The Wormhole Vortex Theory

Abstract

The Wormhole Vortex Theory is a novel interpretation of the spacetime geometry surrounding wormholes, suggesting that both wormholes and black holes share a common mechanism rooted in the rotation of spacetime. According to this theory, rotating wormholes generate a two-sided vortex within the fabric of spacetime, leading to the formation of a region where neither space nor time exists. This document elaborates on the theoretical foundation, mechanisms, implications, and experimental predictions of the Wormhole Vortex Theory, aiming to provide a deeper understanding of high-dimensional spacetime phenomena.

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1. Introduction

In modern physics, wormholes are hypothetical passages through spacetime that could theoretically allow travel between distant parts of the universe or even different universes altogether. Traditional approaches

describe wormholes as bridges sustained by exotic matter to prevent collapse. This theory proposes an alternate mechanism: that wormholes function through the generation of spacetime vortices due to rotational forces.

2. Background Concepts

General Relativity

Einstein's General Relativity describes gravity as the curvature of spacetime caused by mass and energy. It allows the theoretical existence of wormholes and black holes as solutions to Einstein's field equations.

Wormholes

Wormholes, often described as Einstein-Rosen bridges, are tunnels that link two distinct points in spacetime. While speculative, their mathematical structure has been studied extensively.

Spacetime Vortices

Rotation in spacetime—especially around massive rotating objects like Kerr black holes—can cause spacetime to twist, forming vortices. This effect, known as frame dragging, inspires the central mechanism of this theory.

3. Core Hypothesis

Wormholes and black holes operate on the same fundamental principle: the generation of a rotational vortex in spacetime. In the case of wormholes, this vortex is two-sided, creating a bridge with no spacetime in its core.

4. Vortex Generation in Rotating Wormholes

Just as a magnet in water can produce a vortex when stirred, a rotating wormhole produces a two-sided vortex within spacetime. The rotation generates spiral-like distortions in the surrounding spacetime fabric.

These vortices converge toward the center, forming a narrow region where the properties of space and time begin to collapse or vanish entirely.

5. Spacetime Removal Mechanism

As the two-sided vortex forms, a critical region develops at its core where the twisting of spacetime becomes so extreme that space and time themselves are displaced.

This region is theorized to contain no spatial coordinates or temporal flow — a true void in the continuum. In essence, spacetime is "torn" or "excluded" from the center of the vortex.

6. Physics in the Void: Where Spacetime Ceases

In this spaceless and timeless void:

- Matter cannot age, decay, or travel in conventional terms.
- No electromagnetic radiation, including light, can exist or propagate.
- Physics as we understand it (relativity, quantum mechanics) ceases to function.

It is not just an empty space; it is a region where the very concepts of location and duration are undefined.

7. Instantaneous Travel via the Vortex

When a particle or object approaches one mouth of the wormhole, it is pulled into the vortex. As it crosses the spaceless-timeless core, it instantaneously appears at the other mouth.

Since the core does not contain time, no duration is experienced. The transition is truly instantaneous, and not limited by the speed of light.

8. Implications for Causality and Time

This type of travel bypasses spacetime altogether. Hence:

- Cause and effect can be inverted or rendered ambiguous.
- Paradoxes could arise, especially with time travel possibilities.
- Time within the vortex is non-existent, making chronology undefined.

9. Speed of Light and Its Limitations

The speed of light is the upper speed limit **within** spacetime. But if an object bypasses spacetime entirely—as in the wormhole vortex core—then this limit does not apply.

Thus, wormhole travel may allow effective speeds vastly exceeding light speed, without breaking relativity (because no spacetime path is traversed).

10. Violations of Known Physical Laws

Within the vortex core:

- Relativity fails due to the absence of spacetime.
- Thermodynamics cannot operate—no heat flow, no entropy.
- Quantum mechanics has no framework—no particles, no probabilities.

Hence, this region is beyond physics—not violating laws but existing **outside** their domain.

11. Comparison with Black Holes

While this theory focuses on wormholes, the mechanism of vortex creation has parallels with rotating black holes (Kerr black holes). However:

- In black holes, the vortex collapses into a singularity.
- In wormholes, the vortex forms a stable tunnel with a void in the center.

12. Mathematical Framework (Suggested)

To model the vortex and void, one would begin with:

- Modified Kerr metric for two-sided symmetry.
- Energy tensor allowing for spacetime displacement.
- Topological models of disconnected space regions.

This requires further development but is theoretically feasible.

13. Visual Representations

Illustrative diagrams would show:

- Twisting spacetime forming the vortex.
- Central void region (no gridlines of spacetime).
- Entry and exit paths through the wormhole.

14. Theoretical Predictions

If this theory is true, we should expect:

- Observational anomalies in rapidly rotating compact objects.
- Sudden appearances/disappearances of matter.
- Possible violation of causality in controlled quantum experiments near artificial wormholes.

15. Observational Possibilities

While detecting a real wormhole is not currently possible, indirect tests may include:

- Gravitational wave patterns that reflect vortex structure.
- Exotic lensing effects with no visible mass present.

16. Challenges and Criticisms

- No direct experimental support yet.
- Requires exotic conditions to form the vortex.
- Demands new physics beyond General Relativity.

Still, it offers a conceptual bridge between relativity and quantum spacetime dynamics.

17. Potential Experiments and Simulations

Computer simulations using:

- Rotating spacetime tensors.
- Non-Euclidean geometries.
- Particle behavior through simulated void regions.

Could shed light on feasibility and behavior.

18. Implications for Multiverse Theories

If wormholes bypass spacetime:

- They may connect not just distant locations, but entirely different universes.
- The void region may serve as a transition interface between disconnected spacetime domains.

19. Future Research Directions

- Develop a quantum theory of spaceless-timeless voids.
- Simulate vortex-induced displacement of spacetime.
- Investigate links between this theory and quantum entanglement.

20. Conclusion

The Wormhole Vortex Theory presents a bold new way to look at wormholes—not just as tunnels, but as dynamic spacetime vortices with a core that removes spacetime itself. If proven, this could revolutionize our understanding of travel, time, and the structure of the universe itself.

Author: Tirth Sathwara\ Date: July 2025