

ALL SOLVED.

FINE STRUCTURE AND GRAVITATIONAL CONSTANT FROM XI

TO-THEORIE, TIME MASE DUALIÄT,  
ERWEITERNUNG DER QFT UND RT



# Contents



# Chapter 1

## 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  $\alpha \approx 1/137$ .

### 1.1 Time-Mass Duality

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

$$T(x) = \frac{\hbar}{E(x)} = \frac{\hbar}{m(x)c^2} \quad (1.1)$$

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.

### 1.2 The Scaling Parameter $\xi$

The dimensionless scaling parameter  $\xi$  connects all natural constants:

$$\xi = \frac{4}{3} \times 10^{-4} \approx \sqrt{\alpha} \quad (1.2)$$



## Chapter 2

# Particle Masses and Fundamental Constants

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

### 2.1 Lepton Masses

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

$$\frac{m_e + m_\mu + m_\tau}{(\sqrt{m_e} + \sqrt{m_\mu} + \sqrt{m_\tau})^2} = \frac{2}{3} \quad (2.1)$$



# Chapter 3

## Cosmological Implications

### 3.1 The Hubble Constant

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

$$H_0 \approx \frac{c}{\xi \cdot L_P} \cdot \alpha^2 \quad (3.1)$$

### 3.2 Dark Energy

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



## Chapter 4

# 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.