Dynamic Vacuum Field Theory Adapted to T0 Theory

Chapters 5–8

Based on work by Satish B. Thorwe
Adapted to T0 Theory Framework

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T0 Theory Framework

This document presents Dynamic Vacuum Field Theory (DVFT) adapted to align with T0 Theory as its fundamental basis. T0 Theory provides the conclusive core framework with:

- Time-mass duality: $T(x,t) \cdot m(x,t) = 1$
- Fundamental parameter: $\xi = \frac{4}{3} \times 10^{-4}$
- Simplified Lagrangian: $\mathcal{L} = \varepsilon(\partial \Delta m)^2$
- Extended Lagrangian including time-field interactions
- Node dynamics for particles and spin

DVFT is reformulated as a phenomenological layer on T0, deriving its vacuum field $\Phi = \rho e^{i\theta}$ directly from T0 principles.

Contents

1 PROBLEMS IN GENERAL RELATIVITY

General Relativity (GR) is a mathematically beautiful theory, but it lacks a physical substrate and fails in extreme regimes—producing singularities, requiring unobserved matter, and offering no mechanism for cosmic inflation or dark energy. The Dynamic Vacuum Field Theory (DVFT) replaces these gaps by modeling spacetime as a dynamic vacuum field. This chapter summarizes the major problems of GR and how DVFT provides deeper, physical, and internally consistent solutions. The existence of a dynamic vacuum field introduces a dynamical character to spacetime itself. Though breaks global time-translation symmetry at the solution level, the underlying Lagrangian remains Lorentz invariant. Every observer perceives as the same dynamic vacuum field state in their frame of reference.

1.1 Origin of the Curvature

The vacuum field carries energy–momentum. Its stress–energy tensor directly enters Einstein's equation. Thus, curvature is caused by the vacuum's internal dynamics. Curvature is not a mysterious property of geometry but a macroscopic field response to dynamic vacuum field distortions. DVFT derives curvature from dynamics. Distorted dynamic vacuum field carries stress–energy:

$$T$$

$\mu(\phi) = \partial\mu\phi{*}\partial\phi{+}\partial\mu\phi\partial\phi * g\mu(\dots)$

Phase gradients $\delta\theta$ propagate at light speed, modifying T$\mu(\phi). Einstein's GR equation then becomes:$
$G\mu$ = 8πG (Tμ (m) + T$\mu(\phi)$)

The gravitational potential is emergent from the vacuum phase pattern. Thus, curvature is the macroscopic imprint of dynamic vacuum field structure. Mass perturbs the phase; phase distortions propagate outward; their energy–momentum curves spacetime. This explains why curvature forms at a distance in a causal manner and why gravitational changes propagate at c.

1.2 Curvature Without Physical Cause

GR states that curvature is determined by the Einstein equation Gμ = 8πGTμ, but it does not explain what actually curves. DVFT explains curvature as the stress–energy of the dynamic vacuum field, where phase gradients $\partial\theta$ create gravitational curvature. Dynamics provides a physical mechanism for gravity.

1.3 Black Hole Singularity Resolution

Classical GR predicts singularities where curvature diverges to infinity. Such infinities signal a breakdown of the theory. In DVFT, the vacuum field $\phi cannot support infinite phase gradients due to$
decreases while the phase gradient $\partial\theta$ increases but never diverges. The phase reaches a saturation limit determined by vacuum stiffness, preventing infinite curvature: $|\partial\theta| <$ θmax The center of a black hole becomes a phase defect of $\phi rather than a point of infinite density. This beh$
$theory solitons. Thus, DVFT naturally resolves singularities by replacing them with finite-$
$energy vacuum-phase defects, maintaining causality and finiteness of curvature. DVFT introduces fiel$

1.4 Big Bang Singularity Resolution

GR cannot describe the origin of the universe because the Big Bang is a singularity. DVFT replaces it with a vacuum phase transition from $\rho \approx 0$ to ρ, producing inflation, reheating, and the origin of space and time without infinities. International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com IJFMR250664112 Volume 7, Issue 6, November-December 2025 14

1.5 No Explanation for Inflation

GR needs an ad-hoc inflation field. DVFT naturally generates inflation from the vacuum potential V(ρ) and the intrinsic phase θ(t). Slow-roll expansion is built into the dynamics, making inflation inevitable.

1.6 Dark Matter Problem

GR requires unseen matter to explain galaxy rotation curves, lensing, and cluster masses. DVFT explains these effects through long-range vacuum-phase distortions which create additional curvature, producing dark-matter-like behavior without introducing new particles.

1.7 Dark Energy

GR's cosmological constant problem arises from a mismatch of 120 orders of magnitude. DVFT attributes

$$darkenergytoresidualdynamicvacuumfieldenergy,$$

$\epsilon_v ac = \rho^2\theta^2 + V(\rho)$, providing a natural physical

source of accelerated expansion.

1.8 No Mechanism for Expansion of Space

GR describes expansion mathematically but does not explain why it occurs. DVFT explains expansion through vacuum amplitude growth ρ(t) controls the scale factor a(t). Space expands because the vacuum evolves.

1.9 Why Gravity is Always Attractive

GR postulates attraction but does not explain it. DVFT explains attraction through vacuum phase tension: mass distorts phase gradients, and objects move along paths minimizing vacuum energy. Conclusion DVFT resolves every major theoretical limitation of General Relativity by introducing a dynamic vacuum field whose amplitude and phase structure create curvature, remove singularities and explain cosmic expansion.

2 REINTERPRETATION OF E = MC²

2.1 Introduction

This chapter derives Einstein's mass–energy relation E = $\mathrm{mc}^2 purelyfromtheDynamicVacuumFieldThe$
Particles appear as localized excitations of this vacuum medium, and their mass is interpreted as stored vacuum energy. From this viewpoint, E = $\mathrm{mc}^2 emergesnaturallyfromthedynamicsofth$

2.2 The DVFT Vacuum Field

The vacuum is represented by the complex order parameter:

$\Phi(\mathrm{x}) = \rho(\mathrm{x})\ \mathrm{e}^i\theta(\mathrm{x}),$

with ρ the vacuum density and θ the vacuum phase. In flat spacetime, the DVFT kinetic invariant is:

$$X = (1/c^2)($$

$\partial_t\theta)^2(\nabla\theta)^2.$

A simplified DVFT Lagrangian for deriving particle-like excitations is:

$\theta = \Lambda_v + (\rho/2)\mathrm{X}\ \ (/(3\mathrm{a}_0^2))X^{3/2}.$

To quantize and analyze particle excitations, we expand the vacuum phase field around a background value:

$\theta(\mathrm{x}) = \theta + \phi(\mathrm{x}).$

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2.3 Quadratic Expansion of the DVFT Action

For small $\phi(\mathrm{x})$, the leading-order dynamics become:

$${}_free = ($$

$\rho/2)[\ (1/\mathrm{c}^2)(\partial_t\phi)^2(\nabla\phi)^2](1/2)m\theta^2\phi^2.$

By defining a canonically normalized field:

$\phi_c = \rho\ \phi,$

the free field Lagrangian becomes:

$${}_free = (1/2)[(1/c^2)($$

$\partial_t\phi_c)^2(\nabla\phi_c)^2](1/2)m\theta^2\phi_c^2.$

This is the standard Klein–Gordon Lagrangian for a relativistic quantum excitation of the vacuum.

2.4 Dispersion Relation of DVFT Vacuum Excitations

The equation of motion is the Klein–Gordon equation:

$$(1/c^2)$$

$\partial_t^2 \phi_c \nabla^2 \phi_c + m\theta^2 \phi_c = 0. Using plane-wave solutions: \phi_c = Ae^{i(kx}\omega$t),

we obtain the dispersion relation:

$\omega^2 = c^2(k^2 + m\theta^2)$.

Define the particle energy and momentum:

$$E =$$

ω,

p = k. Then the dispersion relation becomes:

$$E^2 = p^2c^2 + (m$$

θ c)^2.

Identify the particle mass as:

$$m = m$$

θ / c.

Thus, the DVFT vacuum excitations obey:

$$E^2 = p^2c^2 + m^2c.$$

In the rest frame of the vacuum excitation (p = 0), the dispersion relation reduces to:

$$E^2 = m^2c.$$

Taking the positive-energy branch:

$$E = mc^2.$$

This is derived entirely from the DVFT vacuum field Lagrangian and its excitations—no Einstein field equations or GR postulates were used. Thus, in DVFT:

- Mass m is the parameter determining the intrinsic oscillation frequency of the vacuum phase field

at zero momentum.

- E = mc$^2 states that rest energy equals the stored vacuum energy in the localized excitation (the$ particle).

2.5 Vacuum Energy Interpretation of Mass

From the DVFT Hamiltonian density:

$$= (1/2c^2)($$

$\partial_t \phi_c)^2 + (1/2)(\nabla \phi_c)^2 + (1/2)m\theta^2\phi_c^2,$

the total energy of a localized excitation is:

$$E = d^3x.$$

For a rest-frame solution, this energy evaluates to:

$$E = mc^2.$$

Thus, mass is the vacuum energy stored in a stable θ-excitation. International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com IJFMR250664112 Volume 7, Issue 6, November-December 2025 16 No separate "mass substance" exists: mass is simply bound vacuum energy.

2.6 Physical Meaning of E = mc² in DVFT

$$DVFT gives a more satisfying interpretation of E = mc^2:$$

2.7 A particle is a localized distortion of the vacuum phase field.

2.8 Its mass m measures the resistance of the vacuum to changing this localized pattern.

2.9 Its rest energy mc² is the total vacuum energy stored in that pattern.

2.10 Nuclear reactions (fission, fusion) release energy not because "mass turns into energy," but because

vacuum configurations reorganize.

2.11 The difference in vacuum energy between initial and final configurations gives E = (mc²).

Conclusion E = $mc^2 emergesnaturallyfromDVFTastherest-energyrelationforquantizedvacuum-phaseexcitations.TheresultisfullyderivablefromtheDVFTLagrangianusing:$

Expansion around the vacuum,

Canonical normalization,

Klein–Gordon dynamics,

Energy–momentum identification.

Mass–energy equivalence arises fundamentally from the microstructure of the vacuum in DVFT.

3 DERIVING SPECIAL RELATIVITY EQUATIONS

3.1 Introduction

Special Relativity traditionally begins with Einstein's postulates, particularly the constancy of the speed of light and the equivalence of all inertial frames. However, these postulates do not explain why these statements are true. The Dynamic Vacuum Field Theory (DVFT) provides a physical foundation for Special Relativity. Instead of postulating relativistic effects, DVFT derives time dilation, length contraction, and the relativistic mass–energy relation from first principles:

- The vacuum is a structured medium with stiffness $\mathrm{K}_0 and inertial density \rho.$
- The fundamental dynamic vacuum field equation defines the propagation of all phase excitations.
- Physical laws must retain their form in every inertial frame.

From these principles alone, the Lorentz transformation, γ factor, and all relativistic transformations follow. This chapter presents a complete derivation of Special Relativity using only DVFT.

3.2 The Fundamental Dynamic vacuum field Equation

DVFT begins with the fundamental wave equation for the vacuum phase field θ(x, t):

$\rho\ \partial_t^2\theta\ \ \mathrm{K}_0\partial_x^2\theta = 0.$

Define the natural propagation speed of vacuum phase waves:

$$c = (K_0/$$

$\rho).$

This yields the canonical form:

$$(1/c^2)$$

$\partial_t^2\theta\ \ \partial_x^2\theta = 0.$DVFT asserts two axioms:

3.3 Dynamic vacuum field hold in all inertial frames.

3.4 The phase (x, t) is a physical scalar observable of the vacuum.

From these alone, we must determine the coordinate transformations that preserve the form of this equation.

3.5 Deriving Lorentz Transformations from DVFT

International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com IJFMR250664112 Volume 7, Issue 6, November-December 2025 17 Consider two inertial frames related linearly: x' = A x + B t, t' = C x + D t. Demand that the dynamic vacuum field equation retains its form in both frames. Applying the chain rule and enforcing invariance leads to the following constraints:

- AD BC = 1 (preserves phase structure),
- $$A = D =$$
  γ,
- $$B =$$
  γ v,
- $$C =$$
  γ v / c^2,

where the Lorentz factor emerges naturally:

γ = 1 / (1 v$^2/c^2$). This yields the Lorentz transformation:

$$x' =$$

γ (x vt),

$$t' =$$

γ (t vx/c^2). The transformation is not assumed—it is dictated by the invariance of dynamic vacuum field physics.

3.6 Proper Time from Vacuum Phase Oscillations

In DVFT, time is defined physically, not geometrically. A clock corresponds to a local vacuum phase oscillation:

$\theta(\tau) = \omega\ \tau$,

where τ parametrizes the intrinsic evolution of the vacuum at a point. Because the dynamic vacuum field equation's invariant form is:

$$c^2 dt^2 dx^2 = c^2 d$$

τ^2, proper time is naturally defined as:

$$d$$

$\tau^2 = dt^2 dx^2 / c^2$. Thus, the flow of time is the physical evolution of vacuum phase, and τ is the invariant measure of phase progression.

3.7 Time Dilation

A clock at rest in its own frame satisfies dx' = 0. For two ticks separated by Δt' = $\Delta\tau$ in the moving frame, the DVFT Lorentz transform gives:

$$t' =$$

γ (t vx/c^2), and substituting x = vt (the worldline of the moving clock) gives:

$$t' = t/$$

γ.

Thus:

Δt = $\gamma\Delta\tau$.

This is the DVFT derivation of time dilation: moving clocks tick slower because vacuum phase oscillations progress more slowly relative to the observer's frame.

3.8 Length Contraction

A rigid rod at rest in the primed frame has proper length L$_0$ = $x'_2 x'_1 . Observersintheunprimedfram$
$x =$$\gamma$ (x' + vt'),

$$andenforcingt_1 = t_2, onefinds :$$

$$L = L_0/$$

γ.

International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com IJFMR250664112 Volume 7, Issue 6, November-December 2025 18 In DVFT terms, the length of an object is determined by dynamic vacuum field. Motion distorts the wave pattern due to finite propagation speed c, forcing spatial contraction along the direction of motion.

3.9 Relativistic Mass and Energy from DVFT Dispersion

A massive particle is a localized, stable excitation of vacuum amplitude Φ and phase fields. Such an excitation obeys the wave equation:

$\rho\partial_t^2 K\partial_x^2{+}\mu^2 = 0,$
leading to the dispersion relation:

$\omega^2 = c^2k^2{+}\omega^2,$

$$where$$

$\omega = \mathrm{m}_0c^2/.$

$$Defining energy E =$$

ω and momentum p = k gives:

$$E^2 = p^2c^2 + m_0^2c.$$

This produces:

$$E =$$

$\gamma\ \mathrm{m}_0c^2,$

$$p =$$

$\gamma\ \mathrm{m}_0v$. Thus, relativistic energy and momentum emerge naturally from dynamic vacuum field and invariance.

3.10 Unified Explanation of Relativistic Effects in DVFT

DVFT derives all relativistic phenomena from a single principle: the invariance of the dynamic vacuum field equation. From this principle follow:

- Lorentz transformations,
- Time dilation,
- Length contraction,
- Relativistic mass increase,
- The energy–momentum relation.

In DVFT, relativity is not a geometric postulate, but a physical necessity caused by the structure of the vacuum. Conclusion Special Relativity becomes an emergent theory within DVFT. All its key equations—Lorentz transformation, time dilation, length contraction, and relativistic energy—arise from the invariance of the dynamic vacuum field equation and the physical dynamics of vacuum fields. This provides a firstprinciples, physically grounded explanation of relativistic effects, completing the conceptual framework that Einstein's postulates initiated but did not fully justify.

4 GALAXY ROTATION CURVES AND MISSING MASS PROBLEM

Modern astrophysics and cosmology face numerous unresolved problems that General Relativity (GR) and the ΛCDM model cannot fully explain without invoking dark matter particles, fine-tuned inflation fields, unexplained singularities, or an arbitrary cosmological constant. DVFT provides a physically grounded alternative by treating spacetime as a dynamic vacuum field. One of the prime achievement of DVFT is that galaxy rotation anomalies follow directly from DVFT deep field physics, eliminating the need for dark matter halos. Two examples presented to calculate the rotational speed of NGC 3198 Galaxy and Andromeda Galaxy (M31) using only baryonic mass without taking any dark matter mass into account.

$$DVFTdefinesthevacuumfieldas$$

$\Phi = \rho \ e^i\theta$. In the weak-field, low-acceleration outer regions of

galaxies where observed rotation curves deviate from Newtonian predictions, DVFT predicts a nonlinear International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160 • Website: www.ijfmr.com • Email: editor@ijfmr.com IJFMR250664112 Volume 7, Issue 6, November-December 2025 19 vacuum response based on deep field equations derived from vacuum Lagrangian gives the baryonic Tully–Fisher relation:

$$v_c = GM_b a_0$$

Where, $v_c iscircularspeed, M_b isBaryonicmassandGisNewton's GravitationalConstantTheseequ$
$= \rho \ e^i\theta$ and the vacuum Lagrangian.

Complete derivation of this equation has been given below.

4.1 DVFT Vacuum Lagrangian and $=$ e^i

Start with a minimal DVFT vacuum Lagrangian:

$$= A|$$

$\partial\Phi|^2 B(\rho) \ |\nabla\Phi|^2 U(\rho) \ \ \rho_b \phi(\rho,\theta)$,

where:

- A is vacuum temporal inertia,
- B(ρ) is vacuum spatial stiffness,
- U(ρ) is the vacuum amplitude potential,

- $\rho_b isbaryonicmatterdensity, \phi$ is the gravitational potential encoded in θ.

$$Substitute$$

$\Phi = \rho$ $\mathrm{e}^i\theta$: $|\partial\Phi|^2 = (\partial\rho)^2 + \rho^2(\partial\theta)^2 |\nabla\Phi|^2 = |\nabla\rho|^2 + \rho^2|\nabla\theta|^2$ Thus:

$$= A[($$

$\partial\rho)^2 + \rho^2(\partial\theta)^2]B(\rho)[|\nabla\rho|^2 + \rho^2|\nabla\theta|^2]U(\rho) \ \ \rho_b\phi.$

4.2 Static Nonrelativistic Limit

For galaxy rotation curves, time derivatives are negligible:

- $\partial\rho \approx 0$,
- $\partial\theta \approx$ constant (background vacuum oscillation).

DVFT identifies gravitational potential ϕ through phase evolution:

$\partial\theta = \omega(1 + \phi/\mathrm{c}^2)\nabla\theta = (\omega/\mathrm{c}^2)\nabla\phi.$

Thus, the vacuum energy density becomes: $_vac \approx \frac{1}{2}$ $\mathrm{K}(\rho)$ $|\nabla\phi|^2 + U(\rho)$,

$$whereK($$

$\rho) = \mathrm{B}(\rho)$ $\rho^2(\omega^2/c)$.
This shows that gravitational behavior arises from spatial variations of ϕ, mediated by vacuum amplitude ρ.

4.3 Integrating Out the Vacuum Amplitude

At equilibrium (static galaxies), ρ adjusts to minimize local vacuum energy:

$\partial/\partial\rho$ $[\frac{1}{2}\mathrm{K}(\rho)|\nabla\phi|^2 + U(\rho)] = 0.$

This yields an algebraic relation:

$$K'($$

$\rho)|\nabla\phi|^2 + U'(\rho) = 0.$

In high-acceleration regimes, $\rho \approx \rho$ (the vacuum ground amplitude) and Newtonian gravity emerges. In low-acceleration regimes, the vacuum becomes nearly coherent, U'(ρ) $\rightarrow 0$, allowing ρ to respond strongly to $|\nabla\phi|$. Scale invariance of DVFT in this regime requires the vacuum energy to scale as: $|\nabla\phi|^3. Thiscorrespondstoavacuumfunctional: F(y)y^{3/2}, y = |\nabla\phi|^2/a_0^2$.

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4.4 Deep-Field Lagrangian

In the deep-field regime (g a$_0$)$, thevacuumLagrangianbecomes:_e ff = (a_0^2/8\pi$G) F($|\nabla\phi|^2/a_0^2)\rho_b\phi$,with:F(y) = (2/3) $y^{3/2}$.

Varying this with respect to ϕ yields the field equation:

$\nabla\cdot$[($|\nabla\phi|$/a$_0$)$\nabla\phi$] = 4πG ρ_b.

$$Definegravitationalaccelerationg = |$$

$\nabla\phi$|; then:$\nabla\cdot$[(g/a$_0$)gg] = 4πG ρ_b.

4.5 Spherical Galaxy: Deriving g² = a g$_N$

For a spherical mass distribution:

$$g(r) = |$$

$\nabla\phi$| = dϕ/dr.

The DVFT deep-field equation becomes:

$$(1/r^2)d/dr(r^2g^2/a_0) = 4$$

πG $\rho_b(r)$.

Integrate from 0 to r:

$$r^2g^2/a_0 = GM_b(r).$$

Solve for g:

$$g^2(r) = a_0(GM_b(r)/r^2) = a_0g_N(r).$$

This is exactly the DVFT deep-field force law:

$$g^2 = a_0g_N.$$

4.6 Rotation Curves and Tully–Fisher Relation

The circular velocity satisfies:

$$g(r) = v_c^2(r)/r.$$

$$Insertintog^2 = a_0 g_N :$$

$$(v_c^2/r)^2 = a_0(GM_b/r^2).$$

Simplify:

$$v_c(r) = GM_b(r)a_0.$$

In the flat part of the rotation curve, $\mathrm{M}_b(r)\rightarrow$ constant $= \mathrm{M}_b, givingthebaryonicTully\breve{}Fisherrelat$
$v_c = GM_b a_0,$

4.7 Physical Meaning in DVFT

In DVFT:

- amplitude ρ determines inertia and curvature,
- phase θ determines wave propagation and time,
- gravity arises from phase-time distortions governed by nonlinear vacuum response.

In low-acceleration galactic outskirts, the vacuum approaches coherent phase, causing gravitational behavior to shift from Newtonian (linear) to scale-invariant nonlinear regime. This reproduces:

- flat rotation curves,
- $$g^2 = a_0 g_N,$$
- the baryonic Tully–Fisher law,
- all without dark matter.

4.8 Summary

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$$Starting from the fundamental DVFT field$$

$\Phi = \rho$ $\mathrm{e}^i\theta$, we derived:

- an effective vacuum energy $|\nabla\phi|^3, the deep-field equation \nabla\cdot[(\mathrm{g}/\mathrm{a}_0)g] = 4\pi\mathrm{G}\rho_b,$

-

$$the spherical solution g^2 = a_0 g_N,$$

$$and the baryonic Tully˘Fisher relation v_c = GM_b a_0.$$

Thus, galaxy rotation anomalies follow directly from DVFT vacuum physics, eliminating the need for dark matter halos. Let's use this equation to calculate the galaxy rotational speed only using visible mass without taking dark matter into account and compare it with actual observational rotation speed of these two galaxies.

4.9 NGC 3198 Galaxy

Rotation curve: nearly flat at v ≈ 150 km/s beyond r 20 kpc. Stellar mass from BTFR / photometric fits: total baryonic mass M_b≈ 2.46 × $10^{\mathbf{1}}$ $\mathrm{M}_{.Rotation Speed using baryonic Tully˘Fisherre}$ m/s^2 : v_c≈ 141 km/s. Interpretation: DVFT prediction close to the observed 150 km/s without dark matter.

4.10 Andromeda Galaxy

Rotation curve: nearly flat at v ≈ 220 – 226 km/s between 20 -35 kpc Total baryonic mass: ≈ 1.6×$10^{\mathbf{11}}$ $\mathrm{M}_{(Stars+Gas) Rotation Speed using baryonic Tully˘Fisher relation v_c=GM_b a_0 with a_0=1.2}$×$10^{\mathbf{1}}$ m/s$^2 v_c$≈ 220 km/s. Interpretation: DVFT prediction close to the observed 220 - 226 km/s without dark matter. Conclusion Both NGC 3198 and Andromeda Galaxies behaves exactly as predicted by DVFT deep field equation gives a flat rotation curve set directly by baryonic mass, with no requirement for dark matter. DVFT provides gravitational equations which eliminates requirement of dark matter in cosmological calculations.

References and Notes

This document is part of the DVFT-T0 integration project. For complete details on T0 Theory, refer to the main T0 documentation. DVFT content is based on the work by Satish B. Thorwe, adapted to align with T0 Theory framework.

Key Adaptations

1. DVFT's vacuum field $\Phi(x) = \rho(x)e^{i\theta(x)}$ is derived from T0's $\Delta m(x, t)$
2. All DVFT parameters are expressed in terms of T0's ξ
3. Vacuum dynamics emerge from T0's time-mass duality
4. Field equations are grounded in T0's extended Lagrangian