

Dark Matter & Dark Energy: A Medium-Based Alternative Theory

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Overview

This theory proposes that what we currently describe as dark matter and dark energy are not separate forces, particles, or exotic fields - but rather effects caused by the properties of a universal medium that permeates all of space.

In essence, we are not observing 'dark' components of the universe, but rather the behavior of objects and light as they move through an invisible, pervasive medium - similar to how fish move through water or sound travels through air.

Challenge 1: Why Don't We Feel the Medium?

We are simply too small. Satellites, probes, and even planets are minuscule compared to the universe's scale. The medium that fills space may not affect us measurably, just as air resistance is imperceptible to a grain of dust drifting indoors. Only objects of immense mass or energy, such as

black holes or colliding neutron stars, create disturbances large enough to register - like gravitational waves. This explains why typical spacecraft experience no drag or resistance in space.

Challenge 2: Why Does Gravity Appear Instantaneous?

If space is a tensioned medium, then changes to gravitational fields may be rebalanced through the structure itself - not via a traveling signal. This rebalancing is more like a shift in equilibrium throughout a connected structure (like a spider web), not a transmitted wave. Gravity in this theory is not 'sent' across distances; it's already present as a tension field in the medium. When mass moves, the tension redistributes, and all connected parts adjust together.

Challenge 3: Why Is the Universe Accelerating?

Instead of requiring an unknown repulsive force (dark energy), this theory suggests that the expansion of the universe is simply the medium decompressing. In early cosmic history, space was under tension - now it is relaxing, causing the rate of expansion to increase. Think of stretching a rubber band: as it stretches, tension eases and expansion accelerates - not because something is pushing, but because internal resistance is falling.

The Inaccessible Framework

Quantum mechanics shows that atoms are mostly empty space, with electron probability clouds surrounding tiny nuclei. Yet atoms persist, interact, and follow strict rules. This suggests a foundational structure beneath what we can measure. This 'medium' might not be measurable because it makes up the very framework of matter, space, and interaction. It cannot be isolated or removed - it is the canvas itself.

Support from High-Vacuum Atom Experiments

Even in near-perfect vacuums, atoms retain mass, charge, and behavior. This implies something unseen continues to support their structure. This medium-based theory proposes that what we call

'empty space' is actually a structured, ever-present field that makes physical consistency possible.

Toroidal Universe as a Medium-Compatible Model

Toroidal universe models (a finite yet unbounded geometry) offer a natural fit for a space medium. In such models, flows, cycles, and balance are possible - just like in smoke rings or magnetic loops. This structure allows for stable tension and directional flow, enhancing the medium model's plausibility.

Directional Perspective in a Toroidal Medium

If we occupy a specific part of a flow-based toroidal structure, what we perceive as acceleration may be a result of location. Like standing in a swirling river bend, our view of the universe's expansion and energy gradient may be biased by our flow position. Redshift, CMB anisotropies, and cosmic acceleration could all stem from our relative placement in a cascading side of the medium.

Conclusion

Dark matter and dark energy may not be mysterious ingredients, but evidence of the structured fabric of reality - the medium. Once we stop thinking of space as empty, and instead as dynamic and structured, our understanding of cosmic behavior may align with simpler, testable principles. This theory invites rethinking gravity, expansion, and matter through the lens of a connected, living medium.