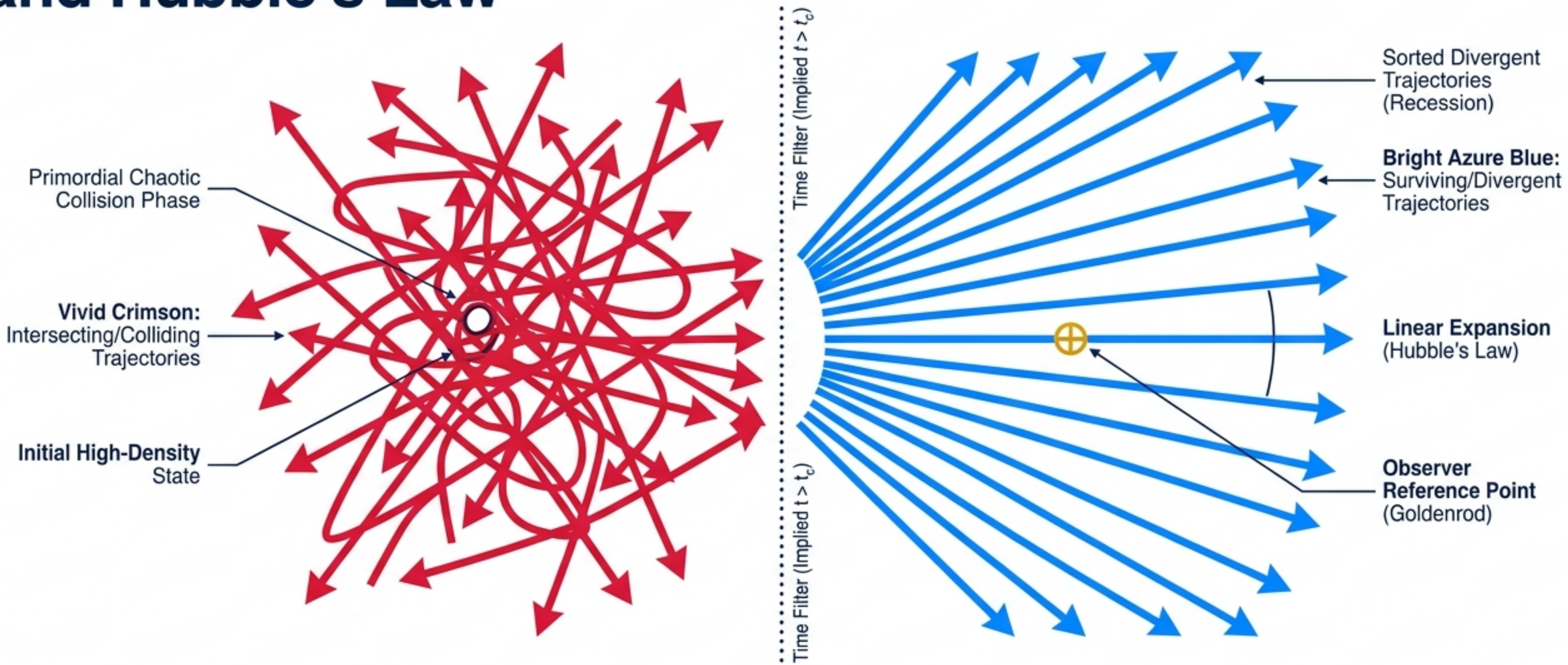
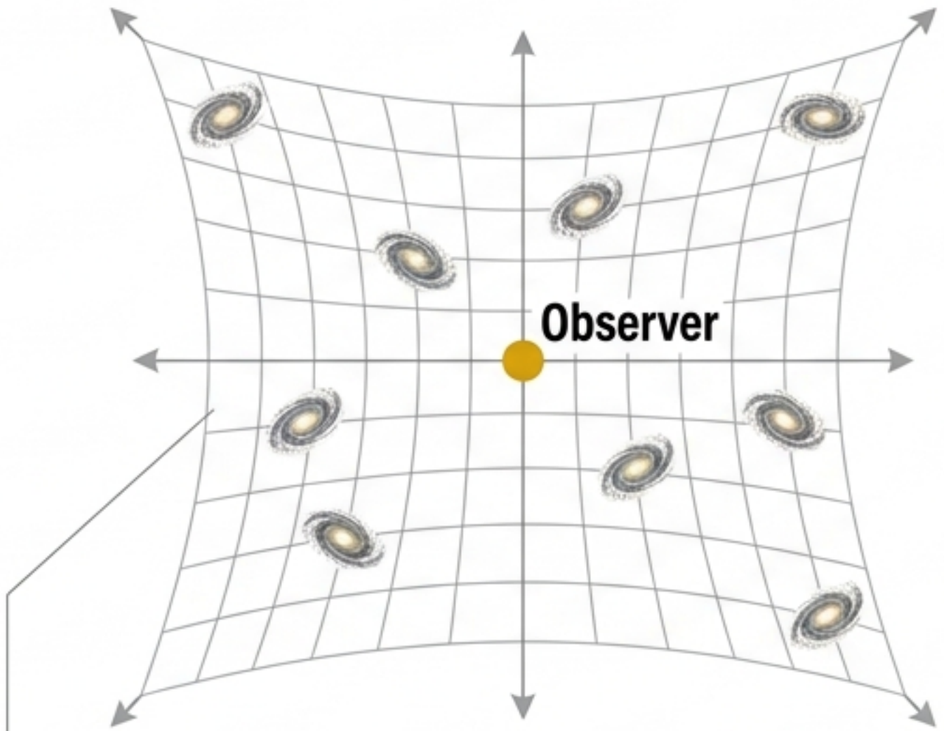
Gravitational Sorting as the Kinematic Origin of Gactific Galactic Recession and Hubble's Law



Galactic Redshift Without Metric Expansion of Space

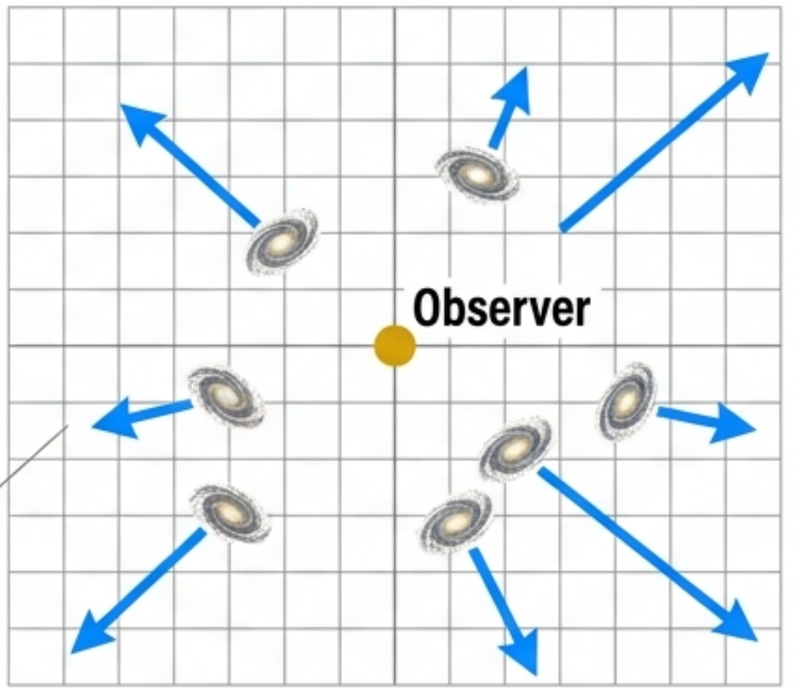
Metric Expansion



Standard Inference

Assumes the visible galaxy population represents a pristine kinematic distribution, forcing the conclusion that space itself must be stretching to explain universal recession.

Kinematic Sorting

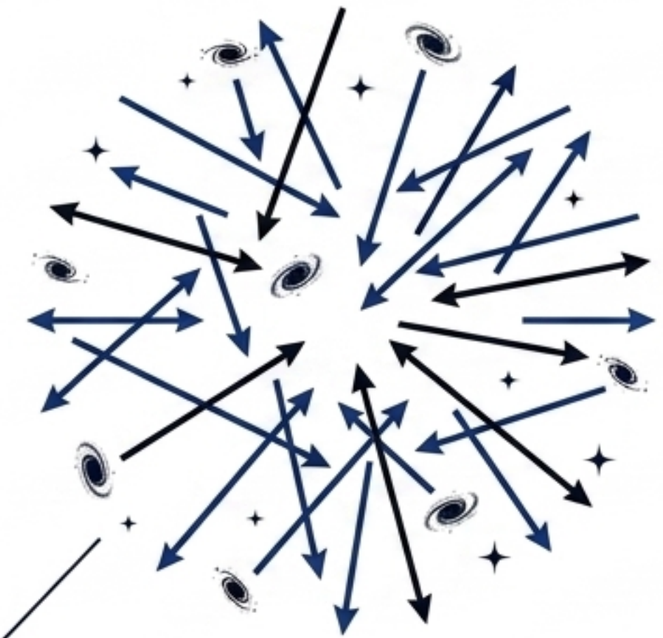


The Kinematic Alternative

Postulates that the visible population is dynamically filtered. Redshift is a genuine kinematic Doppler motion. Galaxies are long-term survivors of a trajectory elimination process moving through static space.

Trajectory Elimination and the Survival of Divergent Kinematics

T=0: Isotropic Chaos

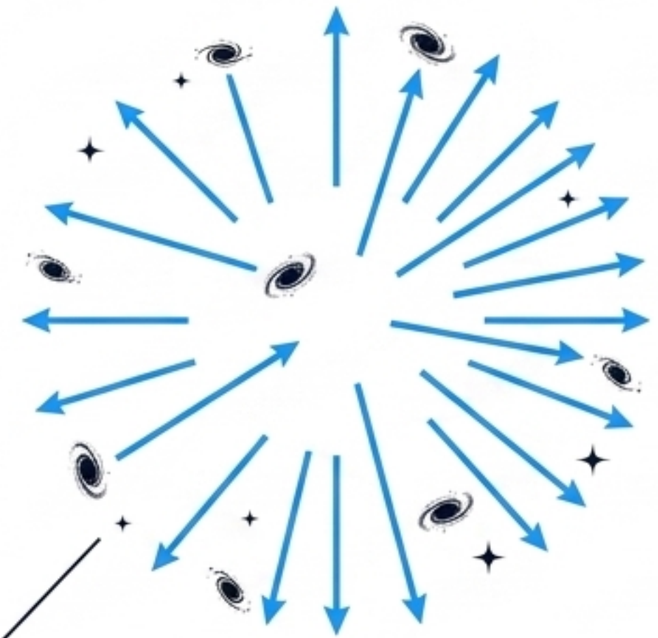


The Precedent: Like chaotic early solar system orbits sorting into a stable coplanar system, galactic kinematics sort over cosmological timescales.

T=1: Trajectory Elimination

The Survival Filter: In an infinite, eternal universe, galaxies on collision courses inevitably interact and merge. Survivors are those that never intersected.

T=2: Divergent Survivors



The Result: Non-intersecting trajectories in an expansion-free infinite universe are parallel or divergent, producing apparent universal recession.

Kinematic Derivation of $v = H_0 \times d$ from Survival Statistics

Distance as a Function of Survival

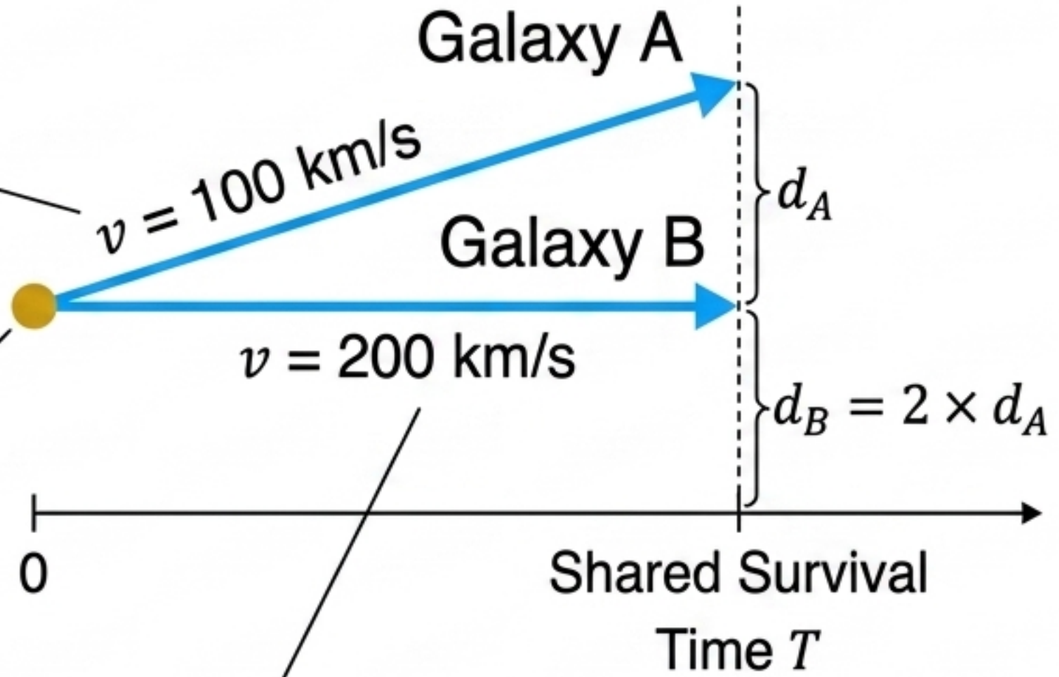
Galaxies that have survived without colliding for time T have moved a distance $d \approx v \times T$.

The Inevitable Linearity

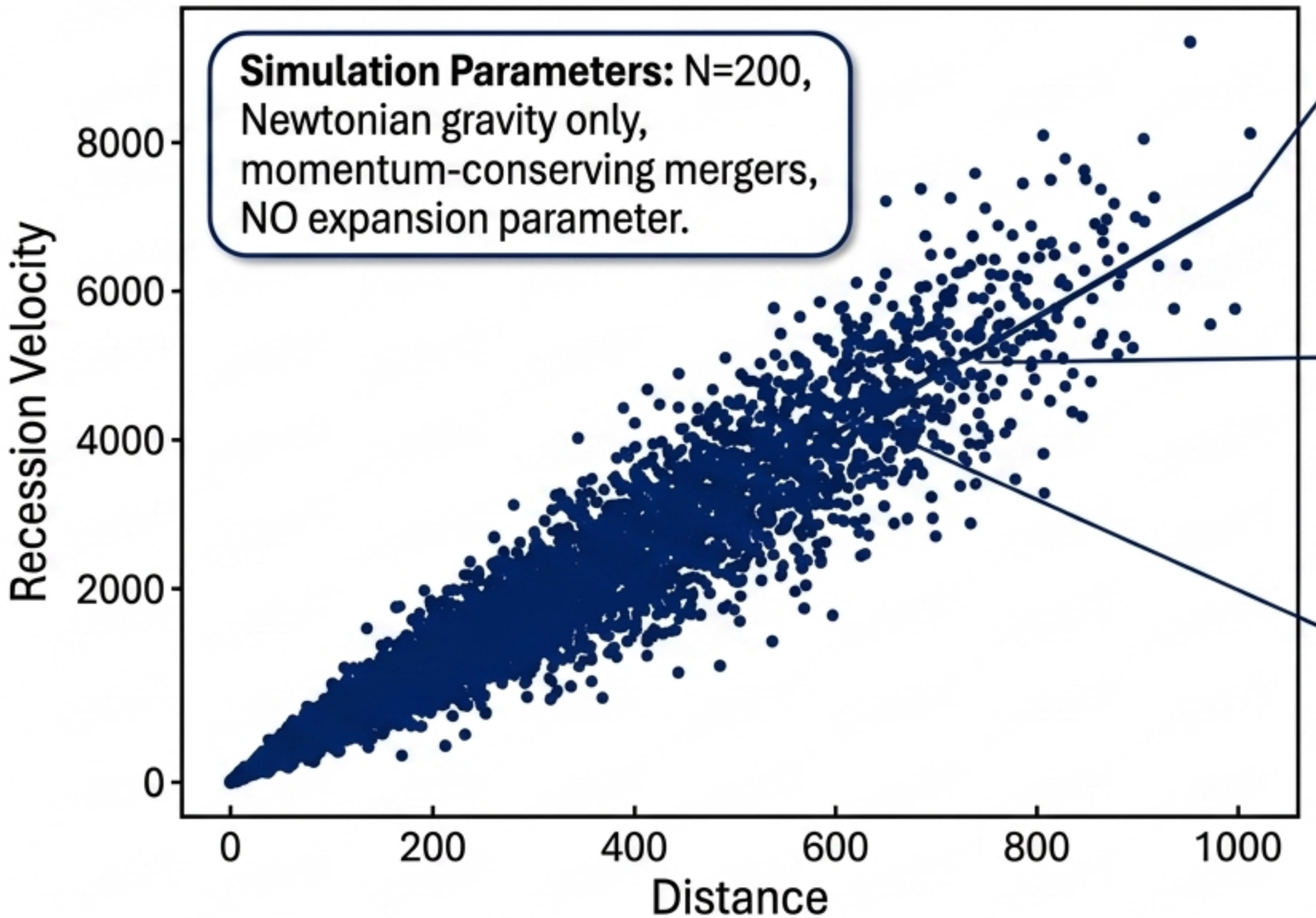
Rearranging the kinematic equation yields $v = (1/T) \times d$. Faster galaxies have naturally traveled further from their last gravitational interaction.

Reinterpreting the Constant

H_0 is not a universal expansion rate, but the inverse of the characteristic sorting timescale ($H_0 = 1/T$). Linearity is an emergent geometric fingerprint of survival selection.



Numerical Validation: Hubble Relationship from Newtonian Sorting



The Setup

Galaxies initialized with random positions and velocities in a static volume. Intersecting galaxies undergo momentum-conserving mergers.

The Emergence

After stabilization, 84% of surviving galaxies are receding (compared to 50% initially).

Statistical Signature

The surviving population yields a positive velocity-distance correlation of Pearson r = 0.675. A Hubble-like relation emerges purely from dynamical filtering without metric expansion.

Symmetrical End-States of Infinite-Space Gravitational Sorting

Independent Regional Evolution

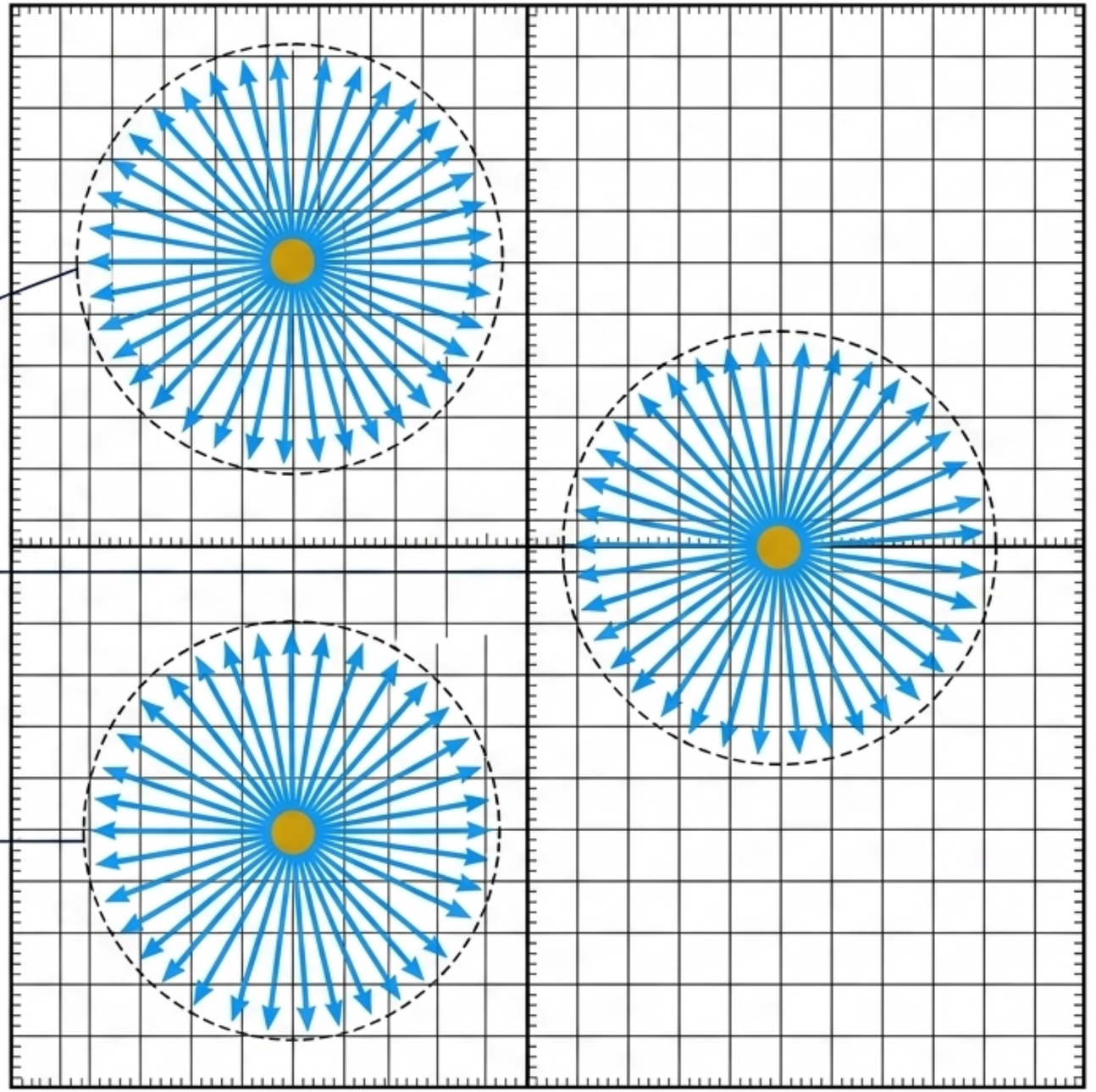
In an infinite, isotropic universe with no boundary, the sorting mechanism operates uniformly and independently across all regions.

The Illusion of a Center

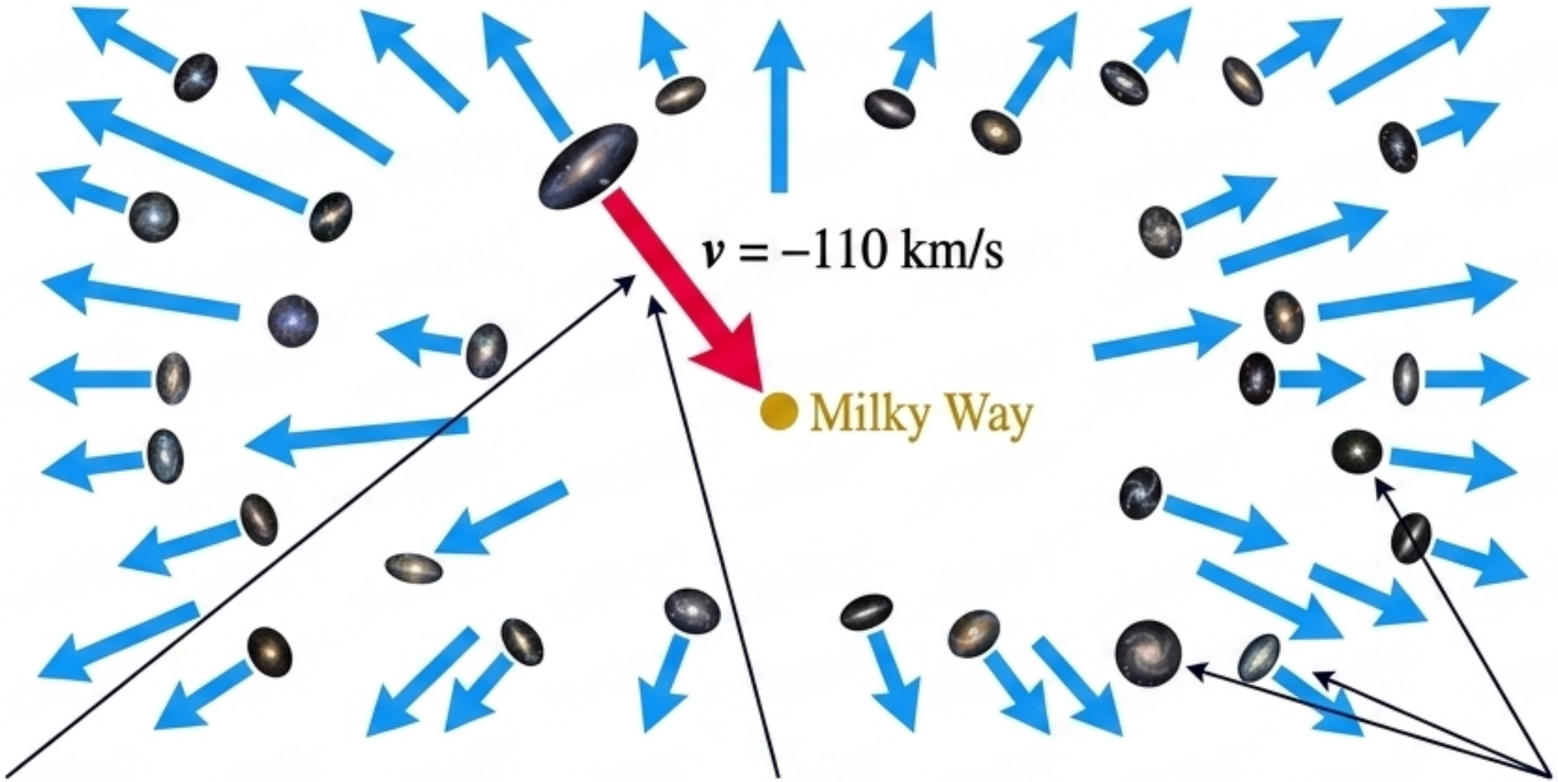
Because trajectory elimination happens everywhere, every observer, regardless of location, is surrounded by a local population of divergent survivors.

Isotropy Without Origin

The uniform recession pattern requires no central origin point and no universal stretching; it is the uniform end-state of infinite-space sorting.



The Andromeda Approach as Incomplete Regional Sorting



The Standard "Local Exception"

Standard cosmology treats approaching galaxies as local exceptions where gravity overpowers expansion, requiring an ad hoc boundary between local and universal physics.

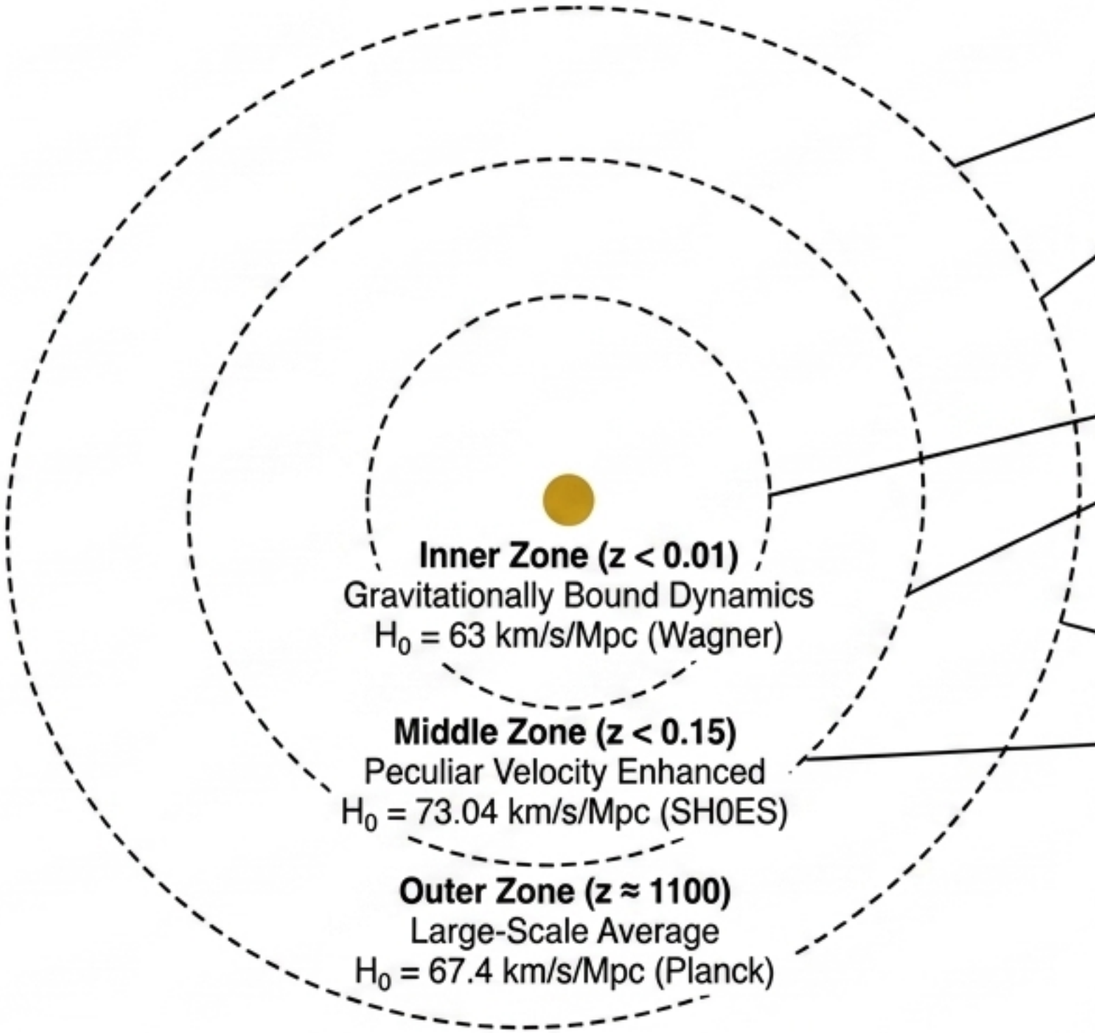
The Sorting Reality

Under gravitational sorting, Andromeda is not an anomaly. It is a live, observable example of a system still undergoing the trajectory elimination process.

Predicting Counter-Motion

Because sorting in an infinite universe is never perfectly complete, counter-moving bodies (unsorted residuals) are physically expected at all scales.

The Hubble Tension as Expected Statistical Variation Across Scales



The Standard Crisis

If H_0 is a universal constant of space, modern high-precision measurements must converge. They do not.

The Sorting Resolution

If H_0 is an emergent property of a survivor population ($H_0 = 1/T$), different methodologies probing different epochs and environments must return different values.

Predicted Divergence

The 4-to-6 sigma tension is the natural signature of measuring an active, dynamically filtered population, not a failure of standard physics.

Observer Bulk Flow as the Origin of Apparent Acceleration

The Kinematic Dipole

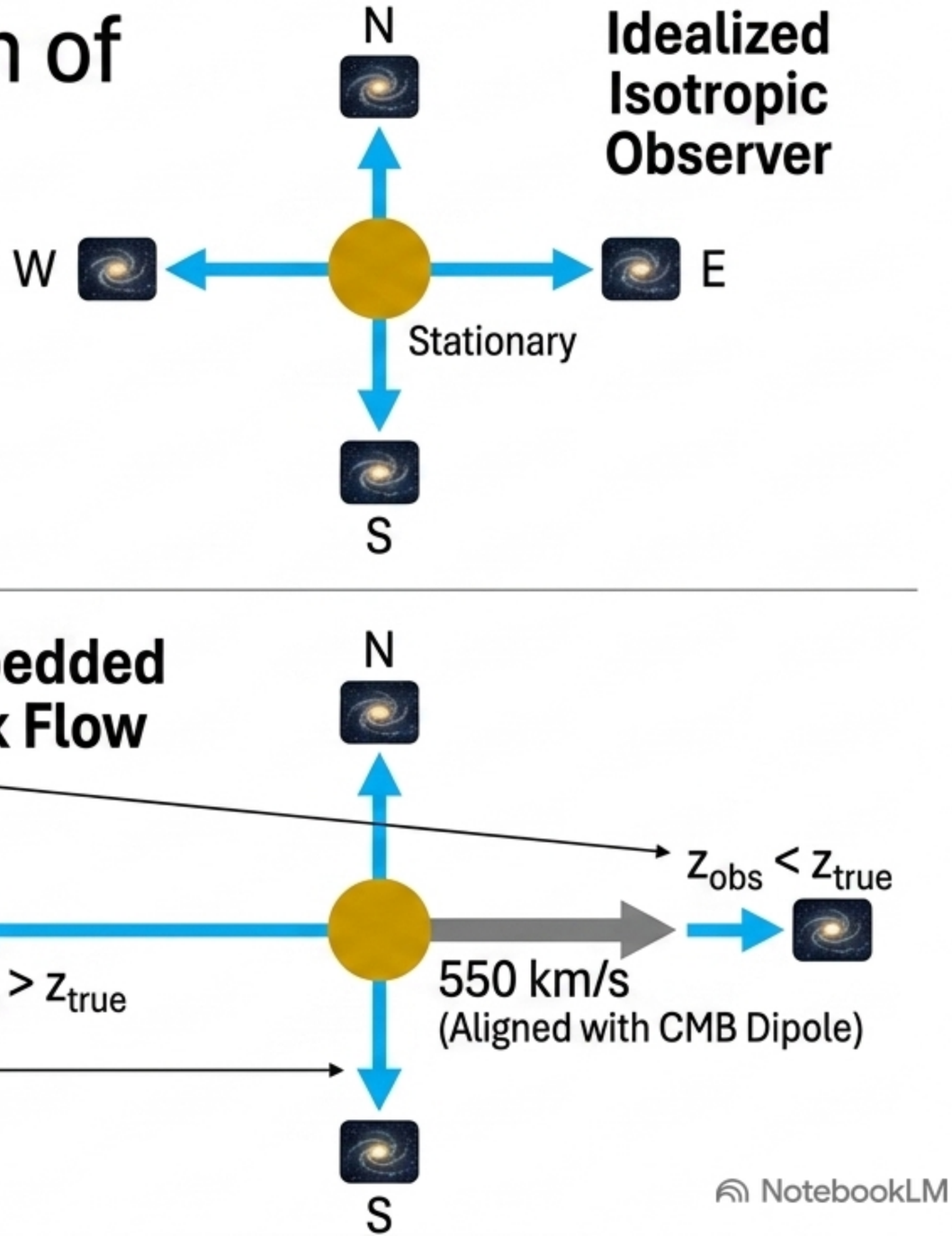
An observer moving within a gravitationally coherent bulk flow measures an anisotropic recession pattern, confirmed by a 3.9-sigma directional dipole in supernova data.

The Illusion of Dark Energy

When this directional asymmetry is averaged across the sky without correction, the kinematic dipole artificially mimics universal acceleration ($q_0 < 0$).

The Conclusion

Correcting for observer bulk flow removes the apparent acceleration, eliminating the physical requirement for a Dark Energy parameter.



Diagnostic Comparison: Metric Expansion vs. Kinematic Sorting

	Standard Model (Metric Expansion)	**BFUT** (Gravitational Sorting)
Mechanism of Redshift	Stretching spacetime metric	**Kinematic Doppler motion of survivors**
Source of Linearity	Geometric assumption of FLRW	**Geometric fingerprint of survival ($v \propto d$)**
Andromeda Approach	Local exception with undefined boundary	**Expected unsorted residual**
Hubble Tension	Crisis requiring new early-universe physics	**Expected scale-dependent variation**
Apparent Acceleration	Unknown Dark Energy fluid	**Observer Bulk Flow illusion**

Synthesis: The Survivor Population Filter

The Unified Insight

Observers in a gravitationally evolving universe are not reading a pristine geometric truth. They are observing a filtered ensemble shaped by time and survival.

The Single-Source Artifact

The Hubble Law, Andromeda's approach, and apparent cosmic acceleration are not separate phenomena requiring expansion, dark energy, and local exceptions. They are all expressions of a single kinematic reality: an observer embedded in an infinite, dynamically sorted bulk flow.