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1. Preface: The Fundamental Critique

Contemporary physics rests on two pillars with serious internal contradictions: the probabilistic interpretation of quantum mechanics and the Λ CDM cosmological model, supported by ad hoc dark components (dark matter and dark energy).

This exposition argues that both pillars are incomplete or incorrect. Probability is a measure of ignorance, not a property of nature, and dark components are patches to save models that ignore fundamental physical effects, such as the finite speed of gravity.

Einstein's phrase, "God does not play dice," was not a metaphor but a profound intuition about a deterministic and realistic universe.

2. The Conceptual Error: Probability vs. Reality

The use of probability in standard quantum mechanics (Copenhagen interpretation) confuses an epistemological concept (our ignorance) with an ontological one (reality itself).

Coin Analogy: A coin in a sealed envelope has a $\frac{1}{2}$ probability of being heads or tails. Upon opening the envelope, a wave function does not "collapse"; we simply access information that already existed. Probability was a description of our state of information, not of the coin.

Collapse is not a physical process: Applying this concept to the subatomic world leads to absurdities such as observation "creating" reality. Quantum theory is a powerful but incomplete predictive tool, as it describes results, not underlying causes.

The Compatibility of Perspectives: Inside vs. Outside Spacetime

The apparent contradiction between (quantum) indeterminism and determinism is resolved by defining the frame of reference:

- **From inside spacetime:** An immersed observer, with limited information, can only access probabilistic descriptions. This is the perspective of standard physics.
- **From outside spacetime:** A perspective encompassing the entirety of the fundamental physical substrate would see a perfectly determined chain of events. Probability is a measure of the ignorance of our limited viewpoint, not a property of nature.

Both visions are compatible. The first describes our experience; the second, the underlying reality.

Conclusion: A theory is needed that describes reality independent of the observer, reconciling both perspectives.

3. The Einstein-VED Theory: A Unifying Substrate

[See Zenodo record](#)

The Einstein-VED Theory (Vibration-Space-Dynamism) proposes a fundamental physical substrate to overcome the incompleteness of current physics. It provides the necessary "external" framework to unify perspectives.

The VED Vacuum: It is not "nothing," but a dynamic and vibrational entity from which spacetime itself and all its content emerge. It is the fundamental reality from whose perspective everything is determined.

Reality as Vibrational Modes: Particles (fermions) and forces (bosons) are not fundamental entities but stable, resonant vibrational modes of the VED substrate. This explains why all particles of a type are identical: they are the same "note" resonating in the VED. Their apparent indeterminacy from our framework arises from interacting with a non-local entity from a local viewpoint.

Geometry and Determinism: Properties such as mass or charge arise from the geometry of these vibrations, not from randomness. The universe is deterministic when described from the VED substrate.

Natural Unification: Supersymmetry (SUSY) emerges naturally, relating fermions and bosons as different vibrational manifestations of the same substrate.

This theory eliminates quantum randomness by providing an underlying cause and offers a realistic and deterministic basis.

4. The Illusion of Expansion: Reinterpreting Redshift

Standard cosmology interprets the redshift (z) of distant galaxies as evidence of the expansion of space itself, requiring "Dark Energy" to explain its acceleration.

A Reinterpretation: Redshift does not measure expansion but a desynchronization in the temporal flow between the emitting galaxy and us. What is interpreted as stretching space is actually a difference in the pace of time.

Key Evidence ($dz/dt < 0$): The observation that redshift decreases over time contradicts the narrative of accelerated expansion. It indicates a relative deceleration, not an acceleration. "Dark Energy" is unnecessary.

The universe does not expand; it evolves through the convergence of temporal flows.

5. The Collapse of Dark Matter: Gaia Data and the Whip Effect

"Dark Matter" was invented to explain why stars in galaxies move faster than the gravity of visible matter can account for. New data from the Gaia satellite invalidates this hypothesis.

The Failed Prediction: Λ CDM predicts a spherical halo of dark matter that produces flat rotation curves (velocity stabilizes in the halo).

Gaia data shows:

- **✗ Velocity Increase:** Orbital velocity increases with distance in the galactic halo.
- **✗ Strong Dispersion:** Velocities are not uniform but show significant scatter.
- **✗ North-South Asymmetry:** Dynamic behavior is radically different in opposite hemispheres.

A spherical, smooth dark matter halo can NEVER produce these patterns. This data is its death sentence.

The True Explanation: The Whip Effect of Retarded Gravity

The error in models is ignoring that gravity propagates at the speed of light (c). The force holding a star does not depend on the current mass of the galactic center but on how it was tens of thousands of years ago (the time it takes for the signal to arrive).

Whip Analogy: The galactic center is the hand, the stars are the tip of the whip. A gravitational "jerk" propagates outward. At greater distances, greater delay and greater energy transfer, accelerating the halo stars (the whip "crack").

Sensitivity to Inhomogeneities: This effect is sensitive to the actual structure of the galaxy (deformations, tidal streams), which naturally explains the dispersion and asymmetry observed by Gaia.

Dark matter is a ghost invented to correct models that ignore a fundamental physical effect: the finite speed of gravity.

6. Conclusion: A Path Toward a Deterministic and Geometric Physics

Physics is at a turning point. High-precision observational data (Gaia) is revealing the cracks in the standard model (Λ CDM).

A new paradigm is possible: The Einstein-VED Theory, along with the correct consideration of temporal delays in gravity, offers a unified, deterministic, and realistic framework that:

1. Eliminates quantum randomness by describing an underlying reality from the perspective of the VED substrate.
2. Explains galactic anomalies (dark matter) as a dynamic effect of retarded gravity.
3. Explains cosmology (dark energy) as an illusion derived from temporal desynchronizations.

The way forward requires abandoning ad hoc patches and returning to fundamental principles: time as a primordial variable and physics as the geometry of reality.

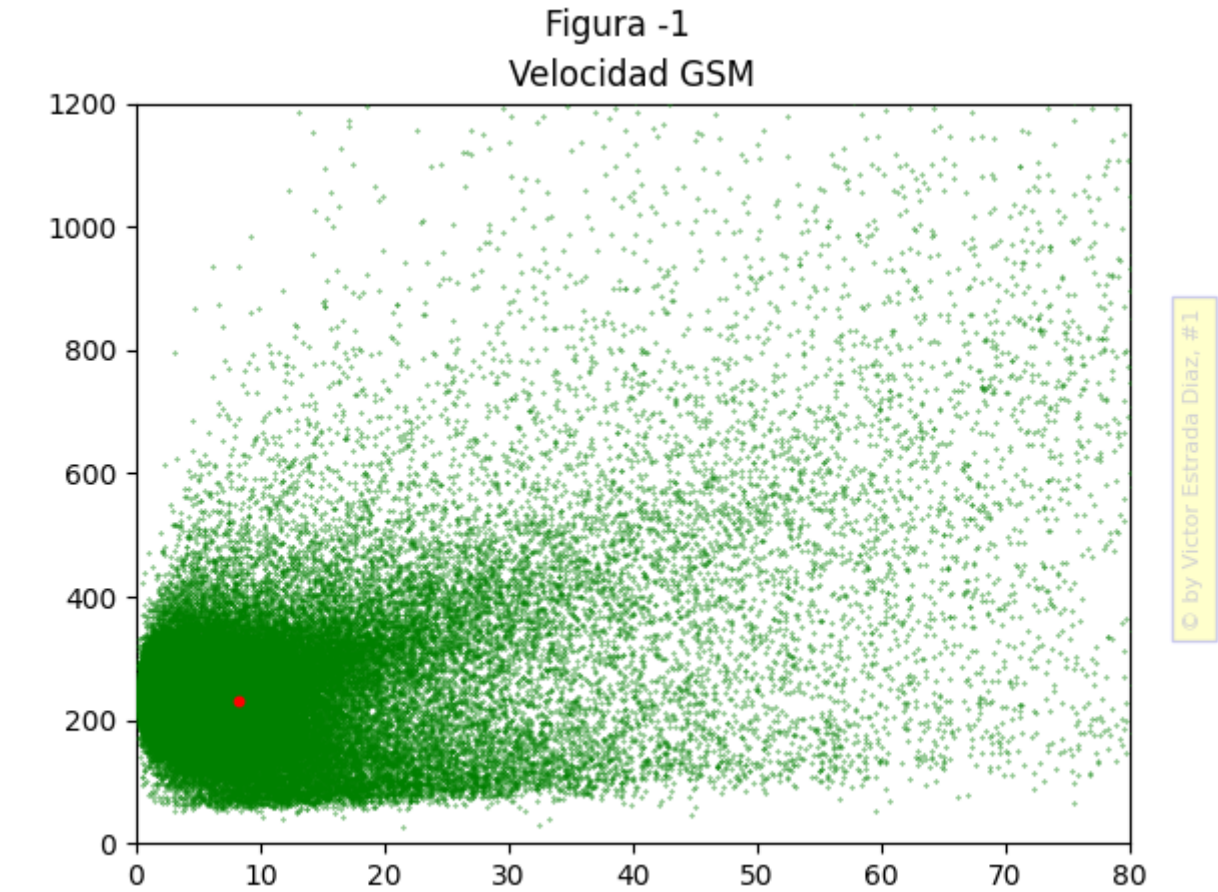
References and Data

- **Einstein-VED Theory:** [ES_Teoria_Einstein_VED.pdf](#)
- **Observational Data Catalog:** <https://estrada.es/teorias/catalogo.html>
- **Zenodo Record:** <https://zenodo.org/records/16342597>

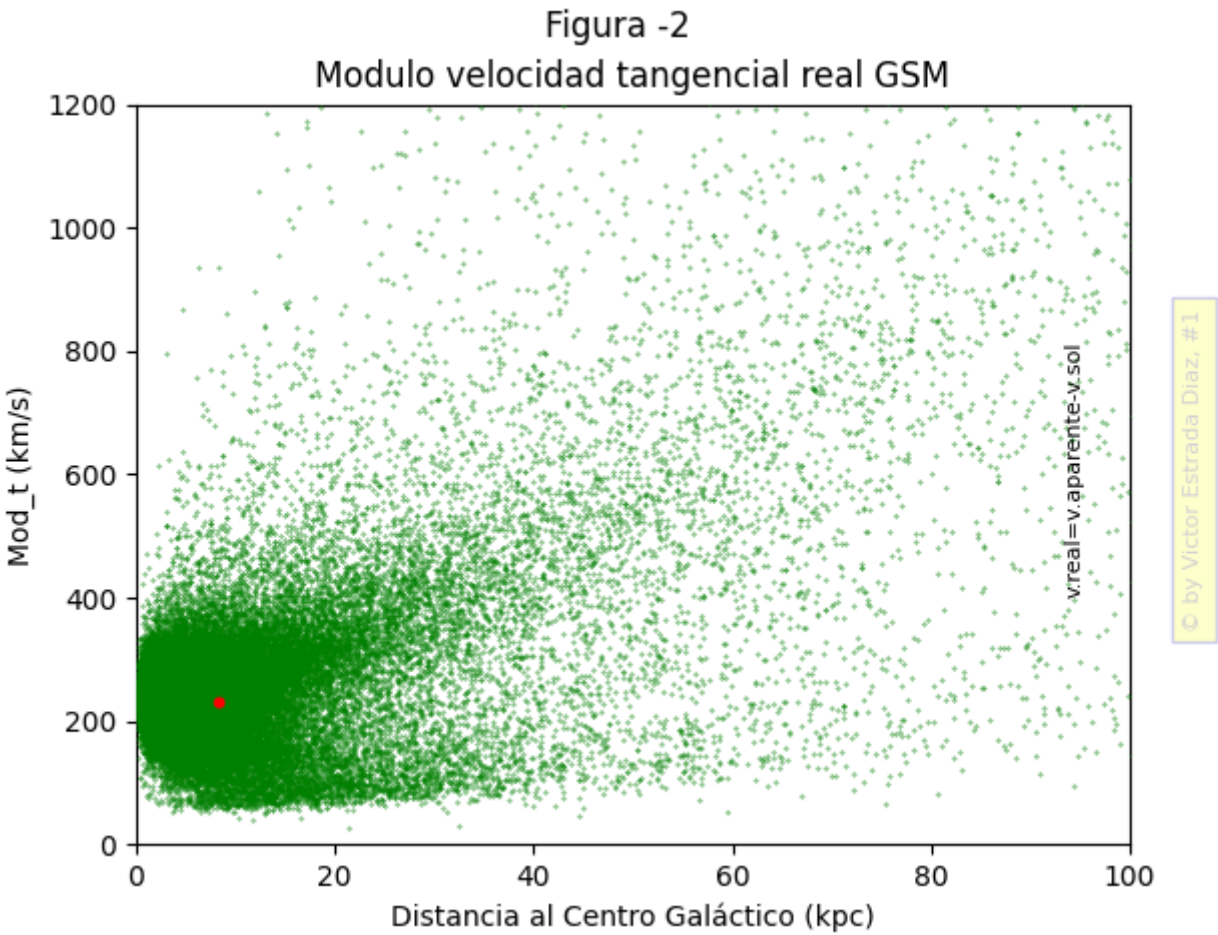
Contradictions of Real Velocities with Current Models

Observe in the graphs two effects that pose a major contradiction with current models, as velocities do not stabilize with distance but increase, and the velocity dispersion far from decreasing increases considerably.

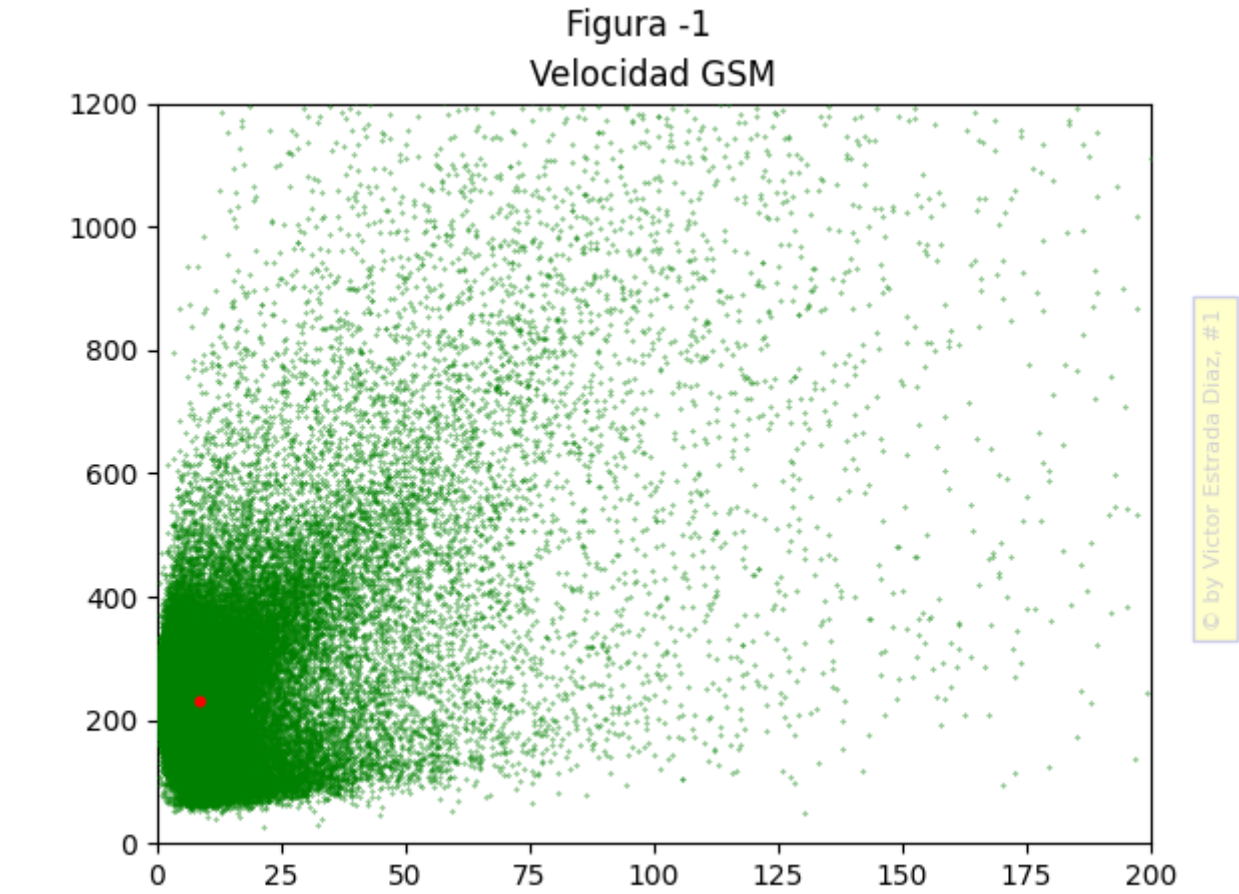
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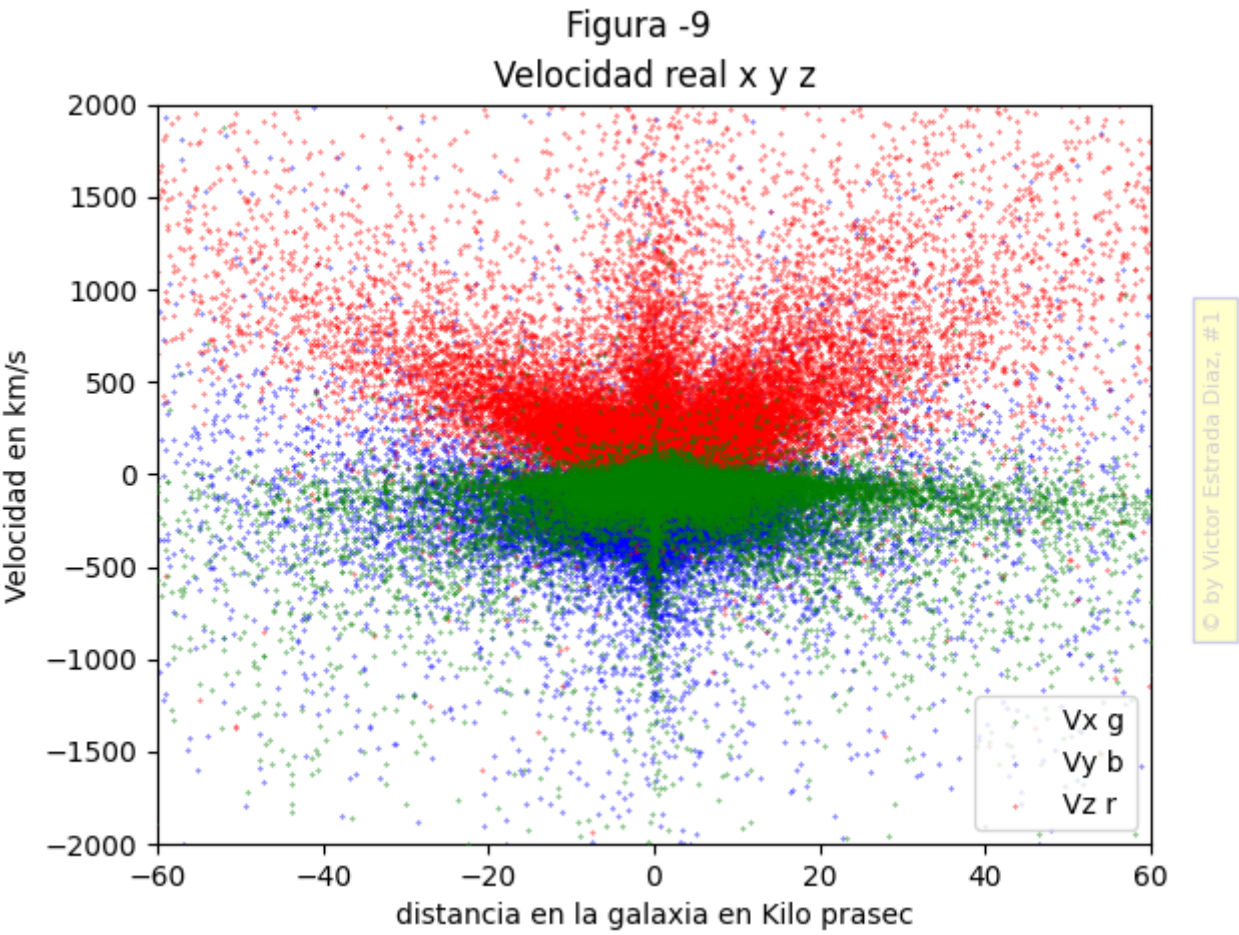
- A 100 kiloparsecs:



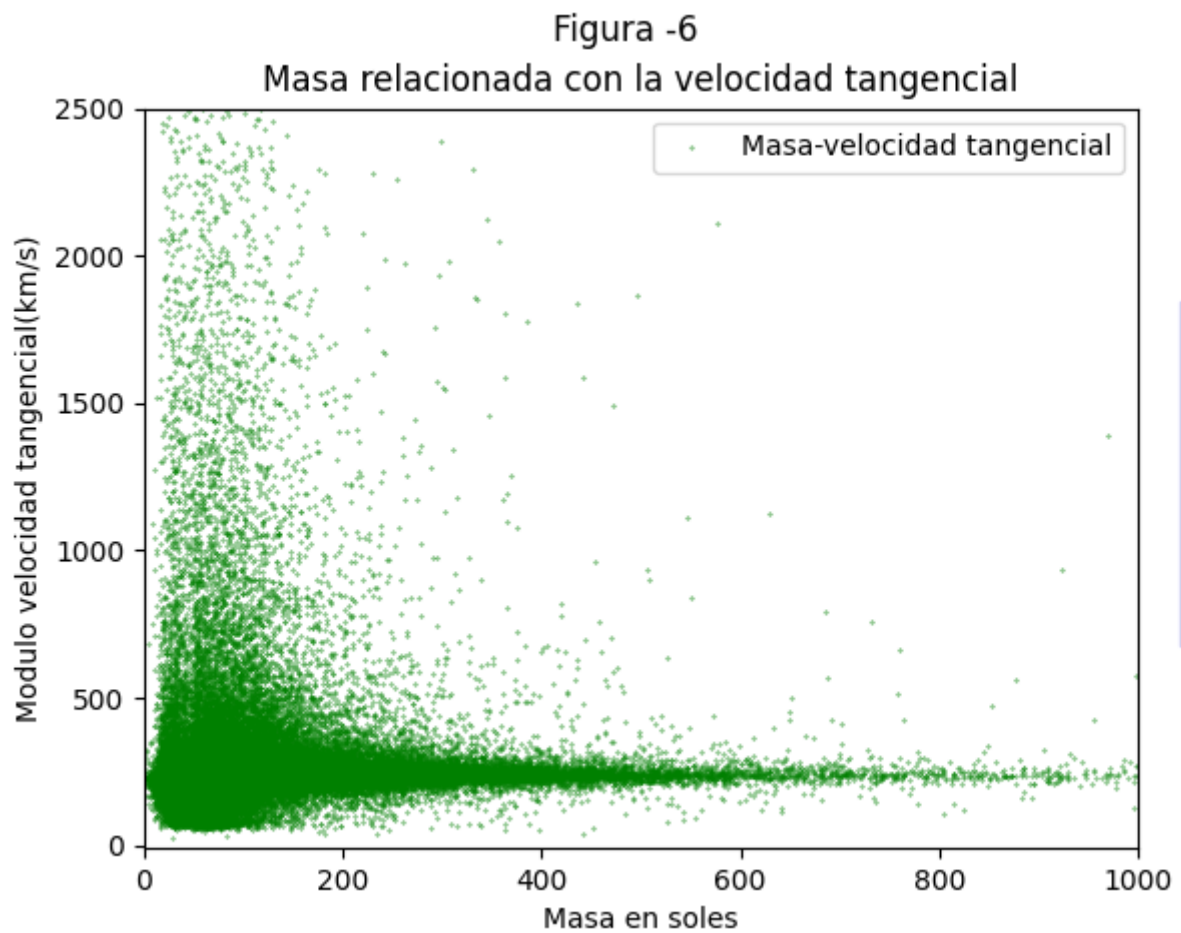
- **A 200 kiloparsecs:**



- **Asimetría Norte/Sur:**



- **Velocidad según masa:**



Related Documentation

Spacetime Theories

- [Spacetime in Relativity](#)
- [Particles are Structures of Pure Spacetime](#)

Quantum Foundations

- [Reinterpretation of Quantum Uncertainty](#)
- [Deterministic Explanation of Entanglement](#)