

Title:

Time-Split Particle Concept:

Simultaneous Travel to Past and Future

Abstract:

We propose a conceptual model of a hypothetical particle capable of splitting into two temporal components: one propagating toward the future and the other toward the past. This idea, inspired by the interplay between quantum mechanics and relativity, provides a novel framework for exploring the nature of time, causality, and information exchange across temporal directions.

Author: Amirhossein Asgari

G-mail: amir.asgari66@gmail.com

Date: 30 August 2025

1. Introduction

Time is one of the fundamental dimensions of the universe. Quantum mechanics allows for retrocausality, while general relativity enforces unidirectional time flow. Here, we introduce a 'time-split particle' concept, simultaneously propagating forward and backward along the time axis.

2. Conceptual Model

Time-Split Particle: A fundamental particle able to undergo temporal bifurcation.

Splitting Process:

Component A \rightarrow propagates forward into the future.

Component B \rightarrow propagates backward into the past.

Key Feature: Components remain entangled, allowing information transfer across time.

3. Connections to Existing Theories

1. Quantum Entanglement: Supports bidirectional temporal information exchange.
2. Tachyons: Relates to faster-than-light retrocausal particles.
3. Closed Timelike Curves (CTCs): Compatible with some general relativity solutions.

4. Potential Implications

Provides a framework for quantum information transfer.

Revisits the arrow of time and entropy.

Inspires time-based quantum computation models.

5. Conclusion

This conceptual model, although hypothetical, may inspire future research into time, causality, and past-future interactions.