

# **FFGFT: Fundamental Principles**

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## **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  $K_{\text{frak}} = 0.986$ .

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## 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:

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

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