg/m^3]* for the toroidal form with a critical density given by $\rho_{10critical} = M_H/\{2\pi^2R_H^3\} = R_Hc^2/4\pi^2G_oR_H^3 = H_o^2/4\pi^2G_o = 8.0378x10^{-28}$ [kg/m^3]* and a critical density which formulates as $3H_o^2/8\pi G_o$ for the spherical form of the closure mass $M_{Hubble} = R_{Hubble}c^2/2G_o$.

$\rho_{10}(n_p) = 2.5938x10^{-28}$ [kg/m^3]* is 'DIMMED' by a factor of 7.56 from the reflectively traced Lightpath density in the 10-dimensional cosmology described by the oscillating Hubble node frequency $\rho_{11}(n_p) = M_oY^{np}/\{2\pi^2R_H^3n_p\} = 3.4307x10^{-29}$ [kg/m^3]* and represents 2.5938/8.0378 or 32.27 % of the critical closure mass.

32.27 % of the critical mass therefore describe the dark matter cosmology added to the baryonic proportion of 4.834 % as defined by the mass seedling M_o and the QBBS boundary and initial conditions set by the instanton-inflaton initialization $q_o = \Lambda_E/a_{dB} = M_o/2M_H = \frac{1}{2}\Omega_o$. The dark energy proportion for the present time then is 1 – 0.3227 = 67.73 %.

The baryon-photon ratio for the parallel 10D-EMI and 11D-EMMI Lightpath then calculate the eta η_{10}; η_{11} parameters:

$\eta_{10} = \{\rho_{10}(n_p)/m_cY^{np}\}/\{4\sigma T_{np}^3/k_Bce\} = (0.15153)/4.378x10^8) = 3.4612x10^{-10}$ attenuated from $e\eta_{10} = 9.408x10^{-10}$ for an arithmetic mean $6.434x10^{-10}$ and a geometric mean $5.706x10^{-10}$ and for measured means $6.07x10^{-10}$ arithmetic and $6.06x10^{-10}$ geometric.

$\eta_{11} = \{\rho_{11}(n_p)/m_c Y^{np}\}/\{4\sigma T_{np}{}^3/k_B ce\} = (0.01738)/4.378x10^8) = 3.9694x10^{-11}$ attenuated from $e\eta_{11} = 1.079x10^{-10}$ for an arithmetic mean $7.38x10^{-11}$ and a geometric mean $6.54x10^{-11}$ averaged in $\{6.95\text{-}6.96\}x10^{-11}$.

The mean value for Eta in the dark matter ylem universe mirrors the dimensional intersection of the Riemann hyperspheres in G/E and F/E of the IR-OR mesonic-leptonic ring oscillation of the quantum geometry and is compared with the F/G ratio for the baryon elemental mass distribution in the Identity series of th SEps encoding.

Nucleosynthesis elements coalesce in the form of nucleons m_c (for a present neutron mass in $1.72x10^{-27}$ kg*) in predominantly doughnut-shaped alpha-particular macro-quantum supermembranes or Calabi-Yau manifolds and manifest in subsequent planetesimal- and star formations in the generation of neutron stars, magnetars and quark stars from black holed vortices in the dark matter epoch as the ylemic history of the universe.

Combining the gravitationally compressed de Sitter dS universe of positive curvature in 10 string dimensions with the lightspeed invariant Anti de Sitter AdS universe of negative curvature in 11 membrane dimensions provides a measured eta baryon-photon ratio as arithmetic 0The baryon-photon ratio is a consequence from the initial boundary conditions of the QBBS in the inflaton-instanton parameters and is completely independent from and the existence of antimatter, restricted to the process of pair-production in the unified field of quantum relativity UFoQR.

The 'pixelated' universe so became scaled in ylemic temperature bubbles in the form of primordial White-Hole-Sources coupled to Black Hole-Sinks in a form of macro quanta to reflect the sourcesink Eps coupled to the sinksource Ess of the underpinning elementary super membrane Eps.Ess. As the universe continued its expansion, the WH-BH dyads remained as temperature hotspots embedded within the cooling spacetime as the Black Body Radiator of the cosmogenesis.

As the universe expanded and cooled, the first ylem stars crystallized from the mass seedling M_o. The universe's expansion however cooled the CMBR background and as the temperature characterizing the Chandrasekar white dwarf-neutron star limit is at a temperature of 20 billion Kelvin, the size of the universe at this temperature provides an upper limit for the size of a star in $(7.82\text{-}8.37)x10^{12}$ m* or a radius 7.8 billion kilometers. This encompasses about 52 Astronomical Units (1 AU=$1.5x10^8$ km as the distance between the earth and the sun) and so the radial extent and the 'size' of a typical solar system, encompassed by supergiants on the HR-diagram.

3. The Ylemic Dark Matter Radius as a universal RMP-Dark Matter Halo

The ylemic radius is independent from mass as a function of the ylemic Gamow temperature, decreases with time and only depends on atomic and subatomic parameters as the classical electron radius R_e and the primordial nucleon as the ylemic neutron $m_c = m_{planck}\alpha^9$ and derived from the gravitational finestructure and the Planck mass as $\alpha_g = 2\pi m_c^2/hc = m_c^2/m_{planck}^2 = \alpha_e^{18}$ for k_B the Stefan-Boltzmann constant for thermodynamic energy, R_e the classical electron radius, G_o the quantum gravitational constant and m_c the proto-nucleonic mass from the Planck mass definition as $1 = 2\pi G_o m_p^2/hc$.

The ylem radius so is descriptive for a spacetime metric coupling the quantum gravitation of a Hawking micro black hole at the high fusion temperatures of the early universe to its later manifestation in neutron stars defined by their nuclear densities with electron and neutron degeneracies.

The maximum temperature for a black hole is given at a nexus point in the thermodynamic evolution of the universe, known as the bosonic unification of the background temperature with that of the bosonic temperature of the Weyl wormhole of the QBBS. The universe had cooled to a temperature of $1.42x10^{20}$ Kelvin from the QBBS temperature of a temperature of a temperature of $2.30x10^{36}$ Kelvin at a time of 2 nanoseconds from the instanton.
At this time, the ylem dark matter-RMP-Einstein quintessence halo with a radius of $6.26x10^8$ meters encompassed a lower dimensional universe of just 1.1382 meters across in the higher dimensional universe created by the inflaton and the hyper accelerated de Broglie wave matter EMMI light path.

The RMP is the dark matter particle in the Higgs field and is defined in the units of the gravitational parameter as a space quanta volumar acted upon by the time differential of frequency df/dt as a form of quantum spin angular acceleration.

The primordial neutron decay in the first 20 minutes of the QBBS universe became triggered in the initial boundary conditions defined in the space quanta counters E, F and G, with the manifestation of the Dirac monopole singularity as the wavelength $\lambda^* = c/f^* = 4.087933536x10^{14}$ m* for radius $R^* = \lambda^*/2\pi = R(n^*=H_o t^{*\prime} = 4.072259032x10^{-13}) = 6.506148293x10^{13}$ m* for a time $t^{*\prime}$ = 216,871.61 s* or 2.51 mean solar days into the expansion and thermodynamic evolution of the universe.

The RMP is defined in its volumar $2\pi^2 R_{RMP}^3 = e^*/f_{ps}^2 = e^*/(9x10^{60})$ entropy self-states) to define the ratio $\{R_e/R_{RMP}\} = \sqrt[3]{\{2\pi^2/2.592x10^{-15}\}} = 7.6154355x10^{15}$ showing that so 7.615 quadrillion RMPs will fit into the source energy quantum and the inversion charge energy of the Dirac monopole and so the QBBS instanton. The radius of the RMP is given $R_{RMP} = 1.411884763x10^{-20}$ m* from the source energy quantum definition for the classical electron radius of $2.777…x10^{-15}$ m*. The RMP dominated era ended when the ylemic dineutron radius became equal to the size of the universe at a time about $1/140^{th}$ of a second for a radius of $2.14114x10^6$ m*.

This was the nexus for the RMP-Higgs ylemic quarkian geometry template to differentiate between the mesonic inner and the leptonic outer ring to kernel the proton in electroweak unification at a temperature of $1.68x10^{15}$ K* and when the dark matter universe became illuminated in the EMMI light path intersecting the RMP haloed universe.

The number of space quanta comprising the universe at RMP time is the size of the universe for cycle coordinate divided by $2\pi^2 r_{ps}^3$ as a space quantum count $Eta_{RMP} = \eta_{RMP} = R_{RMPeff}^3/r_{ps}^3 = 1.9802x10^9 = 1/5.0500x10^{-10}$

For the googolplex E-FGF', the photon baryon ratios for the time of the primordial neutron decay from to 1150.36 – 1130.52 – 1109.96 – 229.821 seconds for a time interval from 880.14 to 900.70 to 920.54 seconds, the respective photon-baryon ratios then replace the ratio of the dark matter restmass photons in the illuminated universe now enabled to freely produce protons, electrons with anti-neutrinos in beta minus weak interaction decay and completing the first 20 minutes of the thermodynamic evolution of the universe in the formation of primordial helium, deuterium, tritium and lithium in the nucleosynthesis of the QBBS.

$$\eta_{MO}\{R_E/R_F\}^3=\{1.41555\}\{1.006208782x10^{112}/1.019538764x10^{103}\}$$
$$=\{1.41555\}\{9.8692548x10^8\}=1.397042x10^9=1/7.15799x10^{-10}$$
$$\eta_{MO}\{R_E/R_G\}^3=\{1.41555\}\{1.006208782x10^{112}/9.676924497x10^{102}\}$$
$$=\{1.41555\}\{1.03980225x10^9\}=1.471892x10^9=1/6.79398x10^{-10}$$
$$\eta_{MO}\{R_E/R_{F'}\}^3=\{1.41555\}\{1.006208782x10^{112}/9.158461354x10^{102}\}$$
$$=\{1.41555\}\{1.09866575x10^9\}=1.555216x10^9=1/6.42998x10^{-10}$$

As the displacement string modular dualities define the minimum-maximum winding mode-frequency mode boundary conditions in string displacement/time $r_{ps}/t_{ps} = \lambda_{ps}f_{ps}/2\pi = c/2\pi$ modular dual to $r_{ss}/t_{ss}=2\pi\lambda_{ss}f_{ss}=2\pi/c$ the minimum Hawking temperature is modulated in $\{r_{ps}t_{ss}/r_{ss}t_{ps}\}=\{c^2/4\pi^2\}$ as $T_{Hmin} = \{c^2/4\pi^2\}T_{ss} = \{c^2/4\pi^2\}E_{ss}/k_B = \{hf_{ss}c^2/4k_B\pi^2\} = 3.58856785x10^{-26}$ K* $= T_{ss}\{c^2/4\pi^2\}_{mod}$ and where $\{c^2/4\pi^2\}_{mod}$ is dimensionless due to the string modular duality.

This minimum Hawking temperature for black hole modulation now defines the modular black hole mass dual to the micro black hole of the QBBS as

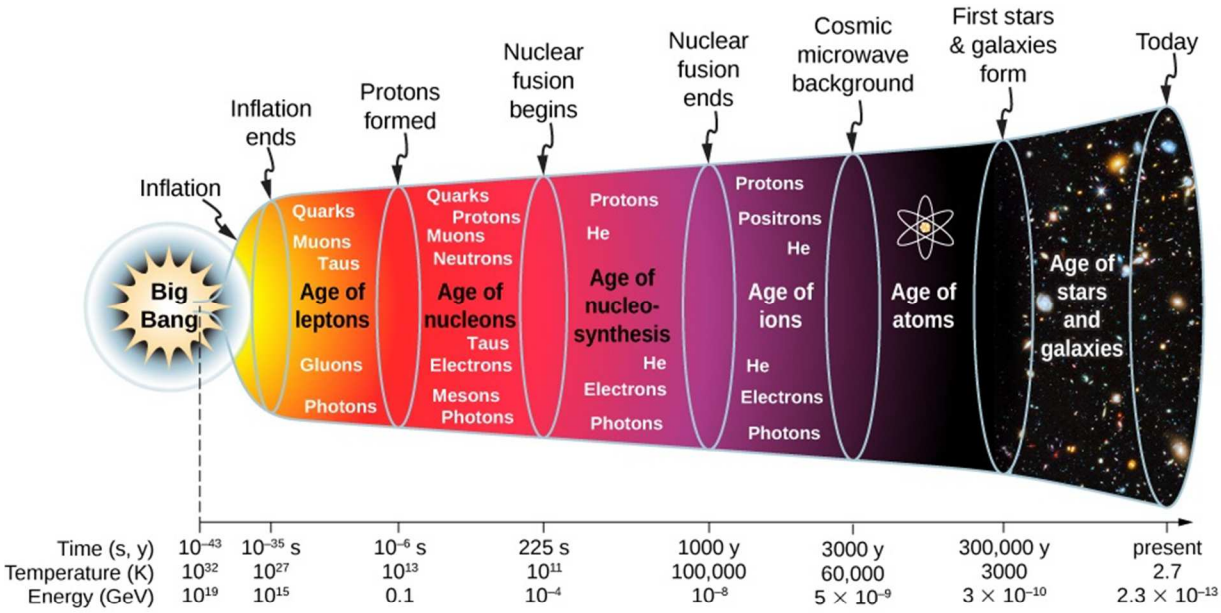
$$M_{Hawkingmax} = \{M_{Hminin}.T_{Hmax}\}/\{T_{Hmin}\} = \{hc^3/4\pi k_B G_o\}/\{hf_{ss}c^2/4k_B\pi^2\} = \{\pi c f_{ps}/G_o\}_{mod} = 2.544790x10^{49}\ kg^*$$

This maximum Hawking mass so refers to the cycle time coordinate in the evolution of the thermodynamic universe, when the bosonic unification Hawking micro black hole mass with its dark matter ylemic halo will be balanced in a Hawking macro black hole mass descriptive in the encompassing temperature evolution of the universe.

As the micro black hole has the wormhole radius $r_{ps}=\lambda_{ps}/2\pi$ of the QBBS at the bosonic unification time 2 nanoseconds into the expansion of the universe; the macro black hole will

have the modular dual radius to the wormhole radius as $r_{ss}=2\pi\lambda_{ss}$ or $6.283x10^{22}$ m* at a time characterizing the dark matter halo of the micro quantum state to reverse in a modulation of rendering the dark matter halo visible and illuminated.

The cycle time n=0.000393425… or 6.64 million years from the QBBS so manifests an anti-wormhole or white hole perimeter for the supermembrane sourcesink E_{ps} mirroring the supermembrane sinksource E_{ss} as the micro black hole perimeter of the bosonic temperature unification.



Universe Background $T(\Lambda_E) = 2.9352x10^{36}$ K **decreases to** $T(ps) = k_b T_{ps}$
Quantum Self-State $T(ps) = 1.4167x10^{20}$ K **Bosonic Unification at** $2x10^{-9}$ s

Instanton
Big Bang
Inflaton

$n = 3.333x10^{-31}$
$t_{ps}^2/t_{ALGO} = t_{ps}/H_o = 1.775x10^{-13}$
$n=H_o t_{ps}^2/n_{ps}=ct_{ps}^2/\lambda_{ps}=t_{ps}=1/f_{ps}=f_{ss}$
mass eigen frequency
Image of 1st Logos Algorithmic Mathimatia definition

$T(\Lambda_E) = 7.545x10^{37}$ K
$t_{algo} = 6.259x10^{-49}$ s

$T(\Lambda_E)$
T_{ps}

$1.489x10^{23} = T(\Lambda_E)$
$1.775x10^{-13} = t_{algo\ image}$

$t_H = \sqrt{\alpha}\, t_{ps} = 2.847x10^{-32}$ $\quad 3.902x10^{-30} = t_{ps}/\sqrt{\alpha} = t_H$

Timespace	Higgs Boson Vacuum	Spacetime
HBP-False Vacuum	$t_{ps} = 2\pi R_{ps}/c = 3.333x10^{-31}$	HBP-Image Vacuum

Monopolar sourcesink E_{ps} so begins to activate in the cosmology in applying the dark matter haloes from a global universal perspective onto a galactic local disposition and preparing the universe for the birth of stars and galaxies, based on the displacement scale of the modulated Hawking macro quantum black hole. The temperature for this nexus coordinate was 358.05 K* and with a cosmological comoving redshift of z=49.421. A universal radius of $6.283x10^{22}$ m* calculates for the Strominger form of the universe as a black hole as $M_{Hmax}=2\pi\lambda_{ss}c^2/2G_o=2.5447x10^{49}$ kg*

The critical displacement scale for the dark matter haloes from $\{\lambda_{ss}/2\pi - \lambda_{ss} - 2\pi\lambda_{ss}\}$ or $\{0.159\text{-}1.00\text{-}6.28\}x10^{22}$ m* is conformally mapped onto the galactic seeds encompassed by supercluster seeds of the Sarkar scale defined in the baryon mass seed $R_{sarkar}=G_oM_o/c^2$ from $\{1.12\text{-}2.23\text{-}4.47\}x10^{24}$ m* with the Hawking modulus applied to the Strominger black hole universal evolution.

The supermembrane modulation factor $\{c^2/4\pi^2\}_{mod}=\{c^2/39.478\}$ so defines a generalized displacement scale for a galactic seed with its core and bulge separated from its inner and outer haloes in $2\pi^2$ as the volumar coefficient for a space quantum ($V_{sq}=2\pi^2r_{ps}^3$) in $2\pi^2\sim2x10^6/10^5=20=4x10^6/2x10^5$ and for $\lambda_{ps}f_{ps}=c=1/\lambda_{ss}f_{ss}$.

From the electroweak unification nexus at $1/140^{th}$ of a second into the cosmogenesis; the dark matter haloes became fully integrated into the lower dimensional universe with the ylemic radius continually shrinking relative to the expanding Hubble universe aiming for the Hubble event horizon set by the inflaton of the QBBS.

At the present cycle time coordinate for the universe, the ylemic radius is 87.15 mm* for a Hawking-ylem-universal temperature of 7.474 K* and a lower dimensional radius of 8.96 billion light years within a higher dimensional radius of 16.88 billion light years of the EMI light path within 19.12 billion light years of the EMMI light path.

The gravitationally closed universe in de Sitter spacetime so is at the 53.11% (n/n+1) marker relative to its closure mass in de Sitter spacetime but is at the 86.73% (n) marker relative to its open anti de Sitter spacetime.

As 86.73% of the closure mass represent $0.8673R_H=14.64$ billion light years; the true EMMI age of the universe is underestimated in the intersection of the EMMI light path relative to the de Sitter spacetime observer in 13.27% of the true age as 16.88+2.24=19.12 billion years.