

Four-Layer Assumption Hierarchy

Layer 1
(Irreducible)

**Observer Existence
(irreducible)**

Layer 2
(Empirical)

A1: Physical
Realizability

A2: Gauge
Principle

A3: Minimality

A4: Finiteness

A1+A4

A1

A2

Layer 3
(Derived)

GR1: Compact
Connected Lie

GR2: Faithful
Representation

GR3: Boundary-
Compatible

Layer 4
(Theorem)

Thm 0.0.3: Stella Uniqueness
GR1-3 = SU(3)

Lean



Irreducible



Empirical



Derived



Theorem