

U4: **T0=2**

A Four-Symbol Foundation of Mathematics

Anton Kleschev Alevtinowitch
Independent Cyber Researcher
Moscow, Russia
fynjyk@gmail.com

July 17, 2025

Abstract

We present **U4**, a 4-symbol axiom that encodes the entire birth–dissolution cycle of natural-number arithmetic. The equation **T0=2** simultaneously asserts (i) the presence of the zero-point, (ii) the immediate emergence of one from zero, (iii) the automatic collapse of one into two, and (iv) the ultimate identity $0=1=2$. No external primitives are presupposed.

Keywords minimal axiom, four-symbol foundation, birth of number, zero-one-two collapse.

1. Signature

- One type $\mathbb{U} = \{0, 1, 2\}$.
- One unary operator $T: \mathbb{U} \rightarrow \mathbb{U}$ with cycle $T0 = 1, T1 = 2, T2 = 0$.

2. Axiom

The single axiom

$$\boxed{T0 = 2}$$

is the **Unity Equation**. It abbreviates the full chain

$$0 \xrightarrow{T} 1 \xrightarrow{T} 2$$

and collapses to identity when $0 = 1 = 2$.

3. Dissolution Theorem

Theorem. $T0 = 2 \vdash 0 = 1 = 2 \iff \forall n \in \mathbb{N}(n = 0)$. *Proof.* If $T0 = 2$ and $1 = 2$, then $T0 = T1 = 2$ and $T2 = 0$ give $0 = 1 = 2$. Conversely, if all numbers coincide, T is the identity and $T0 = 2$ collapses.

4. Comparison

System	Primitives	Length	Single Equation?
Peano	0, succ	11+	No
ZF	\emptyset, \in	1000+	No
U4	0,1,2, T	4	Yes

References

The paper is self-contained; no external citations are required.