FFGFT: Fundamental Principles

January 6, 2026

Abstract

This document introduces the fundamental principles of the T0-Theory, a geometric reformulation of physics based on a single universal parameter $\xi = \frac{4}{3} \times 10^{-4}$. The theory demonstrates how all fundamental constants and particle masses can be derived from the three-dimensional space geometry. Various interpretive approaches—harmonic, geometric, and field-theoretic—are presented on an equal footing. The fractal structure of quantum spacetime is systematically accounted for by the correction factor $K_{\text{frak}} = 0.986$.

Contents

0.1 Introduction to the T0-Theory

0.1.1 Time-Mass Duality

In natural units ($\hbar = c = 1$), the fundamental relation holds:

$$T \cdot m = 1 \tag{1}$$

Time and mass are dual to each other: Heavy particles have short characteristic time scales, light particles long ones.

This duality is not merely a mathematical relation but reflects a fundamental property of spacetime. It explains why heavy particles couple more strongly to the temporal structure of spacetime.

0.1.2 The Central Hypothesis

The T0-Theory is based on the revolutionary hypothesis that all physical phenomena can be derived from the geometric structure of three-dimensional space. At its center is a single universal parameter:

Foundation

The Fundamental Geometric Parameter:

$$\boxed{\xi = \frac{4}{3} \times 10^{-4} = 1.333333\cdots \times 10^{-4}} \tag{2}$$

This parameter is dimensionless and contains all the information about the physical structure of the universe.

0.1.3 Paradigm Shift Compared to the Standard Model

Aspect	**Standard Model**	**T0-Theory**
Free Parameters	> 20	1
Theoretical Basis	Empirical Adjustment	Geometric Derivation
Particle Masses	Arbitrary	Computable from Quantum Numbers
Constants	Experimentally Determined	Geometrically Derived
Unification	Separate Theories	Unified Framework