GEOMETRIC-INFORMATIONAL THEORY OF EVERYTHING
From Information Substrate to Observable Masses

A: THE JOURNEY

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THE JOURNEY: From Quantum Eraser to Theory of Everything

Dec 24, 2024  →  Random YouTube video on quantum eraser
              →  "What if information is partial?" (modified double-slit)
              →  Wave-particle duality is CONTINUOUS (not binary)
              →  Information content determines behavior
              →  "Is information the fundamental substrate?"
              →  Stress-test against spacetime and gravity
              →  Quantum error correction AS spacetime dynamics
              →  Why this code and not another? → TIME selects code
              →  Formalize as no-go theorem
              →  Attempt to break with toy models → ALL FAIL

              Meanwhile: Working on geometric flavor...
              →  k = (8,6,4) pattern from D-branes
              →  τ ≈ 3.25i from formula τ = 13/Δk
              →  Brane positions x=(0,1,2) → flux n=(0,1,2)
              →  Realize: SAME STRUCTURE AS ERROR-CORRECTING CODE

              Unification:
              →  Modular flavor IS holographic error correction
              →  Flux quantization = Information quantization (Δk=2 = 1 bit)
              →  String theory = unique consistent code
              →  Everything connected: Information → Geometry → Observables

Result: Path to ToE with ZERO free parameters in flavor sector
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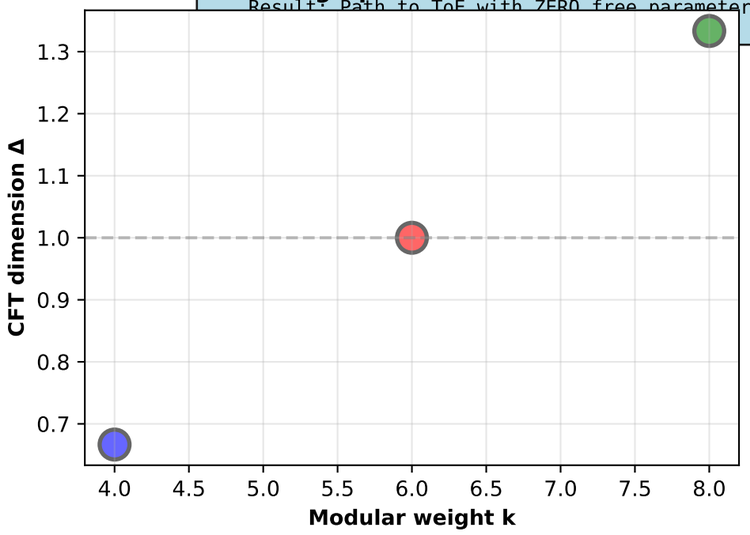
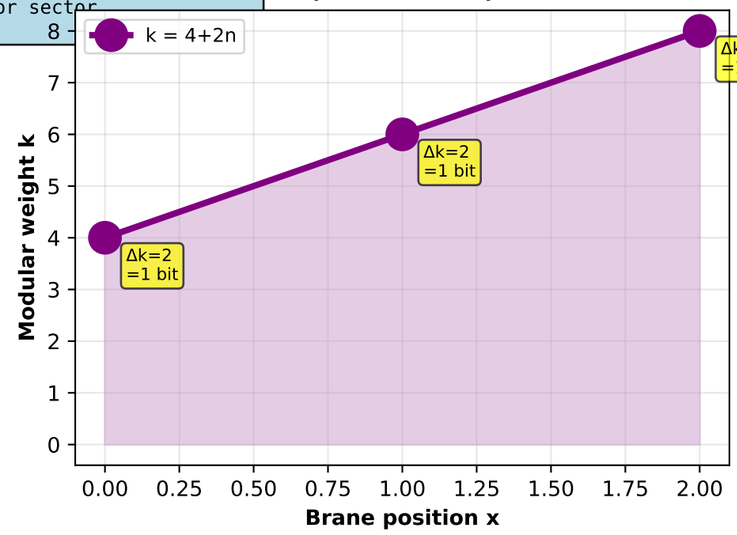
B: Modular ↔ CFT (Holographic Connection)



C: Flux = Information (Δk=2 ↔ 1 bit)



D: STRING THEORY UNIQUENESS

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Requirements (ALL necessary):
✓ Locality
✓ Unitarity
✓ Gravity
✓ Gauge forces
✓ Anomaly cancel (d=10)
✓ Modular invariance
✓ Finite masses
✓ Stable vacuum
✓ Classical limit
✓ Error correction

Alternatives that FAIL:
✗ Point QFT (locality)
✗ LQG (gauge forces)
✗ Causal sets (classical limit)
✗ NCQG (unitarity)
✗ Asym. Safety (anomalies)
✗ SUGRA alone (unitarity)

Conclusion:
String theory is UNIQUELY
determined by consistency.

Not a choice.
A necessity.
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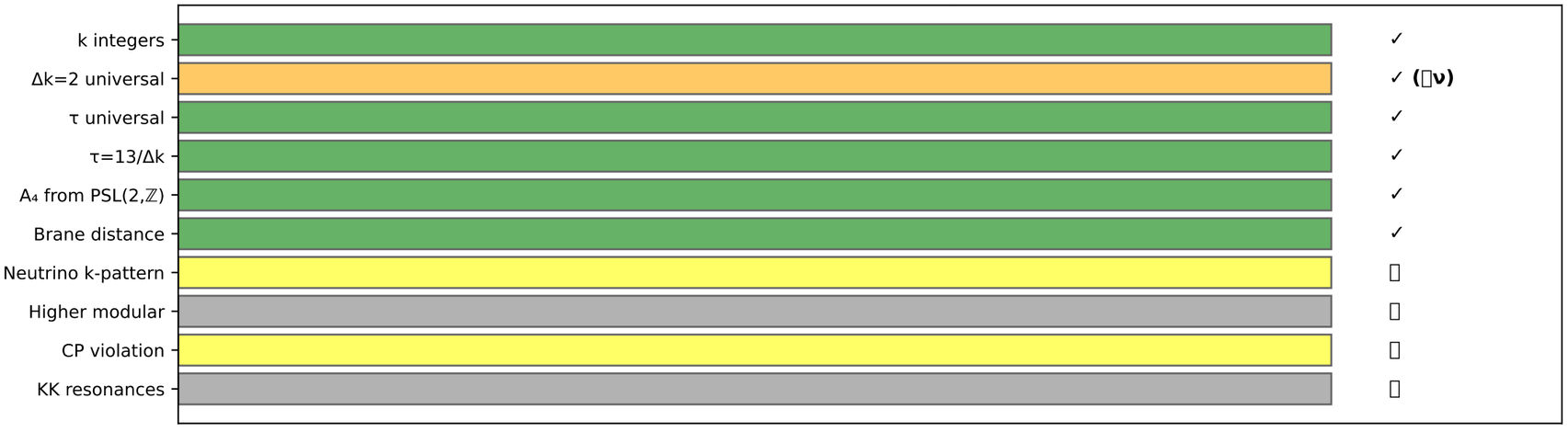
E: PREDICTION SCORECARD
(✓=Confirmed, □=Pending, □=Future)



F: COMPLETE CHAIN

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Information theory
    ↓ (requirements)
Error correction
    ↓ (uniqueness)
String theory
    ↓ (d=10)
Calabi-Yau CY₆
    ↓ (wrapping)
D-branes
    ↓ (positions)
x = (0,1,2)
    ↓ (flux)
n = (0,1,2)
    ↓ (quantization)
k = (4,6,8)
    ↓ (formula)
τ = 13/Δk ≈ 3.25i
    ↓ (modular forms)
Y^(k)(τ) ∝ e^(2πikτ)
    ↓ (Yukawa)
Mass hierarchies
    ↓ (observe)
m_e, m_μ, m_τ, ...

─────────────────
Zero free parameters
Pure necessity
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