

Quantum G Theory: Unification of Gravity and SM via Torsion in G_2 Holonomy

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Abstract

Quantum G Theory (QGT), as an extension of M-theory, contributes to unifying quantum gravity and the Standard Model (SM) through compactification dualities on G_2 -holonomy manifolds and quantum torsion H_3 of the Kalb-Ramond field. It introduces a geometrodynamical resonance field that reproduces SM particle rest masses via 11D SUGRA geometric-quantum coupling. Inspired by ancient philosophy, original root equations are generated, deriving cosmological constants: Λ , ρ_Λ , Ω_Λ , Ω_{dm} , Ω_{b} , and H_0 , as functions of critical parameters such as the graviton frequency (f_g) and cosmological frequency (f_Λ). Within this framework, fundamental constants are reproduced with unprecedented precision—consistent with SM observations—enabling a unified quantum reformulation of the Einstein, Schwarzschild, Friedmann, and Maxwell equations, integrated with the Schrödinger equation through entropic connections — Hawking radiation — and AdS/CFT correspondence. Furthermore, the conjecture $\text{KR}=\text{ER}=\text{EPR}$ is postulated, contributing to solving the problem of the cosmological constant Λ .

Contents

1	Chapter 1: Unified Universal Constants in the SM	2
2	Chapter 2: Generalized Action and G_2 Holonomy	9
3	Chapter 3: Cosmological Constants	11
4	Chapter 4: Entanglement and Quantum-Relativistic Unification	15
5	Chapter 5: Hypertoric $\text{KR}=\text{ER}=\text{EPR}$ Conjecture	18
6	Chapter 6: Torsional Velocity V_g and Matter/Antimatter	22
7	Chapter 7: Philosophical Dualities in QM/EM ; AdS/CFT	25
8	Acknowledgements	32
9	Conclusions	32

Introduction

The significance of Quantum G Theory (QGT) — whose intellectual property was registered since 2020 ¹ — lies in its capacity to resolve fundamental problems: the unification of quantum gravity with gauge interactions [1] and the hierarchy problem [2]. Through torsion H_3 and compactifications on G_2 -holonomy manifolds, achieves a unified quantum reformulation of the Einstein, Schwarzschild, Friedmann, and Maxwell equations, integrated with the Schrödinger equation via entropic connections— Hawking radiation— and AdS/CFT correspondence. This innovative framework extends its implications to Big Bang theory, stellar structure, and the dark components of the universe [3, 4], while introducing an effective potential V_{eff} and derivative action equations in 11D SUGRA [5].

QGT's relevance is demonstrated through the precise reproduction of fundamental constants: from atomic constants (R_∞, a_0, μ_B) and SM particle parameters to cosmological constants ($\Lambda, \rho_\Lambda, H_0$) and fractional densities ($\Omega_\Lambda, \Omega_{\text{dm}}, \Omega_{\text{b}}$), derived from first principles. This synthesis correlates traditionally disconnected physical domains, transforming the landscape of theoretical physics [3].

QGT's pertinence is evidenced by its correlation of 11D SUGRA parameters [5] with constants such as $G_N, \alpha, \rho_{\text{QFT}}$, and ρ_c , along with its predictive potential for high-energy collisions. Its connection to quantum entanglement under the KR=ER=EPR conjecture [6, 7], implemented via a hypertoric geometric-quantum torsion wormhole metric [3, 8, 9], It is consolidating itself as a transformative advance with practical applications.

1 Chapter 1: Unified Universal Constants in the SM

1.1 Chapter 1 Introduction

The Kalb-Ramond (KR) field is a fundamental antisymmetric tensor field $B_{\mu\nu}$ in M-theory [10], whose associated torsion $H_3 = dB$ (an antisymmetric 3-tensor) distorts space-time geometry, blurring the boundaries between gravity and electromagnetism (EM) [11, 12]. In 11D SUGRA, the $C_{\mu\nu\rho}$ tensor mediates gauge interactions and supersymmetry [5]. This field emerges from a non-polar vacuum (analogous to magnetic monopoles), extending the electromagnetic potential A_μ to a higher-rank object, where $H_{\mu\nu\rho}$ acts as a torsional force on strings and particles [3, 12]. Topologically, KR generates wormholes (ER) [13], extending the ER=EPR conjecture [1, 7] to KR=ER=EPR: torsion mediates quantum entanglement (EPR) through non-local geometries [3]. This duality is consistent with "p-brane democracy" [14] and is realized in an extended Hilbert space. In AdS/CFT, $B_{\mu\nu}$ corresponds to correlation operators in the conformal field theory (CFT) [1], reinforcing KR=ER=EPR. In QGT, KR unifies "invisible" gravitational torsion and rotational EM, manifesting as a quantum magnetic monopole $\bar{B}$ [3]. The Kaluza-Klein (KK) mechanism unifies gravity and EM through compactification of an extra dimension [11], reducing 11D SUGRA to $\mathcal{N} = 8$ in 4D, where gravity emerges from compactified dimensions [5]. SM masses arise from kinetic energies in extra dimensions: Fourier modes with non-zero momentum in compact directions (radius $\ll$ atomic scale) are perceived as massive particles, with $E \sim mc^2$ [3, 11]. Dualities connect seemingly distinct theories: the AdS/CFT correspondence relates maximal $\mathcal{N} = 4$ SYM theory (CFT) to 11D SUGRA [1], while dimensional properties (e.g., neutrino chirality in 10D/11D)[9] and the distinction between electric (vectors) and magnetic (2-forms) fields [11] emerge from compactifications. Ultra-energetic collisions ($\gg$ LHC) excite KK modes (harmonics), where the dilaton R_g marks non-perturbative regimes in type IIA strings [10]. M-theory unifies these dualities: at low energies, it describes 11D SUGRA with gravitinos, KR as "generalized EM" for

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branes, and M2/M5 branes charged under RR fields [15, 16]. In QGT, it integrates KK with H_3 on G_2 : mass emerges from motion in holonomy (torsional velocity $2c$), unifying scales and dualities, suggesting access to extra dimensions via elevated vibration [3, 13]. Figure 1 illustrates a head-on collision between two particles moving in a non-compact x direction and the possible consequences of this collision depending on the energy involved [11]. Considering a string/particle duality. In the perturbative regime, at low frequency, particles/strings might rebound and follow their original trajectory. However, in the non-perturbative regime, if the frequency is sufficiently high, particles/strings could become trapped moving in counter-rotating circles along an extra dimension w [11]. This latter regime—the non-perturbative high-frequency one—It constitutes the center of our study, where the KR-RR interaction manifests itself in centrifugal phenomena such as G-force [3, 13].

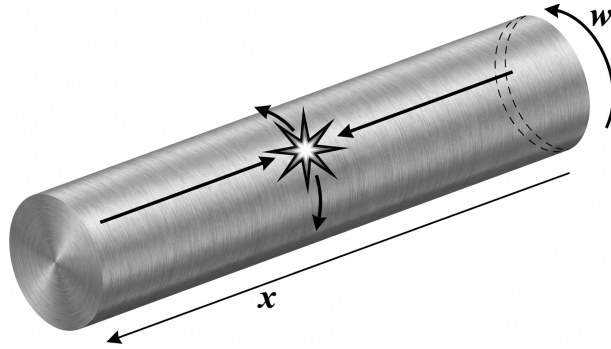


Figure 1: KK-RR Interaction (Edelstein-Giribet)[11]

1.2 Interaction System

Figure 2 illustrates a pair of D-branes interacting through string exchange. The left side of Figure 2 shows how one D-brane exerts force (attractive or repulsive) on the other D-brane by exchanging a closed string or graviton propagating between them. The right side of Figure 2 shows two open strings propagating around an imaginary KK cylinder traced by the closed string's trajectory, moving in counter-rotating circles along w , identical to Figure 1. Figure 2 reveals that both descriptions are indistinguishable, being merely different ways to visualize the same process. Mathematical results are identical according to D-brane and RR charge calculations [15]. That is, exchanging a closed string as a graviton between two D-branes equals sharing a pair of open strings between those same D-branes.

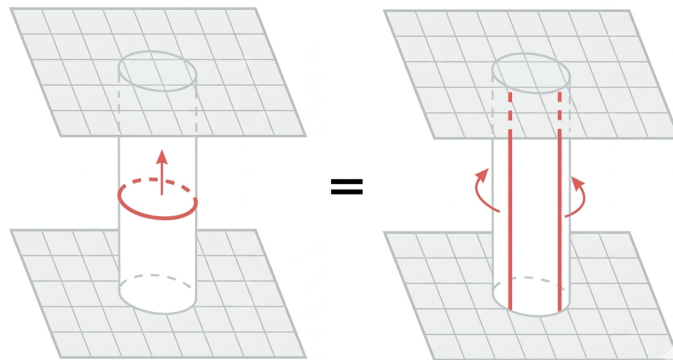


Figure 2: Polchinski's D-Brane and RR Interaction (Edelstein)[11].

In the context of closed string collisions on the worldsheet, these interactions can be equated to a quantum torsion KR field [12] analogous to the KK mechanism [11], coupled to the EM field of supergravity [5], in synergy with D-brane interactions and RR charges [15]. This suggests a connection between open/closed strings and positive/negative energy fission/fusion according to frequency level [3, 12, 17], related to theorized torsion waves [17]. That is, depending on frequency, the two open strings could be considered as positive/negative energy fission, while the closed string would be positive/negative energy fusion [18, 19]. These interactions act as Schrödinger standing waves and torsion waves in the quantum torsion KR field, generating the critical graviton frequency [3, 17].

Cylinder in Polchinski's Channel Duality: Here, we represent the imaginary string propagation cylinder with a coordinate w parametrizing an imaginary dimension around the cylinder, where $R_g = c/(2\pi f)$ can be considered a fictitious radius of this imaginary cylinder. Open string propagation on this cylinder is reflected in modes describing clockwise and counterclockwise moving strings. This equivalence reveals how exchanging closed strings between D-branes can be reformulated as open strings propagating on the cylinder. Figure 2 shows dualities where string tension is a positive/negative energy interaction. Thus, the interaction study focuses on the standing wave's existence (as a loop) in Figure 3, when the wave number K (number of wavelengths fitting the circumference) simultaneously holds positive and negative values; $\pm K$. All figures constitute a unified whole.

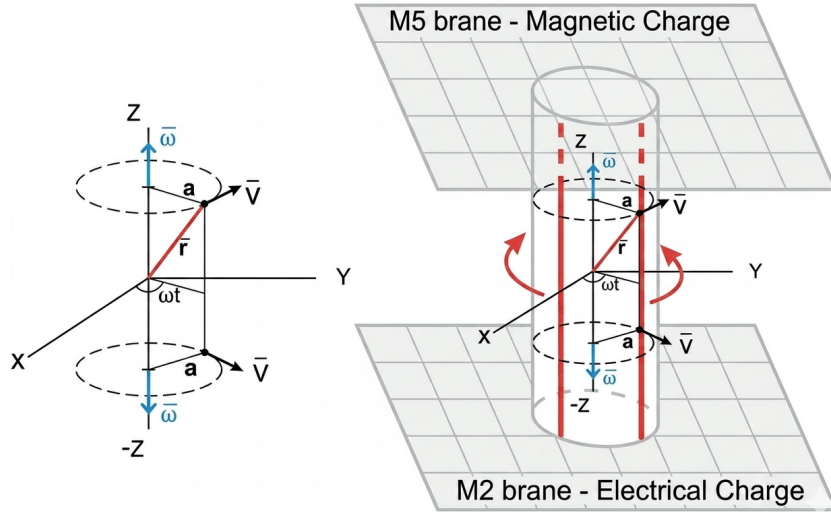


Figure 3: Superimposed KR Torsion Field[13].

1.3 Hypothesis

Within the QGT framework, dependent solely on frequency f , the Kalb-Ramond (KR) torsion field is identified with the ER=EPR duality. It represents a hyperbolic/hypertoric wormhole [3, 8, 9, 13] as an Einstein-Podolsky-Rosen entangled pair [20, 21], illustrated in Figure 4 as a rotational structure: matter/antimatter (M_g) circulating at luminal velocity V around the z -axis, with equal but opposite angular velocities ω . The dilaton graviton radius $R_g = c/(2\pi f)$ defines the hypersurface $A_0 = c^2/(4\pi f^2)$, while vorticity $q(\omega)$ determines the relative KR velocity $V_g = qR_g = 2c$, induced by the dilaton magnetic moment $\Gamma_0 = c^2/f = 2\omega A_0 = qA_0$ [3, 13]. Applying Stokes' theorem [22], Γ_0 quantifies the KR field circulation as an antisymmetric magnetic monopole $B_{\mu\nu}$ in extra dimensions w , with f -dependent transitions.

The equivalence relation $M_g = hf/c^2$ links photonic energy and kinetic mass. Ancient light philosophies propose that reducing frequency f condenses particles into polarized EM fields, progressively forming raw matter [19]. This aligns with quantum electrodynamics (QED) on light-matter transmutation via photon-photon collisions [18, 23], with partial experimental support in "slow light" and Bose-Fermi condensate studies [24–29]. A duality is established: - Inverse photoelectric effect: Photons in low-frequency atmospheres (e.g., metals) reduce threshold f , separating into electron-positron pairs generating electric current. - Annihilation: Increasing f converts matter to light [3, 13]. In quantum mechanics (QM), motion in an extra dimension w requires threshold energy inversely proportional to the graviton radius R_g . Collisions reaching threshold f enable counter-rotations in w . The particle/antiparticle pairs $M_{(+)}/M_{(-)} = M_g$ materialize the KR=ER=EPR identity [3, 13, 20, 21], conserving energy and momentum during transmutation. From the simple pendulum equation and GR, gravity (G) emerges as a *rotational EM field*, representing the acceleration of the Kalb-Ramond (KR) field where quantum state change depends on f [3, 13]:

$$G = \pi V_g f = 2\pi c f. \quad (1)$$

From the dynamics of the KR field in figure 3, QM constants such as Planck's h can be reproduced:

$$h = 2\omega A_0 M_g = \omega A_0 M_{(+)} + \omega A_0 M_{(-)} \quad (2)$$

In subsequent chapters, derivations will be reviewed including: relative KR torsional velocity $V_g = \tau_g/F_g = 2c$, with centrifugal or G-force $F_g = M_g G$ ($G \neq G_N$), torsional power $\tau_g = qE_g$, gravitational potential energy $E_g = \hbar G/c = F_g R_g$, reduced $\hbar = P R_g$, and $M_g = h/\Gamma_0$ in positive/negative fusion. Results: torsional hypersurface $S_g = V_g^2/(12\pi f^2) = \gamma V_g^2/(4f^2)$ with $\gamma = f_g^2/f_p^2 = 1/(3\pi)$. Original "Gedankenexperiment"[13] describes an entangled singularity forming a KR toroid inducing a critical graviton frequency f_g characteristic of a *quantum leap*:

$$f_g = c^2 \sqrt{\frac{V_g}{3\hbar G_N}} = 6,0419 \times 10^{42} \text{ Hz}. \quad (3)$$

Alternatively with γ or $\alpha' = V_g^4/(32\pi\hbar^2 f_g^2)$. The graviton mass $m_g = h/\Gamma_g = 4,45 \times 10^{-8} \text{ kg}$ resembles quantum vacuum inertia hypotheses [30]. Discrete vibrational modes in M2-branes correlate with f_g , influenced by M5-branes and RR charges, modifying space-time topology and aligning masses [11, 13]. The G-force F_g is dual to the *Strong nuclear force and EM force are inextricably linked* and the gravitational potential energy E_g is dual to the *nuclear binding energy* [3, 13]. In M-theory, M-brane solutions generate spin-2 gravitons; KR field alters brane vibrations [10, 11, 13] (see Figures 1–4).

1.4 Reproduction of Universal and SM Constants

Within the QGT framework, the critical graviton frequency f_g , its boundary kinetic mass/energy m_g , dilaton radius R_g , graviton magnetic momentum Γ_g , and KR velocity V_g (see Table 1) enable precise reproduction of numerous fundamental universe constants (see Table 2) and SM particle rest masses (see Table 3). Each fundamental constant is reproduced unified with the SM, showing key simplifications. Additionally, SM rest masses relate as:

$$m_i = m_g \frac{f_i}{f_g} \quad (4)$$

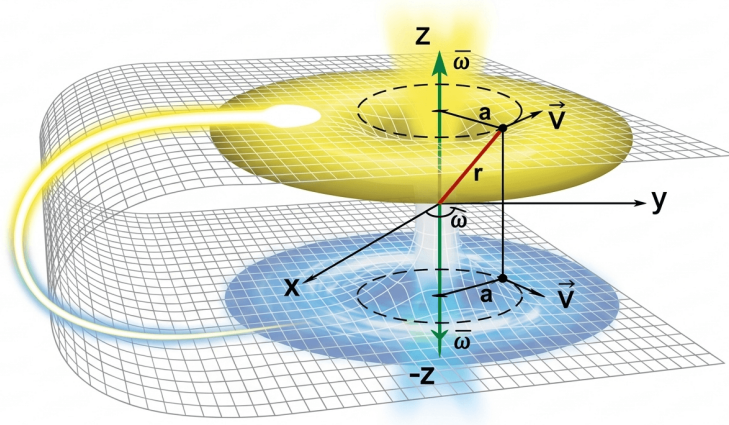


Figure 4: KR=ER=EPR Wormhole[3].

For each particle i , e.g., Higgs boson $m_H = m_g \frac{f_H}{f_g}$. This implies a transformative paradigm in QGT, where rest masses m_i emerge from a frequency resonance unified with the graviton (f_g, m_g), suggesting SM particles are not fixed entities but dynamic states in a continuous frequency spectrum. The relation $m_i = m_g \frac{f_i}{f_g}$ indicates mass is proportional to specific frequency f_i , with f_g as gravitational cutoff scale, analogous to Planck frequency f_p in the ratio:

$$\frac{m_i}{m_p} = 2\pi \frac{f_i}{f_p} \quad (5)$$

Table 1: QGT parameters derived from f_g (graviton frequency), f_p (Planck frequency), f_e (electron/Compton frequency), and known constants [3, 13]

Name	Symbol	QGT Equation
Relative KR velocity	V_g	$= 2c$
Graviton mass	m_g	$= \frac{hf_g}{c^2}$
Planck magnetic momentum	Γ_p	$= \frac{c^2}{f_p}$
Electron magnetic momentum	Γ_e	$= \frac{c^2}{f_e}$
Graviton dilaton radius	R_g	$= \frac{c}{2\pi f_g}$
Graviton magnetic momentum	Γ_g	$= \frac{c^2}{f_g}$
Electron dilaton radius	R_{ge}	$= \frac{c}{2\pi f_e}$

Table 2: QGT equations of universal constants, derived and reproduced in terms of f_g , m_g , V_g , Γ_g , Γ_p , Γ_e , R_g , R_{ge} , and known parameters [3, 13]. Numerical values obtained via QGT equations are consistent with accepted observations [31].

Name	Symbol	QGT Equation
Rydberg	R_∞	$= \frac{ce^4}{18\epsilon_0^2 G_N^2 m_g^2 \Gamma_e} = \frac{\alpha^2 f_e}{V_g}$
Newtonian gravitation	G_N	$= \frac{hV_g}{3m_g^2}$
Planck mass	m_P	$= \frac{\hbar}{\Gamma_p}$
Planck time	t_p	$= \frac{1}{f_g \sqrt{3\pi}}$
Planck temperature	T_p	$= \frac{\hbar f_g \sqrt{3\pi}}{k_B}$
Boltzmann	k_B	$= \frac{\hbar f_g \sqrt{3\pi}}{T_p}$
Sommerfeld hyperfine	α	$= \frac{e^2}{3\epsilon_0 G_N m_g^2} = \frac{e^2}{\epsilon_0 h V_g} = \frac{R_{ge}}{a_0}$
Avogadro	N_A	$= \frac{M_u A_{re} f_g}{m_g f_e}$
Faraday	F	$= \frac{e M_u A_{re} f_g}{m_g f_e}$
Ideal Gas	R	$= \frac{N_A c^3 \Gamma_p}{T_p G_N}$
Bohr radius	a_0	$= \frac{\epsilon_0 h R_{ge} V_g}{e^2}$
Bohr magneton	μ_B	$= \frac{e \hbar f_g}{2 m_g f_e}$
QED coupling	g_s	$= \sqrt{\frac{\hbar c R_{ge}}{a_0}}$
Regge slope	α'	$= \frac{V_g^4}{32\pi \hbar^2 f_g^2}$

Table 3: Rest masses of SM particles derived in QGT, expressed in terms of graviton f_g and m_g , f_i (specific frequency of particle i) [3, 13]. Numerical values obtained via QGT equations are consistent with accepted observations[32].

Name	Symbol	QGT Equation
Proton	m_p	$= m_g \frac{f_p}{f_g}$
Neutron	m_n	$= m_g \frac{f_n}{f_g}$
Pion	m_{π^+}	$= m_g \frac{f_{\pi^+}}{f_g}$
D Meson	m_{D^+}	$= m_g \frac{f_{D^+}}{f_g}$
Electron	m_e	$= m_g \frac{f_e}{f_g}$
Muon	m_μ	$= m_g \frac{f_\mu}{f_g}$
Tau	m_τ	$= m_g \frac{f_\tau}{f_g}$
Electron Neutrino	m_{ν_e}	$= m_g \frac{f_{\nu_e}}{f_g}$
Up Quark	m_u	$= m_g \frac{f_u}{f_g}$
Down Quark	m_d	$= m_g \frac{f_d}{f_g}$
Charm Quark	m_c	$= m_g \frac{f_c}{f_g}$
Strange Quark	m_s	$= m_g \frac{f_s}{f_g}$
Higgs Boson	m_H	$= m_g \frac{f_H}{f_g}$
W Boson	m_W	$= m_g \frac{f_W}{f_g}$
Z Boson	m_Z	$= m_g \frac{f_Z}{f_g}$

1.5 Chapter 1 Discussion

The *principle of conservation of energy* is reinterpreted as resonant transmutation: where the same particle (or string) can evolve through frequency levels, from high ($f \rightarrow f_g$, strings/bosons) to low ($f \ll f_g$, hadrons/solid atoms), and vice versa, without violating total conservation. This evokes fusion/fission via KR vortex, where harmonic resonance (f_i/f_{ii}) modulates states without destructive collisions, reducing SM free parameters (e.g., Yukawa) to geometric frequencies in G_2 -compactified w dimensions [3, 8, 9]. Phenomenologically, it suggests torsion-field-induced transmutation experiments in colliders (LHC) or high-frequency lasers, testing the continuous spectrum. Theoretically, it aligns with AdS/CFT [1], where dual frequencies encode holography, with potential to resolve hierarchies and Higgs vacuum naturalness via f_g as universal regulator. Perhaps the G-force F_g is dual to the *strong nuclear force and EM force inextricably linked*. The gravitational potential energy E_g is dual to the *nuclear binding energy* in the context of quantum chromodynamics (QCD) [3, 13]. The ability to precisely reproduce all these constants—unified across different physical domains—and create new fundamental constants suggests they emerge from an underlying quantum vacuum structure, transforming our understanding of natural laws. Conservation principles allow transmutation (fusion/fission) via resonance, reducing SM free parameters and addressing hierarchies, naturalness, and Higgs vacuum stability, contributing to interaction theories and experiments on universal structure.

It also offers key contributions to studying quantum phase transitions, where systems shift between energy states—from superconducting condensates to extreme configurations like black holes—coherent with the phenomenological approach to order parameters and spontaneous symmetry breaking [33].

2 Chapter 2: Generalized Action and G_2 Holonomy

2.1 Chapter 2 Introduction

QGT extends 11D SUGRA by incorporating torsional and topological terms, aiming to unify gravity with QM [5]. Based on string theory and torsional G_2 manifolds [3, 8, 9], it preserves $\mathcal{N} = 1$ supersymmetry in 4D and generates relevant gauge symmetries. This approach synthesizes the theory's generalized action, internal geometry, and consistency with fundamental constants like gravitational G_N and hyperfine α , along with parameters such as Planck's h , reduced $\hbar$, cosmological Λ , speed of light c , observed vacuum energy density ρ_Λ , and relative KR velocity V_g , providing a foundation for quantum gravity and holography [10, 16]. This action is grounded in a graviton threshold frequency or critical frequency f_g :

2.2 Generalized Action

The bosonic action of QGT is defined as:

$$S = S_{\text{EH}} + S_{H_3} + S_{G_4} + S_{\text{top}}, \quad (6)$$

where:

Einstein-Hilbert:

$$S_{\text{EH}} = \frac{1}{2\kappa_{11}^2} \int d^{11}x \sqrt{-G} R, \quad (7)$$

describes gravitational dynamics in 11D [5].

Torsion:

$$S_{H_3} = \frac{1}{12} \left(\frac{\hbar f_g^2 \Lambda}{c \rho_\Lambda} \right)^{7/3} \int H_3 \wedge \star H_3 = \frac{(8/3)^{7/3}}{12} \int H_3 \wedge \star H_3, \quad (8)$$

governs the dynamics of torsion H_3 via the G_2 geometric factor [3, 8, 9].

4-form:

$$S_{G_4} = -\frac{1}{2} \int G_4 \wedge \star G_4, \quad (9)$$

corresponds to standard 4-form dynamics in 11D SUGRA [16].

Topological term:

$$S_{\text{top}} = \frac{(\kappa_{11})^{(2/3)}}{6 \left(\frac{\hbar f_g^2 \Lambda}{2V_g \rho_\Lambda} \right)^7} \int C_3 \wedge dH_3 \wedge G_4 = \frac{(\kappa_{11})^{(2/3)}}{6(2\pi)^7} \int C_3 \wedge dH_3 \wedge G_4, \quad (10)$$

associated with quantum-cosmological constants and M-theory corrections [10].

2.3 Geometric Foundations and Compactification

Compactification on G_2 manifolds [3, 8, 9] preserves $\mathcal{N} = 1$ supersymmetry in 4D through a calibrated 3-form φ . The compact volume is defined as:

$$\mathcal{V}_7 = \left(\frac{\hbar f_g^2 \Lambda}{c \rho_\Lambda} \right)^{7/3} (2\pi R_g)^7 \left(\frac{f_g}{f_p} \right)^{7/2} = 2,84 \times 10^{-243} \text{ m}^7, \quad (11)$$

or in simplified form:

$$\mathcal{V}_7 = \left(\frac{8}{3} \right)^{7/3} R_{11}^7 \gamma^{7/2}, \quad (12)$$

where $R_{11} = 2\pi R_g$, $\gamma = \frac{1}{3\pi}$, and $f_g = \frac{c}{2\pi R_g}$. Furthermore, the 11D Newton constant is:

$$\kappa_{11}^2 = \frac{(2\pi)^8 \gamma \mathcal{V}_7 R_{11}^2}{\left(\frac{8}{3} \right)^{7/3}} \quad (13)$$

This volume $\mathcal{V}_7$ connects with multiple constants, such as Newton's gravitational constant:

$$G_N = \frac{\kappa_{11}^2 c^3}{(2\pi)^8 \hbar R_{11}^7 \gamma^{7/2}}, \quad (14)$$

and the hyperfine constant α :

$$\alpha = \frac{V_g e^2}{8\pi \varepsilon_0 \hbar R_{11}^2 f_g^2}, \quad (15)$$

where $V_g = 2c$ [5].

2.4 Quantum Torsion and Its Physical Role

The torsion H_3 , derived from the Kalb-Ramond field $B_{\mu\nu}$, introduces quantum correlations and geometric dualities, extending the ER=EPR conjecture to KR=ER=EPR [6]. It modulates the dynamics of the compact manifold, affecting the volume $\mathcal{V}_7$ and generating observable quantum effects.

2.5 Physical Consistency and Comparison with 11D SUGRA

The theory eliminates singularities through torsion H_3 , providing a coherent quantum geometry. Unlike standard 11D SUGRA, it incorporates torsional and topological terms that adjust dynamics, aligning with observations such as the fine-structure constant [5, 16].

2.6 Quantum and Cosmological Observables

QGT connects quantum and cosmological scales through parameters like f_g , Λ , and ρ_Λ . The relationship with the cosmological constant and holography suggests applications in resolving the cosmological constant problem and dark matter [6, 34].

2.7 Chapter 2 Discussion

QGT integrates torsion and topology into 11D SUGRA, distinguished by its compactification on G_2 manifolds [3, 8, 9]. Its capacity to link quantum and cosmological scales, along with consistency with fundamental constants, positions it as a promising framework for quantum gravity and holography. Future research could validate these predictions through collider experiments or cosmological simulations [34].

3 Chapter 3: Cosmological Constants

3.1 Chapter 3 Introduction

The observable universe is described by the scale factor $a(t)$, which quantifies its expansion since the Big Bang. The Hubble constant $H(t) = \frac{\dot{a}}{a}$ measures the rate of this expansion, with a current value $H_0 \approx 67,4 \text{ km/s/Mpc}$, indicating that galaxies at 1 megaparsec recede at about 67,4 km/s, reflecting an accelerating universe according to CMB [35]. In the context of QGT [3, 13], a proposal for a unification of fundamental physics is offered, integrating quantum gravity with the Standard Model and key geometric mechanisms. 7-dimensional G_2 structures that compactify the extra dimensions, stabilizing spacetime [3, 8, 9, 13]. KR torsion (H_3) [12] as an antisymmetric tensor field encoding non-metric dynamics at the quantum scale. The goal is to adapt the Friedmann equation to the context of QGT, deriving cosmological parameters from unprecedented fundamental equations, and to evaluate their impact on modern cosmology. It seeks to demonstrate how this approach offers a novel perspective on the expansion of the universe and cosmological densities, potentially addressing discrepancies such as the cosmological constant problem.

3.2 Foundations

QGT defines three parameters connecting quantum and cosmological scales:

Critical graviton frequency: $f_g = 6,04 \times 10^{42} \text{ Hz}$, linked to the Planck scale [35].

Cosmological frequency: $f_\Lambda = 3,15 \times 10^{-18} \text{ Hz}$, associated with the cosmological constant Λ [36].

Torsional velocity: $V_g = 2c = 5,99 \times 10^8 \text{ m/s}$, relative and effective as a limit in the torsional sector [12].

These parameters relate through the geometric factor:

$$\gamma = \frac{f_g^2}{f_p^2} = \frac{1}{3\pi} \approx 0,1061 \quad (16)$$

where f_p is the Planck frequency [31].

3.3 Friedmann Equation in QGT

The Friedmann equation [37], derived from general relativity, describes universe dynamics:

$$\left(\frac{\dot{a}}{a}\right)^2 = \frac{8\pi G_N}{3}\rho - \frac{kc^2}{a^2} + \frac{\Lambda c^2}{3}, \quad (17)$$

where ρ is total energy density, k spatial curvature, Λ cosmological constant, G_N gravitational constant, and c speed of light. In QGT, this equation adapts considering torsion and compactification on G_2 manifolds [8, 9, 38].

3.4 Cosmological Parameters and Densities

Critical Frequencies and Cosmological Constant

The critical graviton frequency is also:

$$f_g = \sqrt{\frac{c^5 \gamma}{\hbar G_N}} = 6,04 \times 10^{42} \text{ Hz}, \quad (18)$$

In QGT, the cosmological constant derives from a root equation:

$$\Lambda = \frac{4f_g^2 f_\Lambda^2}{\gamma V_g^2 f_p^2} = 1,11 \times 10^{-52} / \text{m}^2, \quad (19)$$

consistent with observations [35].

Evidently, the cosmological Λ is constituted by the Ricci scalar in quantum torsion. Furthermore, this triple relation (f_g, f_Λ, f_p) constitutes the model's fundamental resonance field, coupling quantum (γ) and cosmological (Λ) scales through 11D torsional geometry [34, 39]. The observed fine-tuning in vacuum energy density and Einstein's Λ emerge naturally from this unified scheme when $R_{11} \sim \mathcal{O}(10^{-35} \text{ m})$ [2].

The constant Λ simplifies to:

$$\Lambda = \frac{f_\Lambda^2}{c^2} = 1,11 \times 10^{-52} / \text{m}^2, \quad (20)$$

Observable Volume

The decompactified 3D volume is:

$$\mathcal{V}_3 = \frac{2\pi V_g^3}{3f_g f_\Lambda^2} = 7,52 \times 10^{18} \text{ m}^3, \quad (21)$$

compatible with cosmological scales [35].

Cosmological Densities

The observed cosmological densities [32, 35, 36, 40, 41], typically inferred from astrophysical data and fits within the Λ CDM model, emerge in the QGT framework as solutions derived from fundamental geometrical-dynamical equations. Within this approach, these densities are expressed in terms of the underlying geometric structure and the characteristic frequencies f_g and f_Λ , enabling their natural decomposition into matter and dark energy contributions [3, 13]:

Matter Densities

$$\text{Dark matter: } \Omega_{\text{dm}} = \frac{5V_g^3}{9\mathcal{V}_3 f_g f_\Lambda^2} = 0,265$$

$$\text{Baryonic matter: } \Omega_{\text{b}} = \frac{V_g^3}{9\mathcal{V}_3 f_g f_\Lambda^2} = 0,053$$

$$\text{Radiation: } \Omega_{\text{r}} = \frac{\gamma^4 V_g^3}{\mathcal{V}_3 f_g f_\Lambda^2} = 6,1 \times 10^{-5}$$

$$\text{Total matter: } \Omega_{\text{m}} = \frac{2V_g^3}{3\mathcal{V}_3 f_g f_\Lambda^2} = 0,318$$

Dark Energy

$$\text{Dark energy: } \Omega_{\Lambda} = \frac{3V_g^6}{\mathcal{V}_3^2 f_g^2 f_\Lambda^4} = 0,684$$

3.5 Observational Results and Comparison

Observations of the CMB [35] and supernovae report $\Omega_m = 0,315 \pm 0,007$; $\Omega_b = 0,0493 \pm 0,0001$; $\Omega_\Lambda = 0,685 \pm 0,007$; $\Omega_k = 0$ (flat universe). QGT predicts $\Omega_m = 0,318$; $\Omega_b = 0,053$; $\Omega_\Lambda = 0,684$. For dark matter: QGT $\Omega_{dm} = 0,265$; Planck $\Omega_c = 0,264 \pm 0,007$. For radiation: QGT $\Omega_r = 6,1 \times 10^{-5}$; Planck $\Omega_r \approx 9,2 \times 10^{-5}$.

3.6 Implications and Future Perspectives

In the unification of scales; the interaction between f_g and f_Λ that the cosmological constant problem can be addressed, explaining discrepancies between theoretical and observed vacuum density through torsion and G_2 geometry [3, 8, 9, 34]. In the dark energy and accelerated expansion; the expression Ω_Λ implies dark energy arises from torsional dynamics, consistent with observed accelerated expansion [35]. In the geometric dark matter; the equation Ω_{dm} suggests a geometric origin for dark matter, derived from fluctuations in compact dimensions [42]. In the holographic cosmology and entanglement; the KR=ER=EPR conjecture is explored, linking H_3 with quantum entanglement, potentially implying a holographic universe projected from extra dimensions [6, 7].

3.7 Hubble Constant

QGT relates the cosmological frequency f_Λ to the cosmological constant Λ , and how this connection allows deriving the Hubble constant H_0 from fundamental principles. It further analyzes the torsional nature of H_0 and vacuum energy densities, offering a novel perspective on the cosmological constant problem. From the cosmological frequency f_Λ as root of the cosmological constant Λ , the Hubble constant derives as a relation linking torsional geometry to cosmological parameters through:

$$F_\Lambda = \frac{4\pi^2 \hbar f_\Lambda^2}{9c} = 1,53 \times 10^{-77} \text{ N}, \quad (\text{Cosmological Centrifugal Force}) \quad (22)$$

$$P_\Lambda = \frac{2\pi \hbar f_\Lambda}{c} = 6,96 \times 10^{-60} \text{ kg m/s}, \quad (\text{Cosmological Relativistic Momentum}) \quad (23)$$

yielding:

$$H_0 = \frac{F_\Lambda}{P_\Lambda} = \frac{2\pi f_\Lambda}{9} = 2,198 \times 10^{-18} \text{ s}^{-1} = 67,8 \text{ km/s/Mpc}. \quad (24)$$

These expressions reveal the *torsional* nature of H_0 , interpreted as a fundamental angular frequency quantifying cosmic expansion rate derived from dimensional compactification [43], resulting in a value consistent with accepted observations $H_0 = (67.4 \pm 0.5) \text{ km/s/Mpc}$ from CMB [35].

3.8 Energy Densities

QFT-like Theoretical Vacuum Density:

$$\rho_{\text{QGT} \sim \text{QFT}} = \frac{2\hbar f_p^5}{V_g^3 f_g} = 3,55 \times 10^{113} \text{ J/m}^3, \quad (25)$$

value similar to the vacuum density in Quantum Field Theory (QFT) $\rho_{\text{QFT}} \approx 4,63 \times 10^{113} \text{ J/m}^3$ [36].

Observed Vacuum Density: The QGT calculates vacuum energy densities by eliminating the discrepancy between theory and observation:

$$\rho_{\Lambda \sim \text{QGT}} = \frac{3\hbar f_g^2 f_\Lambda^2}{V_g^3} = 5,31 \times 10^{-10} \text{ J/m}^3, \quad (26)$$

consistent with observed density $\rho_\Lambda \approx (5, 26 \pm 0, 12) \times 10^{-10} \text{ J/m}^3$ [35], solving the problem of the cosmological constant Λ .

3.9 Relationship between Theoretical Densities of QFT and QGT

The relationship between these densities indicates that the theoretical density QFT is 10^{122} times greater than the density QGT:

$$\frac{\rho_{\text{QGT} \sim \text{QFT}}}{\rho_{\Lambda \sim \text{QGT}}} = \frac{2f_p^5}{3f_g^3 f_\Lambda^2} = 6,68 \times 10^{122}, \quad (27)$$

This theoretical discrepancy could be addressed by adjusting parameters such as f_g , f_Λ , or γ .

Critical and Total Density

QGT expresses the following vacuum energy densities:

Critical Vacuum Density (ρ_c):

$$\rho_c = \frac{\hbar \mathcal{V}_3^2 f_g^4 f_\Lambda^6}{V_g^9} = 7,78 \times 10^{-10} \text{ J/m}^3 \quad (28)$$

This value is consistent with Critical Vacuum Density $\rho_c \approx (7, 68 \pm 0, 11) \times 10^{-10} \text{ J/m}^3$ [35].

Total vacuum density or Kaluza-Klein density (ρ_t):

$$\rho_t = \frac{2\hbar \mathcal{V}_3 f_g^3 f_\Lambda^4}{3 V_g^6} = 2,47 \times 10^{-10} \text{ J/m}^3 \quad (29)$$

satisfying:

$$\Omega_m = \frac{\rho_t}{\rho_c} \quad (30)$$

3.10 Implications

The structure suggests that refinements in the fundamental parameters succeed in reducing the discrepancy between ρ_{QGT} and ρ_Λ [44]. It is achieved that $\frac{\rho_{\text{QGT}}}{\rho_\Lambda} \approx 1$, offering a natural solution to the cosmological constant problem [10]. In unifying scales; it links quantum and cosmological scales, providing a new perspective on dark energy and the accelerated expansion of the universe [45]. Moreover, it can be optimized toward MOND, and in future implications, this model could predict observable effects (e.g., variations in H_0 from f_Λ), testable with missions such as Euclid [46], while its unification of forces opens pathways toward a theory of everything [10].

3.11 Chapter 3 Discussion

QGT enriches the Friedmann equation by deriving cosmological parameters from fundamental principles, offering a unified perspective on universe expansion and densities. Its observational consistency and potential to resolve cosmological problems position it as a promising framework, pending future experimental validation [47].

QGT provides a unified framework that relates the cosmological frequency f_Λ to the Hubble constant H_0 , revealing the torsional nature of cosmic expansion. Furthermore, the derived energy densities show consistency with observational data, offering a solution to the hierarchy problem and the cosmological constant problem. This positions QGT as a promising approach for 21st-century physics [48].

4 Chapter 4: Entanglement and Quantum-Relativistic Unification

4.1 Chapter 4 Introduction

Quantum G Theory (QGT) proposes a unifying framework extending string theory through compactification on G_2 -holonomy manifolds [3, 8, 9] and torsion H_3 of the Kalb-Ramond (KR) field [12]. This reinterprets quantum entanglement (EPR) and Einstein-Rosen bridges (ER), quantizing the Einstein field equations and Schwarzschild metric [49], while exploring the extended KR=ER=EPR hypothesis [3]. Based on works by Maldacena and Susskind [6], among other quantum gravity approaches [48, 50, 51], key parameters are derived such as graviton frequency f_g and effective velocity $V_g = 2c$ [3], offering singularity-free geometry and novel perspectives on unified physics.

4.2 Theoretical Foundations

Quantum-Relativistic Field Equations

QGT modifies Einstein's field equations:

$$R_{\mu\nu} - \frac{1}{2}g_{\mu\nu}R + \Lambda g_{\mu\nu} = \frac{8\pi G_N}{c^4}T_{\mu\nu}, \quad (31)$$

The left-hand side is determined by known parameters and torsional hypersurface S_g . The right-hand matter-energy side is determined by centrifugal force F_g , dilaton radius R_g , graviton frequency f_g , and KR vortex gravity potential G , where $G \neq G_N$:

$$R_{\mu\nu} - \frac{1}{2}\frac{g_{\mu\nu}}{S_g} + \Lambda g_{\mu\nu} = \frac{8G}{3F_g R_g f_g^2}T_{\mu\nu} \quad (32)$$

Simplified forms emerge where G_2 compactification generates an effective torsion version:

$$R_{\mu\nu} - \frac{1}{2}\frac{f_p^2}{c^2}g_{\mu\nu} + \frac{f_\Lambda^2}{c^2}g_{\mu\nu} = \frac{4V_g}{3\hbar f_g^2}T_{\mu\nu}, \quad (33)$$

with:

$f_g = 6,04 \times 10^{42}$ Hz: Critical graviton frequency [3].

$f_p = 1,85 \times 10^{43}$ Hz: Planck frequency [35].

$f_\Lambda = 3,15 \times 10^{-18}$ Hz: Cosmological frequency [3].

$V_g = 2c$: Effective torsional velocity [3, 15].

$c = 3,00 \times 10^8$ m/s: Speed of light [35]

Coefficient Matching

$T_{\mu\nu}$ includes torsion and KK mode contributions. Coefficient matching from the above equations reproduces cosmological constant Λ and Newtonian gravitational constant G_N . Additionally, a novel Ricci scalar R is obtained:

$$R = \frac{f_p^2}{c^2} = 3,83 \times 10^{69}/\text{m}^2, \quad (34)$$

$$\Lambda = \frac{f_\Lambda^2}{c^2} = 1,11 \times 10^{-52}/\text{m}^2, \quad (35)$$

$$G_N = \frac{2c^5}{3\hbar f_g^2} = 6,67 \times 10^{-11} \text{ m}^3/(\text{kg s}^2), \quad (36)$$

The precise reproduction of Λ and G_N *from quantum first principles* validates QGT's geometric-quantum duality [10]. The novel R value (Planck-scale Ricci curvature) completes the unification triangle:

$$\underbrace{\text{Gravity}}_{\Lambda, G_N} + \underbrace{\text{Quantum}}_{f_p, f_g} + \underbrace{\text{Geometry}}_R$$

where $R \sim 10^{69} \text{m}^{-2}$ establishes a fundamental limit for spacetime curvature, helping resolve incompatibility between general relativity (GR) and quantum mechanics (QM).

4.3 EPR Entanglement and ER Bridges

Quantum entanglement and the Schwarzschild metric [49] are central to the ER=EPR conjecture [6], linking quantum correlations to ER bridges.

Fundamental Parameters

QGT postulates compactification of seven extra dimensions on a G_2 manifold [3, 8, 9], preserving $\mathcal{N} = 1$ supersymmetry in 4D. Key parameters are defined:

1. Graviton frequency: f_g (related to energy hf_g)
2. Centrifugal force: $F_g = \frac{2\pi\hbar f_g^2}{c}$
3. Major radius (11D compactification): $R_g = \frac{\hbar f_g}{F_g} = \frac{c}{2\pi f_g}$
4. Minor radius (zero-point): $r_g = \frac{\hbar f_g}{2F_g} = \frac{c}{4\pi f_g}$
5. Vorticity: $q = 4\pi f_g$

4.4 Kalb-Ramond Field and Torsion

In string theory, the $B_{\mu\nu}$ field generates torsion $H_3 = dB_2$ [12], defined as:

$$H_{\mu\nu\lambda} = \partial_\mu B_{\nu\lambda} + \partial_\nu B_{\lambda\mu} + \partial_\lambda B_{\mu\nu}. \quad (37)$$

We propose H_3 mediates quantum correlations, extending ER=EPR to KR=ER=EPR by transforming classical to quantum variables:

$$\begin{aligned} r &\rightarrow r_g = \frac{c}{4\pi f_g} \\ M &\rightarrow M_g = \frac{2\pi\hbar f_g}{c^2} \\ G_N &\rightarrow \frac{c^5}{3\pi\hbar f_g^2} \end{aligned}$$

This classical-to-quantum rescaling eliminates divergences at $r = 0$, as demonstrated below.

4.5 Quantization of the Schwarzschild Metric

We apply QGT transformations to the original Schwarzschild metric [49]:

$$ds^2 = - \left(1 - \frac{2GM}{c^2 r}\right) c^2 dt^2 + \left(1 - \frac{2GM}{c^2 r}\right)^{-1} dr^2 + r^2 d\Omega^2 \quad (38)$$

Substituting $M \rightarrow M_g$, $G \rightarrow G_N$, $r \rightarrow r_g$ yields:

$$m = \frac{G_N M_g}{c^2} = \frac{2c}{3f_g} \quad (39)$$

$$r_s = 2m = \frac{4c}{3f_g} \quad (40)$$

$$\beta = \frac{2G_N M_g}{c^2 r_g} = \frac{16\pi}{3} \quad (41)$$

The resulting quantum metric is:

$$ds^2 = - (1 - \beta) c^2 dt^2 + (1 - \beta)^{-1} dr_g^2 + r_g^2 d\Omega^2 \quad (42)$$

with $\beta \approx 16.755 > 1$, eliminating the event horizon.

4.6 Physical Interpretation

The parameter $\beta = \frac{16\pi}{3}$ emerges as a universal dimensionless constant unifying quantum and cosmological scales [7] in the Schwarzschild metric transformation. Its fixed value (≈ 16.755) represents a *gravitational fixed point* in the aforementioned unification (Fig. 5):

$$\beta = \frac{\hbar f_g \Lambda}{R_g \rho_\Lambda} = \frac{16\pi}{3}, \quad (43)$$

encoding quantum gravity self-consistency and acting as a holographic parameter [7]. β quantifies the **critical relationship** between four fundamental components:

$$\beta = \frac{\text{Quantum graviton energy}}{\text{Vacuum energy density} \times \text{Compactification scale}} \times \Lambda \quad (44)$$

ρ_Λ R_g

Quantum-cosmic coupling: β balances:

Quantum fluctuations ($\hbar f_g$)
Cosmic expansion (Λ)

Self-similar geometry: The constant value implies spacetime structure is *scale-invariant* under f_g transformations.

4.7 Implications

1. **Relation with coupling constant:** In string theories:

$$g_s = \frac{\beta}{4\pi} \approx 1, 33 \quad (45)$$

indicating a non-perturbative *strong coupling* regime.

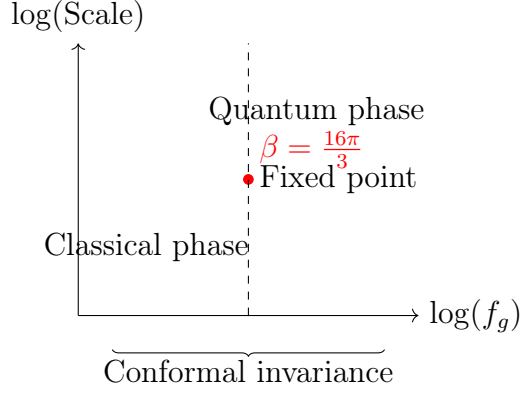


Figure 5: β as a fixed point in gravitational renormalization flow.

4.8 Implications for Quantum Gravity

In the new quantum Schwarzschild solution, $\beta > 1$ eliminates the event horizon, revealing a complete quantum geometry. The metric lacks singularities, and constant coefficients suggest a global effective geometry. Where it is suggested:

A coherent quantum geometry without singularities [51].

Possible relations with holographic theories [52].

A classical limit when $f_g \rightarrow 0$, recovering Minkowski [36].

4.9 Chapter 4 Discussion

QGT redefines ER bridges and EPR entanglement through a transformed metric and the KR=ER=EPR hypothesis, eliminating singularities and unifying quantum gravity. The constant β emerges as a quantum signature of spacetime geometry, suggesting a self-tuned universe for entangled wormhole existence where centrifugal force plays a central role. Future research could experimentally validate $V_g = 2c$, advancing toward a unified theory [53].

5 Chapter 5: Hypertoric KR=ER=EPR Conjecture

5.1 Chapter 5 Introduction

QGT addresses the Einstein, Podolsky, and Rosen (EPR) quantum entanglement paradox [21]. Through QGT, entanglement is proposed to have geometric origin mediated by Einstein-Rosen (ER) bridges and the KR=ER=EPR conjecture, potentially resolving the EPR paradox and suggesting a more complete description of physical reality [6]. We analyze the quantum hypertoric structure in 7D aligned with $SO(32)$ heterotic theory [45], torsional dynamics, and their entropic implications for quantum gravity.

5.2 Geometric Foundations and Compactification

Fundamental Parameters

Following rigorous calculations, QGT defines key parameters emerging from graviton frequency f_g :

$$F_g = \frac{2\pi\hbar f_g^2}{c} \quad [\text{N}], \quad (46)$$

$$R_g = \frac{c}{2\pi f_g} \quad [\text{m}], \quad (47)$$

$$r_g = \frac{c}{4\pi f_g} \quad [\text{m}], \quad (48)$$

where R_g is the major radius in 11D, r_g the Schwarzschild-derived minor radius, centrifugal force (G-force) F_g , and torsional power τ_g [13].

Hypertoric Structure

The 7D and 11D geometry of the hypertorus [3, 8, 45, 54] is described by:

$$\left(\sqrt{x^2 + y^2} - R_g\right)^2 + z^2 + \sum_{i=4}^7 w_i^2 = r_g^2, \quad (49)$$

where:

x, y, z : Spatial coordinates in 3D.

w_i ($i = 4, \dots, 7$): Compact dimension coordinates.

$R_g = \frac{c}{2\pi f_g}$: Graviton hypertorus major radius.

$r_g = \frac{R_g}{2}$: Minor radius (Schwarzschild).

This structure generalizes a 4D torus to 7D, with an S^1 base in the x - y plane and a 6D fiber including z and compact dimensions w_i , exhibiting G_2 holonomy [3, 8, 9, 38].

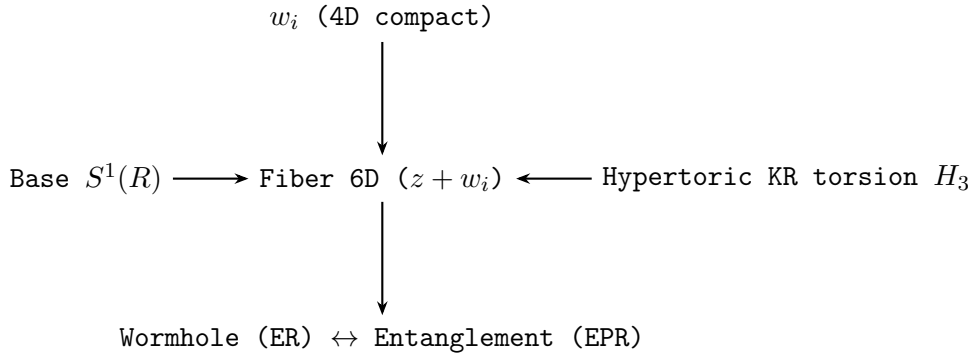


Figure 6: Hypertoric structure and physical relationships.

5.3 Quantum Torsion and Its Physical Role

Torsion Field H_3

The field $H_3 = dB_2$ describes manifold torsion, acting as a gauge potential in string theory [12]. It modifies system dynamics, introducing rotational effects reflected in effective velocity V_g .

Torsional Velocity V_g

Torsional velocity is defined as:

$$V_g = \frac{\tau_g}{F_g} = qR_g = 2c, \quad (50)$$

The equality $V_g = 2c$ arises from channel duality, analogous to counter-rotating particle/antiparticle potentials in compact dimensions [15].

Quantized Vorticity

Vorticity quantizes in a hypertoric wormhole[3, 8, 9]:

$$V_g = qR_g = 2c, \quad (51a)$$

$$q = 4\pi f_g, \quad (51b)$$

$$\omega_g = 2\pi f_g. \quad (51c)$$

The *hypertoric vorticity master equation* and this model can optimize plasma dynamics in artificial stars such as the *Tokamaks: SPARC, ST40, ITER, EAST and T-15MD*.

$$\left(x^2 + y^2 + z^2 + \frac{3V_g^2}{4q^2} \right)^2 = \frac{V_g^2}{\omega_g^2} (x^2 + y^2). \quad (52)$$

5.4 Physical Consistency

QGT Parameters

Table 4: Unit correspondence with quantum constants.

Parameter	Symbol	SI Unit	Definition
Centrifugal Force (G-force)	F_g	N	$\frac{2\pi\hbar f_g^2}{c}$
Graviton Energy	E_g	J	$\hbar f_g$
11D Major Radius (Graviton)	R_g	m	$\frac{\hbar f_g}{F_g}$
Minor Radius (Schwarzschild)	r_g	m	$\frac{\hbar f_g}{2F_g}$
Vorticity	q	1/s	$4\pi f_g$
Torsional Power	τ_g	W	qE_g

Torsional Metric

QGT is consistent with 11D SUGRA and G_2 compactification [38] preserves supersymmetry [5]. The hypertoric geometry [3, 8, 9, 38] is also described by:

$$\left(x^2 + y^2 + z^2 - \frac{3(\hbar f_g)^2}{4F_g^2} \right)^2 = \frac{4(\hbar f_g)^2}{F_g^2} (x^2 + y^2), \quad (53)$$

encoding torsion H_3 via $d\Phi = H_3$, modifying G_2 holonomy [38].

5.5 Quantum and Cosmological Observables

Quantized Flux

Torsional flux over a 3-sphere $S^3 \subset Y_7$ quantizes as:

$$\int_{S^3} H_3 = n \frac{E_{11}}{q_p} = n \frac{F_g R_g}{q_p} = n \frac{\tau_g R_g}{V_g q_p} = n \frac{\hbar \gamma^{1/2}}{2}, \quad n \in \mathbb{Z}, \quad (54)$$

where $E_{11} = F_g R_g$, and q_p is topological charge (vorticity as function of Planck frequency f_p). Canonically:

$$\frac{\gamma^{1/2}}{2} \int_{S^3} H_3 = n\hbar. \quad (55)$$

The KR=ER=EPR conjecture postulates:

$$\oint_{\text{ER}} H_3 = \int_{S^3} H_3 = n \frac{\hbar \gamma^{1/2}}{2}, \quad n \in \mathbb{Z}, \quad (56)$$

linking torsional flux to ER bridges [6].

5.6 Wave Function

The stationary Schrödinger equation is:

$$-\frac{\hbar^2}{2m} \nabla^2 \psi + V(x) \psi = E \psi. \quad (57)$$

with E energy. The term $-\frac{\hbar^2}{2m} \nabla^2$ quantizes classical kinetic energy $p^2/2m$, derived from uncertainty principle $\Delta x \Delta p \geq \hbar/2$ [55], where ∇^2 represents spatial dispersion.

In QGT [3], vorticity $q = 4\pi f$ allows expressing all equations with f as variable, reformulating the wave function:

$$-\frac{\hbar V_g^2}{4q} \frac{d^2 \psi(x)}{dx^2} + V(x) \psi(x) = E \psi(x). \quad (58)$$

5.7 Entanglement

QGT extends the EPR wave function [21]:

$$\Psi(x_1, x_2, w) = \int_{-\infty}^{\infty} e^{(2\pi i/\hbar)(x_1 - x_2 + w)p} dp, \quad (59)$$

where w is a compact coordinate, and torsion H_3 mediates correlations:

$$\Psi(x_1, x_2) = \int_{Y_7} \mathcal{D}X e^{iS_{\text{KR}}} \psi(x_1) \otimes \phi(x_2), \quad (60)$$

with $S_{\text{KR}} = \int H_3 \wedge A$. Momentum in w (Figures 2—7) quantizes:

$$p_w = \frac{n\hbar}{r_g}, \quad V_g = \frac{p_w}{M_g} = 2c, \quad (61)$$

where:

$$M_g = \frac{2q\hbar}{V_g^2} = \frac{\hbar f_g}{c^2}. \quad (62)$$

5.8 Entropy and KR=ER=EPR Radiation

Wormholes, like black holes, could be natural laboratories to study GR-QM intersection. Entropy—quantifying randomness and microscopic degrees of freedom—links to event horizon area (A) via Bekenstein-Hawking formula [11]:

$$S = \frac{k_B c^3 A}{4G_N \hbar} \quad (63)$$

This relationship suggests black hole information resides on its surface (not volume), supporting holographic principles [11]. Substituting (A) with KR vortex-derived area $A_0 = \frac{c^2}{4\pi f^2}$ yields expressions for holographic gravitational entropy S_{BHG} constituted by Boltzmann constant k_B , graviton frequency f_g , Planck frequency f_p , and vortex terms where state change depends on frequency f

$$S_{BHG} = \frac{3k_B f_g^2}{16f^2} \quad \text{or} \quad S_{BHG} = \frac{k_B f_p^2 \Gamma_g}{qV_g^2} = \frac{k_B f_p^2}{16\pi f^2} \quad (64)$$

Near the horizon, quantum vacuum fluctuations (ZPF) generate virtual particles. Hawking radiation arises when particle-antiparticle pairs separate via gravitational field, evaporating the hole [3]. Planck blackbody energy intensity (I_g) and Hawking temperature (T_{HG}) reformulate gravitationally with momentum P and known parameters:

$$I_g = \frac{P f_g^2}{A_0 [e^{Pc/(k_B T)} - 1]} \approx \frac{16E_g}{V_g^3} f_g^4 \quad (65)$$

$$T_{HG} = \frac{3\hbar f_g^2}{16\pi k_B f} = \frac{T_p f_p}{16\pi^2 f} \quad (66)$$

5.9 Chapter 5 Discussion

QGT reinterprets the EPR paradox through a geometrodynamics and hypertoric description of quantum entanglement, mediated by torsion H_3 and ER bridges, aligning with the KR=ER=EPR conjecture [3, 6]. Consistency with 11D SUGRA [5] and quantized torsional flux reinforce its potential as a unified framework. Future research could experimentally validate these predictions, consolidating QGT as a complete theory of physical reality.

The proposed approach integrates torsion and topology into 11D SUGRA, distinguished by G_2 manifold compactification and the KR=ER=EPR hypothesis linked to vortex entropy and thermodynamics. These innovations position it as a promising framework for quantum gravity and holography.

6 Chapter 6: Torsional Velocity V_g and Matter/Antimatter

6.1 Chapter 6 Introduction

QGT proposes a theoretical framework unifying QM and GR through compactification of seven extra dimensions on G_2 manifolds and torsion H_3 of the KR field [13]. This work derives torsional velocity $V_g = 2c$, a key parameter connecting quantum and cosmological scales, from matter/antimatter potential dynamics (electron/positron) modeled as open strings on a KK cylinder. Model consistency is validated against cosmological observations and its capacity to derive fundamental constants like G_N and parameters such as Ω_m .

6.2 Geometric Foundations and Compactification

Considering a KK cylinder in 11D [56, 57], critical graviton frequency f_g defines:

$$F_g = \frac{2\pi\hbar f_g^2}{c} \quad [\text{N}], \quad (67)$$

$$R_g = \frac{c}{2\pi f_g} \quad [\text{m}], \quad (68)$$

$$r_g = \frac{c}{4\pi f_g} \quad [\text{m}], \quad (69)$$

6.3 Quantum Torsion and Its Physical Role

Open String Model

The electron potential (e^-) and the positron potential (e^+) are represented as open string dynamics in the compact dimension w :

$$V_{\text{p-electron}} = +c, \quad V_{\text{p-positron}} = -c,$$

$$\text{Relative velocity: } V_g = c - (-c) = 2c.$$

Torsional Geometry

Torsion H_3 connects this dynamics with quantum entanglement and the KR=ER=EPR conjecture [6]. $V_g = 2c$ occurs in an extra dimension without violating special relativity in 4D (see Fig. 7).

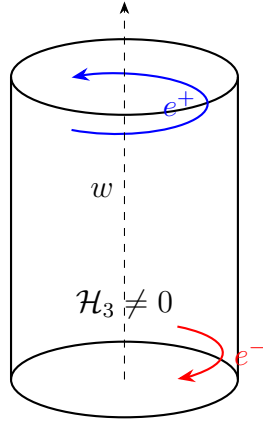


Figure 7: Compactification on KK cylinder with torsion $\mathcal{H}_3$.

6.4 Light-Matter Transmutation

According to ancient principles revisited under modern optics [58, 59]:

Reduction of light frequency induces condensation of particle-antiparticle motion, generating bipolar EM fields (*electrum*).

Coagulation of EM fields into raw matter at critical frequencies, related to QED [60]:

$$\gamma + \gamma \rightarrow e^- + e^+ \quad (\text{pair creation})$$

Experiments with 'slow light' and Bose-Fermi condensates partially validate these phenomena [24–29].

6.5 Photoelectric Duality and Extra Dimensions

Transmutation Mechanism

Incident photon in dense atmosphere (metal) undergoes threshold frequency reduction $f_{\text{threshold}}$, separating into e^-/e^+ [61]:

$$\gamma \xrightarrow{\Delta f \downarrow} e^- + e^+$$

Inverse process: Frequency increase generates photons $e^- + e^+ \rightarrow \gamma$ [62].

Quantum in Compact Dimensions

Motion in extra dimension w requires threshold energy [56]:

$$E_{\text{threshold}} \propto \frac{\hbar c}{R_g}$$

R_g : Dilatonic radius or compactification of w [53].

Particle-antiparticle symmetry: $M_{(+)} \leftrightarrow M_{(-)}$ [63].

6.6 Physical consistency and comparison with 11D SUGRA

Torsional dynamics aligns with 11D supergravity (SUGRA 11D), extending its principles through inclusion of H_3 and G_2 compactification.

6.7 Quantum and Cosmological Observables

Relativistic Balance

Initial relativistic energy balance:

$$\underbrace{(hf_g + M_g c^2)^2}_{\substack{\text{System total energy} \\ \text{pre-transmutation: photon + rest energy}}} = \underbrace{(M_g c^2)^2 + (Pc)^2}_{\substack{\text{Particle/antiparticle energy} \\ \text{with momentum (includes rest energy)}}} + \underbrace{\left(\frac{1}{2}M_g V_g^2 \cdot hf_g\right)}_{\substack{\text{Quantum fluctuation energy} \\ \text{at vortex boundary} \\ \text{(Kinetic} \times \text{Gravitational)}}} \quad (70)$$

with balance:

$$hf + M_g c^2 = M_g c^2 + \frac{1}{2}M_g V_g^2 \quad (71)$$

and momentum balance:

$$\frac{hf_g}{c} + P_0 = P \quad (72)$$

Given $P_0 = 0$:

$$P c = hf_g \quad (73)$$

Substituting into energy balance confirms relative effective velocity $V_g = 2c$.

Non-Relativistic Balance

Analyzing photon transmutation into electron/positron pair:

Initial energy:

$$hf + M_g c^2, \quad (74)$$

where M_g is electron/positron rest mass.

Final energy:

$$M_g c^2 + \frac{1}{2}M_g V_g^2 \quad (75)$$

Balance:

$$hf + M_g c^2 = M_g c^2 + \frac{1}{2}M_g V_g^2 \quad (76)$$

Momentum:

$$\frac{hf}{c} = M_g V_g \quad (77)$$

Substituting $hf = M_g V_g c$:

$$M_g V_g c + M_g c^2 = M_g c^2 + \frac{1}{2}M_g V_g^2, \quad (78)$$

simplifying:

$$V_g = 2c \quad (79)$$

Here, $V_g = 2c$ is the effective torsional velocity of the pair moving in opposite directions at c in extra dimension w of radius $R_g = \frac{c}{2\pi f_g}$.

6.8 Planck-Einstein Matter Model and Wormholes

The theoretical model proposes an equation linking **Planck-Einstein matter** M_g with **vorticity** of a wormhole and **photon energy**:

$$M_g = \frac{2q\hbar}{V_g^2} = \frac{hf}{c^2} \quad (80)$$

where:

M_g : Effective matter.

$q = 4\pi f$: Vorticity (with f photon frequency).

V_g : Effective wormhole velocity.

$\hbar = \frac{h}{2\pi}$: Reduced Planck constant.

c : Speed of light.

The equation splits into:

1. **Relation with vorticity**: $M_g = \frac{2q\hbar}{V_g^2} = \frac{8\pi f\hbar}{V_g^2}.$

2. **Mass-energy equivalence**: $M_g = \frac{hf}{c^2}.$

Equating both expressions:

$$\frac{8\pi f\hbar}{V_g^2} = \frac{hf}{c^2} \quad (81)$$

yields:

$$V_g = \sum_i V_{g,i} = 2c. \quad (82)$$

This indicates the wormhole's effective velocity is twice light speed, suggesting superluminal properties in this theoretical model. Essentially, it connects QM and GR through hypertoric wormhole dynamics [3, 8, 9].

6.9 Chapter 6 Discussion

QGT unifies fundamental physics by deriving $V_g = 2c$ from matter/antimatter dynamics in extra dimensions, presenting a new paradigm of the *photoelectric effect*. This topic could be linked to the ALPHA-g experiment at CERN [64], aimed at the direct measurement of the fall of antimatter and its possible gravitational attraction or repulsion (antigravity), which leaves open the possibility that *matter derives from antimatter and gravity derives from antigravity*. Its consistency with observations opens paths for future research in geometrodynamics and exotic forces.

7 Chapter 7: Philosophical Dualities in QM/EM ; AdS/CFT

7.1 Chapter 7 Introduction

This chapter explores dualities between ancient teachings from Ramtha's School of Enlightenment, channeled by J.Z. Knight since 1977, [19] and QGT, an extension of M-theory [10]. In theoretical physics, duality is understood as equivalence between models of distinct nature describing the same physical phenomenon. Here, we propose extending this notion to the relationship between ancient spiritual philosophy and modern science, establishing correspondences between concepts like Primordial Thought and creative light, and QM/EM and AdS/CFT physical-mathematical constructs such as torsion fields H_3 and compactification on G_2 manifolds. The objective is to demonstrate how ancient philosophy can symbiotically dialogue with modern science, offering heuristic perspectives to resolve conceptual and mathematical anomalies, thereby expanding our knowledge of the universe's fundamental nature.

7.2 Ancient Wisdom and Cosmic Origin

Ancient wisdom [19] proposes a cosmic vision where Absolute Thought is the primordial source of all existence, preceding even light, motion, and matter. In this framework, the universe emerges not from a singular explosion like the Big Bang, but from an act of introspective contemplation by Thought, which upon observing itself generates "Light" and, with it, knowledge and motion. In this process, electricity originates from the reduction of light's frequency, dividing it into positive and negative components that generate gravity, G-force, and magnetic fields. Light is composed of the Z particle, the X particle, hydrogen particles, and oxygen particles, and contains 'electrum' (EM field of positive/negative poles that originates electricity) that keeps them cohesive and explosive. However, in its highest state, light is composed of integral particles that contain their lower potentialities [19].

It is posited that gases formed from these light particles gave rise to what modern science calls the "Big Bang." Nevertheless, this conventional explanation is a temporal interpretation (a way of measuring time) limited in reflecting its true nature, as an atemporal space predates it. Before the 'Big Bang', the gods existed, and after this event a continuous creative process began, resulting from the interaction of primary and secondary consciousness. The creation of gods originated from the self-contemplation of absolute thought, considered eternal life or the "Being" that always remains. By gradually reducing frequency, thought transforms (into light, electricity, gravity, G-force, and magnetic fields) finally into raw matter composed of atoms, each containing trillions of particles, known as the infinite mind or mind of God [19].

For gods to create from thought, the soul was necessary, functioning as a computer that stores and sustains thought. Without it, acquiring knowledge, creating, expressing, or existing as a separate manifestation of thought or "Being" would be impossible. Material creation began with the division of the Z particle into X and Y, generating combustion and gases that formed suns. These, by reducing the frequency of electrum, produced matter, scattering its particles over time. Suns created planets through rotating energy explosions that moved, cooled, and increased their internal cavity by centrifugal force. Thus, planets are hollow at their core. Regarding the Sun, it is argued that it lacks high temperature conventionally, but its essence is light. Surface light explosions generate dense forms of that light.[19].

It is postulated that divinity exists eternally, without a temporal beginning, being conceived as thought, space, and void that sustain and give life to "telestars." These telestars, defined as cosmological entities capable of transforming light into matter and dispersing it through the universe to form stellar systems, are described as originating in thought, divinity, and space—the latter understood as an infinite void where stars and eternity are perceived. To visualize divinity in its impeccable, infinite aspect, contemplating the unlimited eternity represented by space is suggested, conceived as a river of thought surrounding, sustaining, and granting authenticity to all existence. Finally, it is proposed that ancient gods, conceived as entities without physical bodies, decided to incarnate in modern humans, forgetting their divine nature, to experience—making the unknown known—in material reality. To deepen and preserve the integrity of these teachings of spiritual awareness, it is recommended to consult the primary sources [19].

7.3 Cosmological Origin Duality

We address gravitational singularity, where extreme collapse generates regions transcending classical physics [65]. This discontinuity connects with the anthropic principle [66], suggesting symbiosis between cosmic evolution and consciousness. Interference and wave-particle duality experiments indicate that observer consciousness collapses the probability wave function ψ into particle reality [17, 67, 68], evoking ancient light principles and

pointing to a paradigm shift overcoming scientific materialism [69]. The collapse of ψ in neuronal microtubules is key to consciousness [70–72], while "implicate order" suggests a holographic structure unifying information and reality [17, 67, 68, 73]. It is affirmed that mind and universe emerge from universal principles of interconnection [68, 73, 74], and that the self-aware universe creates reality from self-perception [75], aligned with biocentrism theories [76].

Elements of "tired light theory," combined with "slow light" experiments [25], might resurface as complementary to Big Bang theory, supported by recent cosmological reanalyses [77], to transcend the Big Bang's limitation as a time-measuring mechanism. The Z particle resembles a potential photon that splits into X (potential electron) and Y (potential positron). Moreover, the "electrum" may be dual to a *gluon potential*, linked to the G-force F_g in duality with the *strong nuclear force and EM force inextricably linked*, contributing to quantum chromodynamics (QCD). Frequency reduction/variation could link to ancient reality-interpretation principles. From chaotic and emergent perspectives, self-organized systems generate stable structures from chaos, coherent with the vision of Primordial Thought originating light and cosmic structure through introspective processes [17, 50, 68, 78]. This aligns with advanced experiments exploring reality and consciousness nature [68] and quantum entanglement/non-locality [67].

Morphic resonance hypothesis proposes a universal informational field transcending space-time [79, 80], affirming each living being possesses an interconnected morphogenetic field [80]. The duality between matter/consciousness, space-time geometry/perception, and the collapse of the wave function induced by the QM observer indicates that reality is a reciprocal relationship where thought and existence reflect each other [17, 50, 68, 78]. The quest for unification in physics and consciousness suggests a holographic, intelligent, multidimensional universe where duality resolves into primordial unity: an atemporal space, the eternal Now, with the observing "Being" as consciousness/energy creating reality [19] in line with modern physics experiments [67, 68].

Here, energy is defined as consciousness' complement. All consciousness carries a dynamic energetic impact—a radiation or natural self-expression. Likewise, all energy forms contain defining consciousness [19]. Ancient quantum magnetism principles establish that to magnetize is to equalize, relativizing everything; the absolute observer dissolves into creation [81]. In QM, relativity reflects in contextual probability/uncertainty, structured by the observer and Planck/light quantum constants. Similarly, GR describes space-time as structure relative to mass/energy but grounded in absolute principles like light speed and physical laws invariance. Thus, QM and GR are complementary manifestations of one principle [13].

Connecting QGT cosmological and QM/EM equations [3], a magnetic field $\bar{B}$ or magnetic/gravitational duality is evidenced (Table 5). Ricci scalar coupling with torsional hypersurface S expresses GR in terms of graviton and cosmological frequencies, indicating complete unification with QM [3]. Ancient knowledge suggests this hertzian plane (observable 4D) is the only one with time and space-time matrix, with matter/antimatter on opposite sides. QM indicates wave/particle exist simultaneously across multiple time levels without absolute time. These insights find support in quantum physics experiments, including the Gateway Process [68], where matter/antimatter, consciousness/subconsciousness are equivalent—consciousness emerging from subconsciousness and matter from antimatter—both existing in superconsciousness or God's mind [19, 68, 73].

Light creation from Thought analogizes physical phenomena emergence from quantum fluctuations, regulated by graviton frequency. Frequency reduction generating forces/matter—as per equations reproducing SM particle rest masses [3]—reflects QGT processes where torsion mediates D-brane interactions [11, 15]. The ancient holographic view—"The totality of thought is the coherent integration of all particles and each particle contains within

itself the totality of thought"—reflects in AdS/CFT correspondence, where universe information encodes on a lower-dimensional boundary [1]. In QGT, this duality extends via $KR = ER = EPR$, unifying entanglement, Einstein-Rosen bridges, and torsion [3] potentially aligned with "telestar" concept through wormhole hypertorus metric and/or modified Schwarzschild metric in QGT. Observer consciousness collapsing wave function ψ in QM coincides with ancient thought-as-creative-force principles [19, 67, 68, 70].

This mind-universe duality suggests reality emerges from a reciprocal perception-geometry relationship, supported by torsion as a state/phase change in QGT.

7.4 Dualities with Ancient Light Principle

A central element of ancient knowledge[19] is the ancient light spectrum (Fig. 8), represented as a cone/triangle divided into seven 7 energy/consciousness levels, from hertzian (observable 4D reality) to unknown infinity (∞), associated with Zero Point (Primordial Consciousness Point created by Void's self-contemplation) analogous to a subatomic black hole Wormhole [19]. These levels include hertzian, infrared (IR), visible light, ultraviolet (UV), X-rays, gamma rays (γ), and unknown infinity (∞), totaling eleven dimensions considering hertzian level (compactified from 4D) [19]. Figure 8 illustrates this structure, showing time compression at higher frequencies, analogous to time dilation in general relativity [82] and Penrose-Carter diagrams [70].

This conical structure (Fig. 8) resonates with seven compactified dimensions represented by volume $\mathcal{V}_7$ in G_2 -holonomy manifolds characteristic of QGT. These manifolds not only preserve supersymmetry but also determine effective space-time geometry. Furthermore, in conically singular configurations, they can induce chiral fermions emergence [8, 9]. Graviton frequency f_g regulates energy scales in these dimensions, and time compression interprets as relativistic effect in high-energy states [82]. In this model (Fig. 8), the atom spans multiple spectrum levels: superstrings/branes reside at ∞ , quarks in γ , protons in X-rays, and KR torsion field in UV rays—sealing the atomic nucleus at vacuum fluctuation point (ZPF) boundary [19]. Polarized levels (hertzian, IR, visible light) correspond to EM atmosphere (1-form), while unpolarized levels (UV, X, γ , ∞) form magnetic atmosphere $\bar{B}$ (2-form), suggesting a duality aligned with modern physics [10, 11].

The soul, as a record of conscious experience, stores thoughts as feelings—the basis of gaseous matter constituting the universe, with the *Z particle* as the first element granting solidity to atoms, leading to cosmic creation through suns and planets [19, 83]. Though spiritual, its emphasis on light, energy-consciousness duality, and interconnected existence levels resonates with modern theoretical physics concepts: string theories, holographic principle, anthropic principle, and self-organization in complex systems [1, 78, 84].

God's mind parallels quantum field—a timeless domain where virtual particles (spinless) emerge at zero-point field boundary [73, 85]. This reinforces AdS/CFT holographic principle encoding information on lower-dimensional boundaries [1]. M-theory ($d=11$) includes branes (M2 and M5) instead of strings [5, 10]. 11D SUGRA combines EM and KR fields generating gravity/EM, coupling with M2-branes (electric charge) and M5-branes (magnetic charge) [5, 10]. We suggest associating: hertzian level ($d=4$) with observable reality, IR/visible light ($d=2$) with M2-branes, and UV/X/ γ / ∞ /zero point ($d=5$) with M5-branes, totaling 11D [3].

The AdS/CFT correspondence (Fig. 9 and 10) links these ideas to quantum holography, suggesting that brane interactions (D1, D2, D3, D5) explain fundamental forces and atomic structure (quarks, protons) [1]. Within the QGT framework, the dynamics illustrated in Fig. 10 reveal a unified object with magnetic-gravitational duality symmetry connected to the AdS/CFT conjecture. This perspective integrates fundamental equations of gravitational QM/EM fields, suggesting that such dynamics represent quantum processes interconnected by magnetic flux (83). This could explain principles of devices

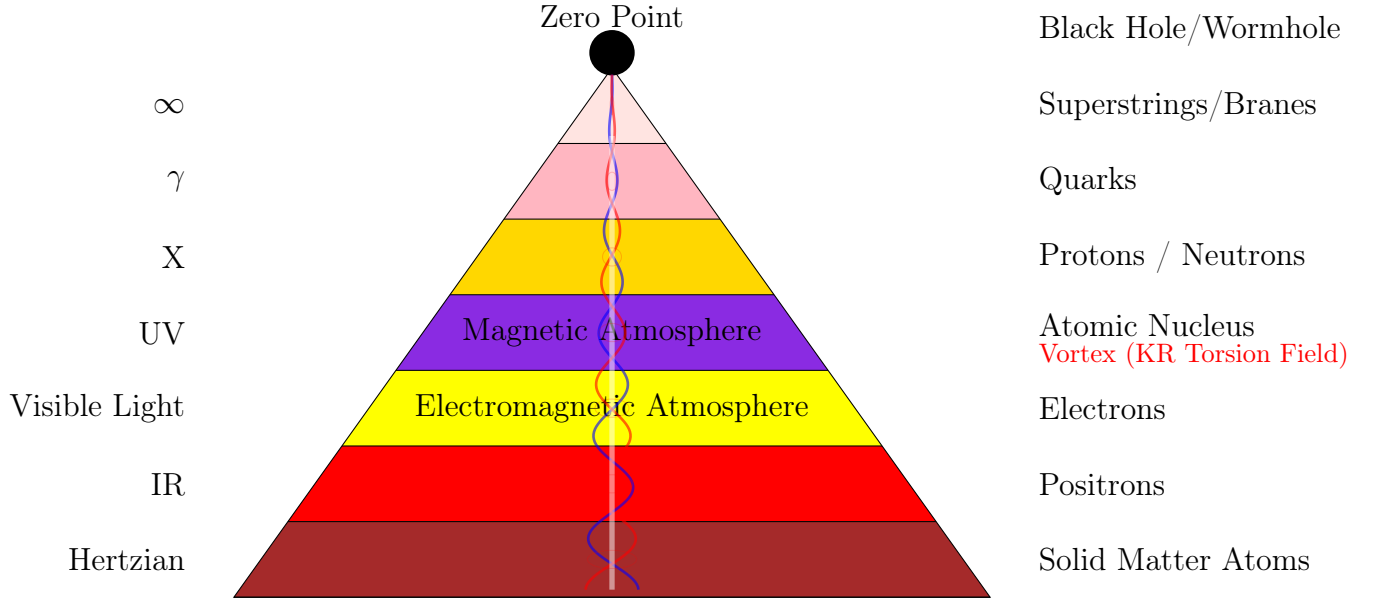


Figure 8: Energy/Consciousness of the 7 Planes of Reality (Ramtha's Cone).

Horizontal lines represent time flow, compressing as energy/consciousness levels ascend; 1st Level: Hertzian (Subconsciousness), 2nd Level: IR (Social Consciousness), 3rd Level: Visible Light (Awakened Consciousness), 4th Level: UV (Bridge Consciousness), 5th Level: X (Superconsciousness), 6th Level: γ (Hyperconsciousness), 7th Level: ∞ (Ultraconsciousness). Ascending this ladder is called 'Evolution' and descending 'Involution' of energy/consciousness[19, 83].

like inductors and capacitors through the KR photoelectric effect.

The vacuum constitutes an extremely energetic state, allowing extraction of ZPF energy for practical applications. Experiments like the Casimir force, using EM systems with torsion pendulums [86], demonstrate this and could validate the cosmological constant Λ by measuring quantum magnetic fields $\bar{B}$ [87]. It is suggested that inertial force, gravity, and mass derive from ZPF [30, 88–90].

The Lamb shift arises from the interaction of E_{photon} with ZPF E_0 [17], evidencing forces linked to ZPF [3]. Through holography and dualities, key derivations include parameters shown in Table 4. M-Theory proposes magnetic-gravitational duality (Fig. 11) [10, 11]: gravity as an extension of monopole $\bar{B}$ from a non-polarized vacuum, converting into rotational EM of extra dimensions, curving spacetime between branes and influencing string propagation [3]. This implies a unified understanding of gravity and fundamental forces like magnetism/electricity, aligned with ancient knowledge [81]. (see Table 4)

Figure 11 shows an essential loop in EM, from Coulomb's laws to Maxwell's, conserving angular momentum. ZPF/QM acts as a matrix from which EM waves emerge [17]. In QGT, the photoelectric paradigm reformulates EM as quantum processes, unifying QM and EM, and predicting ZPF/EM phenomena. The graviton frequency f_g is key in EM interactions, highlighting interdisciplinary applications [3]. Resembling Nikola Tesla's magnetic-radiant energy.²

$$\Phi_B = \int_S \mathbf{B} \cdot d\mathbf{A} \quad (83)$$

²[ZPF]

Table 5: QM/EM Equations with f_g , V_g , R_g , Γ_g , τ_g , and others [3, 13].

Name	Symbol	Equation in QGT
Photon energy	E_{photon}	$= 2E_0$
ZPF energy	E_0	$= F_0 R_g = \frac{1}{2} h f_g$
ZPF force	F_0	$= \frac{2\pi h}{V_g} f_g^2$
ZPF force (with charge)	F_0	$= \frac{1}{2} c Q_0 \bar{B}$
Centrifugal force	F_g	$= c Q_0 \bar{B}$
Electric field	$\bar{E}$	$= \frac{F_0}{\mu_0 \epsilon_0 I_0 \Gamma_g}$
Speed of light (EM)	c^2	$= R_g G = \frac{1}{\mu_0 \epsilon_0}$
Electric field (alternative)	$\bar{E}$	$= \frac{F_0 R_g G}{I_0 \Gamma_g}$
Electric field (simplified)	$\bar{E}$	$= \frac{F_g}{Q_0}$
Electric field (frequency)	$\bar{E}$	$= \frac{2\pi h}{V_g I_0} f_g^3$
Electric field (with charge e)	$\bar{E}$	$= \frac{4\pi h}{e V_g} f_g^2$
Gravitational mass flow	$\dot{M}_g$	$= \frac{\omega h}{\Gamma_g} = \frac{8\pi h}{V_g^2} f_g^2$
Magnetic field	$\bar{B}$	$= \frac{\dot{M}_g}{Q_0}$
Magnetic field (ω)	$\bar{B}$	$= \frac{\omega h}{Q_0 \Gamma_g}$
Magnetic field (I_0)	$\bar{B}$	$= \frac{4\pi h}{I_0 V_g^2} f_g^2$
Magnetic field (charge e)	$\bar{B}$	$= \frac{8\pi h}{e V_g^2} f_g^2$
Electric potential	V_0	$= \frac{h}{e} f_g$
ZPF current intensity (1)	I_0	$= \frac{E_0 G}{\bar{E} \Gamma_g}$
ZPF current intensity (2)	I_0	$= \frac{2\pi h}{\bar{E} V_g} f_g^3$
ZPF current intensity (3)	I_0	$= \frac{1}{2} Q_0 f_g$
ZPF current intensity (4)	I_0	$= \frac{1}{2} e f_g$
Speed of light	c	$= \frac{\bar{E}}{\bar{B}} = \frac{F_g}{\dot{M}_g} = \frac{E_g^2 Q_0 G}{h I_0 \tau_g}$

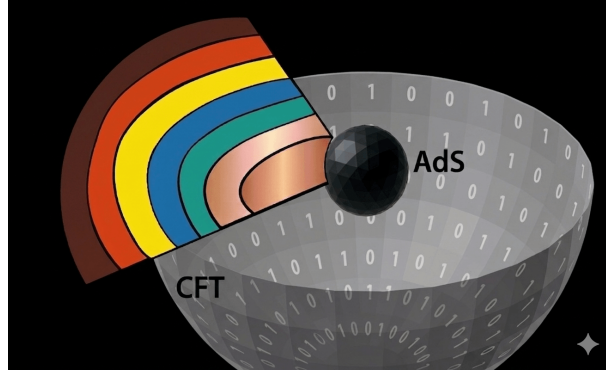


Figure 9: Duality of Ancient/Modern Reality [3, 13].

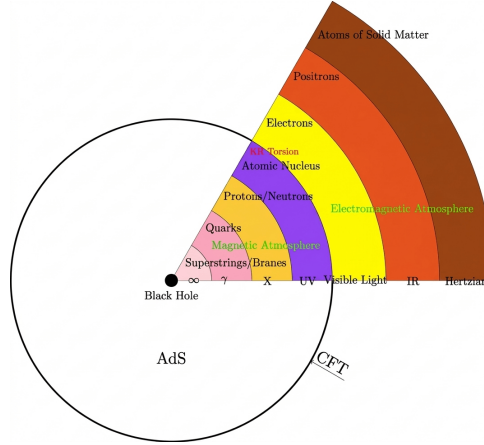


Figure 10: Duality of Ancient/Modern Reality [3, 13]

7.5 Discussion of Chapter 7

In ancient wisdom, light transforms into matter and physical fields by reducing its frequency, generating "electrum" [83]. This process finds a parallel in QGT, where torsion H_3 mediates brane fission/fusion, regulated by f_g , giving rise to fundamental forces linked to QM/EM [3]. Compactification in G_2 and the AdS/CFT framework provide a mathematical basis for these transitions [1, 8, 9]. Experiments such as photon-photon collisions in QED [18, 23] that convert light into matter reinforce this analogy. Thus, the seven levels of light reflect an energy/consciousness continuum, analogous to the multidimensional reality of QGT. Where torsion H_3 , derived from the Kalb-Ramond field $B_{\mu\nu}$, acts as a mediator of spacetime geometry phase and quantum correlations [3, 12].

The concept of *electrum* as the origin of electricity and positive-negative fusion [19] inspires matter/antimatter dynamics as channel duality [15] in QGT, modeled as open strings on a KK cylinder. The torsional velocity $V_g = 2c$ arises from the compactified interaction between the electron potential (e^-) and the positron potential (e^+), reflecting the polarization described [13, 19]. The duality of light in ancient philosophy, encompassing the EM (polarized) and magnetic (non-polarized) atmospheres, finds correspondence in M-Theory and 11D SUGRA [5, 10]. In QGT, M2-branes (electric charges) are associated with visible and IR light levels, while M5-branes (magnetic charges) correspond to UV, X, γ , ∞ , and zero-point levels, totaling 11D. This conical structure aligns with compactification on $G_2(7D)$ manifolds, preserving $\mathcal{N} = 1$ supersymmetry in 4D [11, 91]. Let's remember that electricity corresponds to the principle of cause and effect in spacetime. Magnetism, on the other hand, is not governed by this principle, as it is timeless.

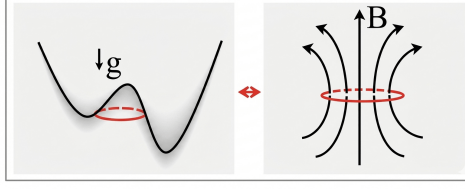


Figure 11: Magnetic-Gravitational Duality (Giribet)[11].

Equation (83) determines the vortex *magnetic flux*, deriving the unified QM/EM functions from Table 5. This magnetic flow in (Fig. 8) and (Fig. 11) is geometrically represented as a helical vortex that passes through the cone from Point Zero to the base of the cone, encoding the transfer of EM and gravitational information through the different energy levels. The G-Force is key in the KR field (H_3), inspired by *electrum*, acting as an inductor for the rotational gravitational EM field, generating gravity at the polarized level [12]. AdS/CFT interprets KR field fluctuations on the boundary as manifestations of gravity in AdS, suggesting a possible light-consciousness duality [1]. This integration reveals profound correspondences: Thought as the essence of being resembles the quantum vacuum as material nothingness and all potential things. The seven energy/consciousness levels reflect the seven dimensions of G_2 and the compactified volume $\mathcal{V}_7$ in 7D. The holographic nature resonates with AdS/CFT and $KR = ER = EPR$. Furthermore, QGT addresses the duality between the relative and the absolute, unifying QM, EM, and GR through the graviton frequency and torsion. This unification is evidenced when connecting the model equations, revealing a magnetic force field reflecting a magnetic/gravitational duality similar to that described by Nikola Tesla, Mehran Tavakoli Keshe, and others [3, 13]. This discussion offers a unified understanding of consciousness and the physical universe, opening pathways for future investigations such as experimental validation of torsion effects or consciousness-driven quantum phenomena, some of which have been previously explored [17, 67, 68]. QGT integrates theoretical physics, mathematics, and neuroscience through mental experiments (Gedankenexperimente). Through practices of expanded attention and states of deep consciousness—or disciplines developed within the RSE [19]—it was possible to observe the morphogenetic field [79, 80]. These states of mind–body–field coherence facilitated the imagination and analysis of geometric and dynamic structures.

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9 Conclusions

Quantum G Theory (QGT) [3] presents itself as an innovative extension of M-Theory [10], seeking to unify quantum gravity with the Standard Model (SM) through torsion H_3 of the Kalb-Ramond (KR) field [12] and compactification on G_2 -holonomy manifolds [38]. This article develops a geometric-quantum framework integrating quantum and cosmological scales, reformulating fundamental equations and exploring connections with AdS/CFT and Hawking radiation. As a synthesis of results, QGT introduces a geometrodynamics resonance field that reproduces SM rest masses through couplings in 11D SUGRA [5], deriving cosmological constants such as Λ , ρ_Λ , Ω_Λ , Ω_{dm} , Ω_b , and H_0 , expressed in terms of f_g and f_Λ [3].

It reformulates Einstein, Schwarzschild, Friedmann, and Maxwell equations, integrating them with Schrödinger via entropic connections and holography, achieving unprecedented precision consistent with observations [35, 41]. The unifying character and advances of QGT lie in using torsion H_3 and G_2 compactification to preserve $\mathcal{N} = 1$ supersymmetry, generating SM masses from kinetic energies in extra dimensions [15]. It surpasses previous models by addressing scale hierarchies and the cosmological constant, unifying QM, GR, and SM through frequency resonance ($m_i = m_g \frac{f_i}{f_g}$) and dualities like AdS/CFT [1]. The physical novelty and originality of QGT resides in the use of H_3 , which modifies space-time geometry, mediates entanglement (KR=ER=EPR) [3, 6], and generates mass via torsional dynamics ($V_g = 2c$) in a 7D hypertorus [3]. It structures the vacuum by eliminating singularities (modified Schwarzschild metric) and encoding holographic information, connecting ZPF with cosmology. The theoretical coherence of QGT with M-Theory and 11D SUGRA is established, extending the bosonic action with torsional terms (S_{H_3}) and preserving supersymmetry in compactifications [9]. It integrates dualities such as AdS/CFT and ER=EPR, deriving physical constants consistent with observations, aligning with M-branes and p-branes [14]. Predictions include detection of $V_g = 2c$ at LHC colliders, graviton frequency in LIGO gravitational waves [92], modified metrics in gravitational lenses, cosmological parameters ($H_0 = 67.8 \text{ km/s/Mpc}$) in CMB [47], light-matter transmutation in lasers [25], and ZPF effects in Casimir experiments [86]. Verification via high-energy experiments, cosmology, and quantum optics. Technological contribution to nuclear fusion energy systems and ZPF. New paradigm on the nature of stars and other objects in the cosmos. Future perspectives include experimental validation of torsion, refining f_g , f_Λ , exploring holography and entanglement, integrating consciousness, developing ZPF techniques, and advancing toward a theory of everything, unifying fundamental forces and ancient philosophies. This philosophy, originally called ancient wisdom—according to Ramtha’s teachings since 1977—states that energy is the complement of consciousness. All consciousness carries with it a dynamic impact of energy, a radiation, or a natural expression of itself. Likewise, all forms of energy contain a consciousness that defines them. This view posits that humankind is a ‘forgotten god,’ a pure consciousness incarnate, harboring at its core a primordial particle of light. This ancestral vision postulates that we are not mere passive observers, but the fundamental agent responsible for collapsing the wave function of probability into a material particle reality. We are consciousness and energy creating the nature of reality, and we exist with the mission of ‘making the unknown known’ from the ‘timeless mind of God,’ or void, that material nothingness that is potentially everything, like the quantum field [19].

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