I. Introduction: The "Spontaneous Appearance" of Quantum Particles is an Illusion

In high-vacuum experiments, humans observe the phenomenon of "quantum particles randomly appearing and disappearing," which is often explained by theories such as "quantum fluctuations" or "virtual particle pairs." But does this so-called "creation from nothing" process truly reflect the essence of the universe?

We believe not. Any truly stable cosmic structure should not permit "creation from nothing." The appearance and disappearance of quantum particles are merely misinterpretations of a more fundamental "structural combination process" at a smaller scale, seen through macro time and macro observational precision.

II. Trend Factors: The Fundamental Structure Composing Quantum Particles

We propose a more fundamental unit: the **trend factor**.

They are the smallest, changeable, and combinable structural units in the universe.

They are defined not by mass, charge, or energy but by "trends" (directional structural changes).

They can combine to form quantum particles and, when the structural stability breaks down, can scatter again.

This means quantum particles are not spontaneously generated but are the result of a specific arrangement of trend factors. "Disappearance" is simply the reorganization of the trend structure, exiting the original quantum state.

III. Uncertainty is a Cognitive Error, Not an Intrinsic Uncertainty

"Quantum uncertainty" implies we cannot simultaneously measure the position and momentum of a quantum particle. But this "uncertainty" is:

Due to the complexity of the trend factor structure's expansion over many dimensions,

Current measurement methods only capture fragments within the "structural unfolding window,"

Much like sitting in a light-speed spaceship and watching a person's life unfold, but only seeing one frame of it.

In other words, the true reason behind the uncertainty is that the trend structure has not fully unfolded within the human observational dimensions.

IV. The Observability of Trend Factors is Simply a "Technical Barrier"

History has shown that once-invisible entities, like bacteria, viruses, genes, quarks, and strings, have been verified with technological advancements.
We predict that:

Trend factors will also be experimentally proven when a future "structural analysis technology" matures.

V. A Quantum Behavior Landscape from the Trend Perspective

We reconstruct a "trend structure evolution diagram" to explain the appearance and disappearance of quantum particles:

- **A Moment:** Several trend factors aggregate to form a stable structure; the quantum is observed.
- **B Moment:** The trend factor structure is disturbed or shifts, and the combination structure disperses; the quantum disappears.
- **C Moment:** A similar trend combination restructures, and a similar state is observed again.

Thus, quantum particles are not "singular entities" but "observable projections of a trend structure in a specific time-space configuration."

Conclusion:

The introduction of trend factors provides a completely new structural logical foundation for reinterpreting "quantum uncertainty."

We no longer attribute "invisibility" to "natural chaos." Instead, we believe we are merely observing a partial process of trend structure unfolding.

If we accept the existence of trend factors, all the mystery and "uncertainty" in quantum behavior will transform into a clear process of structural unfolding — one that we have yet to fully analyze with the right perspective and tools.

Author's Note:
This article presents the first foundational definition of the trend factor theory within infinite-dimensional mathematics. Subsequent model derivations, trend language development, and structural simulations will be based on this foundation.