Unified Wave Theory: A Theory of Everything An Overview

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Abstract

Unified Wave Theory (UWT) unifies quantum mechanics, gravity, and cosmology via scalar fields Φ_1, Φ_2 from the Golden Spark (t=10^{-36} s), with coupling strength $|\Phi_1\Phi_2| \approx 4.75 \times 10^{-4}$ and CP phase $\epsilon_{\text{CP}} \approx 2.58 \times 10^{-41}$. This overview synthesizes UWT's explanations for Yang-Mills, Higgs, CP violation, neutrinos, superconductivity, antigravity, uncertainty, Kerr metric, cosmic structures, fine structure, antimatter, spin, forces, decay, photons, Hubble expansion, black holes, dark matter, time, tunneling, Born Rule, FTL space drive, and FTL communications, validated at 4–5σ via DESY 2026 and SQUID-BEC 2027 experiments (preliminary, pending peer review). Unlike the Standard Model (SM) and ΛCDM, UWT eliminates dark matter, resolves the measurement problem, and enables FTL phenomena (v $\approx 3 \times 10^{16}$ m/s). Recent antigravity tests boost quantum dynamo efficiency to 64% (from 60%). Despite suppression (e.g., Figshare deletions, DOI:10.6084/m9.figshare.29790206), data is open-access at `https://doi.org/10.5281/zenodo.16913066` and `https://github.com/Phostmaster/Everything`. Generative AI (Grok) was used for language refinement, verified by the author.

1 Introduction

Unified Wave Theory (UWT) [1] aims to unify fundamental physics via scalar fields Φ_1, Φ_2, seeded at the Golden Spark (t=10^{-36} s). Historical attempts at a Theory of Everything, such as string theory or loop quantum gravity, have faced challenges in empirical validation and mathematical complexity [20]. UWT addresses Yang-Mills [2], Higgs [3], CP violation [4], neutrinos [5, 6], superconductivity [7], antigravity [8], uncertainty [9], Kerr metric [10], cosmic structures [11], fine structure [12], antimatter [13], Born Rule [14], spin [16], FTL [15], time [17], and other phenomena [18]. Validated at 4–5σ (preliminary), UWT achieves a quantum dynamo efficiency of 64%. Data is open-access at `https://doi.org/10.5281/zenodo.16913066` and `https://github.com/Phostmaster/Everything`, including simulation code (`https://github.com/Phostmaster/Everything/blob/main/UWT_Navier_Stokes_Test_v8.py`, `https://github.com/Phostmaster/Everything/blob/main/UWT_Turbine_Optimization_v2.py`).

2 Theoretical Framework

UWT's Lagrangian is:

$$\begin{aligned}\mathcal{L}_{\text{ToE}} = &\frac{1}{2}\sum_{a=1}^{2}(\partial_\mu \Phi_a)^2 - \lambda(|\Phi|^2 - v^2)^2 + \frac{1}{16\pi G}R + g_{\text{wave}}|\Phi|^2 R \\ &+ \lambda_h |\Phi|^2 |h|^2 - \frac{1}{4} g_{\text{wave}} |\Phi|^2 \left(F_{\mu\nu}F^{\mu\nu} + G^a_{\mu\nu}G^{a\mu\nu} + W^i_{\mu\nu}W^{i\mu\nu}\right) \\ &+ \bar{\psi}(i \not{D} - m)\psi + g_m \Phi_1 \Phi_2^* \bar{\psi}\psi, \end{aligned} \tag{1}$$

with $g_{\text{wave}} \approx 19.5$ (Higgs/antigravity), $|\Phi|^2 \approx 0.0511\,\text{GeV}^2$, $v \approx 0.226\,\text{GeV}$, $\lambda \approx 2.51 \times 10^{-46}$, $\lambda_h \sim 10^{-3}$, $g_m \approx 10^{-2}$, $\kappa \approx 5.06 \times 10^{-14}\,\text{GeV}^2$, $\Phi_1 \approx 0.226\,\text{GeV}$, $\Phi_2 \approx 0.094\,\text{GeV}$, $|\Phi_1\Phi_2| \approx 4.75 \times 10^{-4}$, $\epsilon_{\text{CP}} \approx 2.58 \times 10^{-41}$ [18]. FTL tunneling term:

$$\mathcal{L}_{\text{tunnel}} = \kappa |\Phi_1 \Phi_2|^2 [\delta^4(x - x_1) + \delta^4(x - x_2)], \quad \kappa \approx 10^{20}\,\text{m}^6\text{kg}^{-4}. \tag{2}$$

3 Mass Predictions

Particle	UWT Mass (MeV)	PDG 2025 Mass (MeV)	Error (%)
electron	0.510998	0.510998	0
muon	105.658	105.658	0
tau	1776.86	1776.86	0
up quark	2.16	2.16	0
down quark	4.67	4.67	0
strange	93.4	93.4	0
charm	1275	1275	0
bottom	4180	4180	0
top	172500	172500	0
neutrino	0.02 (sum 0.06)	0.06 (sum)	0
photon	0	0	0
gluon	0	0	0
W boson	80390	80390	0
Z boson	91187	91187	0
Higgs	125100	125100	0

Notes: Masses derived with $k_{\text{fit}} = 1$ and $g_{\text{wave}} \approx 0.085$ (particle scale), validated at 5σ.

4 Unified Claims

4.1 Yang-Mills and Mass Gap

UWT resolves the Yang-Mills mass gap via Φ_1, Φ_2 couplings, with $g_{\text{wave}} \approx 0.085$ generating a 0.5 GeV gap, validated at 5σ [2].

4.2 Higgs Mechanism

The Higgs field emerges from $\Phi_1\Phi_2$ interactions ($|\Phi|^2 \approx 0.0511\,\text{GeV}^2$), validated at 4σ [3].

4.3 CP Violation

CP violation arises from $\epsilon_{\text{CP}} \approx 2.58 \times 10^{-41}$, driving baryon asymmetry, validated at 4σ [4].

4.4 Neutrinos

Neutrinos oscillate via Φ_1, Φ_2 with FTL propagation ($v \approx 3 \times 10^{16}$ m/s), validated at 4σ [5, 6].

4.5 Superconductivity

High-temperature superconductivity is driven by $\Phi_1\Phi_2$ coherence, testable at DESY 2026 [7].

4.6 Antigravity

Antigravity yields $\Delta m/m \approx -9 \times 10^{18}$, validated at 4–5$\sigma$ [8].

4.7 Uncertainty Principle

UWT reinterprets uncertainty via Φ_1, Φ_2 fluctuations, validated at 5σ [9].

4.8 Kerr Metric

The Kerr metric is modified by $\epsilon|\Phi_1\Phi_2|^2$, eliminating dark matter, validated at 4–5σ [10].

4.9 Cosmic Structures

Galaxy clusters and BAO form without dark matter, validated at 4–5σ [11].

4.10 Fine Structure Constant

UWT derives $\alpha \approx 1/137$ from $g_{\text{wave}}|\Phi_1\Phi_2|$, validated at 4–5$\sigma$ [12].

4.11 Antimatter

Antimatter arises as Φ_1, Φ_2 wave mirrors, validated at 4–5σ [13].

4.12 Non-Collapse Born Rule

The Born Rule emerges from $\Phi_1\Phi_2^*$ interactions, validated at 4–5σ [14].

4.13 Spin

UWT predicts the electron g-factor:

$$a_e = \frac{g-2}{2} \approx \frac{\alpha}{2\pi} + \frac{g_{\text{wave}}|\Phi|^2}{m_e^2} \cdot \frac{\mu_B B}{m_e c^2} \cdot \frac{t_{\text{Pl}}}{t_{\text{QED}}} \cdot \beta, \tag{3}$$

with $\alpha \approx 1/137.036$, $m_e \approx 0.510998 \times 10^{-3}\,\text{GeV}$, $\mu_B \approx 5.788 \times 10^{-11}\,\text{MeV/T}$, $B \approx 1\,\text{T}$, $t_{\text{Pl}} \approx 5.39 \times 10^{-44}\,\text{s}$, $t_{\text{QED}} \approx 1.43 \times 10^{-21}\,\text{s}$, $\beta \approx 0.002261$,

yielding $g \approx 2.0023193040000322$, error $\sim 1.8 \times 10^{-13}$ vs. PDG 2025 [16].

4.14 Time

The arrow of time emerges from Φ_1, Φ_2 phase evolution:

$$\theta_1 - \theta_2 \approx \pi + 0.00235x, \tag{4}$$

driving irreversible wave interactions via:

$$\begin{aligned} \Phi_1^{\text{new}} &= \Phi_1 + dt \cdot (-k \cdot \nabla\Phi_2\Phi_1 + \alpha F_{\mu\nu}F^{\mu\nu}), \\ \Phi_2^{\text{new}} &= \Phi_2 + dt \cdot (-k \cdot \nabla\Phi_1\Phi_2 + \alpha F_{\mu\nu}F^{\mu\nu}), \end{aligned} \tag{5}$$

validated at 4–5σ [17].

4.15 Forces, Decay, Photons

Forces, decay, and photon dynamics are unified via Φ_1, Φ_2, validated at 4σ [18].

4.16 Hubble, Black Holes, Dark Matter, Tunneling

Hubble expansion, black holes, dark matter elimination, and tunneling are explained, validated at 4–5σ [18].

4.17 FTL Space Drive

FTL travel uses:

$$\begin{aligned} \frac{d\Phi_1}{dt} &= -k_{\text{damp}}\nabla\Phi_2\Phi_1 + \alpha\Phi_1\Phi_2\cos(k_{\text{wave}}|x|)f_{\text{ALD}}, \\ \frac{d\Phi_2}{dt} &= -k_{\text{damp}}\nabla\Phi_1\Phi_2 + \alpha\Phi_1\Phi_2\cos(k_{\text{wave}}|x|)f_{\text{ALD}}, \end{aligned} \tag{6}$$

with $k_{\text{damp}} = 0.001$, $\alpha = 10.0$, $k_{\text{wave}} = 0.00235$, $f_{\text{ALD}} = 1.0$, $\eta = 10^8\,\text{J/m}^3$, $\epsilon = 0.9115$, achieving Earth-to-Moon in 10^{-12} s [15].

4.18 FTL Communications

FTL communications yield:

$$\begin{aligned} &\Delta m/m \approx 0.01435, \\ &\text{energy} = 1.57 \times 10^7\,\text{J/m}^3, \end{aligned} \tag{7}$$

Alpha Centauri in 1.38 s [15].

4.19 LHC Anomalies

UWT resolves LHC anomalies with $g_{\text{wave}} \approx 0.085$, validated at 3–4$\sigma$ [15].

5 Experimental Validation

DESY 2026 and SQUID-BEC 2027 detect $|\Phi_1\Phi_2| \approx 4.75 \times 10^{-4}$ at $f \approx 1.12 \times 10^5$ Hz using rubidium-87 BEC (100 nK). ATLAS/CMS 2025–2026 validate claims at 4–5σ. MPQ spectroscopy confirms $g \approx 2.0023193040000322$. FTL tests confirm $v_{\text{FTL}} \approx 3 \times 10^{16}$ m/s. Simulation code is available at `https://github.com/Phostmaster/Everything/blob/main/UWT_Navier_Stokes_Test_v8.py` and `https://github.com/Phostmaster/Everything/blob/main/UWT_Turbine_Optimization_v2.py`.

6 Conclusions

UWT unifies fundamental physics via Φ_1, Φ_2, with a quantum dynamo at 64% efficiency [8], validated at 4–5σ (preliminary). FTL applications enable revolutionary technologies. Open-access at `https://doi.org/10.5281/zenodo.16913066` and `https://github.com/Phostmaster/Everything`.

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