

SIMULTANEITY & INTERVALITY THEORY

A Framework for the Co-Emergence of Physical Reality

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Abstract

This paper presents the Simultaneity & Intervality framework, a conceptual and structural model proposing that physical reality operates through two fundamentally distinct yet interconnected regimes. Simultaneity represents a pre-differentiated state of unified potential, while Intervality represents the measurable, differentiated manifestation of reality. The work introduces Replicative Equivalence (R-E) as a governing principle of continuity and distinction, and argues for a formal separation within physics to better interpret quantum and classical phenomena.

1. Introduction

The nature of reality has long been interpreted through measurable distinctions such as space, time, motion, and identity. However, existing frameworks often struggle to fully explain phenomena that appear paradoxical or non-local in nature. This paper proposes that such limitations arise from an incomplete categorization of physical reality.

The Simultaneity & Intervality framework introduces a dual-regime model:

- Simultaneity — a unified, pre-measurement state of potential
- Intervality — a differentiated, measurable state of manifestation

2. Core Conceptual Framework

2.1 Simultaneity State

The Simultaneity State represents a pre-reality condition in which all potential properties exist together without distinction. In this regime, identity, motion, and spatial separation are undefined. All possible states coexist in a unified structure.

2.2 Intervality State

The Intervality State describes the emergence of measurable reality. Here, distinctions are enforced and observable phenomena arise, including mass, motion, gravity, and spacetime intervals.

2.3 Principle of Observation

Before observation, everything is legitimately one and singular. Though still one, post-observation, their simultaneity trait, structure, and behavior still linger silently behind the scenes. Otherwise, matter is all one and of one form called the simultaneity state—cloaked as though distinguished, or at continuous pulsating intervals.

3. Replicative Equivalence (R-E)

The mathematical phenomenon that made this distinguishability happen, in our terms, is known as Replicative Equivalence: a mathematical order we understand. Therefore, reverse-engineering the universe's technique and principle of producing process, reproduction, and distinction (R-equivalence) can be used to compare two unrelated events in order to control, predict, or understand any other event of unrelated origin. The human universe adopted this as its principle for continuity. With proper R-E, we can not only understand behaviors in the grand scheme of things, but also edit reality. This points out that in human existence, if the universe revokes R-E, all things would assume special equality or be at the same place at the same time at once; R-E being the principle behind continuity. Thus, R-E enabled the pulsation of intervality.

Adaptation of Simultaneity & Intervality into Physics (the Dual-Regime Model)

1. Simultaneity & Intervality Physics

Furthermore, we suggest that the framework of simultaneity and intervality informs the very categorization of physics.

The framework of Simultaneity & Intervality physics suggests that physical reality can be understood as comprising two fundamentally distinct but connected regimes:

1.1 Simultaneity Physics

This regime describes undifferentiated, pre-measurement states. It is characterized by coexistence of multiple potentials, absence of defined time, and unresolved identity. It aligns conceptually with quantum superposition and probabilistic wavefunctions, but extends beyond them as a fundamental layer of reality.

1.2 Intervality Physics

This regime governs measurable and observable phenomena. It includes classical mechanics and relativity, where properties are defined, and events occur in ordered sequences within spacetime.

2. Transition Between Regimes

The transition from Simultaneity to Intervality represents the emergence of measurable structure from an undifferentiated state. This transition is analogous to quantum measurement, where probabilistic states resolve into definite outcomes.

3. Limits of Conventional Physics

Conventional physics operates within Intervality and is therefore limited in describing undifferentiated states. This results in incomplete explanations for phenomena originating from Simultaneity.

4. Implications

Recognizing both regimes allows for improved interpretation of quantum phenomena, structured modeling of pre-spacetime conditions, and new approaches to understanding the emergence of reality.

5. Conclusion

Phenomena often described as 'breaking the laws of physics' may instead belong to Simultaneity Physics. Rather than violating physical laws, they operate under a different regime with its own governing principles.

A dual-regime understanding of physics enables clearer interpretation and reduces conceptual ambiguity in modern science.