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Unified Quantum Gravity Pertaining to Nuclear and Cosmic Physics

Seshavatharam U. V. S [1,*] *and Lakshminarayana S.* [2]

[1]Honorary Faculty, I-SERVE, Survey no-42, Hitech city, Hyderabad-84,Telangana, India
[2]Department of Nuclear Physics, Andhra University, Visakhapatnam-03, A.P, India

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Abstract: Quantum gravity can be classified into Nuclear quantum gravity (NQG), Cosmic quantum gravity (CQG) and Unified quantum gravity (UQG). In the context of NQG, by assigning four gravitational constants to the observed four interactions- 'string theory' can be made practical to accommodate the three atomic interactions, 'h-bar' can be understood as an outcome of electroweak gravity and nuclear gravity concepts can be implemented in basic nuclear physics in a full-fledged manner. In the context of CQG, considering the concept of 'light speed growth of a Planck scale black hole' and scaling the famous Hawking's black hole temperature formula- issues like big bang, temperature, redshift, flatness, acceleration and dark energy can be reviewed at fundamental level. Dark matter can be understood as a representation of 'super gravity' associated with galactic (visible and missing) baryonic mass greater than 4×10^{38} kg (200 million solar masses). Studying the concepts of NQG and CQG, in a systematic approach, basics of UQG can be established.

Keywords: quantum gravity, four gravitational constants, strong nuclear charge, dark matter reference mass unit, super gravity of baryonic matter.

1 Introduction

Either microscopic physics point of view or macroscopic physics point of view, the term 'quantum gravity' is strange and speculative for many reasons like inadequacy in theory, lagging in applications and beyond the scope of experimental physics [1,2,3]. In this context, we try to classify quantum gravity into three sub areas: 1) Nuclear quantum gravity (NQG), 2) Cosmic quantum gravity(CQG), and 3) Unified quantum gravity (UQG). Thinking in this way, it seems possible to develop a workable model of quantum gravity related with general theory of relativity (GTR) and quantum mechanics (QM).

Ontology is the branch of philosophy that deals with 'existence', 'being', 'becoming' and 'reality'. We would like the emphasize the point that, even though, 'they' are the greatest observers of the entire universe in so many aspects, 'human beings' are having natural limitations on 'address' of their origin, and 'growth, behaviour and thinking' of their personality. Hence, 'certainty' and 'uncertainty' of physical states of any macroscopic or microscopic physical events or activities cannot be explored fully by human beings. It needs long time observations and analysis. Regarding QM, here it is important to consider the interesting views of Nobel laureate, Gerard 't Hooft [4]: "Quantum mechanics can be treated as a device that combines statistics with mechanical, deterministic laws, such that uncertainties are passed on from initial states to final states". In this context, we appeal that [5], if one is willing to consider the 'quantum constant' as a hidden associate of electroweak interaction that determines the massive behaviour of elementary particles, it seems possible to explore the mystery of 'probability' of quantum results associated with massive elementary particles as well as massive universe composed of so many elementary particles.

2 Nuclear quantum gravity and its workable results

Recently, by considering three large gravitational coupling constants for the three atomic interactions, we

* Corresponding author e-mail: seshavatharam.uvs@gmail.com

have developed a practical model of nuclear quantum gravity. We call it as '4G model' of final unification [5-11]. With reference to gravity, we understood that,

1. When mass of any elementary particle is extremely small/negligible compared to macroscopic bodies, highly curved microscopic space time can be understood with large gravitational constant.
2. Compared to particles having a structure, for point particles, magnitude of gravitational constant can be much higher.
3. Magnitude of the elementary gravitational constant seems to increase with decreasing mass and increasing interaction range of the elementary particle under consideration.
4. Characteristic relations seem to be, $G_x m_x^2 \approx \hbar c$ and $\frac{G_x m_x}{c^2} \approx \frac{\hbar}{m_x c}$.

2.1 Basic assumptions of Nuclear quantum gravity

1. Each atomic interaction is associated with a characteristic gravitational coupling constant.
2. There exists a characteristic electroweak fermion of rest energy $M_{wf}c^2 \cong 584.725$ GeV. It can be considered as the zygote of all elementary particles.
3. There exists a strong interaction elementary charge e_s in such a way that, its squared ratio with normal elementary charge is close to reciprocal of the strong coupling constant, i.e. $\left(\frac{e_s}{e}\right)^2 \cong \frac{1}{\alpha_s} \cong \frac{1}{0.1152}$.

Estimated magnitudes of electromagnetic, strong, weak and Newtonian gravitational constants are,

$G_e \cong 2.374335 \times 10^{37}$ m^{3}kg^{-1}sec^{-2}.
$G_s \cong 3.329561 \times 10^{28}$ m^{3}kg^{-1}sec^{-2}.
$G_w \cong 2.909745 \times 10^{22}$ m^3 kg^{-1}sec^{-2}.
$G_N \cong 6.679855 \times 10^{-11}$ m^3 kg^{-1}sec^{-2}.

Estimated magnitudes of strong coupling constant and strong nuclear charge are, $\alpha_s \cong 0.1151937$ and $e_s \cong 2.9463591$ respectively.

2.2 About the Higgs fermion and its existence

It is generally believed that, electrons and nucleons are fermions and are responsible for the observed spectrum of electromagnetic radiation that propagates in the form of photons. At sub nuclear level, it is well established that, quarks are fermions and play a vital role in generating baryons and mesons. Gluons are believed to be the force carriers in between quarks and hadrons. Whether it is electromagnetic interaction or strong interaction, fermions are supposed to be the 'field generators' and photons and gluons are believed to be the 'force carriers'. It is very clear to say that, 'field generators' and 'force carriers' are essential elements in understanding their respective interactions and both can be considered as a representation of 'head' and 'tail' of a coin. Coin 'without head' or 'without tail' – is practically an ambiguous physical issue.

Based on this kind of logic [11], in a theoretical approach - it is absolutely possible to confirm the existence of the proposed fundamental electroweak fermion of rest energy 585 GeV. In an observational approach, under extreme astrophysical conditions, 1.17 TeV photons can be expected by annihilation of 585 GeV weak fermions or Synchrotron Self-Compton emission mechanism associated with 585 GeV weak fermions. Clearly speaking, by observing Tera electron Volt photons, it seems possible to directly confirm the existence of the proposed 585 GeV fermion. In this context, one can have two possibilities. First possibility is to observe very high energy photons coming from astrophysical objects. Second one is to observe very high energy photons coming from particle accelerators. In this new direction, we appeal a critical review on the currently believed Higg's physics [12].

By identifying and confirming the existence of 585 GeV Higgs fermion, it is possible to show that,

$$\hbar c \cong \left(\frac{G_w G_e}{G_s}\right) m_p m_e \cong G_w M_{wf}^2 \tag{1}$$

where (m_p, m_e, M_{wf}) represent the rest masses of proton, electron and Higgs fermion respectively.

This can be considered as a major consequence of nuclear quantum gravity. Independent of extra dimensions, for the three atomic interactions, their characteristic interaction ranges can be expressed as,

$L_w \cong \frac{2G_w M_{wf}}{c^2} \cong 6.75 \times 10^{-19}$ m.
$L_s \cong \frac{2G_s m_p}{c^2} \cong 1.24 \times 10^{-15}$ m.
$L_e \cong \frac{2G_e m_e}{c^2} \cong 4.81 \times 10^{-10}$ m.

Fermi's weak coupling constant can be expressed as,

$$G_F \cong G_w M_{wf}^2 L_w^2 \cong 1.4402105 \times 10^{-62} \text{ J.m}^3 \tag{2}$$

where $L_w \cong \frac{2G_w M_{wf}}{c^2}$.

Proceeding further, Newtonian gravitational constant and strong coupling constant can be expressed as,

$$G_N \cong \frac{G_w^{21} G_e^{10}}{G_s^{30}} \tag{3}$$

$$\alpha_s \cong \frac{G_w^6 G_e^4}{G_s^{10}} \tag{4}$$

In a unified approach, Planck mass can be expressed as,

$$M_{pl} \cong \sqrt{\frac{\hbar c}{G_N}} \cong \left(\frac{m_p}{m_e}\right)^5 M_{wf} \tag{5}$$

2.3 About the strong nuclear charge and its existence

Using the proposed strong nuclear charge [7], proton magnetic moment $\frac{e_s\hbar}{2m_p}$, nuclear fine structure ratio $\alpha_n \cong \frac{e_s^2}{4\pi\varepsilon_0\hbar c} \cong 0.0633$, unified nuclear binding energy coefficient $B_0 \cong \frac{1}{2}\sqrt{\alpha\times\alpha_n}\left(m_pc^2\right)$ and Fermi gas model of nuclear potential $E_p \cong \sqrt{\alpha\times\alpha_n}\left(m_pc^2+m_nc^2\right) \cong 40.36$ MeV can be fitted. Most interesting relations connected with recent experimental value of root mean square radius of proton [13] are,

$$\hbar \cong \left[\left(\frac{e_s^2}{4\pi\varepsilon_0 c}\right)\left(m_pR_pc\right)^2\right]^{\frac{1}{3}} \tag{6}$$

$$R_p \cong \sqrt{\left(\frac{4\pi\varepsilon_0\hbar^2}{e_s^2m_p}\right)\left(\frac{\hbar}{m_pc}\right)} \cong \sqrt{\frac{4\pi\varepsilon_0\hbar^3}{e_s^2m_p^2c}} \cong 0.835 \text{ fm} \tag{7}$$

2.4 Unified formula for estimating nuclear binding energy

Mass ratio of proton to proposed electroweak fermion and pions to weak bosons is 0.0016 and it seems to be twice the product of Fine structure ratio and strong coupling constant. Electroweak interaction seems to play a key role in generating free or unbound nucleons and nuclear stability. Increasing number of free nucleons, increasing nuclear radii and increasing asymmetry about stable mass number play important role in reducing the nuclear binding energy. Independent of the currently believed semi empirical mass formula and by considering electroweak and strong interactions, nuclear binding energy can be expressed with a four term formula having single energy coefficient can be expressed as [14]

$$\begin{aligned} BE &\cong \{A-\left[1+0.0016\left(\frac{A^2+Z^2}{2}\right)\right] \\ &\quad -A^{\frac{1}{3}}-\frac{\left(A_s-A\right)^2}{A_s}\}\left(B_0\cong 10.1 \text{ MeV}\right) \\ &\cong \{A-\left[1+0.0008\left(A^2+Z^2\right)\right] \\ &\quad -A^{\frac{1}{3}}-\frac{\left(A_s-A\right)^2}{A_s}\}\left(B_0\cong 10.1 \text{ MeV}\right) \end{aligned} \tag{8}$$

where,

$A =$ Mass number and $Z =$ Proton number.

$$\frac{m_p}{M_{wf}} \cong 0.0016$$

$$\cong \frac{\text{Mean mass of Pions}}{\text{Mean mass of Weak bosons}} \cong \frac{\sqrt{\left(m_\pi c^2\right)^0\left(m_\pi c^2\right)^\pm}}{\left(m_zc^2\right)^0\left(m_wc^2\right)^\pm} \cong 0.0016$$

$$A_s \cong 2Z+0.0016\left(2Z\right)^2 \cong 2Z+0.0064Z^2$$

$$B_0 \cong \sqrt{\left(\frac{e_s^2}{8\pi\varepsilon_0\left(\frac{\hbar}{m_pc}\right)}\right)\left(\frac{e^2}{8\pi\varepsilon_0\left(\frac{\hbar}{m_pc}\right)}\right)} \cong \frac{ee_s}{8\pi\varepsilon_0\left(\frac{\hbar}{m_pc}\right)}$$

$\cong \frac{1}{2}\left[\left(2m_uc^2+m_dc^2\right)+\left(m_uc^2+2m_dc^2\right)\right] \approx 10.1$ MeV where m_u and m_d represent Up and Down quark masses respectively.

3 Cosmic quantum gravity and its workable results

Compared to all other areas of physics and compared to the age of cosmic objects, subject of cosmology is having very limited information extracted from the past 100 years of astronomical and cosmological observations. The most worrying point is that, known little information is having a great controversy in all respects. As research is going on, new observations are coming into picture with a great diversity in the presumed basics of cosmology. It needs further study and it may take further 30 to 40 years to establish the basics of quantum cosmology.

Over the past 6 years, gravitational wave observatories have been detecting black hole mergers and very complicated observation is that, many of the black holes are very large in size. To understand this issue, it has been proposed that, black holes grow along with the expansion of the universe [15]. This idea can be considered as one of the best inferences of combined cosmological and astrophysical observations. In this context, it may be noted that, in our 2010 published paper, we proposed that, black hole structure may be a sub set of cosmic black hole structure [16]. The basic relation that connects growing black hole universe and light speed expanding universe can be expressed as [17],

$$R_t \cong \frac{2GM_t}{c^2} \cong \frac{c}{H_t} \tag{9}$$

where R_t, M_t, H_t represent time dependent cosmic radius, mass and Hubble parameter respectively.

It may be noted that around 1917, shortly after publishing 'general theory of relativity', Einstein formulated a similar relationship [18] for a static universe, in the following form.

$$\frac{GM_t}{R_tc^2} \cong 1 \tag{10}$$

We would like to emphasize the point that, based on Hawking's black hole temperature formula, geometric mean of Planck mass, $M_{pl} \cong \sqrt{\frac{\hbar c}{G_N}} \cong 2.176\times10^{-8}$ kg and the so called Hubble mass, $M_0 \cong \left(\frac{c^3}{2GH_0}\right) \cong 9.3\times10^{52}$ kg seems to play a crucial

role in estimating the observed cosmic microwave back ground temperature. It can be expressed as,

$$T_0 \cong \frac{\hbar c^3}{8\pi k_B G\sqrt{M_0 M_{pl}}} \cong 2.725 \text{ K}$$
$$H_0 \cong \left[\frac{32\pi^2 k_B^2 G^{\frac{1}{2}}}{\hbar^{\frac{3}{2}} c^{\frac{5}{2}}}\right] T_0^2 \cong 66.88 \text{ km/sec/Mpc} \quad (11)$$

If one is willing to proceed further, there is a scope for understanding the observed universe with a 'growing black hole' compared to currently believed model of 'Lambda cosmology' (LC). Cosmic age can be understood with a relation of the from,

$$R_t - R_{pl} \cong ct \quad (12)$$

where (R_t, R_{pl}) represent radius of any epoch at time t and Planck scale radius respectively. For the current case,

$$t_0 \cong \frac{R_0 - R_{pl}}{c} \cong \frac{R_0}{c} \cong \frac{1}{H_0} \quad (13)$$

where $R_0 \gg R_{pl}$

3.1 Inadequacy of Lambda cosmology

Most intriguing concept of LC is 'cosmic evolution'. Clearly speaking, universe is having a beginning and its size and time are increasing. Earlier mater was in the form of radiation and observed matter is being created in the form of growing stars and galaxies with increasing number of elementary atoms and their next level atoms. Another interesting feature is that, universe is expanding with increasing speed (accelerating). These observations were developed on the concept of galactic red shift associated with the observed and laboratory wavelengths of photon, being defined as [19],

$$z \cong \frac{\lambda_{Observed} - \lambda_{Lab}}{\lambda_{Lab}} \quad (14)$$

Most complicated feature of LC is current cosmic acceleration [20]. By studying the galactic red shifts and galactic distances, cosmologists are trying to establish the notion of 'accelerating universe'. But in reality, it is practically impossible to investigate and measure the real expansion speeds of galaxies. Another bitter truth is that, as the observed universe is very large, it is absolutely beyond the scope of human beings to measure the expansion speed of cosmic boundary. Even though, cosmologists are strongly believing in cosmic acceleration and seriously working on chasing its mystery with 'dark energy' and 'Lambda term' like strange physical entities [21].

Most controversial feature of LC is galactic dark matter [22]. To understand the observed excess rotation speeds of galactic orbiting stars and to understand the observed galactic gravitational lensing effects, scientists are seriously believing in the existence of 'dark matter' as an exotic form of matter not found in the standard particle model.

Unfortunately both dark energy and dark matter, seem to be 'unphysical' in nature and raising doubts on the 'scope', 'applicability' and 'correctness' of the basic assumptions of LC and GTR. Unless dark matter and dark energy are identified, LC cannot be considered as a complete model of cosmology. It may be noted that, by considering light speed expansion and black hole universe concepts – big bang, inflation, horizon, dark energy, lambda term and flatness issues can be relinquished forever.

3.2 Most misleading part of Lambda cosmology

It may be noted that, by the time of defining galactic red shift, maximum red shift value was around 0.003. We would like to emphasize the point that, definition of galactic red shift is ambiguous. It can also be defined as [23,24],

$$z_{new} \cong \frac{\lambda_{Observed} - \lambda_{Lab}}{\lambda_{Observed}} \quad (15)$$

With reference to current definition, z value lies between 0 and infinity. By following our new definition, z value lies between 0 and 1. It may be noted that, with our given definition, it is very easy to implement 'light speed expansion' in cosmic evolution scheme. By considering light speed expansion concept, dark energy and lambda term concepts can be relinquished. Thought of in this way, as there is no evidence for dark energy, the current definition of galactic red shift can be considered as the most misleading part of LC. Figure 1 compares galactic light travel distances according to our new definition, $z_{new}\left(\frac{c}{H_0}\right)$ (Red curve) and the conventional formula connected with dark energy density and other density fractions (Green curve). For a comparison, readers are encouraged to visit https://cosmocalc.icrar.org/ and http://www.atlasoftheuniverse.com/cosmodis.c.

3.3 Super gravity of baryonic matter

Considering the case of supposition of dark matter through gravitational interaction, inferring the negative results of dark matter experiments and following the ongoing debate concerning the existence of exotic form of dark matter, we are proposing the existence of a power law based super gravitational behaviour of baryonic matter as a possible explanation [25] for the observed galactic rotation curve anomalies. We would like to emphasize the point that, in

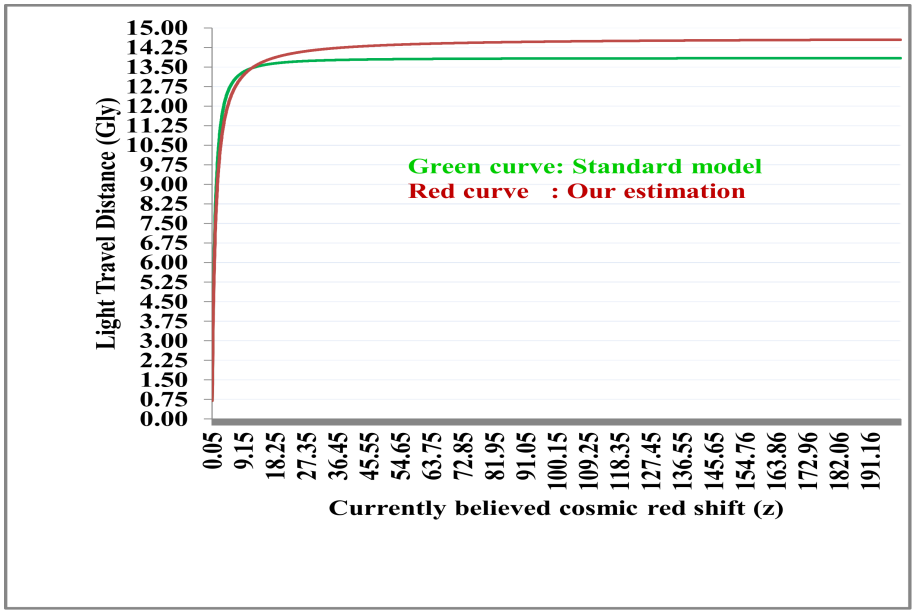

Fig. 1: Comparison of standard and estimated light travel distances

reality there exists no dark matter and equivalent mass of galactic dark matter can be defined as,

$$(M_{dark})_G \cong \left[\frac{(M_{baryon})_G^{\frac{3}{2}}}{(4.0\times 10^{38})^{\frac{1}{2}}}\right] \text{ kg} \qquad (16)$$

where 4.0×10^{38} kg $\cong$ 200 Million solar masses can be called as the 'current dark matter reference mass unit'.

A unified quantum gravitational approach seems to be needed to derive this reference mass unit. Galactic masses less than 200 million solar masses will have decreasing trend of super gravity and galactic masses greater than 200 million solar masses will have an increasing trend of super gravity and it is proportional to $(M_{baryon})_G^{\frac{3}{2}}$. Total mass of galaxy can be expressed as, $M_G \cong (M_{baryon})_G + (M_{dark})_G$. Following this relation, galactic flat rotation speeds can be understood with a relation of the form,

$$\frac{V_G}{c} \cong \frac{1}{4}\left[\frac{M_G}{M_0}\right]^{\frac{1}{4}} \cong \frac{1}{4}\left[\frac{(M_{baryon})_G + (M_{dark})_G}{M_0}\right]^{\frac{1}{4}} \qquad (17)$$

where $M_0 \cong \frac{c^3}{2GH_0} \cong 9.3\times 10^{52}$ kg= Current Hubble mass.

Flat rotation speeds varying from 10 km/sec to 500km/sec can be understood in this way. Our proposal is in line with newly discovered dark matter deficient galaxies and large massive galaxies having high flat rotation speeds. Another interesting feature is that, Sun's estimated equivalent dark mass is around 1.5×10^{26} kg and its effect seems to be negligible. It needs observational and experimental confirmation. To some extent, considering the estimated Virial mass of Sun and based on the theory of light bending, our proposal can be confirmed. Nucleons estimated equivalent dark mass is around 10^{-60} kg and it needs experimental verification.

3.4 Standard ruler associated with baryon acoustic oscillations

As per the cosmic baryon acoustic oscillations (BAO), current acoustic bubble radius [26] is around 150 Mpc. This characteristic length can be fitted with a simple relation of the form,

$$\sqrt{\frac{T_0}{T_{Recomb}}}\left(\frac{c}{H_0}\right) \cong \frac{c}{H_{Recomb}^{\frac{1}{4}} H_0^{\frac{3}{4}}} \cong 150 \text{ Mpc} \qquad (18)$$

where T_{Recomb}, H_{Recomb} represent recombination epoch temperature and Hubble parameter respectively. Hawking's black hole temperature formula pertaining to recombination epoch can be expressed as, $T_{Recomb} \cong \frac{\hbar c^3}{8\pi k_B G\sqrt{M_{Recomb}M_{pl}}} \cong \frac{\hbar\sqrt{H_{Recomb}H_{pl}}}{4\pi k_B}$ where $M_{Recomb} \cong \frac{c^3}{2GH_{Recomb}}$ represents the recombination epoch Hubble mass. Clearly speaking, 'light speed' being a characteristic feature of cosmic expansion and $H_{Recomb}^{\frac{1}{4}}$ being a characteristic feature of cosmic recombination, baryon acoustic bubble radius seems to be inversely proportional to $H_0^{\frac{3}{4}}$. It needs further study with respect to our new definition of cosmic red shift.

3.5 On cosmic rotation and cosmic centre

Considering the evolving universe as a growing black hole or simply a white hole, it seems natural to expect cosmic rotation. We would like to emphasize the point that, Spin is a basic property of quantum mechanics and one who is interested in developing quantum models of cosmology, must think about cosmic rotation. It may be noted that, without a radial in-flow of matter in all directions towards one specific point, one cannot expect a big crunch and without a big crunch, one cannot expect a big bang. Really if there was a "big bang" in the past, with reference to formation of big bang as predicted by GTR and with reference to the cosmic rate of expansion that might have taken place simultaneously in all directions at a "naturally selected rate" about the point of big bang: "point" of big bang can be considered as the characteristic reference point of cosmic expansion in all directions. Thinking in this way, to some extent, point of big bang can be considered as a possible centre of cosmic evolution. If so, thinking about the universe without a centre of rotation is illogical. Based on this logic, we appeal the science community to see the possibility of thinking about angular velocity, cosmic rotation and rotational axis [27].

By considering the universe as a growing and rotating black hole, there is a scope for considering the ratio of cosmic Hubble parameter to angular velocity as a characteristic tool. It can be expressed as, $\gamma_t \cong \left(\frac{H_t}{\omega_t}\right)$. Galaxies are separated by large voids and cosmic mass distribution is not continuous. Hence it may not be logical to study the current rotating black hole universe with known laws of rotation. In this context, we have developed a simple relation for understanding the observational magnitude of current cosmic angular velocity. It can be expressed as,

$$\begin{aligned}\gamma_0 \cong \frac{H_0}{\omega_0} &\cong 1+\ln\left(\frac{M_0}{M_{pl}}\right)\\ &\cong 1+\ln\left(\frac{H_{pl}}{H_0}\right) \cong 1+\ln\left(\frac{T_{pl}^2}{T_0^2}\right) \cong 140.6\end{aligned} \tag{19}$$

where $\left(M_{pl}, H_{pl}, T_{pl}\right)$ represent Planck scale mass, Hubble parameter and temperature respectively.

Based on the above relation, at Planck scale, cosmic Hubble parameter and angular velocity are equal in magnitude and as time increases, cosmic angular velocity decreases by a factor, $\gamma_t \cong \frac{H_t}{\omega_t} \cong 1+\ln\left(\frac{M_t}{M_{pl}}\right) \cong 1+\ln\left(\frac{H_{pl}}{H_t}\right) \cong 1+\ln\left(\frac{T_{pl}^2}{T_t^2}\right)$. Based on the observational data pertaining to estimated galactic angular velocities and available limits on cosmic angular velocity, we are working in this direction with different models. It needs further study with respect to Hubble's law.

By considering Hubble's law and light speed growing black hole universe, it seems possible to develop another simple relation of the form,

$$R_t \cong \frac{2GM_t}{c^2} \cong \frac{c}{H_t} \cong \frac{c}{\omega_t} \tag{20}$$

Clearly speaking, a model of light speed expanding and light speed rotating black hole universe can be developed and studied with future observations. Major consequence of this idea is that, at any stage cosmic evolution, angular velocity and Hubble parameter are equal in magnitude. It needs a critical review with respect to mathematical consistency [28].

$$\begin{aligned}\gamma_t \cong \left(\frac{H_t}{\omega_t}\right) &\cong 1\\ \rightarrow H_t \cong \omega_t &\Rightarrow H_0 \cong \omega_0\end{aligned} \tag{21}$$

4 Conclusion

By considering the above concepts associated with NQG and CQG, there is a scope for developing workable models of UQG in a phased manner.

Based on NQG, at nuclear scale, string theory can be modified to accommodate the four gravitational constants and a workable model of 3+1 dimensional string theory can be developed.

CQG point of view, proposed characteristic dark matter reference mass unit of 200 million solar masses can be explored at various cosmic scales. Cosmological constant problem can be understood with $\frac{H_{pl}^2}{H_t^2} \cong \frac{T_{pl}^4}{T_t^4}$. By considering cosmic temperature, Hubble parameter can be estimated and there is no need to depend on galactic red shifts and distances. Cosmic thermal isotropy and increasing galactic distances can be studied with c, $z_{new} \cong \frac{z}{z+1}, \frac{d(T)}{dt}$ and $\frac{d(H)}{dt}$. Cosmic time-temperature relation can be understood with $T \cong \frac{0.18511\times 10^{10}}{\sqrt{t}}$ K. This relation is similar to the mainstream relation derived on big bang concepts and only difference is that, for the same expected temperatures, our estimated cosmic physical processes are taking place early compared to big bang model. This idea helps in understanding the early formation of matter and galaxies. With further study and future observations, a realistic model of basic quantum cosmology can be developed by 2050-2060.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Plagiarism

The results presented in this article are collection of authors' early published results pertaining to nuclear physics and cosmology. Running text is based on the title and sequence of the presented results.

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