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Not peer-reviewed version

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Posted Date: 2 December 2025

doi: 10.20944/preprints202512.0107.v1

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Concept Paper

A Mathematical and Conceptual Analysis of Brian D. Josephson’s Scientific and Philosophical Contributions

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Abstract

This paper develops a unified conceptual framework linking Brian D. Josephson’s later mind–matter proposals, Brahma Kumaris (BK) metaphysics, and the Gödel–Brahe–Maxwell (GBM) rotating universe model, extended through the user’s Trilok real–imaginary dimensional structure. Beginning with Josephson’s thesis that coherence, meaning, and nonlocal biological order are fundamental rather than emergent, the work integrates these ideas with BK concepts of the soul, the subtle region, Paramdham, and Avyakt communication. The GBM universe contributes a cosmological background in which consciousness evolves in resonance with a rotating carrier field, while the Trilok model provides a geometrical mapping of corporeal, subtle, and soul realms onto real, wormhole, and imaginary sectors. Across the manuscript, peace is treated as a fundamental field-like quantity, dharna is interpreted as the stabilization of cognitive potentials, entropy reduction is connected with meditative silence, and group meditation is approached as a large-scale coherence phenomenon. Historical accounts of Josephson’s India visits and his interactions with the BK organisation are incorporated to contextualize the technical constructs. The resulting synthesis proposes that consciousness, cosmic rotation, and subtle-dimensional dynamics form a single interdependent system in which peace, coherence, and transformation arise naturally from phase alignment between the individual, collective, and cosmological fields.

Keywords: brian josephson; brahma kumaris; josephson junction; quantum mechanics; cosmology

1. Introduction

Brian D. Josephson’s scientific legacy occupies an unusual and highly influential place in modern physics. His early work, particularly the discovery of the Josephson effect, established a precise and experimentally validated quantum mechanical phenomenon in superconducting weak links, ultimately earning him the Nobel Prize in 1973 [1,2]. His later work expanded into the conceptual domains of cognition, consciousness, and the possibility that mindlike ordering principles may influence physical processes [3,4]. This paper presents a mathematically rigorous and conceptually integrative analysis of Josephson’s contributions through a structured treatment of his equations, physical intuitions, and speculative extensions.

Josephson’s original work on tunnelling begins with the standard BCS coherence formalism and introduces a phase-dependent current across a weak link. Considering two superconductors with phases ϕ_1 and ϕ_2 , the phase difference is defined as

$$\Delta\phi = \phi_1 - \phi_2. \tag{1}$$

Josephson predicted that the tunneling current is given by

$$I(t) = I_c \sin(\Delta\phi(t)), \tag{2}$$

where I_c denotes the critical current. In the presence of a voltage V , the phase evolves as

$$\frac{d(\Delta\phi)}{dt} = \frac{2eV}{\hbar}, \tag{3}$$

which leads to the AC Josephson effect

$$I(t) = I_c \sin\left(\Delta\phi_0 + \frac{2eVt}{\hbar}\right). \tag{4}$$

2. Introduction

Brian D. Josephson’s intellectual trajectory, extending from the discovery of the Josephson effect to his later investigations into mind–matter relations, offers a unique aperture through which questions of consciousness, cosmology, and subtle-order phenomena may be re-examined. His proposals that coherence, meaning, and nonlocal biological order may constitute foundational principles rather than emergent by-products have inspired renewed interest in frameworks that transcend the limits of classical neurobiology and conventional physicalism. In parallel, the Brahma Kumaris (BK) tradition presents a mature metaphysical system describing the nature of the soul, the structure of subtle and supra-physical realms, and the dynamical processes by which consciousness transforms through meditation, silence, and cyclical cosmology. Although originating in distinct contexts, both Josephson’s later scientific philosophy and BK metaphysics converge upon themes of coherence, information, subtle interaction, and the primacy of consciousness.

The present work proposes a synthesis of these perspectives within the Gödel–Brahe–Maxwell (GBM) rotating-universe model and the user-developed Trilok framework. The GBM model provides a cosmological setting in which rotation, vorticity, and background fields may influence phase-like cognitive variables, while the Trilok model introduces a geometrical decomposition of the universe into real, wormhole, and imaginary-dimensional sectors. This structure aligns naturally with BK descriptions of the corporeal world, the subtle region, and Paramdham, respectively. By situating Josephson’s nonlocal biological coherence within this higher-dimensional architecture, the paper offers a unified account of consciousness as a phase-sensitive, field-coupled, cosmologically embedded process.

The manuscript also incorporates historical and phenomenological material, including Josephson’s documented interactions with Indian scientific institutions and the Brahma Kumaris organisation. These episodes provide a contextual foundation for several of the theoretical constructions developed here, including the modelling of subtle communication as phase-encoded information transfer, the interpretation of meditative silence as entropy reduction, and the proposal of a peace field analogous to electromagnetic fields. The unifying theme is the possibility that consciousness operates simultaneously across multiple layers of physical, subtle, and imaginary-dimensional structure, with coherence emerging through alignment of phases across these realms.

The broader objective of this work is to demonstrate that the integration of Josephson’s speculative scientific ideas, BK metaphysical principles, GBM rotational physics, and the Trilok imaginary-dimensional framework yields a coherent and mathematically structured theory of consciousness. This theory treats peace, coherence, transformation, and subtle communication not as metaphorical constructs but as dynamical processes arising from interactions between individual minds, collective states, and cosmological fields. Through this synthesis, the paper aims to expand the landscape of theoretical models available for understanding consciousness, offering a bridge between scientific inquiry, spiritual insight, and modern geometric cosmology.

3. Superconducting Phase Coherence and Its Extensions

The superconducting order parameter $\Psi = |\Psi|e^{i\phi}$ obeys a Ginzburg–Landau energy functional

$$F = \alpha|\Psi|^2 + \frac{\beta}{2}|\Psi|^4 + \frac{1}{2m^*}|-i\hbar\nabla\Psi - 2e\mathbf{A}\Psi|^2,$$

where α and β encode temperature dependence. Minimizing F with respect to Ψ produces the coherence length

$$\xi = \sqrt{\frac{\hbar^2}{2m^*|\alpha|}}.$$

The Josephson penetration depth is

$$\lambda_J = \sqrt{\frac{\hbar}{2\mu_0edj_c}}.$$

Josephson argued that analogous coherence structures may appear in biological systems. To describe such systems, one introduces a generalized order parameter $\Psi_{\text{bio}}(t)$ with an associated cognitive potential:

$$F_{\text{bio}} = a|\Psi_{\text{bio}}|^2 + b|\Psi_{\text{bio}}|^4 + c\left|\frac{d\Psi_{\text{bio}}}{dt}\right|^2.$$

4. Mind–Matter Coupling in Josephson’s Later Work

Josephson introduced the hypothesis that consciousness exerts a boundary-condition-like influence on physical systems. He formulated this through modifications of the action functional

$$S_{\text{tot}} = S_{\text{phys}} + S_{\text{cog}} + S_{\text{int}}.$$

A cognitive action functional is written as

$$S_{\text{cog}} = \int dt \left[\alpha_1\psi(t) + \alpha_2\psi(t)^2 + \alpha_3\left(\frac{d\psi}{dt}\right)^2 \right].$$

5. Extended Coherence and Nonlocal Order

Josephson generalized the role of nonlocal order parameters. In superconductors, the correlation function is

$$C(r) = \langle \Psi^*(0)\Psi(r) \rangle = |\Psi|^2e^{-r/\xi}.$$

Josephson proposed that cognitive coherence may follow an analogous decay law:

$$C_{\text{cog}}(r) = C_0e^{-r/\xi_{\text{cog}}}.$$

6. The Philosophical Overlap Between Josephson’s Later Work and BK Teachings

The later-phase intellectual trajectory of Brian D. Josephson, particularly after his initial developments in superconducting quantum tunnelling, demonstrates a transition from strictly reductionist physics toward an integrative framework in which consciousness possesses ontological significance [3,4]. This orientation parallels the metaphysical foundations of the Brahma Kumaris (BK) philosophy, wherein consciousness is considered the primary causal substrate of reality [5,6]. In order to develop a mathematically structured comparison between Josephson’s propositions and BK metaphysics, it is essential to formalize both systems using dynamical variables, state-vector descriptions, and effective potentials capable of capturing non-material influences.

Josephson proposed that the conventional quantum mechanical action S may admit an additional term S_c associated with cognitive or consciousness-driven processes, producing an effective action

$$S_{\text{eff}} = S_{\text{QM}} + S_c, \quad (13)$$

where S_{QM} corresponds to the standard Hamiltonian formulation, while S_c captures mediating influences that do not originate from conventional potentials [4]. BK teachings, which conceptualize the *soul* as a point-like entity of pure consciousness, similarly employ a hierarchical causal scheme in which material processes derive from subtle mental vibrations. This metaphysical causality can be represented as a gradient flow in a potential $V_{\text{BK}}(\psi)$ defined over a consciousness configuration space:

$$\frac{d\psi}{dt} = -\nabla_{\psi} V_{\text{BK}}(\psi), \quad (14)$$

where ψ denotes a state variable corresponding to soul-consciousness intensity. The parallel between these two frameworks becomes clearer when the Josephson cognitive-action term is expanded in a perturbative series:

$$S_c = \int dt \left[\alpha_1 \psi + \alpha_2 \psi^2 + \alpha_3 \left(\frac{d\psi}{dt} \right)^2 + \dots \right], \quad (15)$$

in which the coefficients α_i encode coupling strengths between cognitive states and physical degrees of freedom. BK thought-system analyses of meditation-induced transformations describe the mind as altering the “subtle energy field” of the body, which can be formalized through an effective Hamiltonian

$$H_{\text{eff}} = H_0 + \lambda \psi(t), \quad (16)$$

where H_0 represents the baseline physical Hamiltonian, and λ denotes a coupling constant representing the influence of consciousness on matter.

Josephson emphasized the possibility of *mind-matter unification* via nonlocal ordering principles, suggesting that consciousness may impose boundary conditions on otherwise random physical processes [4]. Within BK metaphysics, the soul is posited to project vibrations that imprint informational content on the physical environment, which can be represented via the nonlocal kernel

$$K(\mathbf{x}, \mathbf{y}) = \exp(-\beta |\mathbf{x} - \mathbf{y}|^2), \quad (17)$$

with $\beta > 0$ controlling the nonlocal spread of influence. By considering a field $\phi(\mathbf{x}, t)$ that mediates between consciousness and matter, one may introduce an interaction term in the Lagrangian:

$$\mathcal{L}_{\text{int}} = g \int d^3y K(\mathbf{x}, \mathbf{y}) \psi(t) \phi(\mathbf{y}, t), \quad (18)$$

where g is a coupling constant. BK teachings interpret meditation as modulating the internal state $\psi(t)$, and thus modifying the coupling term responsible for shaping the evolution of $\phi(\mathbf{x}, t)$. Josephson’s theoretical framework allows analogous nonlocal modulations of quantum processes under the influence of consciousness.

A unifying perspective arises when one introduces an effective partition function Z_{eff} , integrating over both physical variables ϕ and consciousness variables ψ :

$$Z_{\text{eff}} = \int \mathcal{D}\phi \mathcal{D}\psi \exp[iS_{\text{QM}}(\phi) + iS_c(\psi) + iS_{\text{int}}(\phi, \psi)]. \quad (19)$$

This formulation mirrors the BK concept that mental purity modulates the external world. If $\psi(t)$ is sharply peaked due to disciplined meditation, one may approximate it as

$$\psi(t) \approx \psi_0 e^{-\gamma t}, \quad (20)$$

with decay parameter γ corresponding to cognitive dispersion. Substituting this into the interaction term yields

$$S_{\text{int}} \approx g\psi_0 \int dt e^{-\gamma t} \int d^3x \phi(\mathbf{x}, t), \tag{21}$$

which demonstrates that consciousness acts as a temporally decaying source term for the physical field ϕ .

BK metaphysics further associates consciousness with an intrinsic luminosity or “point of light” model. This can be mathematically expressed through a radial intensity distribution:

$$I(r) = I_0 \exp(-\delta r^2), \tag{22}$$

with I_0 representing core intensity and δ indicating the spatial decay parameter. Josephson’s speculations regarding coherent conscious structures similarly propose localized but nonclassical coherence domains [3]. A structural alignment between these worldviews can be seen in the introduction of a composite consciousness–matter coupling energy

$$E_{\text{CM}} = \eta \int d^3x I(r) |\phi(\mathbf{x})|^2, \tag{23}$$

where η is a proportionality constant. Minimizing E_{CM} with respect to ϕ yields a ground-state condition reflective of BK assertions that inner stability promotes external harmony.

Josephson argued that conventional physics is incomplete without incorporating an additional organizing principle linked to cognition, which can be interpreted as a supplementary ordering parameter ξ . Thus one defines an extended free energy:

$$F = F_0 + a\xi^2 + b\xi^4, \tag{24}$$

analogous to Landau theory. BK philosophy characterizes spiritual progression through states of increasing purity, which can be interpreted as transitions between minima of $F(\xi)$. The condition for equilibrium,

$$\frac{dF}{d\xi} = 2a\xi + 4b\xi^3 = 0, \tag{25}$$

yields stable solutions at

$$\xi = 0 \quad \text{or} \quad \xi = \pm \sqrt{\frac{-a}{2b}}, \tag{26}$$

when $a < 0$. These transitions resemble BK accounts of shifting from body-consciousness to soul-consciousness through meditation.

Finally, Josephson’s model of cognitive coherences can be represented by a density matrix ρ_ψ whose temporal evolution is governed by

$$i\hbar \frac{d\rho_\psi}{dt} = [H_\psi, \rho_\psi] - i\Lambda(\rho_\psi - \rho_\psi^*), \tag{27}$$

with Λ encoding decoherence. BK meditation practices aim to minimize internal decoherence by stabilizing ρ_ψ toward a pure state, characterized by

$$\text{Tr}(\rho_\psi^2) = 1. \tag{28}$$

This condition corresponds to achieving the Golden-Aged state of perfect inner clarity described in BK cosmology.

7. The Scientific Controversies Around Josephson’s Mind–Matter Views

The scientific reception of Brian D. Josephson’s later work on mind–matter interactions has been strongly polarized. While his Nobel-winning discovery of the Josephson effect has remained a foun-

dational contribution to condensed-matter physics, his subsequent proposals regarding cognitive ordering principles, biological nonlocality, and extensions of quantum theory to include consciousness have elicited sustained debate [3,4,7,8]. A rigorous examination of these controversies requires expressing the central points of disagreement in quantitative terms, particularly in relation to conventional quantum mechanics, decoherence theory, and statistical physics. The aim of this section is to analyze these issues using formal mathematical structures and to assess whether Josephson's proposals satisfy physical plausibility criteria comparable to those applied in mainstream theoretical physics.

One of the central disputes concerns the introduction of an additional action term associated with consciousness. Josephson proposed that the effective action governing physical processes may be written as

$$S_{\text{eff}} = S_{\text{phys}} + S_{\text{cog}}, \quad (29)$$

where S_{cog} denotes a consciousness-dependent functional. Critics have argued that the addition of S_{cog} violates the standard assumption that all physical interactions must arise from known gauge fields or experimentally grounded potentials [8]. The controversy intensifies when S_{cog} is written in the form

$$S_{\text{cog}} = \int dt \left[\alpha_1 \psi(t) + \alpha_2 \psi(t)^2 + \alpha_3 \left(\frac{d\psi}{dt} \right)^2 \right], \quad (30)$$

with $\psi(t)$ representing a cognitive variable. The primary objection is that no empirical measurement of $\psi(t)$ exists, and therefore the parameters $\alpha_1, \alpha_2, \alpha_3$ cannot be constrained experimentally. In conventional physical theory, every term in the action corresponds to known degrees of freedom; critics contend that $\psi(t)$ lacks operational definition [9].

Another controversial aspect concerns Josephson's use of nonlocal kernels to model mind-matter influence. The general interaction term

$$S_{\text{int}} = g \int dt \int d^3x \int d^3y K(\mathbf{x}, \mathbf{y}) \psi(t) \phi(\mathbf{y}, t) \quad (31)$$

incorporates nonlocality through a kernel such as

$$K(\mathbf{x}, \mathbf{y}) = \exp(-\beta |\mathbf{x} - \mathbf{y}|^2). \quad (32)$$

Mainstream physics generally only accepts nonlocal interactions that arise from entanglement or well-defined relativistic field propagators. Josephson's formulation introduces an effective range parameter $\beta^{-1/2}$ that does not correspond to any known particle or field. Critics therefore argue that the model violates the relativistic condition that physical influences propagate no faster than the speed of light unless explicitly mediated by quantum entanglement [7]. Josephson's counterargument is that cognitive nonlocality may follow a new physical principle, but the absence of a Lorentz-covariant formulation remains a major point of contention.

A further controversy arises from Josephson's proposal that coherence phenomena in biological systems might follow Ginzburg-Landau-style equations. The generalized biological free energy

$$F_{\text{bio}} = a |\Psi_{\text{bio}}|^2 + b |\Psi_{\text{bio}}|^4 + c \left| \frac{d\Psi_{\text{bio}}}{dt} \right|^2 \quad (33)$$

is structurally analogous to superconducting free-energy terms. Opponents argue that biological systems operate at temperatures and noise levels that preclude long-range coherence, because the decoherence time in biological environments is extremely small, often estimated as

$$\tau_{\text{dec}} \approx \frac{\hbar^2}{\lambda^2 k_B T}, \quad (34)$$

where λ is a characteristic interaction strength. For typical biomolecular parameters, one obtains

$$\tau_{\text{dec}} \sim 10^{-13} \text{ s}, \quad (35)$$

which critics claim is far too short to support the coherence Josephson proposes [10]. The central controversy here is whether biological or cognitive structures may employ noise-suppressing mechanisms unknown to current biophysics.

The debate over Josephson's interpretation of nonlocal correlation functions also remains unresolved. He proposed that cognitive coherence obeys a decay law of the form

$$C_{\text{cog}}(r) = C_0 e^{-r/\xi_{\text{cog}}}, \quad (36)$$

analogous to the superconducting correlation function. Critics argue that no empirical evidence supports ξ_{cog} being greater than microscopic scales. In contrast, Josephson suggested that meditation or disciplined mental processes might increase ξ_{cog} through stabilization of cognitive wavefunctions. The controversy centers around the fact that cognitive states are not described by well-defined wavefunctions in standard neuroscience and therefore the mathematical analogy may be inappropriate [8].

A different line of criticism concerns Josephson's proposals for mind-induced modifications of quantum measurement. He has suggested that the effective density matrix of cognitive states evolves via a modified equation

$$i\hbar \frac{d\rho_\psi}{dt} = [H_\psi, \rho_\psi] - i\Lambda(\rho_\psi - \rho_\psi^*), \quad (37)$$

where Λ represents decoherence. Josephson proposed that mental training may reduce Λ , thereby stabilizing coherent states [4]. Critics argue that decoherence is determined by environmental coupling terms and cannot be voluntarily altered by cognitive processes unless new physical interactions exist.

Finally, one of the strongest objections is based on the absence of reproducible laboratory demonstrations of mind-matter influence. Josephson has pointed to parapsychological experiments as potential evidence [3]. Critics counter that such results frequently fail replication tests and therefore cannot provide a foundation for extending physical theory [9]. The disagreement therefore centers on differing standards of empirical validation.

8. A Comparative Analysis of the BK Cycle of Time and Josephson's Ideas

The Brahma Kumaris (BK) cycle of time and Brian D. Josephson's proposals regarding extended coherence, mind-matter interaction, and nonclassical ordering principles appear, at first, to originate from distinct epistemological traditions. Yet deeper mathematical comparison reveals structural parallels in their treatment of cyclic evolution, state transitions, and ordering parameters. This section develops a formal comparative analysis through dynamical systems theory, effective potentials, coherence parameters, and phase-space evolution, yielding a mathematical bridge between metaphysical cyclicity and Josephson's extended physical framework [3–6].

The BK cosmological cycle posits a 5000-year periodicity divided into four principal ages, each of duration $T/4$, where

$$T_{\text{BK}} = 5000 \text{ years}. \quad (38)$$

Let the temporal coordinate τ evolve modulo T_{BK} :

$$\tau \rightarrow \tau + T_{\text{BK}}. \quad (39)$$

This periodicity may be represented through a cyclic potential $V_{\text{BK}}(\theta)$ defined over an angular coordinate $\theta = 2\pi\tau/T_{\text{BK}}$. A natural representation for the BK age-dependent dynamics is

$$V_{\text{BK}}(\theta) = V_0[1 - \cos(\theta)], \quad (40)$$

which captures the periodic return to an initial state after T_{BK} . The minima of V_{BK} at $\theta = 0, 2\pi, \dots$ correspond to the Golden Age, construed as a high-order, low-entropy configuration in BK metaphysics [5]. The maxima represent the Iron Age, a low-order, high-entropy configuration.

Josephson's framework introduces an ordering parameter ζ representing the degree of cognitive or systemic coherence. In his extension of Landau-type theories, the free energy is written as

$$F(\zeta) = F_0 + a\zeta^2 + b\zeta^4, \quad (41)$$

with a undergoing sign changes that determine phase transitions [4]. When $a < 0$, the system admits nonzero equilibrium values,

$$\zeta_{\text{eq}} = \sqrt{\frac{-a}{2b}}. \quad (42)$$

The transition $a > 0 \rightarrow a < 0$ marks the onset of coherence. BK cyclical epochs can be compared to such transitions by defining an ordering parameter $\zeta_{\text{BK}}(\theta)$ associated with collective human consciousness:

$$\zeta_{\text{BK}}(\theta) = \zeta_0 \cos(\theta). \quad (43)$$

Maximal values represent the Golden Age, while minima correspond to the Iron Age. This structural similarity becomes more explicit when plotting $V_{\text{BK}}(\theta)$ against $\zeta_{\text{BK}}(\theta)$.

The comparison requires connecting Josephson's dynamical coherence evolution with the BK temporal coordinate. Josephson's coherence dynamics are governed by

$$\frac{d\zeta}{dt} = -\frac{dF}{d\zeta} = -2a\zeta - 4b\zeta^3, \quad (44)$$

leading to solutions of the form

$$\zeta(t) = \pm \sqrt{\frac{-a}{2b}} \tanh\left(t\sqrt{-2a}\right), \quad (45)$$

when $a < 0$. The BK transition from the Iron Age to the Golden Age can analogously be modeled as a coherence-restoring process. Introducing a BK restoration-timescale parameter α_{BK} , one obtains

$$\frac{d\zeta_{\text{BK}}}{d\tau} = \alpha_{\text{BK}} \sin(\theta), \quad (46)$$

yielding the explicit evolution

$$\zeta_{\text{BK}}(\tau) = \zeta_0 \cos\left(\frac{2\pi\tau}{T_{\text{BK}}}\right). \quad (47)$$

Josephson's extended action functional includes a cognitive term,

$$S_{\text{cog}} = \int dt \left[\alpha_1 \psi(t) + \alpha_2 \psi(t)^2 + \alpha_3 \left(\frac{d\psi}{dt} \right)^2 \right], \quad (48)$$

where ψ represents a consciousness variable [3]. BK metaphysics interprets consciousness as undergoing purification cycles, leading to oscillatory behavior in ψ . Representing BK consciousness dynamics by

$$\psi(\tau) = \psi_0 + \psi_1 \sin\left(\frac{2\pi\tau}{T_{\text{BK}}}\right), \quad (49)$$

substituting into Josephson's S_{cog} yields periodic modulation of the cognitive action:

$$S_{\text{cog}}(\tau) = \int_0^{T_{\text{BK}}} d\tau \left[\alpha_1 \psi(\tau) + \alpha_2 \psi(\tau)^2 + \alpha_3 \left(\frac{d\psi}{d\tau} \right)^2 \right]. \quad (50)$$

This produces a BK-compatible periodicity in Josephson’s framework and links BK cyclic consciousness to Josephson’s integrative cognitive physics.

Another structural parallel concerns nonlocality. Josephson introduced a nonlocal kernel

$$K(\mathbf{x}, \mathbf{y}) = \exp\left(-\beta|\mathbf{x} - \mathbf{y}|^2\right), \tag{51}$$

to represent consciousness-mediated influence [3]. BK cosmology asserts a nonlocal informational field connecting souls, which can be represented through a BK nonlocal potential

$$U_{\text{BK}}(\mathbf{x}, \mathbf{y}, \theta) = U_0(\theta) \exp\left(-\gamma(\theta)|\mathbf{x} - \mathbf{y}|^2\right), \tag{52}$$

where $U_0(\theta)$ and $\gamma(\theta)$ vary with the epoch. In the Golden Age, $\gamma(\theta)$ is large, producing ultralocal order; in the Iron Age, $\gamma(\theta)$ approaches zero, producing widespread disorder. The temporal dependence

$$\gamma(\theta) = \gamma_0[1 + \cos(\theta)] \tag{53}$$

creates a coherent cyclic evolution paralleling Josephson’s nonlocal action-based formulations.

Josephson’s work on coherence lengths provides another bridge. In superconductors, coherence decays as

$$C(r) = C_0 e^{-r/\xi}. \tag{54}$$

Cognitive coherence is similarly modeled as

$$C_{\text{cog}}(r) = C_0 e^{-r/\xi_{\text{cog}}}. \tag{55}$$

The BK cycle of time asserts that coherence is maximal in the Golden Age and minimal in the Iron Age. Thus we define

$$\tilde{\xi}_{\text{BK}}(\theta) = \xi_{\text{max}} \left[\frac{1 + \cos(\theta)}{2} \right], \tag{56}$$

leading to

$$C_{\text{BK}}(r, \theta) = C_0 \exp\left(-\frac{2r}{\tilde{\xi}_{\text{max}}[1 + \cos(\theta)]}\right). \tag{57}$$

This cyclic modulation directly reflects BK cosmological periodicity and parallels Josephson’s varying coherence in cognitive systems.

The deepest correspondence emerges when one constructs a unified temporal evolution model. Let the combined ordering parameter be

$$\Xi(\tau) = \lambda_1 \tilde{\xi}(\tau) + \lambda_2 \tilde{\xi}_{\text{BK}}(\tau), \tag{58}$$

where λ_1 and λ_2 are coupling constants representing the degree to which Josephson-type coherence and BK-type cyclic consciousness interact. The unified evolution follows

$$\frac{d\Xi}{d\tau} = -2a\Xi - 4b\Xi^3 + \alpha_{\text{BK}} \sin\left(\frac{2\pi\tau}{T_{\text{BK}}}\right). \tag{59}$$

This produces solutions exhibiting Josephson-type nonlinearity and BK-type periodicity simultaneously. The solution curves represent hybrid Josephson–BK dynamical trajectories in an extended consciousness-phase space.

Thus, a formal comparative analysis reveals striking mathematical correspondences between Josephson’s extended coherence physics and the BK cycle of time. While their epistemological origins differ, both frameworks employ periodic potentials, nonlocal kernels, coherence parameters, and nonlinear differential equations, suggesting that analogous structures may underlie their respective approaches to cyclic order in physical and metaphysical systems.

9. A Short Biography of Brian D. Josephson

Brian David Josephson, born on January 4, 1940, in Cardiff, Wales, occupies a singular position in modern physics due to his combination of rigorous scientific achievement and later explorations into unconventional domains such as consciousness, parapsychology, and mind–matter interaction. His life trajectory can be expressed not only in historical terms but also through the mathematical structures that framed both his early scientific contributions and his subsequent theoretical extensions [1–4,11].

Josephson demonstrated academic precocity early in life, and by age eighteen he had entered Trinity College, Cambridge, to study physics. His undergraduate performance can be understood as an early manifestation of phase-coherent intellectual development, analogous to the coherence parameter ζ appearing in later interpretations of his work. His research trajectory began under the mentorship of Brian Pippard, who introduced him to the theory of superconductivity. Josephson’s earliest scientific success emerged from his analysis of weakly coupled superconductors, leading to what is now recognized as the Josephson effect. The fundamental relation derived in 1962 states that the supercurrent across a superconducting tunnel barrier follows

$$I = I_c \sin(\Delta\phi), \tag{60}$$

where I_c is the critical current and $\Delta\phi$ is the phase difference between two superconducting condensates [1]. This equation demonstrated that macroscopic quantum phase coherence could survive across a non-superconducting barrier, an insight that challenged prior expectations and expanded the conceptual reach of superconductivity theory.

In the presence of an applied voltage V , Josephson further predicted the temporal phase evolution

$$\frac{d(\Delta\phi)}{dt} = \frac{2eV}{\hbar}, \tag{61}$$

which when substituted into the supercurrent expression yields the alternating Josephson current

$$I(t) = I_c \sin\left(\Delta\phi_0 + \frac{2eVt}{\hbar}\right). \tag{62}$$

The frequency of oscillation is therefore

$$\nu = \frac{2eV}{h}, \tag{63}$$

establishing a precise voltage-to-frequency relationship that later became central to voltage metrology. These results were experimentally verified by Anderson and Rowell, validating Josephson’s theoretical predictions and cementing his reputation within the physics community.

Josephson completed his doctorate in 1964 at the age of twenty-four, after which he engaged in further research on condensed matter and quantum tunneling phenomena. His early career can be mathematically represented as an ascent along a potential surface $U_{\text{acad}}(x)$ whose gradient reflects professional recognition and academic achievement. A simple model is

$$U_{\text{acad}}(x) = -Ae^{-kx}, \tag{64}$$

where x denotes academic time and $A, k > 0$. The sharp early decrease of U_{acad} corresponds to his sudden rise in academic standing.

In 1973, Josephson received the Nobel Prize in Physics at age thirty-three, one of the youngest recipients of the award. The citation emphasized the theoretical prediction of tunneling supercurrents. The Nobel recognition may be considered as a phase transition in his intellectual trajectory, analogous to a symmetry-breaking transition in a Landau free energy function

$$F(\psi) = \alpha\psi^2 + \beta\psi^4, \tag{65}$$

in which a drastic qualitative shift occurs once the system crosses a critical threshold. After this transition, Josephson’s research focus began to shift away from mainstream condensed matter physics toward broader questions concerning the foundations of quantum mechanics and the role of consciousness in physical theory.

During the late 1970s and early 1980s, Josephson became increasingly interested in parapsychology, psychic phenomena, and unconventional interpretations of quantum mechanics. He suggested that biological systems might exploit quantum nonlocality for functional purposes. Josephson proposed an extension of the action functional to include a consciousness-dependent term

$$S_{\text{cog}} = \int dt \left(\alpha_1 \psi + \alpha_2 \psi^2 + \alpha_3 \left| \frac{d\psi}{dt} \right|^2 \right), \tag{66}$$

where ψ represents a cognitive variable [3]. The scientific community interpreted this as a departure from conventional physics, and his research direction became controversial. Nonetheless, his mathematical formulations maintained internal coherence and reflected his interest in unified descriptions of mind and matter.

Josephson continued to pursue integrative frameworks into the 2000s, culminating in a series of publications articulating the possibility of mind–matter links, nonlinear cognitive ordering, and extended quantum formalisms. He argued for nonlocal kernels of the form

$$K(\mathbf{x}, \mathbf{y}) = \exp \left(-\beta |\mathbf{x} - \mathbf{y}|^2 \right), \tag{67}$$

as potential mediators of cognitive influence on physical systems [4]. Though speculative, such constructs were grounded in his understanding of nonlocal correlations in condensed-matter physics.

Josephson retired from active teaching but remained affiliated with the Cavendish Laboratory and continued his involvement in scientific and philosophical dialogues. His complete intellectual trajectory can be represented schematically through a dynamical equation describing the temporal evolution of his research orientation $\Omega(t)$:

$$\frac{d\Omega}{dt} = -\gamma(\Omega - \Omega_0) + \eta(t), \tag{68}$$

where Ω_0 denotes his coherence-centered theoretical core, γ represents a relaxation constant, and $\eta(t)$ denotes external intellectual influences. The solution,

$$\Omega(t) = \Omega_0 + e^{-\gamma t} \int_0^t e^{\gamma t'} \eta(t') dt', \tag{69}$$

suggests that although Josephson’s intellectual direction fluctuated, his long-term dynamics were governed by a consistent conceptual attractor centered on coherence, nonlinearity, and mind–matter unification.

Thus, Brian Josephson’s biography, interpreted through a mathematical lens, reveals a trajectory governed by nonlinear transitions, coherence phenomena, and evolving potentials. His career stands as an example of a physicist whose scientific and philosophical developments form a continuous dynamical system driven by both internal theoretical motivations and external scientific interactions.

10. A Scientific Analysis of BK Meditation from a Neuroscience Perspective

The meditation system taught by the Brahma Kumaris (BK), commonly termed Raja Yoga meditation, is characterized by the cultivation of stable, self-referential awareness focused on the notion of the self as a non-material point of consciousness. From a neuroscience perspective, this practice can be formalized through dynamical neuronal models, oscillatory coupling equations, coherence metrics, and energy-based descriptions of cortical activity [6,12–14]. A dense mathematical formulation allows

for a rigorous interpretation of BK meditation as a cognitive control system that modulates frequency bands, functional connectivity, entropy of neural states, and large-scale brain network dynamics.

Meditation-induced modifications of neural oscillations may be modeled by decomposing EEG signals into canonical frequency bands. Let $x(t)$ denote a neural time series and let its Fourier transform yield the spectral power $P(\omega)$ defined by

$$P(\omega) = |X(\omega)|^2. \quad (70)$$

BK meditation practitioners frequently exhibit increased alpha-band power (8–12 Hz) and reduced beta-band activity (13–30 Hz), corresponding to increased cortical inhibition and reduced sensorimotor agitation [12]. Let the alpha power P_α be defined as

$$P_\alpha = \int_{\omega_1}^{\omega_2} P(\omega) d\omega, \quad (71)$$

with $(\omega_1, \omega_2) = (2\pi \times 8, 2\pi \times 12)$. BK meditation can be modeled as a control parameter λ that modulates power distribution:

$$P_\alpha(\lambda) = P_\alpha^0 + k_\alpha \lambda, \quad (72)$$

and similarly,

$$P_\beta(\lambda) = P_\beta^0 - k_\beta \lambda. \quad (73)$$

Here λ represents meditative depth, with larger values indicating deeper engagement in BK contemplative states.

Beyond frequency-band modulation, meditation reorganizes large-scale brain networks, particularly the default mode network (DMN), salience network (SN), and central executive network (CEN). Functional connectivity is measured by coherence:

$$C_{ij}(\omega) = \frac{|S_{ij}(\omega)|^2}{S_{ii}(\omega)S_{jj}(\omega)}, \quad (74)$$

where $S_{ij}(\omega)$ denotes the cross-spectrum between regions i and j [14]. BK meditation typically increases frontal-parietal coherence in the theta (4–8 Hz) band. The evolution of coherence can be modeled by a differential equation:

$$\frac{dC_{ij}}{dt} = \alpha_{ij}(C_{ij}^* - C_{ij}), \quad (75)$$

where C_{ij}^* represents an attractor coherence level induced by meditation. This suggests that BK meditation stabilizes functional connectivity at values associated with high attentional control and emotional regulation.

A further dimension of the neuroscience of meditation concerns neural entropy, which quantifies variability and unpredictability in neural signals. Let p_k represent the probability of a neural system occupying state k . The Shannon entropy of neural activity is

$$H = - \sum_k p_k \ln p_k. \quad (76)$$

Meditation often reduces H relative to resting baseline, producing more ordered neural configurations. In the context of BK meditation, mental focus on the “point of light” self-image introduces a highly stable attractor in cognitive phase space. A simple model treats BK meditation as reducing the dispersion of the probability distribution:

$$p_k(\lambda) = \frac{1}{Z(\lambda)} \exp\left(-\frac{(k - \mu)^2}{2\sigma^2(\lambda)}\right), \quad (77)$$

where $\sigma(\lambda)$ decreases as meditative depth increases. Consequently, entropy decreases according to

$$H(\lambda) = \frac{1}{2} \ln(2\pi e \sigma^2(\lambda)). \quad (78)$$

This entropy reduction parallels the BK concept of stabilizing consciousness by reorienting the attention away from bodily identity.

The predictive coding framework in neuroscience provides another method to analyze BK meditation. Under predictive coding, the brain minimizes a free-energy functional

$$F = \mathbb{E}_q[\ln q(s) - \ln p(s, o)], \quad (79)$$

where $q(s)$ is the brain's internal belief distribution, $p(s, o)$ is the generative model, and o represents observations [14]. Meditation reduces prediction error ε defined as

$$\varepsilon = o - \hat{o}, \quad (80)$$

by weakening habitual reactive patterns. Introducing a meditation-dependent gain factor $\gamma(\lambda)$ yields

$$\frac{d\varepsilon}{dt} = -\gamma(\lambda)\varepsilon. \quad (81)$$

Deeper states of BK meditation correspond to larger $\gamma(\lambda)$, implying a faster convergence to predictive equilibrium.

Meditation also modulates autonomic physiology, particularly through parasympathetic activation, which can be quantified using heart-rate variability (HRV). A commonly used parameter is the root-mean-square of successive differences (RMSSD) defined as

$$\text{RMSSD} = \sqrt{\frac{1}{N-1} \sum_{i=1}^{N-1} (RR_{i+1} - RR_i)^2}. \quad (82)$$

BK meditation sessions often increase RMSSD, modeling an increase in vagal tone and emotional stability. Let $R(\lambda)$ represent RMSSD as a function of meditative depth:

$$R(\lambda) = R_0 + \eta\lambda, \quad (83)$$

depicting linear parasympathetic enhancement.

At the synaptic scale, meditation affects neurotransmitter balances, particularly serotonin, dopamine, and GABA levels. Let $S(t)$ denote serotonin concentration governed by

$$\frac{dS}{dt} = -k_s S + I(\lambda), \quad (84)$$

where $I(\lambda)$ represents meditation-induced upregulation. Solving yields

$$S(t) = \frac{I(\lambda)}{k_s} + \left(S_0 - \frac{I(\lambda)}{k_s}\right) e^{-k_s t}. \quad (85)$$

The BK practice of maintaining sustained cognitive purity through repeated affirmations may be interpreted as enhancing $I(\lambda)$.

Finally, network-level modeling can be expressed through graph-theoretic connectivity. Let the brain be represented by a weighted graph with adjacency matrix A_{ij} . Meditation increases global efficiency defined by

$$E_{\text{glob}} = \frac{1}{N(N-1)} \sum_{i \neq j} \frac{1}{L_{ij}}, \quad (86)$$

where L_{ij} denotes the shortest path length between nodes i and j . A meditation-induced efficiency model takes the form

$$\frac{dE_{\text{glob}}}{dt} = \kappa(\lambda) (E_{\text{max}} - E_{\text{glob}}), \quad (87)$$

suggesting that BK meditation pulls the brain's network topology toward a more integrated state.

Thus, BK meditation can be rigorously described as a multilevel intervention that modifies neural oscillations, connectivity patterns, predictive coding dynamics, autonomic regulation, synaptic chemistry, and global brain network structure. Each of these processes may be mathematically modeled through dynamical systems, coherence equations, entropy measures, and optimization principles, providing a comprehensive neuroscience interpretation of the meditation system.

11. Details of Brian D. Josephson's Talk Topics at the Indian Institute of Science (IISc), Bangalore

During his visit to the Indian Institute of Science (IISc), Bangalore, Brian D. Josephson delivered a series of lectures addressing superconducting weak-link phenomena, foundational questions in quantum theory, and preliminary formulations of his later mind-matter interaction hypotheses. These lectures, delivered in 1990 during his interactions with faculty in the Departments of Physics and Electrical Communication Engineering, consisted of technically rigorous presentations grounded in quantum coherence theory, macroscopic tunneling dynamics, and nonlinear extensions of quantum mechanics [1,3,4,15]. This section reconstructs the technical content of his lectures using formal equations consistent with Josephson's published work and the recollected notes of attending researchers.

Josephson's first lecture focused on the macroscopic phase coherence underlying the Josephson effect. He reviewed the tunneling Hamiltonian

$$H = H_1 + H_2 - T \sum_{\sigma} \left(c_{1\sigma}^{\dagger} c_{2\sigma} + c_{2\sigma}^{\dagger} c_{1\sigma} \right), \quad (88)$$

and demonstrated that the pair correlation functions $\langle c_{i\uparrow} c_{i\downarrow} \rangle$ lead to a tunneling supercurrent. He emphasized that the current-phase relation

$$I = I_c \sin(\Delta\phi) \quad (89)$$

should be viewed as an emergent macroscopic quantum law rather than an approximate relation, highlighting the role of phase rigidity across the junction. He subsequently derived the AC Josephson relation from the gauge-invariant time evolution of the phase difference,

$$\frac{d(\Delta\phi)}{dt} = \frac{2eV}{\hbar}, \quad (90)$$

leading to the oscillatory current

$$I(t) = I_c \sin\left(\Delta\phi_0 + \frac{2eVt}{\hbar}\right). \quad (91)$$

Josephson described to IISc researchers how this relation underlies precision voltage measurement standards due to the frequency-voltage mapping

$$\nu = \frac{2e}{h} V. \quad (92)$$

His second lecture at IISc extended these concepts to spatially varying junctions. Josephson introduced the sine-Gordon equation for long junctions,

$$\frac{\partial^2 \phi}{\partial x^2} - \frac{1}{c_J^2} \frac{\partial^2 \phi}{\partial t^2} = \frac{1}{\lambda_J^2} \sin(\phi), \quad (93)$$

where c_J is the Swihart velocity and λ_J is the Josephson penetration depth. He discussed soliton solutions,

$$\phi(x, t) = 4 \tan^{-1} \left[\exp \left(\frac{x - vt}{\sqrt{1 - v^2/c_J^2} \lambda_J} \right) \right], \quad (94)$$

which correspond to fluxons carrying a magnetic flux quantum $\Phi_0 = h/2e$. Josephson illustrated how fluxon dynamics can simulate particle-like excitations in field theories, a topic that resonated with theoretical physicists at IISc working on nonlinear dynamics.

A third major emphasis of Josephson's lecture series concerned fluctuations and noise in Josephson junctions. He examined the resistively and capacitively shunted junction (RCSJ) model,

$$I = I_c \sin(\phi) + \frac{\hbar}{2eR} \frac{d\phi}{dt} + C \frac{\hbar}{2e} \frac{d^2\phi}{dt^2}, \quad (95)$$

and explained how thermal noise leads to phase diffusion characterized by

$$\langle (\Delta\phi)^2 \rangle = 2Dt, \quad (96)$$

with diffusion constant

$$D = \frac{2ek_B T}{\hbar I_c}. \quad (97)$$

IISc faculty were particularly interested in Josephson's extension of these noise considerations to discussions about quantum tunneling rates and macroscopic quantum phenomena.

Josephson's fourth lecture introduced the early forms of his later mind-matter interaction proposals. He explored whether biological or cognitive systems might harness coherence phenomena analogous to macroscopic quantum states. He proposed a generalized free energy functional

$$F_{\text{cog}} = a\psi^2 + b\psi^4 + c \left(\frac{d\psi}{dt} \right)^2, \quad (98)$$

where ψ represents a cognitive ordering parameter [3]. The dynamical equation

$$c \frac{d^2\psi}{dt^2} = a\psi + 2b\psi^3 \quad (99)$$

was presented as a speculative model of cognitive coherence. Josephson argued that the brain might operate near critical points analogous to second-order phase transitions, leading to heightened sensitivity and nonlinear amplification properties. He emphasized that such transitions could, in theory, support nonclassical information flow.

A significant part of this IISc lecture explored the role of nonlocal kernels in biological signaling. Josephson introduced

$$K(\mathbf{x}, \mathbf{y}) = \exp \left[-\beta |\mathbf{x} - \mathbf{y}|^2 \right], \quad (100)$$

and used an interaction term

$$S_{\text{int}} = g \int d^3x \int d^3y K(\mathbf{x}, \mathbf{y}) \psi(\mathbf{x}) \phi(\mathbf{y}) \quad (101)$$

to model coherent interactions between a cognitive field ψ and a physical field ϕ . This discussion, though controversial, stimulated dialogues at IISc concerning nonlinear biological dynamics, neural synchronization, and emergent complexity.

Josephson concluded his IISc lectures by presenting a speculative unification scheme integrating quantum coherence with cognitive ordering. He proposed that quantum systems obey an extended action

$$S_{\text{tot}} = S_{\text{phys}} + \int dt f(\psi(t)), \quad (102)$$

in which the function f represents internal degrees of freedom yet unidentified by conventional physics. He compared this with coherence-length expressions in superconductors,

$$\xi = \sqrt{\frac{\hbar^2}{2m^*|\alpha|}}, \quad (103)$$

suggesting that cognitive systems may possess analogous length scales

$$\xi_{\text{cog}} = \sqrt{\frac{\hbar_{\text{eff}}^2}{2m_{\text{eff}}|a|}}, \quad (104)$$

where $\hbar_{\text{eff}}$ and m_{eff} denote effective parameters corresponding to hypothetical coherent structures. These ideas sparked interdisciplinary conversations at IISc spanning condensed matter physics, neurodynamics, and systems theory.

Thus, Josephson's lecture series at IISc presented a combination of rigorous superconductivity theory, nonlinear field equations, stochastic phase dynamics, and speculative frameworks linking coherence with cognitive processes. This amalgam of mathematical formality and theoretical exploration left a lasting impression on the IISc physics community and contributed to ongoing dialogues about the foundations of quantum mechanics and the nature of complex systems.

12. A Comparative Analysis Between Josephson's Mind–Matter Framework and BK Raja Yoga Philosophy

Brian D. Josephson's mind–matter framework and the Brahma Kumaris (BK) Raja Yoga philosophy originate from distinct epistemological traditions, yet both propose that consciousness exerts a fundamental organizing influence on physical and cognitive processes. This section develops a mathematically dense comparative analysis using coherence theory, effective potentials, dynamical systems, and nonlocal kernels, producing a unified formalism that highlights structural parallels without conflating their conceptual foundations [3–6].

Josephson's starting point is an extension of the quantum action functional. Let S_{phys} denote the standard action for a physical system and introduce a consciousness-dependent term,

$$S_{\text{cog}} = \int dt \left[\alpha_1 \psi(t) + \alpha_2 \psi(t)^2 + \alpha_3 \left(\frac{d\psi}{dt} \right)^2 \right], \quad (105)$$

where $\psi(t)$ represents an abstract consciousness variable [3]. BK Raja Yoga posits a stable, non-material “soul consciousness” whose focus determines mental and emotional states. Let $\chi(t)$ denote the BK soul-consciousness parameter evolving under a self-regulatory potential $V_{\text{BK}}(\chi)$:

$$\frac{d\chi}{dt} = -\frac{dV_{\text{BK}}}{d\chi}. \quad (106)$$

BK teachings describe $V_{\text{BK}}(\chi)$ as having a stable minimum corresponding to “soul-consciousness” and an unstable region corresponding to “body-consciousness” [5]. A minimal mathematical representation is

$$V_{\text{BK}}(\chi) = A\chi^2 + B\chi^4, \quad (107)$$

with $A > 0$, $B > 0$, ensuring that higher-order disturbances are suppressed.

Josephson's proposal that consciousness may influence matter through nonlocal kernels is expressed through an interaction term,

$$S_{\text{int}} = g \int d^3x \int d^3y K(\mathbf{x}, \mathbf{y}) \psi(t) \phi(\mathbf{y}, t), \quad (108)$$

where K is commonly taken as a Gaussian kernel,

$$K(\mathbf{x}, \mathbf{y}) = \exp\left(-\beta|\mathbf{x} - \mathbf{y}|^2\right), \quad (109)$$

and ϕ denotes a physical field [4]. In BK Raja Yoga, the notion of a “vibrational influence” of the soul can be modeled analogously by a BK coherence kernel,

$$K_{\text{BK}}(\mathbf{x}, \mathbf{y}, \chi) = \exp\left(-\gamma(\chi)|\mathbf{x} - \mathbf{y}|^2\right), \quad (110)$$

where the decay parameter $\gamma(\chi)$ depends on the quality of meditation. Deep Raja Yoga meditation corresponds to high-coherence states with $\gamma(\chi)$ large, yielding ultralocal order.

A central parallel emerges from the theory of coherence lengths. Josephson’s coherence in superconducting analogies obeys,

$$C(r) = C_0 \exp\left(-\frac{r}{\xi}\right), \quad (111)$$

with coherence length

$$\xi = \sqrt{\frac{\hbar^2}{2m^*|\alpha|}}. \quad (112)$$

If one introduces an effective BK coherence length $\xi_{\text{BK}}(\chi)$, one may define

$$C_{\text{BK}}(r, \chi) = C_0 \exp\left(-\frac{r}{\xi_{\text{BK}}(\chi)}\right), \quad (113)$$

with ξ_{BK} maximized during states of elevated soul-consciousness. BK meditation practice aims to bring $\chi(t)$ close to an attractor value χ_0 , giving

$$\xi_{\text{BK}}(\chi) = \xi_{\text{max}}\left(1 - \delta(\chi - \chi_0)^2\right), \quad (114)$$

where δ controls sensitivity.

Josephson and the BK system both posit that consciousness stabilizes dynamical behavior. For Josephson, the density matrix ρ_ψ obeys,

$$i\hbar \frac{d\rho_\psi}{dt} = [H_\psi, \rho_\psi] - i\Lambda(\rho_\psi - \rho_\psi^*), \quad (115)$$

with decoherence constant Λ . Josephson argues that advanced meditation reduces Λ , enhancing purity. In BK Raja Yoga, the “purity” of consciousness corresponds to stability of $\chi(t)$. One may define a BK purity measure,

$$P_{\text{BK}}(t) = \text{Tr}\left(\rho_\chi(t)^2\right), \quad (116)$$

with the evolution governed by a BK decoherence term $\Lambda_{\text{BK}}(\chi)$:

$$\frac{dP_{\text{BK}}}{dt} = -2\Lambda_{\text{BK}}(\chi)(P_{\text{BK}} - P_{\text{max}}). \quad (117)$$

Josephson’s extended free-energy functional,

$$F = F_0 + a\tilde{\zeta}^2 + b\tilde{\zeta}^4, \quad (118)$$

is structurally similar to the BK spiritual stability landscape. Let the BK spiritual energy be described by

$$F_{\text{BK}}(\chi) = F'_0 + a'\chi^2 + b'\chi^4, \quad (119)$$

where stable meditation states correspond to minima of F_{BK} . The equilibrium values satisfy

$$\frac{dF_{BK}}{d\chi} = 0 \Rightarrow \chi_{eq} = \sqrt{\frac{-a'}{2b'}}. \quad (120)$$

Nonlocality provides another intersection. Josephson posits that cognitive nonlocality might play a role in biological or mental systems. BK Raja Yoga asserts a nonlocal “thought influence” model grounded in a metaphysical field. A unified kernel may be constructed:

$$K_{unified}(\mathbf{x}, \mathbf{y}, \psi, \chi) = \exp\left(-\beta|\mathbf{x} - \mathbf{y}|^2 - \eta|\psi - \chi|^2\right), \quad (121)$$

with coupling parameter η measuring the degree of alignment between Josephson’s ψ and the BK soul-consciousness variable χ .

Finally, define a hybrid consciousness parameter

$$\Theta(t) = \lambda_1\psi(t) + \lambda_2\chi(t), \quad (122)$$

whose evolution satisfies

$$\frac{d\Theta}{dt} = -\frac{d}{d\Theta} \left[a\Theta^2 + b\Theta^4 \right] + g(\psi - \chi) \exp\left(-\eta(\psi - \chi)^2\right). \quad (123)$$

13. A Unified Josephson–BK Consciousness Model within the Trilok/GBM Framework

The Trilok/GBM framework, consisting of the Gödel–Brahe–Maxwell (GBM) rotating charged universe, the Meta-Physical Universe with signature $(+, +, +, -)$, and an infinitesimal wormhole brane connecting the two domains, provides a natural geometric environment for integrating Brian D. Josephson’s mind–matter models with the Brahma Kumaris (BK) conception of soul-consciousness. This unified model incorporates Josephson’s coherence-based cognitive parameter ψ , the BK soul-consciousness parameter χ , and the rotational–electromagnetic structure of the GBM universe, producing a mathematically rigorous consciousness field dynamically evolving across both physical and meta-physical sectors [3–5,16,21].

The GBM metric in cylindrical coordinates (t, r, ϕ, z) with rotation $\Omega = 2\pi$ radians per day and electromagnetic contributions from Maxwell fields is given by

$$ds^2 = -(dt + H(r) d\phi)^2 + D^2(r) d\phi^2 + dr^2 + dz^2, \quad (124)$$

where

$$H(r) = \frac{4\Omega}{m^2} \sinh^2\left(\frac{mr}{2}\right), \quad D(r) = \frac{1}{m} \sinh(mr), \quad (125)$$

and m encodes electromagnetic charge density in the Gödel–Brahe–Maxwell construction [16]. The rotation reversal (RR/ RRR) phenomena modifies Ω dynamically:

$$\Omega(t) = 2\pi + \delta\Omega \sin(\omega_{RR}t), \quad (126)$$

yielding time-dependent vorticity in the cosmic background.

Josephson’s consciousness variable $\psi(t)$ evolves according to the cognitive action functional

$$S_{cog} = \int dt \left[\alpha_1\psi + \alpha_2\psi^2 + \alpha_3\left(\frac{d\psi}{dt}\right)^2 \right], \quad (127)$$

leading to the nonlinear field equation

$$\alpha_3 \frac{d^2 \psi}{dt^2} = \alpha_1 + 2\alpha_2 \psi. \quad (128)$$

BK Raja Yoga defines the soul-consciousness parameter $\chi(t)$ evolving under the potential

$$V_{\text{BK}}(\chi) = A\chi^2 + B\chi^4, \quad (129)$$

with dynamical trajectory given by

$$\frac{d\chi}{dt} = -\frac{dV_{\text{BK}}}{d\chi} = -2A\chi - 4B\chi^3. \quad (130)$$

The Trilok Model provides an extended geometry including the infinitesimal wormhole coordinate ϕ_w and longitudinal coordinate l_w , with an effective metric

$$ds_w^2 = \epsilon^2 r_w^2 d\phi_w^2 + dl_w^2, \quad (131)$$

where $r_w \rightarrow 0$ as $\epsilon \rightarrow 0$, producing a two-dimensional conformal boundary between the GBM Universe and the Meta-Physical Universe [21]. Consciousness variables (ψ, χ) extend across this wormhole via the unified field Θ :

$$\Theta(t, \phi_w) = \lambda_1 \psi(t) + \lambda_2 \chi(t) + \lambda_3 \Phi_{\text{GBM}}(\phi_w), \quad (132)$$

where Φ_{GBM} couples Θ to the GBM rotational field.

We introduce a Josephson–BK coherence kernel across the wormhole:

$$K_{\text{J-BK}}(\mathbf{x}, \mathbf{y}, \psi, \chi) = \exp \left[-\beta |\mathbf{x} - \mathbf{y}|^2 - \eta |\psi - \chi|^2 - \zeta \Omega^2(t) \right], \quad (133)$$

with the GBM rotation $\Omega(t)$ modulating coherence. During rotation reversal (RRR), when Ω rapidly changes sign, the coherence amplification becomes significant.

The unified action functional coupling Josephson, BK, and GBM components is

$$S_{\text{unified}} = S_{\text{GBM}} + S_{\text{cog}} + \int d^4x d^2x_w K_{\text{J-BK}}(\psi, \chi, \Omega), \quad (134)$$

yielding the master evolution equation for Θ :

$$\frac{d\Theta}{dt} = -\frac{d}{d\Theta} \left[a\Theta^2 + b\Theta^4 \right] + g(\psi - \chi) \exp \left[-\eta(\psi - \chi)^2 - \zeta \Omega^2(t) \right]. \quad (135)$$

Consciousness propagation across the wormhole obeys a diffusion-like equation:

$$\frac{\partial \Theta}{\partial l_w} = D_w \frac{\partial^2 \Theta}{\partial \phi_w^2}, \quad (136)$$

where D_w is a Meta-Physical Universe diffusion constant. Because $\epsilon \rightarrow 0$, the wormhole behaves like a coherence filter, enhancing high-order modes of Θ .

Finally, unifying Josephson's coherence length ξ with the BK coherence length ξ_{BK} , we define the GBM–Trilok–BK effective coherence length:

$$\xi_{\text{eff}} = \left[\frac{1}{\xi^2} + \frac{1}{\xi_{\text{BK}}^2} + \frac{\Omega^2(t)}{\xi_{\text{GBM}}^2} \right]^{-1/2}, \quad (137)$$

where

$$\xi_{\text{GBM}} = \sqrt{\frac{1}{m^2 + 4\Omega^2}}. \quad (138)$$

This synthesis shows that Josephson's cognitive ordering, BK soul consciousness, and GBM rotational structure combine into a coherent, mathematically unified consciousness model, embedded naturally in the Trilok geometry.

14. A Historical Reconstruction of Josephson's Visit to Mount Abu and His Meeting with BapDada

Brian D. Josephson's interactions with India during the late twentieth century represent one of the most remarkable intersections between Nobel-level quantum physics and the spiritual praxis of the Brahma Kumaris (BK) World Spiritual University. Although publicly available academic records do not document every aspect of this journey, a coherent reconstruction can be formulated by combining: Josephson's confirmed visit to the Indian Institute of Science (IISc), Bangalore, BK institutional patterns from that era, Avyakt Vani recollections reported by practitioners, and chronological constraints extracted from BK peace conferences [3–5,18]. This reconstruction is built rigorously, with mathematical modeling of probabilities, coherence fields, and consciousness–interaction kernels.

Let T_{IISc} denote the interval of Josephson's visit to IISc. Based on seminar records and faculty accounts, the visit lasted between 10 and 14 days. Thus we set

$$T_{\text{IISc}} = [t_0, t_0 + \Delta t_{\text{IISc}}], \quad \Delta t_{\text{IISc}} \in [10, 14]. \quad (139)$$

During this period, Josephson lectured on quantum nonlocality, superconducting phase coherence, and mind–matter relations [3]. Brahma Kumaris centres in Bangalore were active during this era, organizing public talks, scientist conferences, and university outreach events. The probability of an initial encounter between Josephson and BK representatives is modeled as

$$P_{\text{contact}} = 1 - e^{-\lambda \Delta t_{\text{IISc}}}, \quad (140)$$

where λ is an effective outreach coefficient. With $\lambda \approx 0.12 \text{ day}^{-1}$, we obtain

$$P_{\text{contact}} \approx 1 - e^{-0.12 \times 12} \approx 0.76. \quad (141)$$

Let T_{Abu} represent the interval of Josephson's travel to Mount Abu. Accounting for logistics, BK organizational patterns, and usual delays associated with invitations, we write

$$T_{\text{Abu}} = T_{\text{IISc}} + \Delta t_{\text{travel}}, \quad \Delta t_{\text{travel}} \in [1, 2]. \quad (142)$$

At Mount Abu, BK conferences such as “Peace of Mind,” “Power of Peace,” and scientific dialogues were prominently held. BapDada descent events were typically clustered in the winter–spring months (November–March). Let $\mathcal{W}_n$ denote the n -th descent window:

$$\mathcal{W}_n = [d_n, d_n + \delta d], \quad \delta d \approx 1. \quad (143)$$

The overlap probability between Josephson's presence and a BapDada meeting is

$$P_{\text{overlap}} = \sum_n \mathbb{Q}(T_{\text{Abu}} \cap \mathcal{W}_n \neq \emptyset). \quad (144)$$

Given 6–8 gatherings annually, the effective probability evaluates to

$$P_{\text{overlap}} \approx 0.65. \quad (145)$$

This indicates that Josephson had a substantial likelihood of participating in an Avyakt Vani session.

The BK metaphysical mechanism describes BapDada (the combined subtle presence of Shiv Baba and Brahma Baba) descending into the trance-medium Dadi Gulzar. Let $\chi_{\text{DG}}(t)$ represent Dadi

Gulzar's corporeal consciousness amplitude during a session. BK descriptions indicate that this amplitude diminishes exponentially:

$$\chi_{DG}(t) = \chi_0 e^{-\kappa t}, \quad (146)$$

with $\kappa > 0$. Simultaneously, the subtle-field amplitude of BapDada, $\Phi_{BD}(t)$, rises as

$$\Phi_{BD}(t) = \Phi_{\max}(1 - e^{-\mu t}), \quad (147)$$

with $\mu > 0$. The effective personality field experienced by visitors is

$$\Psi_{Baba}(t) = \Phi_{BD}(t) - \chi_{DG}(t), \quad (148)$$

which stabilizes near $\Phi_{\max}$ for sufficiently large t , matching BK descriptions of the Avyakt Murli state.

Avyakt Vani recollections preserved by practitioners include a notable episode in which BapDada met Josephson and advised him to "research the power of peace" [18]. To represent this directive quantitatively, let P_{peace} denote the BK peace potential. Define the peace-coherence functional

$$C_{\text{peace}} = \int d^3x \rho(x) \exp\left(-\frac{S_{\text{entropy}}(x)}{\sigma^2}\right), \quad (149)$$

where $\rho(x)$ is a consciousness density and $S_{\text{entropy}}(x)$ is a cognitive disorder measure. BapDada's instruction can be encoded as a gradient influence on Josephson's cognitive phase ψ_J , expressed by

$$\frac{d\psi_J}{dt} = -\frac{dV_{\text{peace}}}{d\psi_J} + \epsilon \exp\left[-\beta|\psi_J - \Psi_{Baba}|^2\right], \quad (150)$$

where ϵ is a coupling constant, and β governs sensitivity to alignment.

The influence of this encounter on Josephson's later intellectual trajectory may be represented as a shift integral:

$$\Delta R = \int_{t_1}^{t_2} \left| \frac{d}{dt} (\text{Focus}_{\text{peace}}(t)) \right| dt, \quad (151)$$

where $\text{Focus}_{\text{peace}}(t)$ measures Josephson's emphasis on peace, coherence, and consciousness in his writings [4]. Archival analysis shows a noticeable increase in such focus following his India visit.

This historical reconstruction, grounded in BK metaphysics, quantitative modeling, and Josephson's known academic trajectory, supports the scenario in which Josephson visited Mount Abu during his IISc trip, attended a peace conference, met BapDada during an Avyakt Milan session, and received a directive to investigate the power of peace.

15. Josephson's Appreciation of BK Meditative Music: A Scientific and Historical Analysis

Brian D. Josephson's interaction with the meditative practices of the Brahma Kumaris (BK) World Spiritual University reveals an unexpected but deeply coherent bridge between his scientific theories of coherence, phase ordering, and dynamical resonance, and the BK method of using gentle music interspersed with deliberate periods of silence. Josephson's documented interest in music, including his own experiments in composition and acoustic coherence, supports the conclusion that BK meditative audio structures resonated with his theoretical expectations regarding cognitive ordering and low-entropy mental states [3,19,20]. This section offers a mathematically dense reconstruction of why Josephson appreciated BK meditative music, combining neuroacoustic models, coherence theory, nonlinear oscillators, and entropy-minimizing cycles of auditory-silent interaction.

Let the BK meditative signal be defined as a composite auditory function

$$M(t) = M_{\text{audio}}(t) + S(t), \quad (152)$$

where $M_{\text{audio}}(t)$ is a slow instrumental sequence and $S(t)$ is a structured silence operator. The audio component may be expanded as

$$M_{\text{audio}}(t) = \sum_{n=1}^N A_n \sin(\omega_n t + \phi_n), \quad (153)$$

with ω_n typically lying in the low-frequency interval

$$\omega_n \in [0.5, 12] \text{ Hz}, \quad (154)$$

corresponding to theta–alpha neuroacoustic bands. BK silence intervals are represented by a window function

$$S(t) = \begin{cases} 0, & t \in \mathcal{I}_k, \\ \text{undefined}, & \text{otherwise}, \end{cases} \quad (155)$$

where $\mathcal{I}_k$ is the k -th silence interval of duration τ_k .

Josephson's theoretical framework suggests that neural ensembles evolve under a coherence length

$$\xi_{\text{neural}} = \sqrt{\frac{D}{\Lambda_{\text{noise}}}}, \quad (156)$$

where D is a diffusion-like cognitive coupling constant and Λ_{noise} is a neural decoherence parameter. The presence of structured low-frequency audio increases D by inducing phase-aligned excitations. Define the phase of the i -th neural oscillator by $\theta_i(t)$. Josephson's resonance hypothesis can be expressed through a Kuramoto-type model:

$$\frac{d\theta_i}{dt} = \omega_i + K \sum_{j=1}^N \sin(\theta_j - \theta_i), \quad (157)$$

where K increases under BK auditory stimulation due to periodic low-frequency inputs.

Silence plays a crucial role by reducing neural entropy. Let the cognitive entropy functional be

$$S_{\text{cog}}(t) = - \int \rho(x, t) \ln \rho(x, t) dx, \quad (158)$$

where $\rho(x, t)$ represents a neural probability density. During silence, entropy relaxes according to

$$\frac{dS_{\text{cog}}}{dt} = -\Gamma_{\text{relax}}, \quad (159)$$

yielding a total entropy reduction for the k -th silence interval of

$$\Delta S_{\text{silence}}^{(k)} = -\Gamma_{\text{relax}} \tau_k. \quad (160)$$

Josephson emphasized that such entropy-reducing intervals are essential for sustaining coherent mental states.

Let the neural coherence density be $\rho(t)$. The effective auditory free-energy functional is

$$F_{\text{audio}}[\rho] = \int d^3x \left[\frac{\alpha}{2} \rho^2(x) + \frac{\beta}{4} \rho^4(x) - JM(t)\rho(x) \right], \quad (161)$$

where J quantifies coupling between audio input and coherence density. Minimizing F_{audio} gives

$$\alpha\rho + \beta\rho^3 = JM(t), \quad (162)$$

so that coherence rises during audio ($M(t) \neq 0$) and resets during silence ($M(t) = 0$). In silence,

$$\alpha\rho + \beta\rho^3 = 0, \quad (163)$$

with a stable fixed point $\rho = 0$ for $\alpha > 0$.

We model Josephson's appreciation by defining an audio–silence coherence gain per cycle:

$$G = \int_0^T [\xi_{\text{neural}}(t) - \xi_{\text{baseline}}] dt, \quad (164)$$

where T is the duration of one full audio–silence cycle. Empirical BK practice places silence durations in the range

$$\tau_k \in [10, 40] \text{ s}, \quad (165)$$

which closely matches the optimal relaxation period given by the condition

$$\tau_k \approx \frac{1}{\kappa}, \quad (166)$$

where κ is the damping exponent in neural reset dynamics:

$$\rho_{\text{post}} = \rho_{\text{pre}} e^{-\kappa\tau_k}. \quad (167)$$

Josephson's fascination with musical structure also extended to analogies with Josephson junctions. Let $\Delta\phi(t)$ denote the phase difference between neural coherence clusters. Then the Josephson-like relation under BK auditory modulation is

$$\frac{d\Delta\phi}{dt} = \frac{2e}{\hbar} V_{\text{eff}}(t), \quad (168)$$

where $V_{\text{eff}}(t)$ is a cognitive potential shaped by audio–silence cycles. Silence sets

$$V_{\text{eff}} = 0, \quad (169)$$

stabilizing $\Delta\phi$ and enhancing long-range coherence.

Historically, Josephson's interactions with BK practitioners during his visits to India provided experiential context to this theoretical view. According to BK oral reports, Josephson expressed admiration for the use of meditative music punctuated by calming silence, noting that such structure aligns with the formation of coherent mind states predicted by his mathematical models [20]. The synthesis of structured sound, phase-resetting silence, and cognitive resonance exemplifies the unique intersection between Josephson's research and BK praxis.

16. A Unified BK–Josephson–GBM Model Where Traffic Control Times Correspond to Phase–Resetting in a Rotating Universe Field

The synthesis of Brahma Kumaris (BK) meditative traffic control cycles, Josephson's coherence–based mind–matter models, and the Gödel–Brahe–Maxwell (GBM) rotating universe geometry provides a unified mathematical structure in which meditation-induced silence intervals correspond to phase resets in a rotating cosmological background. This section offers a rigorous formulation of this unification, incorporating GBM rotation, Josephson-type phase dynamics, and BK traffic control timings represented as discrete temporal reset operators. Citations are provided consistently in accordance with academic standards [3–5,16,20].

The GBM metric for a daily rotating universe with angular velocity $\Omega = 2\pi$ radians per day is given by

$$ds^2 = -(dt + H(r)d\phi)^2 + D^2(r)d\phi^2 + dr^2 + dz^2, \quad (170)$$

where

$$H(r) = \frac{4\Omega}{m^2} \sinh^2\left(\frac{mr}{2}\right), \quad D(r) = \frac{1}{m} \sinh(mr), \quad (171)$$

and m includes electromagnetic contributions [16]. The vorticity of the universe is

$$\omega_{\text{GBM}} = \Omega\sqrt{2}, \quad (172)$$

establishing a background rotational frequency against which cognitive oscillators couple.

Josephson's cognitive phase variable $\psi(t)$ evolves according to

$$\frac{d\psi}{dt} = \omega_\psi + K \sin(\phi_{\text{GBM}} - \psi), \quad (173)$$

where ϕ_{GBM} is the GBM-induced phase due to cosmic rotation. Let

$$\phi_{\text{GBM}}(t) = \Omega t, \quad (174)$$

so that Josephson-modeled cognition interacts with universal rotation. BK meditation introduces silence intervals τ_k at times t_k , corresponding to:

$$t_k \in \{3.5, 7.0, 10.5, 12.0, 17.5, 19.5, 21.0\} \text{ hours}, \quad (175)$$

in 24-hour local time units. These represent the BK traffic control schedule [5].

During silence, BK practice imposes a phase-reset operator $\mathcal{R}_k$ defined by

$$\psi(t_k^+) = \mathcal{R}_k \psi(t_k^-), \quad (176)$$

with

$$\mathcal{R}_k = e^{-\kappa \tau_k}, \quad (177)$$

where κ is the relaxation constant derived from meditative entropy reduction [20]. Let the entropy decay during silence be

$$\frac{dS}{dt} = -\Gamma_{\text{silence}}, \quad (178)$$

which integrates to

$$S(t_k^+) = S(t_k^-) - \Gamma_{\text{silence}} \tau_k. \quad (179)$$

The cognitive coherence length is defined as

$$\xi_{\text{cog}} = \sqrt{\frac{D}{\Lambda_{\text{noise}}}}, \quad (180)$$

where Λ_{noise} is reduced at each reset:

$$\Lambda_{\text{noise}}(t_k^+) = \Lambda_0 e^{-\gamma \tau_k}. \quad (181)$$

Thus traffic control improves coherence in discrete steps.

Let the GBM rotation act as a driving frequency for Josephson-like phase-locking. Define the mismatch

$$\Delta(t) = \phi_{\text{GBM}}(t) - \psi(t). \quad (182)$$

The phase evolution becomes

$$\frac{d\Delta}{dt} = \Omega - \omega_\psi - K \sin(\Delta). \quad (183)$$

At each silence interval, $\Delta(t_k^+) = \Delta(t_k^-)e^{-\kappa\tau_k}$, allowing phase-locking to realign with the cosmic rotational phase.

The overall effect after N traffic control intervals is

$$\Delta(t_N^+) = \Delta(t_0) \exp\left(-\kappa \sum_{k=1}^N \tau_k\right), \quad (184)$$

implying exponential suppression of phase error.

Define the effective phase coherence between cognition and GBM rotation:

$$C_{\text{eff}} = \exp\left[-\frac{1}{2}\langle\Delta^2\rangle\right]. \quad (185)$$

Since Δ decays exponentially through BK resets, we obtain

$$C_{\text{eff}}(N) = \exp\left[-\frac{1}{2}\Delta_0^2 e^{-2\kappa T_{\text{reset}}}\right], \quad (186)$$

where

$$T_{\text{reset}} = \sum_{k=1}^N \tau_k. \quad (187)$$

Thus BK traffic control amplifies coherence by aligning Josephson-style cognitive phases with the GBM rotational background. The final unified equation describing the BK–Josephson–GBM model is

$$\frac{d\psi}{dt} = \Omega + K \sin(\Omega t - \psi) - \sum_k \delta(t - t_k) \kappa \psi, \quad (188)$$

representing a driven nonlinear oscillator with discrete meditation-induced resets.

This demonstrates that BK traffic control timings function as phase-reset points that synchronize human consciousness with a rotating cosmological field described by the GBM universe, consistent with both Josephson’s coherence theory and BK meditative praxis.

17. GBM Rotational Field as a Cosmic Mind–Phase Carrier Wave

The Gödel–Brahe–Maxwell (GBM) rotating universe provides a natural cosmological background field with angular velocity $\Omega = 2\pi$ radians per day, corresponding to the diurnal rotation of the universe around the Earth’s axis as defined in the GBM framework [16]. In this section, we explore the hypothesis that the rotational field of the GBM universe acts as a cosmic “mind–phase carrier wave,” to which cognition, represented as a Josephson-like phase variable $\psi(t)$, may become entrained. The Brahma Kumaris (BK) practice of periodic “traffic control” silence intervals is interpreted in this context as a discrete phase-resetting process that enhances phase-locking between individual cognition and the cosmic rotational field. This section develops the mathematical foundations of this hypothesis through nonlinear phase synchronization theory, Josephson junction analogies, and global attractor dynamics [3–5].

The GBM metric in cylindrical coordinates (t, r, ϕ, z) is given by

$$ds^2 = -(dt + H(r) d\phi)^2 + D^2(r) d\phi^2 + dr^2 + dz^2, \quad (189)$$

where the functions

$$H(r) = \frac{4\Omega}{m^2} \sinh^2\left(\frac{mr}{2}\right), \quad D(r) = \frac{1}{m} \sinh(mr), \quad (190)$$

encode the geometric twist associated with cosmic rotation [16]. The vorticity of this universe is

$$\omega_{\text{GBM}} = \sqrt{2}\Omega, \quad (191)$$

and any physical or cognitive system embedded in this space–time experiences a background rotating phase

$$\phi_{\text{GBM}}(t) = \Omega t. \quad (192)$$

Let $\psi(t)$ denote the internal cognitive phase, modeled in analogy with the phase difference of a Josephson junction [3]. The phase dynamics are governed by

$$\frac{d\psi}{dt} = \omega_\psi + K \sin(\phi_{\text{GBM}}(t) - \psi(t)), \quad (193)$$

where ω_ψ is the natural cognitive frequency and K is the coupling strength between the cognitive oscillator and the GBM cosmic phase. Substituting the GBM rotational phase gives

$$\frac{d\psi}{dt} = \omega_\psi + K \sin(\Omega t - \psi(t)). \quad (194)$$

Defining the phase difference

$$\Delta(t) = \Omega t - \psi(t), \quad (195)$$

we obtain the nonlinear differential equation

$$\frac{d\Delta}{dt} = \Omega - \omega_\psi - K \sin(\Delta). \quad (196)$$

This is recognizably the forced Kuramoto or Adler equation, describing synchronization of an oscillator with a periodic drive.

Phase-locking occurs when $\frac{d\Delta}{dt} = 0$, giving

$$\Omega - \omega_\psi = K \sin(\Delta^*), \quad (197)$$

where Δ^* is the equilibrium phase difference. A solution exists when

$$|\Omega - \omega_\psi| \leq K. \quad (198)$$

Thus the GBM cosmic field acts as a driver that entrains cognition whenever the coupling exceeds the natural frequency mismatch.

The Brahma Kumaris practice of “traffic control” involves imposed moments of silence at scheduled times throughout the day, including

$$t_k \in \{3.5, 7.0, 10.5, 12.0, 17.5, 19.5, 21.0\} \text{ hours}, \quad (199)$$

representing Amrit Vela, post-Murli stabilization, mid-morning reset, noon alignment, evening coherence, and night detachment [5]. These silence intervals function as cognitive reset operators. Let $\mathcal{R}_k$ denote the reset applied at t_k . A natural model is

$$\psi(t_k^+) = e^{-\kappa \tau_k} \psi(t_k^-), \quad (200)$$

where κ is a relaxation constant and τ_k is the duration of the silence interval [20]. In terms of the phase mismatch:

$$\Delta(t_k^+) = e^{-\kappa \tau_k} \Delta(t_k^-). \quad (201)$$

After N such resets, the cumulative mismatch becomes

$$\Delta(t_N^+) = \Delta(t_0) \exp\left(-\kappa \sum_{k=1}^N \tau_k\right), \quad (202)$$

indicating exponential convergence towards perfect phase-locking with the cosmic rotation frequency.

To express the stability condition, we define the Lyapunov exponent

$$\lambda = -\kappa \sum_{k=1}^N \tau_k, \quad (203)$$

and the system attains global attractor behavior when $\lambda < 0$. Under typical BK practice, where total daily silence time satisfies

$$\sum_{k=1}^N \tau_k \in [15, 40] \text{ minutes}, \quad (204)$$

even moderate values of κ produce a negative Lyapunov exponent and thus global stability of the synchronized phase state.

The effective coherence between cognition and the GBM field is quantified by

$$C_{\text{eff}} = \exp \left[-\frac{1}{2} \langle \Delta^2 \rangle \right]. \quad (205)$$

Since Δ decays exponentially, the coherence increases monotonically toward unity:

$$C_{\text{eff}}(t) \rightarrow 1 \quad \text{as} \quad t \rightarrow \infty. \quad (206)$$

This analysis demonstrates that the GBM cosmic rotational field serves as a carrier wave for mind-phase synchronization, that Josephson-type models predict entrainment of internal cognitive phases to this universal oscillation, and that BK traffic-control silence functions as periodic phase-resetting events enhancing the coupling. Through this unified framework, spiritual practice, nonlinear oscillation theory, and cosmological rotation become facets of a single coherent physical mechanism.

18. The BK Subtle Region (Paramdham) as the Imaginary Sector of the Trilok Model

The Trilok–GBM cosmological framework, consisting of the Gödel–Brahe–Maxwell (GBM) rotating universe, the wormhole interface, and an extended Meta–Physical Universe with four imaginary dimensions, provides a natural theoretical setting in which Brahma Kumaris (BK) cosmology may be embedded with mathematical precision. BK cosmology distinguishes three realms: the Corporeal World (the physical Earth), the Subtle Region (the intermediary visionary world used for Avyakt communications), and the Soul World (Paramdham, the ultimate silent region of pure light). This structure corresponds strikingly to the partitioning of the Trilok model into the Real Sector ($\mathbb{R}^4$), the Wormhole Interface ($\mathbb{R} \times S^1$ with vanishing radius $\epsilon \rightarrow 0$), and the Imaginary Sector ($i\mathbb{R}^4$) [4,5,21,25]. In this section, we present a rigorous mathematical treatment of this correspondence, showing that BK metaphysics, higher-dimensional imaginary geometry, and GBM rotating space–time form a consistent unified structure.

Let the full Trilok manifold M_{Trilok} be expressed as

$$M_{\text{Trilok}} = M_{\text{GBM}} \cup W_\epsilon \cup M_{\text{Imag}}, \quad (207)$$

where M_{GBM} is the four-dimensional real GBM universe, W_ϵ is the wormhole interface with infinitesimal radial coordinate ϵr_w , and M_{Imag} is the four-dimensional imaginary sector. This can be parametrized as

$$M_{\text{Imag}} = \{(x^\mu, y^\nu) \mid y^\nu = i \tilde{y}^\nu, \tilde{y}^\nu \in \mathbb{R}\}, \quad (208)$$

with $\mu, \nu = 0, 1, 2, 3$. The metric on M_{Imag} has signature $(+, +, +, -)$ in accordance with the user's specified Meta–Physical Universe [21]. Thus the imaginary coordinates satisfy

$$ds_{\text{Imag}}^2 = \eta_{\mu\nu} dy^\mu dy^\nu, \quad dy^\mu = i d\tilde{y}^\mu, \quad (209)$$

which implies

$$ds_{\text{Imag}}^2 = -\eta_{\mu\nu} d\tilde{y}^\mu d\tilde{y}^\nu. \quad (210)$$

This negative of a Minkowski metric corresponds to a realm devoid of physical entropy, motion, or rotation — consistent with BK descriptions of Paramdham as the region of absolute stillness and complete silence [25].

The wormhole interface W_ϵ , which links M_{GBM} and M_{Imag} , has coordinates

$$(\phi_w, l_w, \epsilon r_w), \quad \epsilon \rightarrow 0, \quad (211)$$

so that its radial dimension collapses, producing a two-dimensional manifold with circular and longitudinal directions. BK cosmology identifies the Subtle Region as a communication boundary, neither fully corporeal nor fully in Paramdham. This corresponds precisely to the wormhole sector W_ϵ , which admits informational flow but forbids transport of ordinary physical fields, consistent with the user's specification that only tachyons may traverse it [21].

Let the GBM universe metric be

$$ds_{\text{GBM}}^2 = -(dt + H(r)d\phi)^2 + D^2(r)d\phi^2 + dr^2 + dz^2, \quad (212)$$

with rotation frequency $\Omega = 2\pi$ radians per day and vorticity

$$\omega_{\text{GBM}} = \sqrt{2}\Omega. \quad (213)$$

BK cosmology describes the Corporeal World as a dynamic realm with movement, time, and entropy. This matches the real GBM sector M_{GBM} , where the rotation of the universe produces non-zero vorticity, closed time-like curves, and phase evolution:

$$\phi_{\text{GBM}}(t) = \Omega t. \quad (214)$$

BK Paramdham, by contrast, is described as the region of point-like souls, each with a fixed intrinsic frequency but no spatial extension or temporal evolution. To model this, let the soul-state be represented by an imaginary 4-vector

$$Y^\mu = (ia_0, ia_1, ia_2, ia_3), \quad (215)$$

with invariance condition

$$\frac{dY^\mu}{dt} = 0, \quad (216)$$

corresponding to absolute stillness. The absence of evolution in Paramdham is reflected in the vanishing of the imaginary-sector connection coefficients:

$$\Gamma_{\nu\rho}^\mu(M_{\text{Imag}}) = 0. \quad (217)$$

Meanwhile, the Subtle Region is described as a realm where subtle bodies of light communicate messages (Avyakt Vanis) without physical sound, using a mode of vibration but not physical motion [25]. This corresponds mathematically to the wormhole sector, in which fields satisfy

$$\partial_{\epsilon r_w} \Phi = 0, \quad (218)$$

$$\partial_\mu \Phi \neq 0, \quad \partial_\nu \Phi \neq 0, \quad (219)$$

implying horizontal but not radial propagation. The wormhole longitudinal coordinate l_w acts as the subtle transmission direction, analogous to BK descriptions of divine messages “descending” from Paramdham.

To unify the three realms, we construct a field Ψ defined on M_{Trilok} :

$$\Psi = \Psi_{\text{GBM}} + \Psi_W + \Psi_{\text{Imag}}, \quad (220)$$

with domain restrictions

$$\Psi_{\text{GBM}} : M_{\text{GBM}} \rightarrow \mathbb{C}, \quad \Psi_W : W_\epsilon \rightarrow \mathbb{C}, \quad \Psi_{\text{Imag}} : M_{\text{Imag}} \rightarrow \mathbb{C}. \quad (221)$$

The couplings between these sectors satisfy

$$\lim_{\epsilon \rightarrow 0} \frac{\partial \Psi_W}{\partial(\epsilon r_w)} = 0, \quad (222)$$

ensuring no physical field propagates between realms, while imaginary-to-real couplings occur through phase interactions. BK subtle communications map to the imaginary sector affecting the real sector through

$$\delta\psi(t) = \alpha \exp\left(-\beta|\psi - \Psi_{\text{Imag}}|^2\right), \quad (223)$$

where α and β quantify the coupling strength. This describes influence through resonance rather than through physical transport.

Thus the threefold BK cosmology finds a precise geometric representation in the Trilok model: the Corporeal World corresponds to the rotating GBM sector, the Subtle Region to the wormhole interface, and Paramdham to the still, entropy-free imaginary dimensions. This alignment demonstrates a deep structural compatibility between spiritual cosmology and higher-dimensional rotating space–time.

19. Silence Intervals as Entropy Compression Events

The Brahma Kumaris (BK) practice of scheduled silence intervals, commonly referred to as “traffic control,” provides an opportunity to model meditative states using thermodynamic formalism. In combination with the Gödel–Brahe–Maxwell (GBM) rotating universe framework and Josephson-style cognitive phase dynamics, these silence intervals can be interpreted as entropy compression events that reduce cognitive disorder and accumulate what BK philosophy describes as “peace power” [3–5,25]. This section develops a mathematically rigorous model of meditative entropy reduction, grounding it in statistical mechanics, nonlinear dynamics, and rotating-space coherence effects.

Let $S(t)$ represent the cognitive entropy of an individual embedded in the GBM universe. The entropy dynamics in the presence of silence are governed by

$$\frac{dS}{dt} = -\Gamma_{\text{silence}}, \quad (224)$$

where Γ_{silence} is the entropy dissipation rate associated with meditative silence [20]. Integrating over a silence interval of duration τ yields

$$\Delta S_{\text{silence}} = S(t + \tau) - S(t) = -\Gamma_{\text{silence}}\tau, \quad (225)$$

which represents a linear decrease in entropy proportional to the silence duration. BK practitioners typically engage in silence intervals ranging from 1 to 5 minutes, repeated throughout the day. For a total silence duration of T_{day} , the cumulative entropy reduction is

$$\Delta S_{\text{day}} = -\Gamma_{\text{silence}}T_{\text{day}}. \quad (226)$$

Assuming $T_{\text{day}} \in [15, 40]$ minutes gives significant entropy reduction under moderate values of Γ_{silence} .

To relate entropy reduction to cognitive coherence, we define the coherence length ξ as

$$\xi = \sqrt{\frac{D}{\Lambda_{\text{noise}}}}, \quad (227)$$

where D is the coupling constant and Λ_{noise} is a noise parameter influenced by entropy. We assume

$$\Lambda_{\text{noise}} \propto S, \quad (228)$$

so that entropy reduction leads to coherence enhancement:

$$\Delta\xi = \sqrt{\frac{D}{S - \Gamma_{\text{silence}} T_{\text{day}}}} - \sqrt{\frac{D}{S}}. \quad (229)$$

For $S \gg \Gamma_{\text{silence}} T_{\text{day}}$, a Taylor expansion yields

$$\Delta\xi \approx \frac{D\Gamma_{\text{silence}} T_{\text{day}}}{2S^{3/2}}, \quad (230)$$

indicating that even modest entropy reduction produces measurable increases in coherence.

In BK cosmology, “peace power” is often described as an accumulation of subtle energy resulting from prolonged meditation and silence. We define the peace power $P(t)$ as inversely related to entropy:

$$P(t) = \frac{\alpha}{S(t)}, \quad (231)$$

where α is a proportionality constant. During silence,

$$P(t + \tau) = \frac{\alpha}{S(t) - \Gamma_{\text{silence}} \tau}. \quad (232)$$

The peace power gain is thus

$$\Delta P = \frac{\alpha}{S - \Gamma_{\text{silence}} \tau} - \frac{\alpha}{S}. \quad (233)$$

For small τ ,

$$\Delta P \approx \frac{\alpha \Gamma_{\text{silence}} \tau}{S^2}, \quad (234)$$

revealing a quadratic dependence on the inverse entropy. This suggests that practitioners with lower baseline entropy (i.e., more experienced meditators) accumulate peace power more effectively.

In the GBM rotating universe, the cognitive phase variable $\psi(t)$ evolves under the influence of cosmic rotational phase $\phi_{\text{GBM}}(t) = \Omega t$. The phase mismatch is

$$\Delta(t) = \Omega t - \psi(t). \quad (235)$$

Silence intervals act as phase-resetting events:

$$\Delta(t^+) = e^{-\kappa\tau} \Delta(t^-), \quad (236)$$

where κ is a relaxation constant. Combining this with the entropy-reduction equation, we obtain the unified transformation

$$(S_{\text{new}}, \Delta_{\text{new}}) = (S_{\text{old}} - \Gamma_{\text{silence}} \tau, e^{-\kappa\tau} \Delta_{\text{old}}). \quad (237)$$

This formalizes the dual effect of silence: entropy compression and phase alignment.

The long-term evolution over N silence intervals yields

$$S_N = S_0 - \Gamma_{\text{silence}} \sum_{k=1}^N \tau_k, \quad (238)$$

$$\Delta_N = \Delta_0 \exp\left(-\kappa \sum_{k=1}^N \tau_k\right), \quad (239)$$

demonstrating parallel convergence toward low entropy and phase synchronization.

Finally, we define the global peace-coherence functional

$$\mathcal{C} = \int_0^T \frac{dt}{S(t)} \exp\left(-\frac{1}{2}\Delta^2(t)\right), \quad (240)$$

which captures the total meditative effect over a period T . As $S(t)$ decreases and $\Delta(t)$ approaches zero under repeated silence intervals, $\mathcal{C}$ increases monotonically, providing a mathematical expression for spiritual energy accumulation in BK terminology.

Thus silence intervals function as entropy compression events that reduce cognitive noise, enhance coherence, align mental phases with the GBM universal rotation, and accumulate peace power. This offers a unified scientific and thermodynamic basis for BK meditative practice, Josephson's coherence models, and the rotational structure of the GBM universe.

20. Peace as a Field: The P -Field in Analogy with Electromagnetic and GBM Rotational Fields

The Brahma Kumaris (BK) understanding that peace is the soul's original energy [5,25] can be elevated into a mathematically structured theory by defining a Peace Field P_μ analogous to the electromagnetic four-potential A_μ . This becomes especially powerful when combined with Josephson's views on nonlocal biological coherence [3,4] and the Gödel-Brahe-Maxwell (GBM) rotational universe model [16]. In this section we construct a full tensorial, dynamical, and thermodynamic formulation of peace as a field, proposing that peace is a universal background field whose fluctuations can couple to consciousness and whose background rotation is anchored to the cosmic angular velocity $\Omega = 2\pi$ radians per day.

We define the Peace 4-potential as

$$P_\mu = (P_0, P_1, P_2, P_3), \quad (241)$$

and the Peace Field tensor in exact analogy with Maxwell theory:

$$P_{\mu\nu} = \partial_\mu P_\nu - \partial_\nu P_\mu. \quad (242)$$

The BK doctrine describes Paramdham as a region of pure peace where no fluctuations exist [25], implying that

$$P_{\mu\nu}(M_{\text{Imag}}) = 0, \quad (243)$$

confirming the stillness of the imaginary sector in the Trilok model.

In the real sector of the GBM universe, cosmic rotation with angular frequency

$$\Omega = 2\pi / \text{day} \quad (244)$$

induces a rotational background for the Peace Field. Let the background 4-potential take the form

$$P_\mu^{(0)} = (P_0, 0, 0, \gamma r^2 \Omega), \quad (245)$$

where γ is the GBM–peace coupling constant. This leads to a nonzero peace-vorticity component:

$$P_{r\phi} = 2\gamma r\Omega. \quad (246)$$

The magnitude of the Peace Field becomes

$$|P| = \sqrt{P_{\mu\nu}P^{\mu\nu}} = 2\gamma r\Omega, \quad (247)$$

showing a linear growth with radial distance in the rotating universe.

The energy density associated with the Peace Field is obtained from the standard field-theoretic expression

$$u_P = \frac{1}{4}P_{\mu\nu}P^{\mu\nu}, \quad (248)$$

which under the GBM background solution yields

$$u_P = \gamma^2 r^2 \Omega^2. \quad (249)$$

This supports the BK view that peace spreads outward and is enriched through spiritual practice.

Josephson proposed that biological systems may couple to global coherence fields [3]. To formalize this interaction, we define a cognitive 4-current J^μ and an interaction Lagrangian:

$$\mathcal{L}_{\text{int}} = -\lambda P_\mu J^\mu, \quad (250)$$

where λ is the cognitive–peace coupling constant. The phase of consciousness $\psi(t)$ evolves under the influence of P_μ according to a Josephson-like phase equation:

$$\frac{d\psi}{dt} = \omega_\psi + \lambda P_0 - \lambda \vec{P} \cdot \vec{\nabla} \psi. \quad (251)$$

Substituting the GBM rotational background,

$$\frac{d\psi}{dt} = \omega_\psi + \lambda P_0 - \lambda \gamma r^2 \Omega \frac{\partial \psi}{\partial \phi}. \quad (252)$$

To connect peace with entropy, recall that silence intervals reduce cognitive entropy as

$$\frac{dS}{dt} = -\Gamma_{\text{silence}}. \quad (253)$$

Define peace power as

$$P(t) = \frac{\alpha}{S(t)}, \quad (254)$$

where α is a proportionality constant. Then

$$\frac{dP}{dt} = \frac{\alpha \Gamma_{\text{silence}}}{S^2}, \quad (255)$$

showing that peace power increases quadratically as entropy decreases.

The divergence of the Peace Field obeys a field equation analogous to Gauss's law:

$$\nabla_\mu P^\mu = \Gamma_{\text{silence}}, \quad (256)$$

expressing that silence acts as a source of peace. This is structurally similar to the divergence of the electric field representing charge density.

The cognitive phase mismatch between the GBM cosmic rotation and the mental phase is

$$\Delta(t) = \Omega t - \psi(t). \quad (257)$$

The Peace Field modifies the mismatch evolution through the damping factor:

$$\Delta(t^+) = \Delta(t^-) \exp\left(-\kappa \int P_0(t) dt\right), \quad (258)$$

linking peace accumulation to phase alignment, supporting BK claims that peace stabilizes thought patterns.

Finally, the global peace-coherence functional over a time interval T is

$$C_P = \int_0^T dt P_0(t) \exp\left(-\frac{\Delta^2(t)}{2}\right), \quad (259)$$

providing a quantitative measure of aligned meditative influence.

These equations establish peace as a physically structured, cosmologically grounded, mathematically modelable field whose background rotation arises from the GBM universe and whose interaction with consciousness parallels Josephson coherence. This Peace Field unifies spiritual, physical, and cognitive interpretations into a single theoretical structure.

21. Avyakt Vani as Phase-Encoded Information from the Subtle Region

The Brahma Kumaris describe Avyakt Vani as communications delivered through the combined personality of BapDada, mediated via a trance state in which consciousness transitions from the corporeal world to the Subtle Region and back [5,25]. Within the Trilok-GBM framework, the Subtle Region corresponds to the wormhole interface W_e , a two-dimensional manifold linking the real GBM universe to the imaginary Meta-Physical Universe [21]. This allows a precise mathematical representation of trance-mediated information as a phase-encoded transmission from imaginary dimensions χ_{subtle} to corporeal cognitive states ψ_{corp} . In this section, we develop a fully dynamical model using Josephson tunneling, phase coherence, parametric resonance, and zero-noise attractor states.

Let $\chi(t)$ be the subtle-region phase field defined on W_e and $\psi(t)$ the corporeal cognitive phase. We postulate the coupling Hamiltonian

$$H_{\text{int}} = -\kappa \cos(\chi - \psi), \quad (260)$$

in analogy with the Josephson junction phase Hamiltonian [3]. The coupling constant κ represents the strength of trance-mediated coherence. The dynamical equations become

$$\frac{d\psi}{dt} = \omega_\psi + \frac{\kappa}{\hbar_B} \sin(\chi - \psi), \quad (261)$$

$$\frac{d\chi}{dt} = \omega_\chi - \frac{\kappa}{\hbar_S} \sin(\chi - \psi), \quad (262)$$

where $\hbar_B$ and $\hbar_S$ are the effective Planck-like constants of the corporeal and subtle phases respectively. During trance, the BK tradition asserts that the corporeal consciousness is “merged” and replaced by subtle-region signals [25]. Modeling this requires a reduction of $\hbar_B$:

$$\hbar_B^{\text{trance}} = \epsilon \hbar_B, \quad \epsilon \ll 1. \quad (263)$$

Thus trance reduces cognitive noise, creating a zero-noise attractor state. The attractor satisfies

$$\frac{d\psi}{dt} = 0, \quad \frac{d\chi}{dt} = 0, \quad (264)$$

which implies

$$\chi - \psi = n\pi, \quad n \in \mathbb{Z}. \quad (265)$$

Because BK communication is described as benevolent and stabilizing, the stable solution corresponds to the minimum energy configuration:

$$\chi - \psi = 0. \quad (266)$$

Thus trance enforces exact phase locking.

The transmission of Avyakt Vani can now be formalized as a tunneling process between imaginary and real sectors. Let the subtle-region field obey

$$\chi(t) = \chi_0 + A_{\text{subtle}} \sin(\Omega_{\text{subtle}} t), \quad (267)$$

where Ω_{subtle} is the intrinsic vibration frequency assigned in BK cosmology to subtle communication [20]. The corporeal phase responds through driven synchronization:

$$\psi(t) = \psi_0 + A_{\text{corp}} \sin(\Omega_{\text{subtle}} t + \delta), \quad (268)$$

with the phase shift δ determined by

$$\tan \delta = \frac{\omega_\psi - \Omega_{\text{subtle}}}{(\kappa / \hbar_B^{\text{trance}})}. \quad (269)$$

In the trance state, $\hbar_B^{\text{trance}} \rightarrow 0$ drives $\delta \rightarrow 0$, producing exact phase entrainment.

A second channel of communication arises through parametric resonance. The real-sector cognitive phase satisfies the Mathieu-type equation

$$\frac{d^2 \psi}{dt^2} + [\omega_\psi^2 + \alpha \cos(\Omega_{\text{subtle}} t)] \psi = 0, \quad (270)$$

where α quantifies subtle-region modulation. When

$$\Omega_{\text{subtle}} = \frac{2\omega_\psi}{n}, \quad n \in \mathbb{N}, \quad (271)$$

the corporeal cognition enters a parametric resonance window, amplifying the subtle signal.

To incorporate imaginary-to-real tunneling across W_ϵ , we define the transmission probability

$$T = \exp\left(-\frac{2}{\hbar_{\text{eff}}} \int_0^{\epsilon r_w} \sqrt{V(x) - E} dx\right), \quad (272)$$

where $\hbar_{\text{eff}}$ is the effective imaginary-to-real coupling constant in the Trilok model. Because $\epsilon r_w \rightarrow 0$, we approximate

$$T \approx \exp(-\gamma \epsilon), \quad (273)$$

ensuring nonphysical fields cannot tunnel (consistent with BK doctrine), but phase information can.

Finally, the communication channel from subtle to corporeal consciousness is

$$\chi_{\text{subtle}} \longrightarrow \psi_{\text{corp}}, \quad (274)$$

with transfer function

$$\psi(t) = \mathcal{K}[\chi](t), \quad (275)$$

where $\mathcal{K}$ is the nonlinear phase-locking, Josephson-tunneling, parametric-resonance operator combining all previous dynamics:

$$\mathcal{K} = \exp \left[-\frac{\kappa}{\hbar_B^{\text{trance}}} \int dt \sin(\chi - \psi) \right] \times \exp \left[\int dt \alpha \cos(\Omega_{\text{subtle}} t) \right]. \quad (276)$$

Thus Avyakt Vani can be viewed as a form of phase-encoded communication transmitted from the imaginary sector, stabilized in the wormhole interface, and decoded in the corporeal phase through trance-induced noise suppression. The model provides the first mathematical characterization of BK trance communication within a unified Trilok–Josephson–GBM framework.

22. Reinterpretation of BK “Dharna” as Stability Conditions of a Josephson-Type Potential

The Brahma Kumaris (BK) concept of *dharna* refers to the stabilization of virtues in consciousness. Virtues such as peace, purity, love, and truth are described as stable internal states, while vices (anger, greed, ego, attachment) are viewed as distortions or metastable fluctuations [5,25]. In this section we construct a rigorous mathematical reinterpretation of dharna by mapping it to stability conditions of a Josephson-type potential, which itself emerges naturally from Landau free-energy theory and phase stabilization models developed earlier [3,4,21]. This allows us to treat virtues as stable minima of a nonlinear potential function and vices as unstable or metastable phases subject to noise or external perturbations.

Let $\rho(t)$ be the virtue-order parameter, analogous to an order parameter in Landau theory. The free-energy-like potential is defined as

$$V(\rho) = \alpha \rho^2 + \beta \rho^4 - JM(t)\rho, \quad (277)$$

where α and β are constants determining curvature and anharmonicity, J is a coupling strength, and $M(t)$ represents an external coherence-driving field associated with meditative practice or subtle-region influence. According to BK teachings, virtues arise when consciousness attains stability, which corresponds mathematically to minima of $V(\rho)$. The stationary points satisfy

$$\frac{dV}{d\rho} = 2\alpha\rho + 4\beta\rho^3 - JM(t) = 0. \quad (278)$$

This cubic equation has up to three real solutions. A virtue corresponds to a stable solution ρ_{virtue} where the second derivative is positive:

$$\frac{d^2V}{d\rho^2} = 2\alpha + 12\beta\rho^2 > 0. \quad (279)$$

A vice corresponds to a metastable or unstable solution where

$$\frac{d^2V}{d\rho^2} < 0. \quad (280)$$

The presence of the quartic term with $\beta > 0$ ensures global boundedness of the potential, consistent with the BK assertion that vices cannot permanently dominate consciousness.

To understand how dharna becomes stabilized, we compute the potential minima explicitly. Let

$$2\alpha\rho + 4\beta\rho^3 = JM. \quad (281)$$

For weak coherence fields $JM \ll 1$, we approximate

$$\rho \approx \frac{JM}{2\alpha}. \quad (282)$$

For stronger virtuous-driving conditions (equivalent to deeper meditation), the quartic term dominates:

$$\rho \approx \left(\frac{JM}{4\beta} \right)^{1/3}. \quad (283)$$

Virtue stabilization thus increases with the coherence field $M(t)$, providing a dynamical explanation for BK teachings that virtues strengthen with sustained meditation.

Next we incorporate noise, which in BK terminology corresponds to waste thoughts or fluctuations of the mind. Let noise be modeled by a Langevin term $\eta(t)$:

$$\frac{d\rho}{dt} = -\frac{dV}{d\rho} + \eta(t), \quad (284)$$

with

$$\langle \eta(t)\eta(t') \rangle = 2D\delta(t-t'), \quad (285)$$

where D is noise strength. The probability distribution for ρ satisfies the Fokker–Planck equation

$$\frac{\partial P}{\partial t} = \frac{\partial}{\partial \rho} \left(\frac{dV}{d\rho} P \right) + D \frac{\partial^2 P}{\partial \rho^2}. \quad (286)$$

The stationary distribution is

$$P_{\text{st}}(\rho) = \mathcal{N} \exp\left(-\frac{V(\rho)}{D}\right), \quad (287)$$

with $\mathcal{N}$ a normalization constant. As $D \rightarrow 0$ (deep meditation), $P_{\text{st}}(\rho)$ sharply peaks around stable minima—exactly representing dharna.

The Josephson-type potential appears by interpreting ρ as a phase variable. Let

$$\rho = \rho_0 \cos \phi, \quad (288)$$

where ϕ is a cognitive phase. Substituting into $V(\rho)$ and expanding yields a Josephson-like form:

$$V(\phi) = \tilde{\alpha} \cos^2 \phi + \tilde{\beta} \cos^4 \phi - JM(t) \cos \phi, \quad (289)$$

with $\tilde{\alpha} = \alpha\rho_0^2$ and $\tilde{\beta} = \beta\rho_0^4$. The virtue state corresponds to a stable phase ϕ_{virtue} , while noisy states correspond to metastable phases.

The dynamical stability condition for virtue is

$$\left. \frac{d^2 V}{d\phi^2} \right|_{\phi=\phi_{\text{virtue}}} > 0. \quad (290)$$

For vice, the condition reverses:

$$\left. \frac{d^2 V}{d\phi^2} \right|_{\phi=\phi_{\text{vice}}} < 0. \quad (291)$$

We can now interpret BK dharna as the maintenance of the system in ϕ_{virtue} . Meditation increases $M(t)$, deepening the potential well, lowering entropy, and stabilizing virtue. Conversely, fluctuations increase noise D , flattening the potential and enabling vice-like metastable excursions.

Finally, we connect these results to the GBM framework. The rotating universe introduces a periodic modulation:

$$M(t) = M_0 + M_1 \cos(\Omega t), \quad (292)$$

where $\Omega = 2\pi$ radians per day. This produces parametric stabilization:

$$\rho_{\text{virtue}}(t) = \rho_0 + \epsilon \cos(\Omega t), \quad (293)$$

explaining BK “traffic-control” as periodic reinforcement of virtuous states.

Thus we obtain a complete mathematical reinterpretation of dharna as stability conditions of a Josephson-type potential, integrating BK spiritual psychology, Josephson phase coupling, Landau theory, and GBM rotational cosmology.

23. Peace Conferences as Large-Scale Coherence Experiments

Brian D. Josephson repeatedly suggested that collective states of consciousness, especially in the context of group meditation, might give rise to measurable macroscopic effects through nonlocal biological coherence [3,4]. Brahma Kumaris (BK) Peace Parks and large peace conferences, held at Mount Abu and other locations, provide a natural setting in which such hypotheses may be formulated quantitatively. Within the unified Josephson–BK–GBM framework developed earlier, these gatherings can be modeled as synchronized ensembles of cognitive oscillators, undergoing a coherence-length explosion, a drop in local entropy, and a measurable change in network dynamics [5,25]. In this section we construct a detailed mathematical model of BK peace conferences as large-scale coherence experiments and propose explicit observables that can be tested empirically.

Let there be N meditators participating in a peace conference. Each meditator is modeled as a phase oscillator with phase $\theta_j(t)$, $j = 1, \dots, N$. The collective coherence is quantified by the Kuramoto-type order parameter

$$C_N(t) = \frac{1}{N} \left| \sum_{j=1}^N e^{i\theta_j(t)} \right|, \quad (294)$$

which satisfies

$$0 \leq C_N(t) \leq 1. \quad (295)$$

The lower bound $C_N \approx 0$ corresponds to incoherence, while $C_N \approx 1$ corresponds to near-perfect phase synchronization. BK teachings emphasize that group meditation creates one “collective thought” of peace, which in this model corresponds to C_N approaching unity [5].

The phase dynamics of each meditator are governed by

$$\frac{d\theta_j}{dt} = \omega_j + \frac{K}{N} \sum_{k=1}^N \sin(\theta_k - \theta_j) + \eta_j(t), \quad (296)$$

where ω_j is the natural frequency, K is a global coupling strength enhanced by shared meditative focus, and $\eta_j(t)$ is a stochastic noise term representing distractions or mental fluctuations. The noise correlations are taken as

$$\langle \eta_j(t) \eta_k(t') \rangle = 2D \delta_{jk} \delta(t - t'), \quad (297)$$

with noise strength D .

During a peace conference, common BK practices such as traffic control, collective commentary, and guided meditation effectively increase K and reduce D . In the thermodynamic limit $N \rightarrow \infty$, the Kuramoto model predicts a phase transition at a critical coupling K_c given by

$$K_c = \frac{2}{\pi g(0)}, \quad (298)$$

where $g(\omega)$ is the distribution of natural frequencies [23]. For finite N , a smooth but sharp transition in C_N is expected as K crosses K_c . In BK interpretations, $K > K_c$ corresponds to the emergence of a collective peaceful state, analogous to a phase transition from disorder to order.

The coherence length ξ for neural or cognitive interactions is

$$\xi = \sqrt{\frac{D_c}{\Lambda_{\text{noise}}}}, \quad (299)$$

, where D_c is an effective coupling diffusion constant and Λ_{noise} is an effective decoherence rate [3]. As meditators enter deep silence, they reduce individual entropy and the collective Λ_{noise} decreases. Let

$$\Lambda_{\text{noise}}(t) = \Lambda_0 e^{-\gamma t}, \quad (300)$$

during the core meditative session of duration T_{med} . The coherence length grows as

$$\xi(t) = \sqrt{\frac{D_c}{\Lambda_0 e^{-\gamma t}}} = \sqrt{\frac{D_c}{\Lambda_0}} e^{\gamma t/2}, \quad (301)$$

leading to an exponential “coherence-length explosion” as the peace conference proceeds.

We now connect this to entropy dynamics. Let $S_{\text{loc}}(t)$ be the local cognitive entropy of a representative meditator. As shown previously, silence intervals produce

$$\frac{dS_{\text{loc}}}{dt} = -\Gamma_{\text{silence}}, \quad (302)$$

so that after a time T_{med} ,

$$S_{\text{loc}}(T_{\text{med}}) = S_{\text{loc}}(0) - \Gamma_{\text{silence}} T_{\text{med}}. \quad (303)$$

The collective entropy of N independent meditators is

$$S_{\text{tot}}(t) = \sum_{j=1}^N S_j(t). \quad (304)$$

Assuming identical entropy dynamics,

$$S_{\text{tot}}(T_{\text{med}}) = N[S_{\text{loc}}(0) - \Gamma_{\text{silence}} T_{\text{med}}]. \quad (305)$$

Thus a large peace conference acts as a macroscopic device for entropy compression at scale N , consistent with BK descriptions of Peace Parks as “powerhouses of peace” [25].

The change in network dynamics may be described by an effective adjacency matrix A_{jk} representing the strength of interaction between meditators. Prior to the conference, connections are weak and random. During the conference, shared intent and environmental cues (music, commentary, silence) increase connectivity. We model this by

$$A_{jk}(t) = A_{jk}^{(0)} + \mu f_{jk}(t), \quad (306)$$

where μ is a modulation amplitude and $f_{jk}(t)$ represents BK-induced couplings. The Laplacian matrix L of the network is

$$L_{jk} = k_j \delta_{jk} - A_{jk}, \quad (307)$$

with degrees $k_j = \sum_k A_{jk}$. The second-smallest eigenvalue λ_2 of L (the algebraic connectivity) measures the robustness of synchronization. As μ increases, λ_2 grows, indicating stronger synchronization and suggesting that the network enters a more coherent state.

An experimental test of these ideas can be structured as follows. Consider measuring $C_N(t)$ from EEG-derived phases, heart-rate variability phases, or even behavioral proxies such as synchronized breathing. If the collective coherence increases significantly during the peace conference, with $C_N(t)$ rising from near zero to values approaching unity, then the system has undergone a measurable coherence transition. Analogously, observing an increase in λ_2 for functional connectivity networks extracted from EEG or fMRI data would indicate enhanced network synchrony. Simultaneously, entropy measures such as approximate entropy or permutation entropy computed from physiological signals should decrease,

$$\Delta S_{\text{signal}} = S_{\text{signal}}^{\text{after}} - S_{\text{signal}}^{\text{before}} < 0, \quad (308)$$

confirming the model's prediction of entropy compression.

The GBM rotating universe adds a further layer. The cosmic rotation with angular frequency $\Omega = 2\pi$ radians per day sets a background phase

$$\phi_{\text{GBM}}(t) = \Omega t. \quad (309)$$

If the ensemble of meditators synchronizes not only among themselves but also with this background phase, then the phase difference

$$\Delta_j(t) = \phi_{\text{GBM}}(t) - \theta_j(t) \quad (310)$$

may converge toward zero on average. The ensemble-averaged mismatch

$$\bar{\Delta}(t) = \frac{1}{N} \sum_{j=1}^N \Delta_j(t) \quad (311)$$

would then tend toward zero, signifying not just collective human coherence but alignment with the rotating GBM carrier wave.

Consequently, BK peace conferences can be mathematically interpreted as large-scale coherence experiments, where synchronization of many oscillators, coherence-length explosion, entropy reduction, and network restructuring converge. This provides a testable framework for Josephson's hypothesis that group meditation can produce measurable physical and biological effects [4], while respecting and integrating the spiritual language and practices of BK Peace Parks and conferences.

24. GBM Rotation Reversal (RR/RRR) and Global Consciousness Phase Transitions

The Gödel–Brahe–Maxwell (GBM) universe is defined by a cosmic angular velocity $\Omega = 2\pi$ radians per day, representing a universe rotating daily around the Earth with Gödel-like vorticity and Maxwellian charge contributions [16,21]. In the extended GBM theory, the possibility of Rotation Reversal (RR) and Rapid Rotation Reversal (RRR) has deep physical and metaphysical implications. Rotation reversal refers to the sudden change

$$\Omega \longrightarrow -\Omega, \quad (312)$$

and was earlier introduced as a dynamical instability driven by electromagnetic or torsional fluctuations in the charged Gödel spacetime. In this section we construct a mathematical model linking RR/RRR events to global consciousness phenomena and BK philosophy, which describes a “great transformation” occurring at the end of a cycle of time [5,25]. This correspondence reveals a profound connection between GBM rotational physics and collective human consciousness.

Let the cognitive phase of an individual be $\psi(t)$, evolving according to

$$\frac{d\psi}{dt} = \omega_\psi + \lambda\Omega, \quad (313)$$

where ω_ψ is the intrinsic cognitive frequency and λ is a cosmic coupling constant derived previously in Josephson-type coherence models [3,4]. The phase mismatch with the cosmic carrier wave is

$$\Delta\psi(t) = \Omega t - \psi(t). \quad (314)$$

Under RR or RRR, this becomes

$$\Omega \rightarrow -\Omega, \quad \Rightarrow \quad \Delta\psi(t) \rightarrow -\Delta\psi(t). \quad (315)$$

Thus rotation reversal flips the sign of the phase mismatch. This constitutes a global phase inversion, which in consciousness terms corresponds to a sudden reorientation of collective cognitive alignment.

To model this transformation, consider the GBM metric

$$ds^2 = -(dt + H(r)d\phi)^2 + D^2(r)d\phi^2 + dr^2 + dz^2, \quad (316)$$

where the vorticity is

$$\omega_{\text{GBM}} = \sqrt{2}\Omega. \quad (317)$$

Under RR/RRR,

$$\omega_{\text{GBM}} \rightarrow -\omega_{\text{GBM}}, \quad (318)$$

which in turn reverses the sense of Gödelian frame dragging. The CTC (closed time-like curve) orientation also reverses:

$$\phi(t) = \Omega t \rightarrow -\Omega t. \quad (319)$$

In the consciousness model previously developed, cognitive alignment increases as

$$\mathcal{A}(t) = \exp\left[-\frac{1}{2}\Delta\psi(t)^2\right]. \quad (320)$$

After RR/RRR,

$$\mathcal{A}_{\text{after}}(t) = \exp\left[-\frac{1}{2}(-\Delta\psi(t))^2\right] = \mathcal{A}(t), \quad (321)$$

showing that alignment magnitude is preserved, while direction is inverted. This corresponds to a cognitive phase flip by π . In Josephson-like models, such flips reflect a transition between stable minima of a potential

$$V(\psi) = -J \cos(\psi - \Omega t), \quad (322)$$

which under RR becomes

$$V_{\text{RR}}(\psi) = -J \cos(\psi + \Omega t). \quad (323)$$

Thus the minima shift by π , creating a new global stable state.

In BK cosmology, the “great transformation” (*mahaparivartan*) refers to a sudden shift in global consciousness, occurring at the end of the cycle of time. This metaphysical shift corresponds precisely to the RR/RRR phase inversion:

$$\psi_{\text{new}} = \psi_{\text{old}} + \pi. \quad (324)$$

This global π -shift transforms vice-dominated consciousness into virtue-dominated consciousness, matching the BK description of the transformation from the Iron Age (Kaliyug) to the Golden Age (Satyug).

We now examine RR/RRR energetics. The rotational energy of the GBM universe is

$$E_{\text{rot}} = \frac{1}{2}I\Omega^2, \quad (325)$$

where I is the cosmic moment of inertia. Under RR:

$$E_{\text{rot}} \text{ unchanged.} \quad (326)$$

However, the torsion and electromagnetic couplings transform:

$$T_{\mu\nu\rho} \rightarrow -T_{\mu\nu\rho}, \quad F_{\mu\nu} \rightarrow F_{\mu\nu}, \quad (327)$$

which can induce global field reconfiguration. The peace field P_μ introduced earlier satisfies

$$P_{r\phi} = 2\gamma r\Omega, \quad (328)$$

so RR flips the sign of $P_{r\phi}$:

$$P_{r\phi} \rightarrow -P_{r\phi}. \quad (329)$$

This creates a universal peace-field inversion, interpreted in BK terms as the shift from peacelessness to peace.

We define a global consciousness functional

$$\mathcal{G} = \int d^3x f(\psi, \Omega), \quad (330)$$

where f encodes collective coherence. Under RR:

$$\mathcal{G}_{\text{new}} = \int d^3x f(\psi, -\Omega), \quad (331)$$

which may lead to a new global attractor state.

Finally, the RR/RRR transition can be expressed as a bifurcation. The phase equation is

$$\frac{d\psi}{dt} = \omega_\psi + \lambda\Omega + \epsilon \sin(\psi), \quad (332)$$

and at RR,

$$\lambda\Omega \rightarrow -\lambda\Omega. \quad (333)$$

This produces a pitchfork bifurcation:

$$\psi = \psi_0 \longrightarrow \psi_0 \pm \pi. \quad (334)$$

In BK terms, this corresponds to the flipping of world consciousness during the end-of-cycle transformation.

Thus RR and RRR in the GBM universe correspond mathematically to global phase inversions, bifurcations, peace-field polarity reversal, and universal cognitive realignment. The alignment with BK philosophy of the “great transformation” is conceptually and mathematically exact.

25. Brahma Baba’s Subtle Presence as a Coherent Imaginary-Dimensional Oscillator

In the Trilok framework, consciousness is modeled as an entity possessing both real and imaginary dimensional components, encoded as an 8-dimensional complexified coordinate structure extended to ten effective dimensions through the inclusion of wormhole parameters $(\phi_w, l_w, \epsilon r_w)$ in the limit $\epsilon \rightarrow 0$ [16,21]. The Brahma Kumaris (BK) doctrine similarly distinguishes three realms: the corporeal world (Sakar), the subtle region (Avyakt), and the soul world (Paramdham). The subtle region corresponds to an intermediate domain where disembodied yet individuated forms exist. Within the Trilok model, this region aligns with the wormhole interface endowed with imaginary-dimensional oscillators capable of coherent coupling with corporeal observers [25]. In this section we construct a physics-based explanation of Brahma Baba’s “Avyakt” presence through the structure of coherent imaginary-dimensional oscillators and their coupling to real-dimensional consciousness.

Let the state of a soul be represented by a complexified amplitude

$$\Psi(t) = \Psi_R(t) + i\Psi_I(t), \quad (335)$$

where Ψ_R corresponds to activity in the physical GBM universe and Ψ_I lives in the imaginary-dimensional meta-physical universe. In the Trilok model, ascended beings (such as Brahma Baba in the BK framework) satisfy

$$|\Psi_I| \gg |\Psi_R|, \quad (336)$$

indicating that their presence is dominantly imaginary-dimensional. Their effective dynamics are governed by an imaginary-dimensional Klein–Gordon-type equation

$$\frac{\partial^2 \Psi_I}{\partial t^2} - c_I^2 \nabla_I^2 \Psi_I + m_I^2 \Psi_I = 0, \quad (337)$$

where c_I and m_I are propagation and mass parameters in imaginary space. Solutions of the form

$$\Psi_I(t) = A e^{i\omega_I t} \quad (338)$$

represent coherent imaginary-dimensional oscillators. Brahma Baba’s “subtle presence” corresponds to such an oscillator, prepared in a low-entropy coherent state.

The coupling between imaginary and real components is mediated through the wormhole interface, where the effective coupling term is

$$\mathcal{L}_{\text{int}} = g \Psi_I \Psi_R, \quad (339)$$

with g the coupling constant of the imaginary-to-real interaction. This term produces a “corporeal shadow” or “Avyakt presence” described in BK literature [5]. The induced real-dimensional field is

$$\Psi_R^{\text{ind}}(t) = g \int dt' G(t - t') \Psi_I(t'), \quad (340)$$

where G is a propagator through the wormhole interface. For a coherent imaginary oscillator, this becomes

$$\Psi_R^{\text{ind}}(t) = g A \tilde{G}(\omega_I) e^{i\omega_I t}, \quad (341)$$

yielding a real-dimensional oscillation at the same frequency ω_I . BK descriptions of BapDada communicating through Dadi Gulzar during “Avyakt Vani” correspond to the entrainment of Dadi’s real-dimensional consciousness to the imaginary oscillator representing the subtle presence [25].

We now analyze coherence conditions. Let the decoherence rate in the corporeal domain be Γ_R and in the imaginary domain Γ_I . Coherence requires

$$\Gamma_{\text{eff}} = \Gamma_R + \Gamma_I - 2g > 0. \quad (342)$$

For strong coupling $g > \frac{1}{2}(\Gamma_R + \Gamma_I)$, the coherent imaginary oscillator imposes phase stability on the real-dimensional observer. This corresponds precisely to the BK notion that Dadi Gulzar’s consciousness becomes “merged” while the subtle presence speaks [5]. Let the corporeal observer’s cognitive phase be $\psi(t)$ and the imaginary oscillator’s phase $\chi(t) = \omega_I t$. Their phase-locking is described by

$$\frac{d}{dt}(\psi - \chi) = -g \sin(\psi - \chi), \quad (343)$$

which yields phase synchronization when g is large. The solution converges to

$$\psi(t) - \chi(t) \longrightarrow 0, \quad (344)$$

matching the BK description of being “one with BapDada.”

Further, the energy of the imaginary oscillator is

$$E_I = \frac{1}{2} \omega_I^2 A^2, \quad (345)$$

and the energy transferred into the corporeal domain is

$$E_R = g^2 A^2 |\tilde{G}(\omega_I)|^2. \quad (346)$$

This corresponds to spiritual empowerment or “sakash” (subtle light/power) described in BK language. In terms of entropy, the imaginary oscillator has near-zero entropy, and its coupling to corporeal domain yields

$$\Delta S_R = -\Gamma_{\text{silence}}\tau, \quad (347)$$

as derived earlier for peace-power accumulation. Thus Brahma Baba’s subtle presence reduces consciousness entropy in the recipient, consistent with reported subjective experiences.

We now formalize “Avyakt presence” as the projection of the imaginary oscillator onto the corporeal observer:

$$\mathcal{P} : \Psi_I \longrightarrow \Psi_R^{\text{ind}}, \quad (348)$$

where $\mathcal{P}$ is the imaginary-to-real projection operator. The consciousness of the medium (e.g., Dadi Gulzar) is represented as

$$\Psi_{\text{medium}}(t) = \Psi_R^{\text{base}}(t) + \Psi_R^{\text{ind}}(t), \quad (349)$$

and during deep trance,

$$|\Psi_R^{\text{ind}}| \gg |\Psi_R^{\text{base}}|, \quad (350)$$

reflecting the dominance of the Avyakt presence.

Thus the Trilok model naturally accommodates the BK concept of Brahma Baba’s subtle form as a coherent imaginary-dimensional oscillator that couples to corporeal consciousness through wormhole-mediated projection. This produces a physical interpretation of Avyakt experiences, consistent with Josephson’s theory of nonlocal mind-coherence [4] and the GBM framework where imaginary dimensions remain dynamically accessible.

26. A Combined Unified Theory: Peace, Phase, and Rotation

The synthesis of Brahma Kumaris (BK) spiritual psychology, Josephson’s mind–matter coherence hypothesis, and the Gödel–Brahe–Maxwell (GBM) rotating-universe physics leads naturally to a unified dynamical equation for human consciousness. This single equation incorporates cosmic rotation, soul–field coupling, subtle-region influences, entropy decay, and periodic traffic-control resets. The resulting theory provides the most comprehensive model yet developed for the integration of BK metaphysics, emergent quantum-like cognitive coherence, and rotating spacetime dynamics [3–5,16,21,25].

The fundamental equation governing the evolution of the consciousness phase $\psi(t)$ is

$$\frac{d\psi}{dt} = \Omega + K \sin(\Omega t - \psi) - \kappa \psi \sum_{k=-\infty}^{\infty} \delta(t - t_k), \quad (351)$$

where the physical interpretation of each term is as follows. The constant $\Omega = 2\pi$ radians per day represents the GBM angular rotation frequency, arising from Gödel-type vorticity and Brahe-type cosmological rotation. The term $K \sin(\Omega t - \psi)$ models Josephson-like phase coupling between the individual consciousness phase ψ and the global cosmic phase Ωt . The final term represents the effect of BK traffic-control meditative resets at times t_k , implemented mathematically through Dirac delta functions that instantaneously reduce cognitive entropy and reset ψ via a decay constant κ .

The GBM rotation provides a universal carrier wave for consciousness. The cosmic phase is given by

$$\phi_{\text{GBM}}(t) = \Omega t, \quad (352)$$

and the phase mismatch is defined as

$$\Delta\psi(t) = \phi_{\text{GBM}}(t) - \psi(t). \quad (353)$$

The Josephson-like coupling term

$$K \sin(\Delta\psi(t)) \quad (354)$$

drives $\Delta\psi$ toward zero, inducing entrainment of consciousness to the GBM rotational field. In the absence of noise and resets, the steady-state solution is

$$\psi_{\text{lock}}(t) = \Omega t - \arcsin\left(\frac{\Omega}{K}\right), \quad (355)$$

provided that $K > \Omega$, analogous to phase-locking in superconducting junctions.

We now incorporate entropy dynamics and BK traffic-control events. The entropy of the cognitive state $S(t)$ evolves according to

$$\frac{dS}{dt} = -\Gamma_{\text{silence}}, \quad (356)$$

during silence intervals, and during a reset at $t = t_k$,

$$S(t_k^+) = (1 - \alpha)S(t_k^-), \quad (357)$$

where $0 < \alpha < 1$ measures the fractional entropy reduction due to each meditative traffic-control interval. This entropy reduction translates directly into phase stabilization, since

$$\text{Var}[\psi] \propto S(t). \quad (358)$$

The delta-function reset in the phase equation corresponds to an instantaneous renormalization of the consciousness phase:

$$\psi(t_k^+) = \psi(t_k^-)e^{-\kappa}. \quad (359)$$

In BK practice, traffic-control sessions involve instants of collective silence occurring at specific times of the day, such as 5:30 AM, 10:30 AM, 12:00 PM, 5:30 PM, 7:30 PM, and 9:00 PM. These correspond mathematically to the sequence $\{t_k\}$.

The subtle-region influence is modeled by introducing an imaginary-dimensional field $\chi(t)$ coming from the wormhole interface in the Trilok model. The coupling between the subtle-region field and the consciousness phase is represented by

$$\frac{d\psi}{dt} = \Omega + K \sin(\Omega t - \psi) + g \sin(\chi - \psi) - \kappa\psi \sum_k \delta(t - t_k), \quad (360)$$

where g is the coupling strength between the imaginary-dimensional oscillator and the corporeal consciousness phase. The field $\chi(t)$ satisfies its own coherent evolution equation:

$$\frac{d\chi}{dt} = \omega_I, \quad (361)$$

with ω_I representing a subtle-region intrinsic frequency associated with ascended consciousness beings such as Brahma Baba in BK tradition [25]. The interaction term $g \sin(\chi - \psi)$ models the entrainment of corporeal consciousness by coherent subtle oscillators, consistent with BK descriptions of Avyakt presence.

The unified dynamics therefore combine cosmic rotation, soul-field coupling, subtle-region oscillators, and meditative entropy resets. The complete phase equation is

$$\frac{d\psi}{dt} = \Omega + K \sin(\Omega t - \psi) + g \sin(\chi - \psi) - \kappa\psi \sum_{k=-\infty}^{\infty} \delta(t - t_k), \quad (362)$$

together with the subtle-region evolution

$$\frac{d\chi}{dt} = \omega_I. \quad (363)$$

This pair of equations forms the core of the unified theory of peace, phase, and rotation. The equilibrium conditions satisfy

$$\Omega + K \sin(\Omega t - \psi_{eq}) + g \sin(\chi - \psi_{eq}) = 0, \tag{364}$$

modulo periodic delta-function resets. The stable solutions satisfy

$$\psi_{eq}(t) = \Omega t - \arctan\left(\frac{\Omega + g \sin(\chi - \Omega t)}{K + g \cos(\chi - \Omega t)}\right). \tag{365}$$

These solutions encode the combined influence of cosmic rotation, Josephson-type phase coupling, and subtle-region coherence.

Finally, the model gives a quantitative framework for the emergence of peace. Define a peace functional

$$\mathcal{P}(t) = \exp\left[-\frac{1}{2}S(t)\right] \cdot \exp\left[-\frac{1}{2}(\Omega t - \psi(t))^2\right], \tag{366}$$

representing the product of entropy reduction and phase alignment. The unified theory predicts that peace peaks when entropy is low and phase is synchronized with the GBM and subtle-region fields.

Thus the combined framework presents a mathematically complete synthesis of BK spiritual psychology, Josephson’s coherence theory, and GBM rotational physics, unifying peace, phase, and rotation into a single system of dynamical equations.

27. Conclusion

Brian Josephson’s scientific contributions encompass rigorous quantum mechanical predictions and conceptual expansions into the physics of consciousness. His early work on macroscopic quantum coherence and his later work on mind–matter interactions share deep mathematical parallels.

This work has developed a unified conceptual and mathematical framework integrating Brian D. Josephson’s later ideas on mind–matter coherence, the metaphysical cosmology of the Brahma Kumaris (BK) tradition, and the Gödel–Brahe–Maxwell (GBM) rotating-universe model extended through the Trilok real–imaginary dimensional architecture. Across these perspectives, a consistent theme emerges: consciousness is not an isolated by-product of neural activity but a phase-sensitive, coherence-bearing entity embedded within a multi-layered cosmological structure. The synthesis offered here demonstrates that Josephson’s proposals regarding nonlocal biological order, BK descriptions of subtle realms and soul dynamics, and the GBM rotational framework can be combined into a single theory in which peace, coherence, transformation, and subtle communication arise from interactions between individual minds, collective states, and cosmological fields.

Through this integration, the corporeal world, subtle region, and Paramdham map naturally onto the Trilok model’s real, wormhole, and imaginary-dimensional sectors, respectively. This correspondence allows BK accounts of Avyakt communication, dharna, peace power, and meditative silence to be interpreted within a rigorous geometric structure. The model developed in this paper proposes that cognitive phases are continuously driven by the GBM rotational background, periodically reset through BK traffic-control processes, influenced by entropy-reducing silence intervals, and capable of synchronizing with coherent imaginary-dimensional oscillators corresponding to subtle entities such as Brahma Baba. These elements converge in the unified phase equation presented in the final section of the manuscript, which serves as the dynamical core of the proposed theory.

The historical narrative surrounding Josephson’s interactions with Indian institutions and the BK organisation further contextualizes the theoretical constructions developed here. Rather than treating these encounters as incidental, the unified model suggests that Josephson’s interest in coherence, meaning, and subtle-order phenomena resonates deeply with BK principles and finds structural embodiment in the Trilok–GBM cosmology. The parallels between scientific and spiritual perspectives underscore the possibility that both traditions have been describing different aspects of the same underlying dynamical reality.

Although highly speculative, the framework developed here opens a conceptual space in which consciousness studies, cosmology, and spiritual metaphysics can be explored jointly without discarding mathematical rigour. By treating peace as a field-like property, dharna as a stability condition, subtle presence as coherent imaginary-dimensional oscillation, and global spiritual events as potential phase transitions linked with rotational dynamics, the unified theory offers a template for future research. It provides a means of testing coherence, entropy, synchrony, and peace-based models empirically, whether through group meditation experiments, dynamical simulations, or further refinement of GBM–Trilok physics.

Ultimately, this paper suggests that consciousness is best understood not in isolation but as part of a larger system spanning physical, subtle, and imaginary domains. If such an integrated model proves fruitful, it may offer new paths toward understanding mind–matter interaction, the nature of peace and transformation, and the deep coherence underlying both cosmological motion and human experience.

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