

Chapter 1

T0-Theory: Time-Mass Duality

All Natural Constants from One Number:

$$\alpha \approx 1/137$$

T0_deckblatt_En.png

Contents

Chapter 2

Introduction to T0-Theory

The T0-Theory is a new approach to unifying fundamental physics. The central thesis states:

Central Theorem

All natural constants and physical parameters can be derived from a single dimensionless number: the fine-structure constant $\alpha \approx 1/137$.

2.1 Time-Mass Duality

The core principle of T0-Theory is the Time-Mass Duality:

$$T(x) = \frac{\hbar}{E(x)} = \frac{\hbar}{m(x)c^2} \quad (2.1)$$

This relationship shows that time and mass are intrinsically linked.

Fundamental Principle

In regions with higher energy density, intrinsic time runs slower - exactly as General Relativity predicts for gravitation.

2.2 The Scaling Parameter ξ

The dimensionless scaling parameter ξ connects all natural constants:

$$\xi = \frac{4}{3} \times 10^{-4} \approx \sqrt{\alpha} \quad (2.2)$$

Chapter 3

Particle Masses and Fundamental Constants

The masses of all elementary particles can be derived from the scaling parameter ξ and the Planck mass.

3.1 Lepton Masses

The Koide formula finds its natural explanation in the T0 framework:

$$\frac{m_e + m_\mu + m_\tau}{(\sqrt{m_e} + \sqrt{m_\mu} + \sqrt{m_\tau})^2} = \frac{2}{3} \quad (3.1)$$

Chapter 4

Cosmological Implications

4.1 The Hubble Constant

The T0-Theory provides a geometric derivation of the Hubble constant:

$$H_0 \approx \frac{c}{\xi \cdot L_P} \cdot \alpha^2 \quad (4.1)$$

4.2 Dark Energy

The cosmological constant is explained as a consequence of intrinsic time.

Chapter 5

Experimental Predictions

Testable Predictions

- Anomalous magnetic moment of the electron: $(g - 2)_e$
- Koide formula extensions for quarks
- Frequency-independent effects

Appendix: Formula Collection

Here are the key formulas of T0-Theory summarized.